
**THE CASE FOR A MORATORIUM ON SOUTHERN
OCEAN KRILL HARVESTING:
AN ANALYSIS OF THE APPLICATION OF THE
PRECAUTIONARY APPROACH TO, AND THE
CURRENT INADEQUACIES OF, THE KRILL
MANAGEMENT REGIME IN INTERNATIONAL
ENVIRONMENTAL LAW**

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Euphausia superba: The Antarctic Krill

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STATEMENTS

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A handwritten signature in black ink, appearing to read 'P. Bender', with a stylized, cursive script.

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April 2007

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ABSTRACT

The Antarctic is one of the world's largest and most isolated wilderness areas. The Antarctic krill is a small crustacean that is one of the most pivotal species in the vulnerable Antarctic ecosystem. Accordingly, it is extremely important that the krill is given adequate legal protection by the international regulatory and management regime. The purpose of this thesis is to provide a comprehensive analysis of the world's international legal regime in the context of the Antarctic krill. In particular, this thesis examines the adequacy of the current legal regime to provide effective management of krill and other Antarctic marine species in light of the problem of illegal, unregulated and unreported fishing in the Southern Ocean. The thesis examines both legal theory and practical management in the specific context of the Antarctic krill. The aim of the thesis is to recommend an appropriate regulatory framework for the Antarctic krill in light of the "precautionary approach" to fisheries management, given the krill's importance to the Antarctic ecosystem.

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GENERAL INTRODUCTION

The purpose of this thesis is to examine the international legal regime surrounding the Antarctic krill, a small crustacean that is one of the most pivotal species in the vulnerable Antarctic ecosystem. There is scientific uncertainty surrounding the Antarctic krill population and the exact effects of krill harvesting on other dependent species. Accordingly, this thesis submits that an Antarctic krill fishing moratorium should be introduced because of this uncertainty and the Antarctic krill's vital role in the ecosystem. The current system of binding international treaties and conventions is not adequate to implement such a moratorium and does not offer adequate protection to Antarctic krill. Non-binding international law does offer a more comprehensive set of marine conservation principles, however, because of its non-binding status its effects are limited. Accordingly, it is proposed that there be a strengthening of current international legal regime and the use of alternative mechanisms to enforce a moratorium such as trade related measures.

The Antarctic krill is located at the base of the Antarctic food chain and forms a vital link between plankton and larger species, channeling nutrients to those higher in the food chain. Antarctic species depend either directly or indirectly on krill for their survival. Accordingly, it is extremely important that krill is given adequate legal protection by the international regulatory and management regime.

The exploitation of krill poses such a direct and alarming threat to dependent species in the Antarctic ecosystem, (many of which are currently threatened because of past exploitation,) that krill should receive the full protection of a complete moratorium on further harvesting. The pivotal role of krill in the ecosystem and the dependence of so many species on krill make it crucial that krill population is protected. Uncertainty surrounding krill population and its interactions with dependent species and localised predator populations make it particularly important that a harvesting ban is introduced. The application of a strong form of the precautionary approach to resource management (discussed below) justifies a krill fishing moratorium because of current scientific uncertainty. For such a ban to prove effective, it must be a universally binding legal obligation. Only with a strong legal obligation that binds all parties, even on the high seas, can krill receive the protection they need. At a minimum, localised krill fishing bans should be introduced in sensitive areas in Antarctica where fishing may have the most impact.

It will be submitted that the current legal regime can facilitate the introduction of a krill fishing moratorium. Southern Ocean fisheries are regulated predominantly by the Convention for the Conservation of Antarctic Marine Living Resources ("CCAMLR"), a Treaty that aims to achieve sustainable exploitation of marine stocks in the Antarctic. In addition, the marine areas of the Antarctic are governed by a whole host of binding and non-binding international conservation instruments such as the Law of the Sea Convention, the Convention for Biological Diversity and the UN FAO Code of Conduct for Responsible Fishing. It will be shown that although many international agreements (soft and hard law) focus on conservation of marine species, they contain some legal weaknesses, and accordingly there have been problems with States failing to fully implement such agreements. These instruments also suffer from a lack of legal strength in that a Treaty such as CCAMLR only binds those States which are parties to the Convention. This gives rise to problems with non-party compliance. However, this thesis submits that CCAMLR is the appropriate body to implement and monitor a krill fishing moratorium. Improvements in enforcement mechanisms will help CCAMLR to prevent illegal, unreported and unregulated ("IUU") fishing in the Southern Ocean. The UN General Assembly has also recently advocated a strengthening of the international legal framework for fisheries management in order to combat IUU fishing. This may provide an impetus for the international community to re-examine and strengthen current regulatory arrangements so that a krill fishing moratorium has a greater chance of being successful.

Chapter 1 of this thesis examines the scientific data concerning the size of the Antarctic krill population and the significance of krill to the Antarctic ecosystem and why the preservation of krill is vital for the continued existence of that ecosystem. It is critical to this thesis to examine the data which highlights the scientific uncertainty because this thesis advocates a krill moratorium in light of the uncertainty because of the Antarctic krill's role in the ecosystem. The chapter will also examine the history of exploitation in the Antarctic and the dangers posed by exploitation to krill and its dependent species. Furthermore, chapter 1 will also analyse the effect that krill harvesting is currently having on the ecosystem including effects on local predator and krill populations. Krill industry as a whole will also be examined together with the reason why a likely expansion of this industry necessitates a total krill ban.

Chapter 2 examines the precautionary approach to resource management, particularly in the context of Antarctica and krill management. As discussed, there is enormous scientific uncertainty concerning krill population and the effect of krill harvesting on the Antarctic ecosystem. Accordingly, the precautionary approach provides a basis for a more careful approach to management of fisheries resources such as the Antarctic krill. Adopting a precautionary approach for the Antarctic krill should, taking into account krill's pivotal role in the ecosystem, result in the imposition of an Antarctic krill fishing moratorium. At the very least, under this approach, localised krill fishing bans should be introduced in areas where krill fishing could affect genetically distinct krill populations or land based predator colonies.

Chapter 3 of this thesis will analyse the conservation treaties and conventions that are applicable to krill and are entered into through formal processes and are binding on the parties (often referred to as "hard" law). Examination of this "hard" law is necessary to determine whether it can place sufficient binding legal obligations on States to protect the Antarctic krill through a fishing moratorium. In particular, the major regulatory instrument of the Southern Ocean, CCAMLR, will be examined to assess its legal status and effectiveness in preventing threats to krill population and the whole Antarctic ecosystem. Furthermore, this chapter will focus on the Protocol on Environmental Protection to the Antarctic Treaty and its interaction with CCAMLR, including its ability to provide effective legal protection to krill. Maritime sovereignty and the existence of Exclusive Economic Zones (EEZs) in Antarctica will be also analysed to determine whether krill could receive protection from the introduction of a fishing ban within these zones of national jurisdiction. The chapter will also look at the Law of the Sea Convention and the United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species to highlight both the strengths and weaknesses of these instruments and the need to improve them for the greater good of krill and other marine species. Finally, this chapter will examine the Convention for Biological Diversity and the role it can play in the conservation of Antarctic biodiversity.

Chapter 4 of this thesis will examine the non-treaty quasi-legal instruments and resolutions that are, in general, non-enforceable/binding on parties (loosely referred to as "soft" law). In particular, this chapter will analyse the application of these soft law instruments to Antarctic krill conservation and the implementation of a krill fishing moratorium. Furthermore, the limitations of these soft law instruments will also be discussed. The chapter will first look at the Stockholm and Rio Declarations and their ability to offer any meaningful protection to krill given their non-binding status and a focus on development within the instruments.

The sustainable use objectives of Agenda 21 will also be analysed to highlight current weaknesses that need to be resolved before a complete fishing ban can be effectively introduced. These sustainable use goals will also be examined in light of the UN FAO Code of Conduct for Responsible Fisheries and subsequent instruments supporting it, to determine whether it would accord with a complete ban and whether it can offer meaningful protection to krill in its current form. The creation of binding obligations through the entry of the Code's principles into customary international law will also be discussed to highlight the effect that such a development would have on krill protection. Finally, this chapter will focus on the 2002 World Summit on Sustainable Development and the General Assembly resolutions introduced in the wake of this conference. The World Summit gave rise to a number of conservation principles that could help to manage krill and other species.

Chapter 5 will examine the practical aspects of the investigation, management and enforcement of Antarctic krill conservation. Only with an effective and efficient management and enforcement system can a krill moratorium be successfully implemented, particularly with the risk of IUU fishing. Strong universally binding legal obligations are necessary for the introduction of a comprehensive krill harvesting ban but such obligations will only prove effective if they are fully implemented by all States and observed by all fishing vessels. This chapter will firstly examine CCAMLR's ecosystem approach towards management of marine species in the Antarctic. Chapter 5 will outline the threat posed by IUU fishing and the effectiveness of current international instruments that aim to reduce that threat. Even if strong universally binding legal obligations exist, those obligations will only be effective if they are backed with a comprehensive enforcement regime and strong sanctions. Chapter 5 will conclude with an examination of the range of enforcement mechanisms currently available to determine whether any of them can be effective in enforcing a comprehensive krill fishing ban. Furthermore, the current sanctions that can be imposed on IUU vessels will be analysed to determine whether they are of sufficient strength to deter vessels from flouting a comprehensive harvesting ban. The world's nations must vigorously enforce their conservation obligations so that a total krill fishing ban can be successful and the whole Antarctic ecosystem can receive the crucial protection that such a ban will provide.

Due to the Antarctic krill's vital role in the ecosystem and the scientific uncertainty discussed above, this thesis concludes that the current hard and soft law regimes are not capable of ensuring the security of the Antarctic krill and their dependent species.

Current enforcement and management techniques have also proved ineffective in dealing with the IUU fishing problem. Accordingly, it is critical that alternative means of protecting the

Antarctic krill are examined. Chapter 6 will examine an alternative means of combating IUU fishing through restrictive trade measures.

In particular, this chapter will analyse the legality of such measures, when applied in an environmental context, under the free trade principles of the World Trade Organization (“WTO”) system and the General Agreement on Tariffs and Trade (“GATT”). There are certain exceptions to these principles which will also be examined to determine whether trade measures to protect Antarctic species would fall within their ambit. The current status of environmental issues under the WTO system will also be looked at, including the work of the WTO’s Committee on Trade and Environment (“CTE”). Several multilateral environmental agreements (“MEAs”) utilise trade measures to enforce their provisions. This chapter will look at the interaction between WTO regulations and these agreements and also the interaction between these WTO principles and customary international law. Furthermore, it will examine whether particular types of trade measure could be used to protect krill without infringing WTO requirements and the application of the precautionary approach under the WTO. Finally, this chapter will outline potential alternative avenues to the WTO for dealing with environmental issues with a trade focus.

The final chapter of this thesis discusses the problem of overcapacity of the world’s fishing fleets. This problem has been cited as one of the reasons for the growth of IUU fishing and has caused many fishers to seek alternative fisheries. Overcapacity is a problem that will focus fishers’ attention much more on alternative fishing grounds such as the Southern Ocean and alternative species such as the Antarctic krill. Accordingly, it is vital for this thesis to analyse the overcapacity problem because of its potential to impact on the effectiveness of an Antarctic krill fishing moratorium.

Chapter 7 will begin by defining overcapacity and looking at the current status of that problem. The chapter will then analyse the types of solutions that have been used by States to deal with this issue and the effectiveness of such solutions. A strong legal regime is also necessary to curb fleet overcapacity. This chapter will briefly consider the international measures that have been undertaken to reduce capacity and will discuss whether stronger measures are required. One of the potential causes of fleet overcapacity is the maintenance of fishing subsidies by national governments. Chapter 7 will outline this issue and consider whether subsidies should be maintained in any form. The status of such fishing subsidies under the WTO system will also be discussed. In particular, the legality of fishing subsidies under the WTO’s free trade principles will be examined to determine whether the WTO can effectively curb such subsidies and hence curb the overcapacity problem.

This thesis makes a significant contribution to the field of Antarctic and Southern Ocean Studies. In particular, as opposed to many of the existing works on Antarctic krill management which focus on scientific factors, this thesis provides a comprehensive analysis of the application of all significant international law instruments and theories to krill. The thesis provides a critique of current legal deficiencies that need to be addressed in the future, which is something that impacts not only on krill but all Antarctic species. Furthermore, this thesis also goes into an in-depth analysis of how theoretical concepts in international law impact specifically on krill and on treaties regulating the Antarctica. In particular, the thesis looks at how legal theory can be used to justify practical action in Antarctic in respect of krill or can provide a basis for legal challenge or future negotiation in respect of Antarctic regulation. The thesis also canvasses a number of alternative means that could be introduced to enhance both conservation of krill and other Antarctic species. Finally, this thesis examines a number of recent international law and fisheries developments that took place between 2003 and the end of 2005. In particular, there has been an original analysis of the impact of these developments on the Antarctic krill and Southern Ocean fisheries.

CHAPTER 1: BACKGROUND AND HISTORY

Introduction

Apart from phytoplankton, Antarctic krill is a marine living resource that forms the base of the Southern Ocean food chain. Krill channel a large amount of nutrients and energy to higher species in the food chain and are a vital link between plankton and these larger species. Part I of this Chapter will examine the unique status of the Antarctic ecosystem and the long history of natural resource exploitation in Antarctica. The thesis will chart the rapid degradation of many species through overexploitation which has forced people to turn their attention to new sources of Antarctic exploitation, culminating in the rise of a modern krill harvesting industry. The concern surrounding the new industry's effect on krill will then be examined, as well as the steps towards introducing conservation measures to protect krill. This Part will then focus on the introduction of the Convention on the Conservation of Antarctic Marine Living Resources and chart the Convention's development of measures to protect krill.

Parts II and III will examine the significance of krill to the Antarctic ecosystem and why it is important that krill be conserved. Firstly, the biology of the Antarctic krill, its distribution, and its feeding habits in Antarctica will be examined. The significance of krill will then be discussed in terms of its vital role at the base of the ecosystem and the dependence of other species on it. Part IV focuses on this important function and the reason why uncertainties concerning krill population estimates will mean that a greater level of krill conservation is required. The need to adopt a precautionary approach to krill management is necessary because of this uncertainty. The precautionary approach is discussed in Chapter 2 of this thesis.

Part V of this Chapter will examine krill harvesting and krill fishing industry. The current management regime has both legal and enforcement weaknesses that make it inadequate to effectively conserve krill. The problem of by-catch from krill harvesting and the uncertainties surrounding the problem will be outlined together with the detrimental impact on dependent predator species from localised krill harvesting. A precautionary approach should be adopted because of these weaknesses and uncertainties. Finally, this Part will detail current levels of krill fishing and the effect that those levels will have on the ecosystem. Part VI will look at the likely increase in current harvesting levels that will result from increases in demand for current krill products. New uses of krill in aquaculture and biotechnology are also likely to increase demand for krill. This Part will outline recent developments in technology that will reduce krill harvesting costs and lead to greater profits and likely greater levels of harvesting. Because of the

uncertainties surrounding krill population itself and the impact of fisheries on dependent species, the threat of increased harvesting levels should be a justification for adopting a precautionary approach to krill management. This approach will be discussed in Chapter 2, the strongest form of which would suggest that a moratorium on Antarctic krill fishing should be introduced.

Finally, Part VII of this Chapter will discuss the uncertainty of environmental effects on krill population. The problems that such uncertainty poses in setting catch limits for krill will be examined along with the potentially detrimental effect on dependent species if catch limits are incorrectly set. A higher level of krill conservation is necessary because of the uncertainties surrounding krill population and their interaction with other species. A comprehensive ban on krill harvesting should be considered as a real option because of the vital role of krill in the ecosystem. A high level of conservation is also necessary because lower costs of krill harvesting and greater demand for krill are likely to lead to a larger krill industry in the future.

I. The Historical Exploitation of Antarctic Marine Living Resources

Antarctica is an ice covered continent straddling the southern end of the globe. The Antarctic land mass is 13.5 million square kilometres in area and seventy percent of the world's fresh water is contained in the ice cap that covers the continent.¹ However, despite this expanse of ice, Antarctica is really a desert that receives a very small amount of precipitation in the form of snow.² Antarctica's land mass is also surrounded by ice shelves and annual sea ice that expands dramatically during the winter.³ Antarctica is home to many marine species in the nearby Southern Ocean. The Southern Ocean makes up approximately 10 percent of the geographic area of the world's ocean⁴ and is home to many varied and unique species. The distinctive nature of the Southern Ocean makes it essential that these unique species are conserved so that their inherent and economic value can be preserved for future generations. Preservation of such marine species will ensure that the biological diversity⁵ of the Antarctic ecosystem as a unique world habitat remains intact. The Antarctic ecosystem has been threatened in recent years by exploitation of its natural resources, which has been compounded by the inadequacies of the current regulatory regime. Krill need to be protected by a strong legal regime because of their

¹ Friedham, R. and Akaha, T. 1989. Antarctic Resources and International Law: Japan, the United States, and the Future of Antarctica. *Ecology Law Quarterly*, Vol 16: 119-154 at 124

² *Ibid*

³ Kindt, J.W. 1988. Ice-Covered Areas and the Law of the Sea: Issues Involving Resource Exploitation and the Antarctic Environment. *Brooklyn Journal of International Law*, Vol 14(1): 27-71 at 28

⁴ *Ibid*, 29

⁵ The concept of biological diversity will be discussed in greater detail in a subsequent chapter.

vital role in the ecosystem. The dependence of many species on krill means that a complete ban on harvesting or the introduction of localised “no-take” zones (which amount effectively to localised harvesting bans) should be considered as possible options. Legal and enforcement problems with the current regulatory system give impetus for the need to adopt a precautionary approach to krill management.

Exploitation of the Antarctic

The exploitation of Antarctica’s natural resources is not a new phenomenon. People have been plundering the Antarctic ecosystem for several centuries. Antarctica has been exploited ever since South Georgia Island was discovered in 1775 by Captain Cook.⁶ Seals were one of the first Antarctic resources to be utilised. There was major exploitation of fur seals in Antarctica and the sub-Antarctic islands.⁷ The Sealing industry began on South Georgia and spread to other sub-Antarctic islands.⁸ Fur seal colonies in South Georgia, the Falkland Islands and the South Shetland Islands were exploited heavily by early hunters.⁹ Fur seals were almost wiped out from South Georgia by 1822¹⁰ and were hunted virtually to extinction in the South Shetlands.¹¹ On Macquarie and Heard Islands significant depletion of seal stocks also occurred.¹²

⁶ Chittleborough, G. 1984. Nature, extent and management of Antarctic living resources. in *Australia’s Antarctic Policy Options* edited by Harris, S. Centre for Resource and Environmental Studies: Canberra at 141

⁷ Gulland, J.A. 1988. The Management Regime for Living Resources. in *The Antarctic Legal Regime*. edited by Joyner, C.C. and Chopra, S.K. Martinus Nijhoff Publishers: London. at 221

⁸ Chittleborough, G. *Supra*, fn 6, 141

⁹ Couratier, J. 1983. The regime for the conservation of Antarctica’s living resources. in *Antarctic Resources Policy*. edited by Vicuna, F.O. Press Syndicate of the University of Cambridge: Melbourne. at 139

¹⁰ Chittleborough, G. *Supra*, fn 6, 141

¹¹ Gulland, J.A. *Supra*, fn 7, 221

¹² Chittleborough, G. *Supra*, fn 6, 143

The degradation of fur seal stocks then resulted in a change of focus for hunters to exploitation of elephant seals.¹³ The elephant seals were harvested from 1830 for their oil.¹⁴ The level of harvesting reduced as seal numbers declined.¹⁵ The fur sealing industry was revived in 1870¹⁶, particularly on South Georgia.¹⁷ Seals were exploited until 1920 and this exploitation continued on South Georgia until 1964.¹⁸ In June 1972, the Convention for the Conservation of Antarctic Seals was adopted to protect the seal population.¹⁹ To date, commercial sealing has not resumed in Antarctica. However, the history of commercial sealing shows the huge potential for exploitation in Antarctica to have a catastrophic effect on populations. Krill could easily suffer the same fate if an unregulated krill industry took hold in Antarctica.

Commercial exploitation of the larger Antarctic species has also taken place in the past. Modern whaling in Antarctica began with the establishment of a whaling station on South Georgia in 1904.²⁰ Many species were exploited including blue, sei, sperm, fin, minke and killer whales.²¹ There were huge reductions in the numbers of larger Antarctic whales as a result.²² In the 1930s, several whale species were threatened by excessive harvesting.²³ The severe danger posed to sustainable exploitation of whales provided the impetus for a Convention to regulate whaling, which was signed in 1946.²⁴ An increased concern with whale exploitation gave momentum to the need for complete conservation of whales. The International Whaling Commission made a recommendation for whaling to cease in the Antarctic in 1982. This moratorium came into operation in 1986.²⁵ Whales in Antarctica are currently protected from exploitation except for certain scientific purposes. Prior to the whaling moratorium the urgent need for an international legal regime for whaling that would address management and conservation issues demonstrated the impossibility of sustainable exploitation if no controls were imposed on fishing vessels. King and royal penguins were also harvested for their oil on places such as Macquarie and Heard Islands, again leading to a dramatic reduction in their numbers.²⁶

¹³ *Ibid*

¹⁴ Couratier, J. *Supra*, fn 9, 139

¹⁵ Chittleborough, G. *Supra*, fn 6, 143

¹⁶ Couratier, J. *Supra*, fn 9, 139

¹⁷ Chittleborough, G. *Supra*, fn 6, 143

¹⁸ Couratier, J. *Supra*, fn 9, 139

¹⁹ *Ibid*, 144

²⁰ Chittleborough, G. *Supra*, fn 6, 144

²¹ Friedham, R. and Akaha, T. *Supra*, fn 1, 125

²² Chittleborough, G. *Supra*, fn 6, 144

²³ Couratier, J. *Supra*, fn 9, 139

²⁴ *Ibid*, 141

²⁵ Baird, R. 1997. Fishing the Southern Ocean: The Development of Fisheries and the Role of CCAMLR in their Management. *University of Tasmania Law Review*, Vol 16(2): 160-183 at 166

²⁶ Chittleborough, G. *Supra*, fn 6, 143

Similar to these abovementioned species, krill also require an effective regime to regulate and control commercial harvesting if sustainable exploitation of krill is to be achieved. A similar regime would be required if a comprehensive ban on harvesting were a desired objective. The likely future increases in krill harvesting and the scientific uncertainty surrounding the population would justify such a moratorium.²⁷

The decline in numbers of larger species combined with renewed conservation concerns about those species turned the attention of fishing nations to species lower down the food chain. The Southern Ocean provides a habitat for about 100 different species of fish.²⁸ Overexploitation of these Antarctic species was quite common in the past. Finfish, for example, were extremely overfished around South Georgia in the early 1970s and stocks took years to recover.²⁹ Overexploitation of such resources is still a problem that needs to be overcome. These difficulties stem from the inability of the current system to adequately regulate and control fishing activities in the Southern Ocean. The historical decline in levels of Antarctic fish populations focussed attention on species lower down the food chain such as the Antarctic krill. Between 1976 and 1977 there was a huge increase in interest displayed by countries in krill fishing.³⁰ Such interest was due in part to a greater level of research conducted by countries such as Poland and West-Germany.³¹ This research improved the harvesting technology and the efficiency of krill fishing. This initial exploratory fishing had the potential to substantially increase krill harvest.³²

The changing fisheries pattern of world fishing fleets was also a major problem. Numerous long distance fishing vessels were no longer able to fish in their traditional grounds because of an increasing number of State declarations of Exclusive Economic Zones.³³ Greater attention was therefore directed towards Antarctic marine resources. Concerns about overexploitation of fisheries resources provided the impetus for negotiation by the Antarctic Treaty Parties for a comprehensive conservation regime for the Southern Ocean.³⁴ The increased interest in krill exploitation in recent years has made some kind of conservation regime essential. The history of overexploitation of other species has shown the potential for serious detrimental harm to occur when a species is commercially harvested.

²⁷ These ideas are discussed in more detail in connection with the precautionary approach/principle in Chapter 2.

²⁸ Friedham, R. and Akaha, T. *Supra*, fn 1, 125

²⁹ Gulland, J.A. *Supra*, fn 7, 222

³⁰ Auburn, F.M. 1982. *Antarctic Law and Politics*. Croom-Helm: Canberra. at 206

³¹ *Ibid*

³² *Ibid*

³³ *Ibid*

³⁴ This regime has become known as the Convention for the Conservation of Antarctic Marine Living Resources.

An effective management regime is therefore necessary to ensure that krill do not suffer from the same pattern of overexploitation that has plagued other species throughout Antarctica's history. The weaknesses embodied in the current legal regime, including the mechanisms for enforcement, makes it difficult to maintain adequate control of fishing activity. This is a particular problem in the Antarctic due to its geographic isolation and the vast area it encompasses. The likely expansion in krill industry makes it vital that a precautionary approach to krill management is adopted. A complete harvesting ban would be the strongest form of such an approach. Such a measure could help to achieve sustainable exploitation of larger species that depend on krill and are more economically attractive to fishers.

History of Krill Conservation

The first signs of a Southern Ocean conservation regime came in the Seventh Antarctic Treaty Party Consultative Meeting in 1972, which involved informal talks on the need to regulate exploitation of living resources.³⁵ The following Eighth meeting in 1975 had little focus on a potential regime regulating marine Antarctica but saw some agreement among the parties of the need to accomplish protection, scientific study and rational use of marine living resources.³⁶ The critical step in gaining protection for the Antarctic krill had its origins in the decision at the Ninth Consultative Party Meeting in 1977 to hold a Special Consultative Meeting in 1978 in order to plan protection for marine species in Antarctica.³⁷ A comprehensive management regime was to be designed by that time.³⁸ Such a regime was necessary if krill were to be given effective protection from exploitation. Simply maintaining an unregulated environment was not acceptable because it exposed krill to the same risk of exploitation that decimated seal and whale numbers beforehand. A marine regulatory regime was necessary to prevent krill from being overexploited, an outcome which would have had major ramifications for the whole ecosystem.

³⁵ Howard, M. 1989. The Convention on the Conservation of Antarctic Marine Living Resources: A Five-Year Review. *International and Comparative Law Quarterly*, Vol 38: 104-149 at 108

³⁶ *Ibid*, 109

³⁷ Heap, J.A. 1991. Has CCAMLR Worked ? Management Policies and Ecological Needs. in *The Antarctic Treaty System in World Politics*. edited by Jorgensen, A. and Ostreng, W. Macmillan: London. at 46

³⁸ Auburn, F.M. *Supra*, fn 30, 205

The Ninth Antarctic Treaty Party Consultative Meeting saw the formulation of the main components of the Convention.³⁹ Recommendation IX-2 of this meeting contained the basic features of the new regime and many principles contained in it were eventually placed in the Convention.⁴⁰ These principles included the geographical area covered by the Convention and the need for an ecosystem approach to resource management.⁴¹ The recommendation also focussed on the effective conservation of marine living resources.⁴² The Final Report by the Working Group on Living Resources of the Ninth Meeting made it clear that the concept of conservation also embodied rational use of the resources.⁴³ A concluding round of negotiation took place at the Tenth Antarctic Treaty Party Meeting⁴⁴ before a final meeting was held in Canberra in May 1980 to put the finishing touches to the new Convention for the Conservation of Antarctic Marine Living Resources.⁴⁵ Signature of the Convention was possible from August 1980⁴⁶ and Argentina, Australia, Belgium, Chile, France, East and West Germany, Japan, New Zealand, Norway, Poland, South Africa, USSR, UK, and the US were the original parties.⁴⁷ The Convention came into force on 25 May 1982 at the first meeting in Hobart.⁴⁸

The new Convention did not provide immediate protection for the Antarctic krill although possible management approaches for krill were first considered in 1984 and there was a major conference in 1989.⁴⁹ The early history of the Convention was characterised by a lack of action. In 1984, net mesh sizes and a fishing prohibition within 12 miles of South Georgia were the only conservation measures in place.⁵⁰ The Scientific Committee's first meeting was held in 1982.⁵¹ There was, however, conflict between parties over the Committee's role in the early years of CCAMLR.⁵² Some countries saw the Committee as simply a consultative body which expressed scientific opinion, others saw it as a political body.⁵³ The danger with the Scientific Committee being perceived as a political body is that its opinions may be given less credence by parties. A purely consultative body may have more weight given to its scientific opinions and it may therefore perform a more effective role than if it was seen as political.

³⁹ *Ibid*, 215

⁴⁰ Couratier, J. *Supra*, fn 9, 145

⁴¹ *Ibid*

⁴² Auburn, F.M. *Supra*, fn 30, 215

⁴³ *Ibid*, 216

⁴⁴ Howard, M. *Supra*, fn 35, 111

⁴⁵ Howard, M. *Supra*, fn 35, 112

⁴⁶ Baird, R. *Supra*, fn 25, 166

⁴⁷ *Ibid*

⁴⁸ Puissochet, J. 1991. CCAMLR - A Critical Assessment. in *The Antarctic Treaty System in World Politics*. edited by Jorgensen, A. and Ostreng, W. Macmillan: London. at 73

⁴⁹ Croxall, J.P, Everson, I. and Miller, D.G.M. 1992. Management of the Antarctic krill fishery. *Polar Record*, Vol 28(164): 64-66 at 64

⁵⁰ Gulland, J.A. *Supra*, fn 7, 234

⁵¹ Howard, M. *Supra*, fn 35, 117

⁵² *Ibid*

⁵³ *Ibid*

In the beginning of CCAMLR there were also problems with the statistics needed to formulate and implement conservation measures. Many countries gave basic statistical data only.⁵⁴ There was a much more detailed definition of the data needed to monitor exploited and dependent species by the Scientific Committee and Working Groups during 1984 and 1985.⁵⁵ Statistical data is a necessity if precautionary catch limits are to be properly formulated. This original reticence of members to give statistical data could have created great difficulties in formulating catch limits and made it hard for CCAMLR to provide an effective management regime. Indeed, a lack of data still makes it difficult for CCAMLR to formulate accurate precautionary catch limits for krill.

There was finally some movement towards krill conservation when the Ad Hoc Working Group on krill was established in 1987.⁵⁶ The Ad Hoc Working Group on krill had the task of reviewing studies of krill population; looking at growth rate studies; reviewing estimates of reproductive mortality rates; looking at krill distribution studies; and looking at data on existing krill catches.⁵⁷ This Working Group was set up as a permanent body in 1988.⁵⁸ The Working Group on krill reviewed the methods used to estimate krill populations; reviewed information on the size and distribution and composition of krill harvesting; looked at the effect of future krill harvesting; reported to the Scientific Committee; and liaised with CCAMLR's Ecosystem Monitoring Programme (CEMP) Working Group on impacts of krill fisheries on other species.⁵⁹ The permanent Working Group looked much more at management issues, rather than just focussing on biological parameters like the ad hoc group.⁶⁰ A management focus may be a necessity when studying krill. Because CCAMLR focuses on how to manage the whole Antarctic marine ecosystem, scientific studies should take into account the relationship between krill and other species and how biological factors may impact on any potential management regime. Scientific studies that also consider management implications of biological data can only strengthen krill conservation in the future. However, uncertainties with the data still exist and this provides one justification for introducing more comprehensive krill conservation measures.

⁵⁴ Gulland, J.A. *Supra*, fn 7, 235

⁵⁵ *Ibid*

⁵⁶ Croxall, J.P., Everson, I. and Miller, D.G.M. *Supra*, fn 49, 64

⁵⁷ Nicol, S. 1991. CCAMLR and its approaches to management of krill fishery. *Polar Record*, Vol 27: 229-36 at 231

⁵⁸ Croxall, J.P., Everson, I. and Miller, D.G.M. *Supra*, fn 49, 64

⁵⁹ Nicol, S. 1991. *Supra*, fn 57, 231

⁶⁰ *Ibid*

There were concerns in 1989 about the possible adverse impact of krill fisheries on krill and its predators.⁶¹ The Working Group came to the conclusion a year later in 1990 that the deficiencies in data made it impossible for them to adequately advise CCAMLR's Scientific Committee.⁶² The possible adverse effects of krill fisheries on krill predators was also highlighted in 1992, but inadequate data again restricted the ability of the Working Group to advise the Commission.⁶³ This highlights the problem with data uncertainty concerning krill, however, in line with the precautionary approach a lack of data should not have stopped the Commission introducing some form of protection for krill. The lack of protection for krill was also shown by the lack of discussion on the topic by the Commission of CCAMLR. The Commission did not have a reported discussion on krill until the Fifth meeting.⁶⁴ Substantial discussion of krill was not a feature of the Commission's deliberations until the Ninth meeting.⁶⁵ This shows an extreme lack of foresight on the Commission's part. The Commission should not have avoided dealing with krill protection because of data uncertainty. Leaving krill fishing unregulated exposed krill to a huge and unacceptable risk of exploitation that could have affected krill in the same way as it has damaged other Antarctic species in the past.

The Eighth meeting of the Commission did acknowledge the Scientific Committee's view that the possibility of precautionary catch limits for krill should be examined.⁶⁶ Part of the Agenda for the Ninth meeting involved an examination of the need for such precautionary limits.⁶⁷ Fishing nations were against such limits because of the lack of data concerning krill populations.⁶⁸ They wanted more scientific data before such limits were imposed.⁶⁹ It was also argued that future krill catch numbers were not going to increase, so limits were not required.⁷⁰ This view ignores the potential for new krill products to be introduced and potential changes in the economics of krill harvesting. As evidenced by current developments, new krill products are being developed and these new markets, combined with decreases in harvesting costs, have improved the economic viability of krill industry. Krill finally received some protection in the form of precautionary catch limits in 1991.

⁶¹ Baird, R. *Supra*, fn 25, 176

⁶² *Ibid*

⁶³ *Ibid*, 177

⁶⁴ Nicol, S. 1991. *Supra*, fn 57, 232

⁶⁵ *Ibid*

⁶⁶ *Ibid*, 234

⁶⁷ *Ibid*

⁶⁸ *Ibid*

⁶⁹ *Ibid*

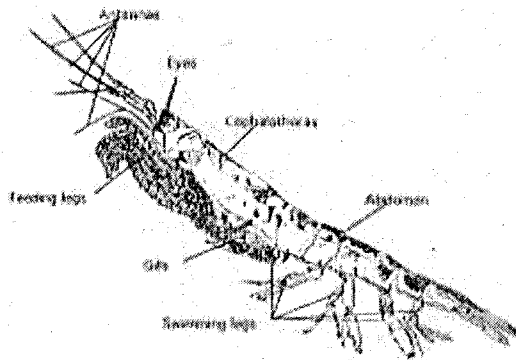
⁷⁰ *Ibid*

Alarmingly, krill received no protection for this substantial period after CCAMLR's inception, despite the fact that krill harvesting levels then were a great deal higher than present levels. The lack of action could partly be attributed to deficiencies in scientific data on krill at the time, however, CCAMLR's precautionary approach dictates that lack of data should not prevent conservation measures being put in place.⁷¹ CCAMLR cannot afford to take such a long time in the future before acting if krill are to be conserved by that regime.

⁷¹ The precautionary approach will be discussed in greater detail in Chapter 2.

II. Krill Biology

Krill are a species of crustacean⁷² that form an essential link in the Antarctic ecosystem between phytoplankton and higher forms of life.⁷³ The largest species of Antarctic krill is known as *Euphausia superba*⁷⁴ and can grow to a maximum of 6.5cm and weigh over a gram.⁷⁵ Antarctic krill have a circumpolar distribution⁷⁶ but are scarcer in the open ocean than near the edge of ice sheets.⁷⁷ Krill are found in swarms that are extremely dense, with some swarms having densities of over a million animals per cubic metre of water.⁷⁸ These swarms give the water a reddish-brown colour because of their density.⁷⁹ The main concentrations in Antarctica are near the South Orkney Islands, South Georgia, South Sandwich Islands, Bouvet Island, the Ross Sea, and off Wilkes Land.⁸⁰ This makes strong conservation measures in these waters essential if krill are to be protected. Even if a comprehensive ban on krill fishing is not introduced, some form of seasonal or total ban should be introduced for at least some of these high krill concentration areas.



Krill Biology

Source: Nicol, S. 1995. *Antarctic Krill*. Encyclopaedia of Environmental Biology. Academic Press

⁷² Nicol, S. 1995. Antarctic Krill. *Encyclopaedia of Environmental Biology*. Academic Press at 389

⁷³ *Ibid*

⁷⁴ Alverson, D.L. 1980. Tug-of-War for the Antarctic Krill. *Ocean Development and International Law*, Vol 8: 171-181 at 177

⁷⁵ Nicol, S. 1995. *Supra*, fn 73, 389

⁷⁶ Nicol, S. and Endo, Y. 1999. Krill Fisheries: Development, management and ecosystem implications. *Aquatic Living Resources*, Vol 12(2): 105-120 at 106

⁷⁷ Nicol, S. 1995. *Supra*, fn 73, 391

⁷⁸ Nicol, S. and Endo, Y. *Supra*, fn 75, 106

⁷⁹ Nicol, S. and De la Mare, W. 1993. Ecosystem Management and the Antarctic Krill. *American Scientist*, Vol 81: 36-47 at 37

⁸⁰ Alverson, D.L. *Supra*, fn 75, 174

Krill are more mobile than plankton, which are organisms that drift with ocean currents.⁸¹ They have 5 pairs of swimming legs and are heavier than water. This impediment requires them to swim for short periods to remain afloat. There is some vertical migration of krill, but they are usually found in the top 200m of the water column.⁸² Krill have several luminous organs located near their swimming legs, abdomen, mouth and eyes.⁸³ They also have six pairs of legs that are used to collect food and move it into the mouth.⁸⁴ There are 11 mouthparts that are necessary to grind up krill's food.⁸⁵ Krill were previously believed to live for only 2 years in the wild, but new evidence suggests that they live at least 5 years.⁸⁶ In laboratories, their potential life span has been extended to as much as 11 years.⁸⁷ Krill mainly feed on drifting microscopic plants, known as phytoplankton. These plants rely on light at the ocean's surface to photosynthesise.⁸⁸ The main blooms of phytoplankton begin in October and can continue right through autumn.⁸⁹ Krill can live at least 200 days in the laboratory without food by reducing their body size. This could be the mechanism for them to survive Antarctic winters when phytoplankton is scarce.⁹⁰ Krill provide a link between the phytoplankton and species higher in the food chain making them a crucial species in marine Antarctica. Consequently, a comprehensive harvesting ban should be considered for Antarctica in order to facilitate greater protection for dependent species and allow the continued sustainable exploitation of such species.

⁸¹ Nicol, S. 1995. *Supra*, fn 73, 390

⁸² Nicol, S. and Endo, Y. *Supra*, fn 77, 106

⁸³ Nicol, S. 1995. *Supra*, fn 73, 390

⁸⁴ *Ibid*

⁸⁵ *Ibid*

⁸⁶ Nicol, S. and De la Mare, W. *Supra*, fn 80, 42

⁸⁷ Nicol, S. 1995. *Supra*, fn 73, 395

⁸⁸ *Ibid*, 393

⁸⁹ Chittleborough, G. *Supra*, fn 6, 136

⁹⁰ Nicol, S. and De la Mare, W. *Supra*, fn 80, 43

III. The Role of Krill in the Antarctic Ecosystem

Krill represent an essential link in the Antarctic ecosystem. As discussed above, krill are vital because they feed off phytoplankton and channel the nutrients and energy of the phytoplankton to other species that do not feed on the phytoplankton, either directly or indirectly, higher up in the Antarctic food web. As such, Antarctic krill are essential for providing energy to larger species in the food web (see, for example, Nicol⁹¹).

There are some claims that Antarctic krill plays a more important role than species in similar positions in other ocean ecosystems.⁹² Only a small number of species exist in the extremely short Antarctic food chain.⁹³ This makes it extremely vulnerable to exploitation and necessitates the maintenance of a strong regulatory regime governing marine species in Antarctica. Many of these species are either directly or indirectly dependent on krill. Among the predators that feed directly on krill are finfish, squid and seals (particularly the crabeater seal). Penguins, such as the Adelie, chinstrap and gentoo, are also highly dependent on krill. Studies of penguins and seals have shown that poor breeding seasons correspond to times when krill numbers are depleted.⁹⁴ The baleen whales also feed directly on krill. There have been some suggestions that whale migrations to Antarctica are caused by the desire to feed on krill. There is also a possibility that huge decreases in whale populations may have contributed to increases in krill in recent years.⁹⁵

Krill are also important for species that feed on krill predators. Such species indirectly rely on krill for their own prosperity. These species include birds, such as the black-browed Albatross and Antarctic petrel, and the toothed whales. The abundance and position of krill in the Antarctic food web make it a vital species in the Antarctic ecosystem.⁹⁶ Krill channel a large amount of nutrients and energy to higher species in the food chain.⁹⁷ Disturbing krill could have a much greater effect than depleting species higher up in the food chain.⁹⁸ The extreme importance of krill in the Antarctic ecosystem should provide impetus for the complete protection of krill.

⁹¹ *Ibid*

⁹² Alverson, D.L. *Supra*, fn 75, 177

⁹³ Gulland, J.A. *Supra*, fn 7, 220

⁹⁴ Brierly, A. and Reid, K. 1999. The Kingdom of Krill. *New Scientist*, Vol 162, 17 April: 38-41 at 40

⁹⁵ Kindt, J.W. *Supra*, fn 3, 34

⁹⁶ Nicol, S. 1995. *Supra*, fn 73, 395

⁹⁷ Howard, M. *Supra*, fn 35, 110

⁹⁸ *Ibid*

The total protection of krill provides dependent predators with a more reliable food supply. Without protection, dependent species would have a greater vulnerability to fishing and a lower recruitment rate because of potential reductions in food. A lack of protection could also threaten the whole Antarctic ecosystem because krill forms the base of that ecosystem. Conserving the Antarctic ecosystem would also conform with the conservation objectives of international instruments such as the Protocol on Environmental Protection to the Antarctic Treaty.⁹⁹ Furthermore, krill conservation would give greater protection to the variability of Antarctic species in accordance with the objectives of the Convention on Biological Diversity¹⁰⁰ and would allow the optimum utilisation of other dependent species in conformance with the Law of the Sea Convention¹⁰¹ while giving those species some measure of protection by conserving krill as the ecosystem's base.

The role that krill plays in predator breeding will be discussed in greater detail in a subsequent section, however, it should be noted that krill does have an important impact on predator species. For example, Ichii et al conducted a study of the impact of krill fishing on local penguin populations and found that the fishery could have an adverse impact on penguins during their breeding season.¹⁰² Agnew and Marin have also documented the dependence of predator species on krill and the multiplying effect that krill fishing can have on predator species.¹⁰³

In respect of whales, a high krill harvest may reduce the rates of increase of baleen whales and threaten their existence.¹⁰⁴ A low krill harvest combined with a sustainable catch of seals may keep seal numbers constant while increasing baleen whale numbers but dramatically increasing minke whale numbers.¹⁰⁵ Accordingly, it can be noted that there is a delicate balance between krill and other species that should not be disturbed lightly by krill harvesting.

⁹⁹ This instrument will be discussed at length in Chapter 3.

¹⁰⁰ The concept of biological diversity and the Biodiversity Convention will be covered in detail in Chapter 3.

¹⁰¹ The Law of the Sea Convention will be discussed in Chapter 3.

¹⁰² Ichii, T., Naganobu, M. and Ogishima, T. 1994. *An Assessment of the Impact of krill Fishery on Penguins in the South Shetlands*. CCAMLR Science, Vol 1: 107-128

¹⁰³ Agnew, D.J. and Marin, V.H. 1994. *Preliminary Model of Krill Fishery Behaviour in Subarea 48.1*. CCAMLR Science, Vol 1: 71-79 at 72

¹⁰⁴ Chittleborough, G. *Supra*, fn 6, 153

¹⁰⁵ *Ibid*

IV. Uncertainties Surrounding krill Population

Past perceptions of a huge krill biomass formed the basis for proposed large scale fisheries.¹⁰⁶ The wide distribution of krill in Antarctica makes it difficult to obtain reliable estimates of population size.¹⁰⁷ Krill distribution is not uniform throughout the Southern Ocean. Various methods have been used in the past to estimate krill population. Catch rates from nets towed behind ships are sometimes used to calculate krill numbers. Nets often do not collect a proportion of krill, resulting in underestimates of population. Large animals can swim fast enough to evade nets and small krill may slip out of the nets.¹⁰⁸ The production rate of phytoplankton has also been used as a measure of krill population. Similarly, the consumption of krill by predators and the abundance of krill larvae are also utilised to estimate krill numbers.¹⁰⁹ All of these techniques are prone to error which creates uncertainty about the true size of krill population and may lead to poor management decisions that could harm the whole ecosystem. The current management regime may not be able to provide a high level of protection to krill if its decisions are based on inadequate data, although a number of techniques have been introduced to take into account this uncertainty (these will be discussed later in this thesis).

Acoustic surveys have also been used to detect krill. Such surveys utilise an echosounder that transmits sound that is then reflected back from objects in the water. The return time and proportion of sound returned can be used to determine the depth and quantity of species. Such techniques encounter many problems including picking up other species on the echosounder¹¹⁰ and difficulties using sound reflections to calculate krill density.¹¹¹ Vertical migration of krill can also complicate the measurements.¹¹² Krill may be swimming above the echosounder. Noisy environments, such as pack ice, also make it difficult for the echosounder to record accurate data. Acoustic surveys are unable to survey krill populations living under the ice and this can result in a large undetected mass of krill.¹¹³ Complications with estimating krill populations have led to wildly fluctuating estimates of krill biomass in the past, ranging from 14 to 7 000 million tonnes.¹¹⁴ Such uncertainties make it extremely difficult to manage krill stock

¹⁰⁶ Nicol, S., Constable, A.J. and Pauly, T. 2000. Estimates of Circumpolar Abundance of Antarctic Krill Based on Recent Acoustic Density Measurements. *CCAMLR Science*, Vol 7: 87-99 at 89

¹⁰⁷ Nicol, S. and De la Mare, W. *Supra*, fn 80, 38

¹⁰⁸ Nicol, S. 1995. *Supra*, fn 73, 392

¹⁰⁹ Nagata, T. 1983. The Implementation of the Convention on the Conservation of Antarctic Marine Living Resources: needs and problems in *Antarctic Resources Policy*. edited by Vicuna, F.O. Press Syndicate of the University of Cambridge: Melbourne at 121

¹¹⁰ Nicol, S. and De la Mare, W. *Supra*, fn 80, 40

¹¹¹ Nicol, S. 1995. *Supra*, fn 73, 392

¹¹² *Ibid*

¹¹³ Nicol, S., Constable, A.J. and Pauly, T. *Supra*, fn 107, 94

¹¹⁴ *Ibid*, 88

with a high level of precision. This is an even greater concern for krill because of the large number of species that (directly or indirectly) depend on them for survival.

This thesis submits that, as there are clear difficulties with estimating krill biomass, then krill should receive total protection from harvesting until such difficulties are resolved. Such a view is consistent with a strong form of the precautionary approach discussed in Chapter 2. Krill's vital role in the ecosystem means that errors in estimating the population could lead to decisions that may threaten many other species. This would not only conflict with the "rational use" conservation objectives of CCAMLR, but would also conflict with the conservation objectives of the Madrid Protocol and the sustainable use goals advocated by the Law of the Sea Convention.

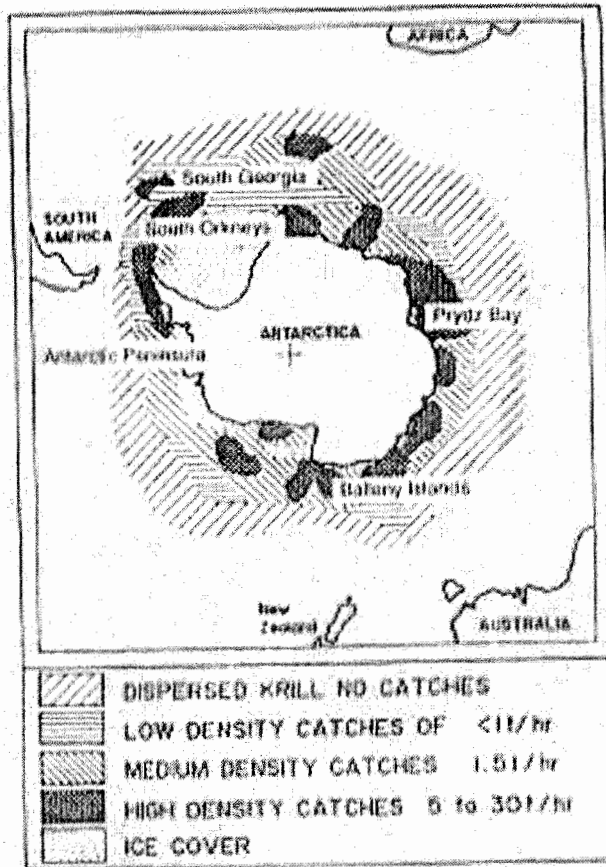
A recent CCAMLR study in 2000 utilised acoustic surveys and estimated the biomass of krill to be between 60 and 155 million tonnes. The precautionary catch limit of 1.5 million was revised upwards to over 4 million tonnes in accordance with the new estimate.¹¹⁵ In addition, a "trigger" level of 620,000 tonnes was set for Area 48 of the Convention zone at which the Area would be subdivided into smaller management units. The 2000 survey employed various techniques to reduce estimate error including the use of several survey ships and conducting surveys at the same time each day.¹¹⁶ Error resulting in skewed observations may still be present because of problems such as a large undetected krill population. This type of survey may, however, be the best method of estimating krill.¹¹⁷ Uncertainty is still prevalent in krill population estimates because of the difficulties in making such estimates. The recent CCAMLR survey has provided a krill estimate much lower than previous estimates. That is, to restate the submission presented above, if reasonably accurate measurements of krill populations cannot be obtained, then krill must be protected from exploitation. Even if the current acoustic survey was the best method available it still suffers from uncertainty. Adopting a weak form of the precautionary approach involving catch limits may not be enough if, because of inaccurate population estimates, damage is done to the ecosystem before its effects can be detected.¹¹⁸

¹¹⁵ *Ibid*, 95

¹¹⁶ These techniques may have reduced some of the problems in gaining accurate results.

¹¹⁷ *Ibid*

¹¹⁸ CCAMLR does try to take uncertainty into account in its mathematical models used to formulate precautionary catch limits.



Krill catch densities in Antarctica

Source: Nicol, S. 1995. *Antarctic Krill*. Encyclopaedia of Environmental Biology. Academic Press

The models used to estimate krill yield do take into account uncertainties in estimates of biological parameters (these models will be discussed in greater detail in a later Chapter). However, estimating changes in krill populations is still problematic because of insufficient data on matters such as krill consumption by predators¹¹⁹; distribution variations; spawning areas; development rates; and how krill abundance changes with distance from the edge of the ice.¹²⁰ A large krill population could, arguably, mean that precautionary catch limits (i.e. a weak form of the precautionary approach) are sufficient to protect krill even with a high level of uncertainty.

¹¹⁹ Nicol, S., Constable, A.J. and Pauly, T. *Supra*, fn 107, 95

¹²⁰ Nagata, T. *Supra*, fn 110, 128

At the creation of CCAMLR in 1980, 424,821 tonnes of krill were harvested. At that time, krill industry was the 24th largest fishery in the world and the biggest crustacean fishery.¹²¹ The apparently massive krill population has previously given the impression that harvesting levels are low.¹²² However, there are concerns that even apparently small catch levels could affect dependent species.¹²³ Uncertainty concerning krill populations could have major effects on predator abundance despite the adoption of a management approach focussed on catch limits. The potential for adverse changes because of estimation uncertainty provides support for a comprehensive ban on krill fishing. Such a moratorium would prevent detrimental changes to prey populations and would uphold the ecosystem conservation objectives of CCAMLR and other international instruments such as the Madrid Protocol. These ecosystem conservation goals would also maintain species variability in conformance with the Convention on Biological Diversity.

V. Krill Fishing Industry

When large Antarctic predators, such as seals and whales, were reduced in number, there was increased interest in other Antarctic species. Finfish were the next species to be severely depleted as a result of exploitation¹²⁴ and attention then turned to krill. Experimental krill fishing expeditions occurred throughout the 1960s, but only small catches were made. Krill fishing became attractive in the 1970s because of the minimal control that coastal states exercised over the industry. There were also major improvements in technology¹²⁵ and subsidies given to fishing fleets¹²⁶ that made krill fishing more viable. Further improvements in technology and fishing subsidies will be particularly dangerous if the current regime is not strengthened to eliminate some of its legal and enforcement weaknesses.

¹²¹ Nicol, S. 1991. *Supra*, fn 57, 229

¹²² *Ibid*, 230

¹²³ Everson, I. and Goss, C. 1991. Krill fishing activity in the southwest Atlantic. *Antarctic Science*, Vol 3(4): 351-358 at 351

¹²⁴ Nicol, S. 1995. *Supra*, fn 73, 397

¹²⁵ Peterson, M.J. 1986. Antarctic Implications of the New Law of the Sea. *Ocean Development and International Law*, Vol 16(2): 137-181 at 155

¹²⁶ Fishing subsidies and the overcapacity of the world's fishing fleet will be discussed in Chapter 4.

Fishing fleets can easily locate krill in dense swarms in the upper layers of the sea.¹²⁷ Ships avoid areas where krill are feeding because such krill have a green tint, spoil rapidly and have an unusual taste. They aim to harvest 10 tonnes of krill per haul of nets. This can be achieved extremely quickly (sometimes in less than 15 minutes) in high concentrations of krill but excessive hauls are avoided because krill become crushed in the nets.¹²⁸ Japan tested a krill fishing trawler in 1974 that could catch 16 tonnes of krill per day. A West German trawler, the *Weser*, could catch 8 to 12 tonnes an hour during intense fishing periods in 1975-76.¹²⁹ At its peak in 1983 the per annum catch was over half a million tons, the majority being caught by the USSR.¹³⁰ The major fishing nations in the past have been Japan, the USSR, Korea, Poland and the UK. Krill catch by these states rose at one point to 530,003 tonnes per annum.¹³¹ There were fears that this increased activity would mean the demise of krill.¹³² The emergence of a krill fisheries industry means that an effective management regime is necessary to ensure that krill are properly protected. The significant krill harvesting that has taken place in the past shows the need for CCAMLR to maintain a comprehensive management regime for krill.



Krill Fishing

Source: CCAMLR website

¹²⁷ Nicol, S. and De la Mare, W. *Supra*, fn 80, 37

¹²⁸ Nicol, S. 1995. *Supra*, fn 73, 398

¹²⁹ Peterson, M.J. *Supra*, fn 126, 153

¹³⁰ Nicol, S. 1995. *Supra*, fn 73, 397

¹³¹ Nicol, S. 1991. *Supra*, fn 57, 229

¹³² Peterson, M.J. *Supra*, fn 126, 155

Krill By-Catch

The harvesting of krill by trawling nets has given rise to concerns about by-catch. The density of krill swarms means that other species are not usually contained within the swarms.¹³³ Fish larvae and juvenile fish can be caught in krill trawling nets, especially if krill fishing focuses on less dense krill swarms. CCAMLR has requested information from its members on by-catch numbers.¹³⁴ Japanese data from South Georgia indicated that by-catch occurred in a minority of the harvests that were investigated and the number of fish involved was low and related to only three species of fish.¹³⁵ Ukrainian data, however, suggested that there may be large levels of by-catch, especially if krill catch rates were low.¹³⁶ Even if the by-catch is small, it could have a drastic impact on recruitment of depleted or endangered species of fish.¹³⁷ Exploited stocks could be at risk if their breeding stocks are decreased to a level that causes a decrease in recruitment.¹³⁸ In one study, juvenile fish were found to occur frequently as by-catch in waters above the continental shelf.¹³⁹ The total by-catch of juvenile fish needs further investigation to ensure correct estimates. If there is a significant problem with by-catch it could have extremely detrimental effects on the whole marine ecosystem.

There may, however, be other solutions to the by-catch dilemma that do not require an end to krill harvesting. The by-catch problem could possibly be reduced by changing the location of krill fisheries to open waters away from the continental shelf. Krill fishers are less likely to catch juvenile fish in these areas.¹⁴⁰ The high levels of krill close to the continental shelf may reduce the viability of this option because krill fishers would have little incentive to move from a productive area of high krill concentration to an area where there are less krill available.¹⁴¹ Although more information is needed about the problem, it is clear that any upsurge in krill fishing would be detrimental to other exploited species due to problems of by-catch.

There is some suggestion that fishing boats may avoid areas where there is a chance of catching other species.¹⁴² However, actually achieving compliance with such a law in the vast expanse of

¹³³ Nicol, S. and Endo, Y. *Supra*, fn 77, 109

¹³⁴ CCAMLR website, <http://www.ccamlr.org>

¹³⁵ Report of the 5th Meeting of the Working Group on Krill, 1993, *Scientific Committee CAMLR XII*

¹³⁶ *Ibid*

¹³⁷ Basson, M. and Beddington, J.R. 1991. CCAMLR: The Practical Implications of an Eco-System Approach. in *The Antarctic Treaty System in World Politics*. edited by Jorgensen, A. and Ostreng, W. Macmillan: London at 63

¹³⁸ CCAMLR website, <http://www.ccamlr.org>

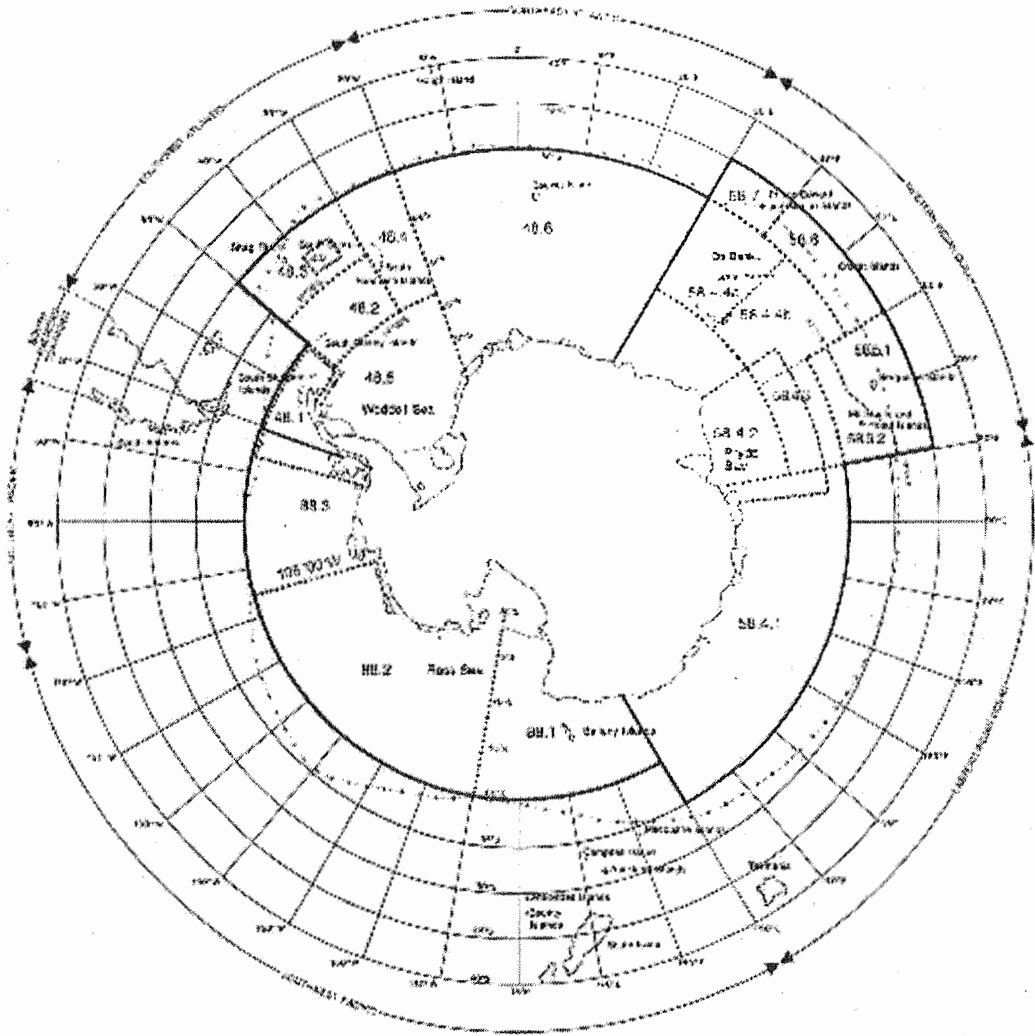
¹³⁹ Pakhomov, E.A. and Pankratov, S.A. 1994. By-Catch, Growth and Feeding of Antarctic Juvenile Fish taken in Krill Fisheries in the South Georgia Area. *CCAMLR Science*, Vol 1: 129-142

¹⁴⁰ Pakhomov, E.A. and Pankratov, S.A. *Supra*, fn 142.

¹⁴¹ Nicol, S. and Endo, Y. *Supra*, fn 77, 109

¹⁴² *Ibid*

the Southern Ocean would be difficult. The practicalities of monitoring and controlling IUU fishing in this region, are discussed in greater detail later in this thesis. If this solution is feasible it may negate the potential effects of krill fisheries by-catch without the need to place a moratorium on krill harvesting. In effect, this solution would be akin to a localised krill ban in particular areas of the Southern Ocean.



CCAMLR Convention Areas, CCAMLR website, <http://www.ccamlr.org>

Localised Fisheries

Localised krill fisheries could also pose problems for dependent predators. Most fishing takes place in Area 48, the Atlantic zone.¹⁴³ Fishing moves with the seasons from South Georgia (48.3) in winter to the South Orkneys (48.2) and South Shetlands (48.1) in summer.¹⁴⁴ Fisheries in Antarctica are conducted in localised areas. Summer harvesting occurs in zones used by krill predators.¹⁴⁵ Some land based predators are restricted to particular breeding sites during summer. In some places there is overlap between fishing zones and the areas of greatest predator concentration. Potential overlap between areas where predators feed during breeding periods and localised krill fisheries could have an adverse impact on localised predator populations.¹⁴⁶ Highly mobile predators are less affected. Between 74% and 90% of krill caught in Area 48.1 is taken during the critical summer breeding months near predator breeding areas. Future fishing activities could expand operations during breeding periods and multiply the impact on predators.¹⁴⁷

A study of penguins in Area 48.1 indicated that there is an insignificant overlap between fishing zones and penguin foraging areas. As a result, it may be possible to imply that there is little competition between penguins and fisheries in this area.¹⁴⁸ Localised fisheries could, however, still be affecting other predators and penguins may be affected in other CCAMLR zones. Future krill fisheries could also impact on localised areas. Any affect that localised fishing had on predators would exist even with catch limits set at a low level. If a real threat does exist from localised fisheries then complete protection of krill may be necessary to ensure the survival of local predator populations. Threats to localised populations conflict with the biological diversity goals of the Convention on Biological Diversity by threatening the genetic variability of predator populations. Dangers to localised predators also clash with the conservation and sustainable use objectives of the Law of the Sea Convention and the ecosystem conservation goals of the Madrid Protocol. Even if a total ban is not introduced, then a seasonal or area specific ban should be introduced to better protect localised predator stocks in sensitive areas. A localised ban in areas governed by state sovereignty could be effective despite flaws with the current management regime. At the very least, a localised ban is justified under the precautionary approach because of the scientific uncertainty concerning the effect that krill harvesting concentrated in localised areas would have on local predator populations.

Large scale krill swarms may also constitute genetically distinct biological stocks.¹⁴⁹ If there are genetically independent krill populations then sustained fishing in one particular area could

¹⁴³ Everson, I. and Goss, C. *Supra*, fn 124, 351

¹⁴⁴ *Ibid*, 353

¹⁴⁵ *Ibid*, 357

¹⁴⁶ Ichii, T., Naganobu, M. and Ogishima, T. *Supra*, fn 103 krill

¹⁴⁷ Agnew, D.J. and Marin, V.H. *Supra*, fn 104, 72

¹⁴⁸ Ichii, T., Naganobu, M. and Ogishima, T. *Supra*, fn 103

¹⁴⁹ Nicol, S. 1995. *Supra*, fn 73, 392

destroy an isolated stock of krill.¹⁵⁰ Recently, there has been some evidence of genetically separate krill stocks.¹⁵¹ However, there is still uncertainty as to whether these discrete stocks of krill actually exist.¹⁵² Ocean currents may carry krill between different areas. This could mean there is simply one global krill population¹⁵³ and destroying biologically distinct krill stocks would not be a risk. The perceived problems with insufficient food for localised predators may not materialise if ocean currents do carry krill between areas. However, if genetically distinct local krill populations do exist, then there will be a need to introduce stronger regulatory and enforcement mechanisms to protect them.

Recently CCAMLR has utilised information from the 2000 biomass survey to explore the possible use of small scale geographical management units.¹⁵⁴ An examination of the potential ranges of predators at particular locations and the relationship between those ranges and fisheries is necessary.¹⁵⁵ CCAMLR has subdivided the subareas of Area 48 of the Convention Area into 15 of these small scale management units.¹⁵⁶ Five of these units contain the majority of krill catch in Area 48 and all of these units are opposite local predator colonies.¹⁵⁷ The implementation of such small scale units may eliminate any problems from localised fishing by setting catch limits in localised areas. If such a solution is effective then, arguably, rational harvesting of krill could be maintained without the need for complete protection to ensure that local predator populations are not endangered. However, there still need to be improvements in the enforcement mechanisms of the current regulatory system if such new management techniques are to be effective.¹⁵⁸

Current Fisheries

¹⁵⁰ *Ibid*

¹⁵¹ Nicol, S. and Endo, Y. *Supra*, fn 77, 106

¹⁵² Nicol, S. and De la Mare, W. *Supra*, fn 80, 42

¹⁵³ *Ibid*

¹⁵⁴ This is in contrast to the current approach of CCAMLR.

¹⁵⁵ *Ibid*

¹⁵⁶ *Management of the Antarctic Krill: Ensuring the Conservation of the Antarctic Marine Ecosystem*. October 2004. A submission presented by the Antarctic and Southern Ocean Coalition (ASOC) to the CCAMLR Commission and Scientific Committee at 9

¹⁵⁷ *Ibid*

¹⁵⁸ Enforcement mechanisms and advances in this respect are discussed later in this thesis in Chapter 5.

The dramatic increase in krill fishing in the past did not bode well for krill. However, the severe danger posed by historical increases in harvesting seems to have subsided with declines in catch in recent years. The break-up of the USSR, one of the major krill producers, has contributed to this decline¹⁵⁹ as has the 1998 Asian economic crisis.¹⁶⁰ Massive costs associated with Southern Ocean fisheries have also reduced incentives for krill fishing.¹⁶¹ The amount of fuel needed to catch a tonne of krill is the same as is needed to catch a tonne of high quality fish in the Northern hemisphere.¹⁶²

Krill catch for the 2002/03 season was 117,728 tonnes and the projected catch for the 2003/04 season was 165,000 tonnes.¹⁶³ The projected catch for the 2004/05 season was 226,000, although the Scientific Committee believed that a more realistic expectation of actual catches for the current season would be around 160,000 tonnes.¹⁶⁴ These projections would seem miniscule in comparison to the current catch limit of over 4 million tonnes, but they highlight that the scale of krill fisheries seems to be on the rise. Further evidence of this phenomenon is also evidenced by suggestions that Russia, a country that exited krill fishing industry in 1993/94, was planning to introduce two vessels to harvest krill in the Antarctic.¹⁶⁵ CCAMLR precautionary catch limits are also set to ensure a sustainable krill harvest without threatening stocks. Potential future krill fisheries are taken into account in determining this precautionary limit. However, there is still a massive amount of uncertainty surrounding the size of krill population. Even a small krill harvest could potentially have a disastrous impact on depleted predator stocks.¹⁶⁶ Accordingly, a strong form of the precautionary approach outlined in Chapter 2 would justify resolute action being taken to avert any risks arising because of this uncertainty.

¹⁵⁹ Nicol, S. 1995. *Supra*, fn 73, 389

¹⁶⁰ CCAMLR website, <http://www.ccamlr.org>

¹⁶¹ Peterson, M.J. *Supra*, fn 126, 153

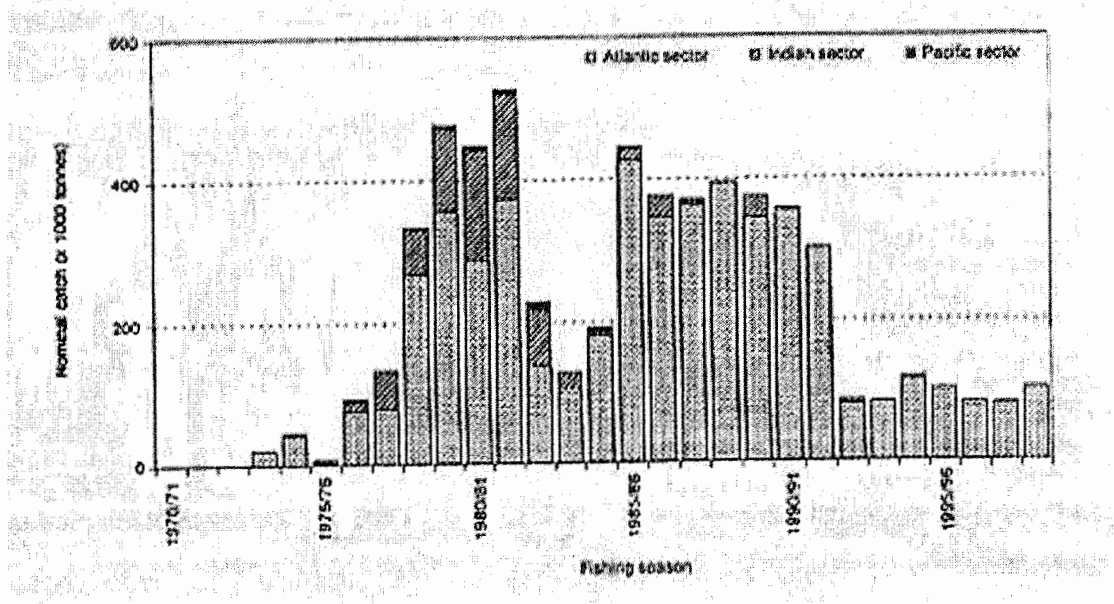
¹⁶² Koch, M. 1984. The Antarctic Challenge: Conflicting Interests, Cooperation, Environmental Protection, and Economic Development. *Journal of Maritime Law and Commerce*, Vol 15(1): 117-126 at 120

¹⁶³ Report of the CCAMLR Scientific Committee from its 23rd Meeting, 2004, SC-CAMLR-XXIII – 2004

¹⁶⁴ *Ibid*

¹⁶⁵ *Management of the Antarctic Krill: Ensuring the Conservation of the Antarctic Marine Ecosystem*. October 2004. A submission presented by the Antarctic and Southern Ocean Coalition (ASOC) to the CCAMLR Commission and Scientific Committee at 5

¹⁶⁶ Everson, I. and Goss, C. *Supra*, fn 124, 351



World Krill Fishing Catches in Prior Years

Source: CCAMLR website, <http://www.ccamlr.org>

Furthermore, greater krill harvesting is likely to eventuate because of the development of new krill products and harvesting technologies (some recent efforts at improving krill harvesting technology are discussed below). A higher level of harvesting would harm both krill and their dependent species, especially because of the extreme uncertain surrounding the effect of fishing on depleted predator populations.

VI. The Economics of Krill Fishing

The current low catch for Antarctic krill is due to a lack of current demand combined with high catch costs that have led to poor economic returns. The vast distance to the Southern Ocean means that fishing vessels incur high fuel and processing costs. A krill fisheries industry cannot be sustained on a year long basis in all Antarctic areas because of ice cover during the winter.¹⁶⁷ Only around South Georgia is a year round fisheries industry viable.¹⁶⁸ This should mean that South Georgia should be a major focus of krill conservation efforts. High costs and poor financial returns are the result of such geographical problems. If krill cannot be caught economically, then catches will remain at current low levels. Low levels of harvesting arguably negate the need for a total fishing ban, although even low levels may have a detrimental effect on dependent species, particularly if they are already endangered. Even with low levels of krill harvesting, there could be improvements in the current legal regime and the mechanisms of enforcement of current precautionary catch limits in order to more effectively regulate the current and future krill fishing industry. Particularly because krill harvesting is likely to increase in the future as demand increases from the expansion of krill markets and harvesting costs are reduced from improvements in processing technology.

Difficulties also arise from the processing of krill. Krill spoil rapidly after they have been caught due to the powerful enzymes contained in their digestive systems.¹⁶⁹ These enzymes break the body down rapidly on death, turning krill into a liquid sludge. In effect, krill eats itself after death. Krill that have been feeding have higher levels of digestive enzymes, causing them to spoil more rapidly. Krill storage problems are compounded by the high level of solubility of krill proteins¹⁷⁰ and the bacteria found in digestive systems of krill.¹⁷¹ Storing live krill is a possible solution, but existing catch systems are not able to do this as yet. Krill must be frozen and partially processed on board the vessel.¹⁷² Such problems can only increase the costs of processing krill and diminish monetary returns. Anything that reduces returns will decrease the possibility of larger volumes of harvesting in the future and reduce incentives for new entrants into krill market. Static levels of krill harvesting will make it difficult to argue for tighter restrictions on krill harvesting or complete protection.

¹⁶⁷ Auburn, F.M. *Supra*, fn 30, 209

¹⁶⁸ Nicol, S. 1995. *Supra*, fn 73, 397

¹⁶⁹ Nicol, S., Forster, I. and Spence, J. Products Derived from Krill. in *Krill - Biology, Ecology and Fisheries*. edited by Everson, I. Blackwell Science at 263

¹⁷⁰ *Ibid*

¹⁷¹ *Ibid*, 265

¹⁷² Auburn, F.M. *Supra*, fn 30, 208

These technical problems create high processing costs for krill. However, as processing technology improves the costs will diminish. Furthermore, as discussed later in this thesis, there overcapacity in the world's fishing fleet causes risks that fishers will switch from exploiting depleted stocks to exploiting other species such as krill. As returns from krill fishing improve, the harvesting levels are likely to increase. As discussed previously in this Chapter, krill form a vital link between phytoplankton and other species which are higher up the Antarctic food web. A plethora of species receive their nutrients and energy necessary to sustain the survival of the species either from feeding directly on krill or indirectly from feeding on species that directly feed on krill. Furthermore, the previous sections of this Chapter have highlighted the scientific evidence that illustrates the correlation between krill population numbers in particular areas and the recruitment success of dependent species, particularly during the breeding season. Accordingly, krill conservation is vital to ensure that significant damage is not done to the whole Antarctic ecosystem because, as Everson and Goss point out, even small harvesting levels may have a detrimental effect on dependent species.¹⁷³

The exoskeleton of krill contains an extremely high level of fluoride.¹⁷⁴ Fluoride can be toxic to humans in high enough levels, so krill need to be specially processed if they are to be used for human consumption.¹⁷⁵ Fluoride is contained only in krill's shell, however, on death it leaches into the body. To prevent this occurring either the shell either be removed quickly on death; krill must be snap frozen to prevent fluoride leaching; or krill must be boiled to fix fluoride in the shell.¹⁷⁶ Removing the shells can be labour intensive.¹⁷⁷ The need to specially process krill to deal with fluoride can increase costs and reduce the profitability of krill fisheries which provides another disincentive for larger harvesting levels in the future. However, as discussed, improvements in processing technology can reduce these technical difficulties and, with a reduction in cost, krill harvesting will become more profitable.

¹⁷³ Everson, I. and Goss, C. *Supra*, fn 124, 351

¹⁷⁴ Nicol, S., Forster, I. and Spence, J. *Supra*, fn 171, 265

¹⁷⁵ Auburn, F.M. *Supra*, fn 30, 209

¹⁷⁶ Nicol, S., Forster, I. and Spence, J. *Supra*, fn 171, 265

¹⁷⁷ Griffin, N. 2002. Top Ocean Looks South. *Pacific Fishing*, April edition: 32-35

The demand for krill products and the profitability of such products also threatens the viability of the industry. Profitability depends on the final product. In the past, lack of technology and poor profitability has prevented the extensive use of krill except for high value/low volume products, such as whole krill and tail meat.¹⁷⁸ The small size of krill industry has also contributed to high costs and low returns from standard catching and processing technology.¹⁷⁹ Krill can be caught economically, however, expensive processing and marketing has previously inhibited the industry.¹⁸⁰ Consumer resistance to krill taste has also limited krill markets for human consumption.¹⁸¹ A substantial investment is also required for any large scale krill production.¹⁸² All of these factors have meant that it has been extremely difficult to achieve acceptable economic returns from krill fisheries. Vessels have little incentive to enter the market or to increase their volumes of krill catch when it is so difficult to make an acceptable profit. If there is little incentive for an expansion of krill industry then, arguably, current catch limits and management procedures may be sufficient. However, although krill themselves may not be under threat, the potential for species that depend on them to be detrimentally affected by even a low level of krill harvesting should provide the basis for stronger controls on krill fishing. Economic returns from krill fishing are also likely to improve in the future. With the development of new krill products and the expansion of existing ones, demand for krill is likely to improve significantly. Any improvements in processing technology will also lead to reduced costs and better economic returns.

The current low levels of krill fisheries may be indicative of the poor economic viability of the industry. Given the high costs of krill fisheries; the lack of demand; and historically low economic returns then, arguably, no protection is required for krill. Products that are sold on a high volume basis, such as krill meal, also have their price restricted by competition from alternative meal based products such as soya beans and fish.¹⁸³ A threat to krill may not exist if harvesting the species is not worthwhile.

¹⁷⁸ McElroy, J.K. 1981. The Economics of Harvesting Krill. *CEMARE Research Paper no 11*.

¹⁷⁹ Nicol, S., Forster, I. and Spence, J. *Supra*, fn 171, 277

¹⁸⁰ Gulland, J.A. *Supra*, fn 7, 223

¹⁸¹ Peterson, M.J. *Supra*, fn 126, 158

¹⁸² McElroy, J.K. *Supra*, fn 180

¹⁸³ Auburn, F.M. *Supra*, fn 30, 209

However, there is still a huge potential for krill industry to become profitable in the future with the advent of new technologies and products. New products and better marketing is likely to lead to greater demand for krill. Japan already has an economically sustainable krill industry, albeit on a small scale and stocked mostly from the Indian Ocean.¹⁸⁴ Antarctic krill has been touted as a means to supplement global protein supplies.¹⁸⁵ There are also fewer opportunities to expand conventional fisheries because of the exploitation of traditional fish stocks.¹⁸⁶ Diminishing returns from existing fisheries, coupled with greater demand for new krill products, will force fisheries fleets to refocus their attention on krill.

Krill has been utilised in a variety of ways in the past. There is a small demand for krill as fishing bait¹⁸⁷ and for home aquariums.¹⁸⁸ Although this is only a fraction of current krill demand, there is no reason why (with clever marketing) demand for such products cannot rise. One of the major markets for krill in the future is likely to be in aquaculture. Krill have been used in the aquaculture industry as feed¹⁸⁹ because they are a good source of proteins and minerals. Krill are also high in astaxanthin, a pigment that gives aquaculture fish, such as salmon, their colour.¹⁹⁰ This makes krill an extremely useful product for the aquaculture industry. Krill hydrolysates can also act as a feeding stimulant to make cheaper grain feeds in aquaculture more palatable to the fish.¹⁹¹ A Canadian company is currently planning a large venture to increase the usage of liquid krill hydrolysates.¹⁹² The huge increase in global aquaculture in recent years is likely to provide a greater demand for such hydrolysates and also for krill as aquaculture feed.¹⁹³

This increased demand for krill aquaculture feed products is already beginning to materialise. Several companies have begun commercial sales of krill-based products to the aquaculture industry. One company, AquaInTech Inc. has recently made a krill oil product available for use as a feed supplement in commercial aquaculture.¹⁹⁴ Another company, Argent Labs, is selling commercially freeze-dried Pacific krill for use as feed in the aquaculture industry.¹⁹⁵

¹⁸⁴ Gulland, J.A. *Supra*, fn 7, 223

¹⁸⁵ Alverson, D.L. *Supra*, fn 75, 171

¹⁸⁶ *Ibid*

¹⁸⁷ Nicol, S., Forster, I. and Spence, J. *Supra*, fn 171, 263

¹⁸⁸ *Ibid*, 274

¹⁸⁹ *Ibid*, 268

¹⁹⁰ *Ibid*, 268, 269

¹⁹¹ Nicol, S. and Endo, Y. *Supra*, fn 77, 114

¹⁹² Nicol, S., Forster, I. and Spence, J. *Supra*, fn 171, 268

¹⁹³ *Ibid*, 278

¹⁹⁴ Fraser, S. 3 March 2005. *All Natural Krill Oil*. <http://www.aquafeed.com>

¹⁹⁵ Argent Labs website, <http://www.argent-labs.com>

Furthermore, at the World Aquaculture Society's 2005 meeting, Antarctic krill was touted as a potential alternative feed in the aquaculture industry.¹⁹⁶ An FAO study predicts that global demand for fish will expand from 133 million tonnes in 1999/2001 to 183 million tonnes by 2015.¹⁹⁷ This will be accompanied by an increase in world fish production from 129 million tonnes in 1999/2001 to 172 million tonnes by 2015.¹⁹⁸ The FAO study projects that world aquaculture production will increase substantially and 73% of the increase in fish production will come from aquaculture. China and South East Asia currently produce 90% of world aquaculture output and the FAO projects that Chinese aquaculture will continue to expand. These findings suggest that world aquaculture production will continue to expand. Such an expansion will require increased use of aquaculture feed and other aquaculture products. As discussed above, there are now a range of commercially available krill-based aquaculture products on the market. Any expansion of the aquaculture industry could very well be accompanied by increased usage of these krill products.

The problem of global overfishing could also provide the impetus for dramatic jumps in aquaculture levels in the future. Such a large increase in demand for krill would mean that harvesting volumes would dramatically increase in the future. This could have a huge impact on krill and reduce a food source for dependent species with potentially devastating effects on the whole Antarctic ecosystem. The reasons why excessive krill fishing would have this effect have been outlined throughout this Chapter. However, it is useful to reiterate that the vital link that krill forms in channelling nutrients and energy to higher species is clear. What is not so clear is the effect that *particular* levels of krill harvesting will have on other Antarctic species and on krill population itself. It is this scientific uncertainty that not only provides a justification for a krill harvesting ban, but requires it. As discussed there is even uncertainty as to whether even a small level of krill harvesting will be harmful to dependent species, and because the predictions concerning the exact size of krill population are also wildly uncertain, then it makes it difficult to sustain an argument that precautionary catch limits will not result in harm to krill population and dependent species. Indeed, as will be expounded later in this thesis, even the mathematical models which are used to formulate precautionary catch limits are extremely uncertainty, particularly in respect of the variables that are input into those models (eg recruitment rates of krill and krill population size). Accordingly, this uncertainty strengthens the argument that, at a minimum, no-take zones in sensitive areas are required for krill.

¹⁹⁶ World Aquaculture Society 2005 Meeting Abstract at the World Aquaculture Society website, <http://www.was.org>

¹⁹⁷ The State of World Fisheries and Aquaculture 2004 report, *FAO website*, <http://www.fao.org>

¹⁹⁸ The FAO does note in its report that an alternative study by IFPRI "is much more cautious about the possibility of aquaculture increasing production rapidly. Therefore, it also does not expect that the fisheries sector as a whole will be able to expand output as rapidly as does the FAO study, in spite of the fact that the IFPRI study is much more optimistic about the increase in landings from capture fisheries."

A complete krill harvesting ban now would eliminate the need for dramatic action in the future if the projected increases in aquaculture production materialise. Such a move would prevent threats to the Antarctic ecosystem that may breach the conservation objectives of the Madrid Protocol and the Convention on Biological Diversity.

Human consumption of krill has previously been limited in scale.¹⁹⁹ In the past, China sold breaded krill sticks on an experimental basis²⁰⁰ and a krill paste could be obtained in the former Soviet Union.²⁰¹ Krill was also used in other products in the Soviet Union such as butter, cheese and sausages.²⁰² There was also use of krill in salads and pate.²⁰³ The possibility of using krill for food aid in developing countries has also been raised in the past and krill protein concentrates were even produced for this purpose.²⁰⁴ However, such a use has not been developed. Currently krill are sold for human consumption as tail meat, frozen whole krill or as krill pastes. Krill concentrate has also been used as a food additive and is currently being marketed as a dietary supplement. Such speciality products only use small amounts of krill, but are potentially high value.²⁰⁵ The development of new high value products will enhance the returns available from krill fisheries and is likely to cause a rise in krill harvesting levels.

In recent years there has been more interest in the chemical and pharmaceutical applications for krill. Krill is a good source of the chemical chitin. Chitin has many possible uses, including use in cholesterol lowering drugs.²⁰⁶ The enzymes found in krill could be employed in a variety of ways, particularly in light of the strength of such enzymes. The potential applications range from use in medicine to use in restoring art works.²⁰⁷ Future pharmaceutical benefits from krill are indicative of the increased focus on developing new krill products. This is highlighted by the very recent (2005) launching of a patent by a Chilean company, Osteos21 Ltd, for a patent for a product which combines krill and salmon processing by-products and assists in calcium intake and deposition on bones to help prevent and cure osteoporosis.²⁰⁸ Such innovative applications may expand demand for krill and therefore increase returns from krill fisheries. New markets for krill may encourage new entrants into krill fishing, which could be extremely harmful to krill.

¹⁹⁹ Peterson, M.J. *Supra*, fn 126, 158

²⁰⁰ Auburn, F.M. *Supra*, fn 30, 208

²⁰¹ *Ibid*

²⁰² *Ibid*

²⁰³ *Ibid*

²⁰⁴ *Ibid*

²⁰⁵ Nicol, S., Forster, I. and Spence, J. *Supra*, fn 171, 267

²⁰⁶ *Ibid*, 275

²⁰⁷ *Ibid*, 277

²⁰⁸ Fraser, S. 17 May 2005. New Marine Functional Food. <http://www.aquafeed.com>

New krill products and the expansion of existing krill markets could significantly increase future demand. Greater demand would increase price and thus increase the economic viability of the industry. Higher harvesting levels may also lead to economies of scale and recoupment of the large initial investments necessary to participate in krill industry. This may increase financial returns and result in greater krill catches. Recently there has been increased usage of krill waste products, including the shell and liquid waste.²⁰⁹ Utilising a greater proportion of krill could increase the returns per volume of catch and thus place the industry on a much sounder economic basis. Current krill harvesting vessels may find it more profitable to harvest larger volumes of krill if they are able to reap a greater return for each krill caught. This increases the danger that krill fishing volumes may be higher in the future and heightens the need for effective conservation measures.

The viability of the industry could also be aided by decreased harvesting and processing costs from the development of new technologies. Already there have been efforts to develop such technologies to produce economically sustainable returns from krill fisheries. Recently an Alaskan company, Top Ocean, has started harvesting, processing and selling krill products for animal and human consumption.²¹⁰ The company is using technology developed by countries that have previously been involved in krill fishing. The company has hybridised different technologies from nations such as the USSR and Japan.²¹¹ Top Ocean has purchased two Russian vessels to use for commercial krill fishing operations. The company has been experimenting with processing equipment to improve the quality of the meat and meal for human consumption. Technology may now be advanced enough for this purpose. The company can also produce krill products for human consumption aboard fishing vessels.²¹² Such an achievement has eluded other krill harvesting operations. However, no market exists for the meal product as yet. According to the company, the product has been tested in Kosovo with promising results. Krill meat has already been sold in Japanese and Australian markets.²¹³

²⁰⁹ Nicol, S. and Endo, Y. *Supra*, fn 77, 114

²¹⁰ Griffin, N. *Supra*, fn 179

²¹¹ *Ibid*

²¹² *Ibid*

²¹³ *Ibid*

Furthermore, CCAMLR's Scientific Committee at its 23rd meeting in 2004 noted that a Vanuatian vessel, the Atlantic Navigator, appeared to be using new technology to catch and process krill.²¹⁴ These major efforts to develop cost effective harvesting and processing technologies pose a danger to krill. The drive to discover innovative new uses for krill and to increase the usage of current krill products is likely to lead to a greater demand for krill. A much greater economic incentive to become involved in krill fisheries would then exist and a huge expansion of krill industry is probable as a result. This likely expansion should provide the impetus for tough protection for krill now, so that there is no threat to krill or dependent species from overfishing.

Greater demand for krill products and therefore the need for larger catch volumes are likely to lead to krill fishing economies of scale which will increase economic returns. This would help to offset the high initial investment required to engage in krill fisheries. Greater demand for krill or substitutes for krill products will drive up the price of krill products, especially if supply was capped by a precautionary catch limit. Higher prices could provide a greater incentive to become involved in the industry. The high initial investment costs of obtaining efficient krill harvesting technology also provide significant barriers of entry into the market. This could reduce competition and provide significant advantages to those already involved in krill fisheries.

A lack of economic data on krill industry also contributes to the problem.²¹⁵ Information on the costs and returns from krill harvesting and the economics of marketing krill products is absent. Gauging the potential of a large scale krill industry is extremely difficult without such detailed data. Any substantial harvesting could damage the Antarctic ecosystem, despite CCAMLR's precautionary approach. If krill can provide good economic returns there will be an incentive to aggressively fish the species in breach of CCAMLR's directives. The weak enforcement mechanisms available to CCAMLR and the current problems with IUU fishing will be discussed later in this thesis. Any significant fisheries could cause detrimental change to populations by threatening krill dependant species. This would conflict with international instruments such as the Madrid Protocol's ecosystem conservation objectives. The endangering of species through detrimental changes would conflict with the conservation and sustainable use objectives of the Law of the Sea Convention and the Convention on Biological Diversity. Ideally, the legal regime governing the high seas and the Antarctic in particular should also be strengthened over time in a greater effort to restrict IUU fishing in this region.

²¹⁴ Report of the CCAMLR Scientific Committee from its 23rd Meeting, 2004, SC-CAMLR-XXIII – 2004

²¹⁵ Nicol, S., Forster, I. and Spence, J. *Supra*, fn 171, 277.

VII. Environmental Factors affecting krill population

Environmental factors can affect krill populations and are therefore able to threaten the viability of any large scale krill industry. The Antarctic sea ice changes annually from a minimum area of around 4 million square kilometres to a maximum of around 19 million square kilometres.²¹⁶ The sea ice plays an important role in the marine ecosystem. Juvenile krill feed on algae that live underneath the ice sheets.²¹⁷ When pack ice melts it releases microscopic plants. These phytoplankton are trapped near the surface because of the low density freshwater released by the melting ice. Algae thrive in the sea ice environment.²¹⁸ The high levels of nutrients and sunlight provide ideal conditions for algae reproduction. Krill can then feed on this phytoplankton. Ice also gives protection from predators²¹⁹ and from fishing fleets during winter months. South Georgia remains ice free during winter and is the only area where krill fishing can take place during this time.²²⁰ This makes it difficult for any large scale krill industry to be maintained because of the limits placed on supply during the winter months. South Georgia's ice free status during winter makes it of particular importance for krill harvesting and makes it extremely vulnerable to overfishing. A likely increase in the scale of the fishing industry will threaten krill population in the waters surrounding South Georgia because of the area's unique characteristics for krill harvesting.²²¹ Any localised krill bans that were introduced would need to, at a minimum, cover this vital krill fishing ground (this idea will be developed further later in this thesis).

Krill is often more abundant near the ice than in open ocean. The majority of krill are found near the edge of Antarctica's continental shelf. Krill populations have also been observed at their greatest levels when there has been more ice.²²² There is some controversial evidence suggesting that reductions in krill abundance in recent times are due to lack of winter ice cover.²²³ During such periods a particular type of zooplankton, salps, are more abundant. Salps are probably not useful as food for many krill predators. A correlation may exist between increases in salps, decreases in krill, and poor breeding seasons for land based predators. This would result in predators being unable to find sufficient food for their offspring because of the lack of krill.²²⁴

²¹⁶ Nicol, S. and Allison, I. 1997. The Frozen Skin of the Southern Ocean. *American Scientist*, Vol 85(5): 426-439

²¹⁷ Brierly, A. and Reid, K. *Supra*, fn 95, 40

²¹⁸ *Ibid*

²¹⁹ *Ibid*

²²⁰ Nicol, S. and Allison, I. *Supra*, fn 218

²²¹ Issues of sovereignty and conservation concerning South Georgia and other sub-Antarctic islands will be discussed in Chapter 3.

²²² Brierly, A. and Reid, K. *Supra*, fn 95, 40

²²³ Nicol, S. and Allison, I. *Supra*, fn 218

²²⁴ *Ibid*

Reductions in sea ice would therefore have a detrimental effect, not only on krill, but also on dependent species. The uncertainty of the relationship between sea ice and krill and the difficulty in predicting the extent of sea ice in any one year should be grounds for caution when formulating conservation measures. If an unforeseen reduction in the sea ice occurred in any particular year, then a reduction in krill could be the result.²²⁵ If any management measures or mathematical models²²⁶ failed to accurately take into account the effect of potential reductions in sea ice on krill numbers, then both krill and dependent species would be detrimentally affected by fishing levels that have not been set in accordance with these reductions.

Increased global temperatures would have a profound impact on the extent of sea ice cover.²²⁷ Such decreases in ice cover would harm both krill and dependent predator populations. However, the exact effect of climate change on krill populations is uncertain. This uncertainty makes it impossible to ascertain the extent and direction of any change in krill population.²²⁸ Such uncertainties only add to the complexities involved in determining a sustainable level of krill harvesting. Conservation of krill is essential to ensure that dependent species are not detrimentally affected by these uncertainties and to ensure that the conservation objectives of international instruments are achieved. A comprehensive ban on krill fishing should be introduced because of the inability of the current regime to deal with such uncertainties, although weak enforcement mechanisms will make it difficult to effectively maintain any such ban. If recent improvements in enforcement mechanisms are implemented in the Antarctic, any comprehensive or localised krill ban would be more likely to succeed.

²²⁵ This, of course, depends on the relationship between krill numbers and the extent of sea ice which, as mentioned, is uncertain.

²²⁶ The precautionary catch limits of CCAMLR are set using mathematical models that try to take into account data uncertainty.

²²⁷ Nicol, S. and Allison, I. *Supra*, fn 218

²²⁸ There is insufficient data to make such predictions.

Why introduce a harvesting ban?: A summary of the position

The purpose of this section is merely to draw together the reasons why some form of ban, rather than mere precautionary catch limits, is required in respect of krill fishing industry in Antarctica.

Firstly, there is an issue as to whether any form of management or conservation measures are required at all given the *seemingly* low level of krill harvesting compared to CCAMLR's precautionary measures. As discussed, based on CCAMLR statistic the level of krill fishing has clearly increased in the past few years. Furthermore, there is now a greater demand for krill because there has been a greater demand for existing products and new uses have emerged such as in the aquaculture, medical and chemical industries. In particular, the range of krill products in the aquaculture industry has dramatically increased as is the demand for these products. Due to the huge predicted increase in aquaculture in the near future, there is also likely to be a corresponding increase in demand for krill products. As discussed, this has already been evident from the new krill products that are appearing on the market.

Furthermore, the costs of actually engaging in krill fishing are likely to decrease dramatically because of the improvements in harvesting technology that have been discussed in this Chapter. This renewed investment in harvesting technology also demonstrates an increased interest in krill fishing. Greater demand for krill products combined with lower costs should lead to greater profits from krill fishing, although it should be noted that there are no recent *major* studies concerning the economics of krill harvesting. Higher profits should lead to a much greater krill catch in the future and, accordingly, some form of management measures are required to prevent krill IUU fishing having the same effect that exploitation on other Antarctic species has had in the past. This history of devastating effects of Antarctic exploitation has been described in detail at the beginning of this Chapter. The historic evidence is a clear and unquestionable reason why some form of management regulation is required in respect of the Antarctic krill.

Secondly, once it has been established that some form of Antarctic krill management or conservation is necessary there is an issue as to whether current CCAMLR precautionary catch limits are adequate. There are a number of reasons why these limits are inadequate which have been described throughout this Chapter as follows:

- The size of krill population is very uncertain and previous estimates have fluctuated wildly. Little comfort can be achieved from setting precautionary catch limits where a population size is largely unknown as, if the population is a lot smaller than the largest estimates, precautionary catch limits could be permitting fishers to catch a large proportion of the stock in a single season, thus harming recruitment rates and detrimentally affecting the size of the stock in the following season.
- As outlined above, the scientific study of Everson and Goss regarding krill fishing concludes that even low levels of krill harvesting could have a detrimental effect on dependent species. Accordingly, setting these precautionary catch limits could still be harming dependent species. Therefore, as outlined in Chapter 2, it would be prudent to suspend krill fishing until more scientific certainty is achieved regarding the exact effects of krill fishing on dependent species.
- As discussed, there is scientific evidence concerning a correlation between the extent of Antarctic sea ice and recruitment levels of krill. Accordingly, if climate change has a major effect on the extent of sea ice in Antarctica, this is likely to have an effect, maybe even an extremely significant effect, on krill recruitment. Of course, given the massive uncertainty concerning krill population size, such changes would not be detected in a timely manner. Accordingly, CCAMLR could still be setting precautionary catch limits at high levels at the same time as krill recruitment rates were being detrimentally eroded by changes in sea ice cover caused by climate change. This highlights the inadequacies of simply maintaining precautionary catch limits.
- As will be outlined in further detail in Chapter 5, CCAMLR sets precautionary catch limits by taking an ecosystem approach which sets the limits based on effects of fishing on the target species and other species in the ecosystem. However, the exact nature and effect of interactions between krill and other species is wildly uncertain. Accordingly, the mathematical models CCAMLR uses to set the catch limits are inaccurate, although they do attempt to take into account uncertainty in variables such as population size.

- Following from this point, CCAMLR uses a feedback management system which changes the precautionary catch limits of species based on new scientific data concerning the effects of fisheries and other variables on the species. However, this system inevitably suffers from a time lag in that corrections to the management system are made as impacts from previous decisions become apparent and so this can result in damage being done before adjustments can be made.

At a very minimum, localised no-take zones are required in respect of krill. As discussed in this Chapter, there is scientific evidence that points both to localised genetically distinct krill populations and detrimental effects from krill fishing on localised predator populations during breeding season. Simply having precautionary catch limits in these zones would not be sufficient because of the uncertainties highlighted above concerning the effect that even small levels of krill fishing may have on dependent species. Furthermore, enforcement of precautionary catch limits or any form of krill ban will always be a problem in large Southern Ocean areas. However, a moratorium may make enforcement easier, particularly with trade related measures and port state controls, because differentiation would not be required between legitimate krill catches and those caught by IUU fishers. This reduces problems of proof in respect of species which can be caught legally.

The final question is why a krill fishing moratorium is the ideal management response in respect of Antarctic krill. Localised no-fish zones may help local dependent predator populations but they may not solve the problem in respect of the Antarctic ecosystem as a whole. Evidence concerning the efficacy of no-fish zones and the impact on areas outside those zones is discussed in further detail subsequently in this thesis.

The uncertainties, inaccuracies and time lags concerning precautionary catch limits cannot be accepted in respect of krill *above all other Antarctic marine species*. Damage to krill population caused by time lags in CCAMLR's feedback management system cannot be accepted in respect of krill because, unlike other species, it will have global consequences to the Antarctic ecosystem. As strongly emphasised earlier in this Chapter, the Antarctic food chain is extremely short which makes it extremely vulnerable to exploitation. Krill forms the crux of the ecosystem and so, because of the relatively few species that exist in the Antarctic system, damage to krill will not just affect a few dependent species it will have ripple on effects in respect of the whole ecosystem. As discussed above, some scientists have claimed that krill plays a more important role than species in similar positions in other ocean ecosystems. Accordingly, krill is a unique species, exploitation of which, has the potential to have dramatic effects on other species in the Antarctic ecosystem.

Krill **SHOULD** be treated differently from other species in Antarctica because the well being of those other species is dependent, at least in part, to the continued well being of krill. This is the fundamental reason why exploitation of krill should be halted in the face of scientific uncertainties concerning appropriate catch limits, the interaction of krill with other species and even the size of krill population itself.

Conclusion

This Chapter has examined the significance of krill to the Antarctic ecosystem and why conservation of krill is essential for the survival of that ecosystem. The history of natural resource exploitation in Antarctica has led to the depletion in numbers of many species. The development of a modern krill harvesting industry requires us to ensure that past problems of overexploitation are not repeated with krill. A legal conservation regime is necessary in Antarctica to ensure that krill does not suffer from the same pattern that has threatened other Antarctic species in the past.

The current legal regime, the Convention for the Conservation of Antarctic Marine Living Resources, took a substantial period of time before it introduced krill conservation measures. Swifter action is necessary in the future to respond to potential threats to krill because of krill's vital role in the Antarctic ecosystem. Antarctic krill form the base of the Antarctic ecosystem and play a vital role by channelling nutrients and energy to higher level species. The magnitude of krill's position in the ecosystem means that a comprehensive ban on krill harvesting is appropriate. A complete ban would give greater security to dependent species and would allow continued exploitation of such species, although there are some weaknesses in the current regulatory regime which would reduce the effectiveness of such a ban.

Conserving krill should be given high priority, not only because of its role in the ecosystem, but also because of the high level of scientific uncertainty surrounding the species. There is extreme uncertainty surrounding estimates of krill populations; interactions with other species; and the effects of environmental factors on krill numbers. There is also uncertainty as to whether krill harvesting will have a major effect on predators because of juvenile fish by-catch and on localised predator populations because of localised krill fishing. Such uncertainty could have detrimental effects on predator populations, even with the precautionary catch limits imposed by CCAMLR. A complete ban on krill harvesting would help to prevent such adverse changes to these populations and would conform to the ecosystem conservation objectives of CCAMLR.

A krill fishing moratorium is appropriate because of likely increases in krill harvesting levels in the future. New uses in areas such as aquaculture (which is likely to be a high growth area, particularly because of overfishing) are likely to result in greater demand for krill and greater profitability from krill fishing. Advances in technology will also reduce the harvesting and processing costs of krill fishing and lead to better economic returns. Greater demand and higher returns would increase the levels of krill fishing and require a stricter level of krill conservation.

The scientific uncertainty described above should not form a barrier to taking decisive action to secure krill's long-term future. The adoption of a moratorium on krill fishing or, at the very least the implementation of localised fishing bans is justified *because* of this uncertainty. This justification is based on what is known as the "precautionary approach" to resource management". These concepts and their application to krill management in the Antarctic are the subject of the next chapter.

CHAPTER 2: THE PRECAUTIONARY APPROACH

Introduction

The purpose of this Chapter is to examine the precautionary approach/principle to resource management, particularly in the context of Antarctica and krill management. As highlighted in Chapter 1, krill are a vital link in the Antarctic ecosystem on which many other species are directly or indirectly dependent. Krill harvesting is currently permitted up to certain precautionary catch limits. However, there is still enormous scientific uncertainty concerning the effect of krill harvesting on the Antarctic ecosystem and even on the approximate size of the Antarctic krill population. A krill moratorium or localised krill bans should be introduced in light of this uncertainty and the vital role krill plays in Antarctica. This Chapter argues that the precautionary approach/principle is the justification for such a move and, perhaps, in its strongest form *demand*s that such action be taken.

Part II of this Chapter will examine the “precautionary approach/principle” itself. There are problems in defining exactly what constitutes a “precautionary approach”. This Part will outline the different “degrees” of the precautionary approach and which one is the most appropriate. The Part will then conclude by discussing what this means in terms of krill management in Antarctica.

Part II of this Chapter then examines the importance of krill to dependent species and the role that precautionary catch limits play in permitting sustainable harvesting of krill despite the uncertainty that exists. The approach of the Commission for the Conservation of Antarctic Marine Living Resource to setting precautionary catch limits is a particular focus of this Part.

Part III of this Chapter will examine other areas in international law where the precautionary approach has been advocated. In particular, an analysis will be conducted of the legal support that these areas can give to the application of a precautionary approach to krill and other Antarctic species. This Part will begin by examining the acceptance of the precautionary approach in international hard law instruments including its standing within the *United Nations Convention on the Law of the Sea 1982*; *United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species 1995*; *FAO Code of Conduct for Responsible Fisheries 1995*; and the *Convention for Biological Diversity 1992*. This part will conclude by examining the precautionary approach/principle's standing within customary international law and the role that such law can play in facilitating krill conservation.

Finally, Part IV of this Chapter highlights some of the criticisms that have been levelled at the precautionary approach. The Part examines the validity of these criticisms and asks whether a precautionary approach should be adopted at all in respect of krill management.

I. Different degrees of a “precautionary approach”

Environmental concerns first began to appear in international legal instruments in the Stockholm Declaration of 1972. The precautionary principle appeared as part of the 1987 Second Ministerial Declaration of the International Conferences on the Protection of the North Sea. The precautionary approach to environmental management was subsequently advocated in the Rio Declaration,²²⁹ which will be discussed in greater detail below. This approach supports the introduction of conservation procedures regardless of whether sufficient information exists.²³⁰

As will be discussed further below, the Code of Conduct and Fish Stocks Agreement endorse the approach. Article 10 of the Kyoto Declaration also gives support to states applying the precautionary approach as referred to in the FAO Code of Conduct and the UN Fish Stocks Agreement. The 1982 World Charter for Nature also recognises a form of the precautionary approach.

The precautionary approach has sometimes been referred to as the precautionary principle, although there is unlikely to be any difference between the meaning of the terms.²³¹ At its most basic level, the precautionary approach seeks to solve the problem that long term predictions on the effects of human activities on ecosystems may never be possible.²³² The precautionary principle suggests that scientific uncertainty should be a justification for action, rather than waiting until definitive evidence is available.²³³ This places the burden of proof on states advocating development if scientific uncertainty exists.²³⁴ The precautionary approach is significant for achieving sustainable development because the ability of regional ecosystems to withstand resource exploitation is mostly unknown.²³⁵ The Antarctic ecosystem’s capacity to withstand krill exploitation, particularly because of krill’s vital role in that ecosystem, is still uncertain. This makes the precautionary approach extremely important for conservation of krill and the Antarctic ecosystem. Even if a comprehensive ban on krill fishing is not adopted, the precautionary approach still justifies setting precautionary catch limits in the absence of accurate data.

²²⁹ Rio de Janeiro, 1992, United Nations Conference on Environment and Development, Rio Declaration principle 15

²³⁰ Baird, R. *Supra*, fn 25, 178

²³¹ Birnie, P. and Boyle, A. 2002. *International Law and the Environment* (2nd ed). Oxford University Press: New York at 116.

²³² Gullett, W. 1997. Environmental Protection and the “Precautionary Principle”: A Response to Scientific Uncertainty in Environmental Management. *Environmental and Planning Law Journal*, Feb issue: 52-65 at 54

²³³ *Ibid*

²³⁴ Dernbach, J.C. 1998. Sustainable Development as a Framework for National Governance. *Case Western Reserve Law Review*, Vol 49: 1-103 at 61

²³⁵ *Ibid*, 62

There is also uncertainty surrounding the precautionary approach/principle in respect of whether it refers to the identification of potential risks to the environment or whether it refers to actually taking measures to respond to those risks.²³⁶ The precautionary approach requires states to take action where there is a threat of environmental harm even though there may be scientific uncertainty as to the exact harm that an activity will cause.²³⁷ However, there still needs to be a scientific basis for the threatened harm before states are legally required to act, it simply means that there is yet insufficient scientific certainty to determine the effect that a risk will have.²³⁸ This also means that states when conducting activities must take into account possible errors in the scientific data and that legal measures should not be delayed by states to await more scientific certainty.²³⁹

The principle requires precautionary measures to be taken that are proportionate to the likely harm that will be caused by an activity.²⁴⁰ Arguably, because the harm resulting from krill fishing could be significant because of krill's important role in the Antarctic ecosystem then, the appropriate proportionate response to such possible damage would be a complete krill harvesting ban. If this statement holds weight then, for states to comply with the precautionary principle, they would need to introduce measures for a complete harvesting ban. However, the precautionary principle must also take into account the probability of environmental harm.²⁴¹ The probability of harm involves taking the worst possible situation into account when making a decision.²⁴² Considering the probability of harm also involves adopting the best guess of the harm when formulating regulations.²⁴³ Depending on which interpretation is taken, the precautionary approach can be applied in different ways which gives rise to conflicting ideas of what constitutes the "appropriate" precautionary approach or precautionary catch limit. However, whether a complete ban is adopted or if there are merely precautionary catch limits, krill still need an effective legal regime to manage them. Current enforcement mechanisms must be improved to prevent the threat of IUU fishing, particularly in light of likely increases in krill harvesting as a result of greater economic returns.

²³⁶ Birnie, P. and Boyle, A. *Supra*, fn 233, 116

²³⁷ *Ibid* at 117.

²³⁸ *Ibid*

²³⁹ *Ibid* at 117-118.

²⁴⁰ Dernbach, J.C. 1998. *Supra*, fn 236, 61

²⁴¹ Charest, S. 2002. Bayesian Approaches to the Precautionary Principle. *Duke Environmental Law and Policy Forum*, Vol 12: 265-291 at 269

²⁴² *Ibid*, 270

²⁴³ *Ibid*

The different possible interpretations of the precautionary approach are also evident in some international instruments. For example, Principle 15 of the Rio Declaration directly recognises the precautionary approach. Principle 15 states that the “precautionary approach shall be widely applied by States according to their capabilities [and] [w]here there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.” Principle 15 constitutes a weak formulation of the precautionary approach²⁴⁴ because of its requirement for “threats of serious or irreversible damage” before the approach must be applied. What constitutes “serious or irreversible damage” is a subjective matter and requiring such harm may mean that the probability of damage needs to be high before the precautionary approach will be applied. The requirement for the approach to be “widely applied” could arguably suggest that the approach should be adopted in a wide variety of circumstances, alternatively, it could be argued that this suggests that it does not need to be applied in all circumstances.

The 1989 Oslo Commission decision concerning the dumping of industrial wastes in the North Sea constitutes an extremely strong application of the precautionary approach because it arguably requires states to prove that there will be no harm from an activity before it can take place.²⁴⁵ Such a strong statement of the principle has, arguably, no justification because of the extreme difficulties in proving that there will be no adverse impacts from an activity.²⁴⁶

The World Charter for Nature 1982 also appears to embody a form of the precautionary approach which leans towards the “strong” type of precaution. Article 11 states that activities which “*might* have an impact on nature shall be controlled and the best available technologies that minimise significant risks to nature or other adverse risks shall be used.” Article 11(a) goes on to state that activities which are “*likely* to cause irreversible damage to nature shall be avoided” and Article 11(b) requires that activities which are “*likely* to pose a significant risk to nature shall be proceeded by an exhaustive examination; their *proponents shall demonstrate that expected benefits outweigh potential damage to nature, and where potential adverse effects are not fully understood, the activities should not proceed*”. Accordingly, the World Charter also appears to reverse the burden of proof in certain circumstances.

²⁴⁴ Gullett, W. *Supra*, fn 234, 60

²⁴⁵ Gullett, W. *Supra*, fn 234, 60

²⁴⁶ *Ibid*

The precautionary approach has recently been the subject of a project to investigate the application of the approach in the areas of biodiversity conservation and resource management and to out guidelines on its application.²⁴⁷ The Project was begun in August 2002 by four Non-Government Organisations including the IUCN – World Conservation Union and was completed in January 2006.²⁴⁸ A set of guidelines was developed after investigation of case studies on the application of the approach and consultation with external parties.

The guidelines formulated as a consequence of the precautionary principle project are as follows:

A. ESTABLISH THE FRAMEWORK

- **Guideline 1: INCORPORATE**
Incorporate the Precautionary Principle explicitly into appropriate legal, institutional and policy frameworks for biodiversity conservation and natural resource management.
- **Guideline 2: INTEGRATE**
Integrate application of the Precautionary Principle with the application of and support for other relevant principles and rights.
- **Guideline 3: OPERATIONALISE**
Develop clear and context-specific obligations and operational measures for particular sectors and contexts, or with respect to specific conservation or management problems.
- **Guideline 4: INCLUDE STAKEHOLDERS AND RIGHTHOLDERS**
Include all relevant stakeholders and rightholders in a transparent process of assessment, decision-making and implementation
- **Guideline 5: USE THE BEST INFORMATION AVAILABLE**
Base precautionary decision-making on the best available information, including that relating to human drivers of threats, and traditional and indigenous knowledge

²⁴⁷ *The Precautionary Principle Project: sustainable development, biodiversity conservation and natural resource management*, <http://www.pprinciple.net>

²⁴⁸ *The Precautionary Principle Project: sustainable development, biodiversity conservation and natural resource management*, <http://www.pprinciple.net>

B. DEFINE THE THREATS, OPTIONS AND CONSEQUENCES

- **Guideline 6: CHARACTERISE UNCERTAIN THREATS**

Characterise the threat(s), and assess the uncertainties surrounding the ecological, social and economic drivers of changes in conservation status

- **Guideline 7: ASSESS OPTIONS**

Identify the available actions to address threats, and assess the likely consequences of these various courses of action and inaction

- **Guideline 8: ALLOCATE RESPONSIBILITIES FOR PROVIDING EVIDENCE**

Allocate roles and responsibilities for providing information and evidence of threat and/or safety according to who is proposing a potentially harmful activity, who benefits from it, and who has access to information and resources

C. DEVISE THE APPROPRIATE PRECAUTIONARY MEASURES

- **Guideline 9: BE EXPLICIT**

Specify that precautionary measures are being taken and be explicit about the uncertainty to which the precautionary measures are responding.

- **Guideline 10: BE PROPORTIONATE**

In applying the Precautionary Principle adopt measures that are proportionate to the potential threats

- **Guideline 11: BE EQUITABLE**

Consider social and economic costs and benefits when applying the Precautionary Principle and where decisions would have negative impacts on the poor or vulnerable explore ways to avoid or mitigate these

D. IMPLEMENT EFFECTIVELY

- Guideline 12: BE ADAPTIVE

Use an adaptive management approach, including the following core elements:

- monitoring of impacts of management or decisions based on agreed indicators;
- promoting research, to reduce key uncertainties;
- ensuring periodic evaluation of the outcomes of implementation, drawing of lessons and review and adjustment, as necessary, of the measures or decisions adopted;
- establishing an efficient and effective compliance system.

One can see that the above guidelines draw on the meaning of the precautionary approach as elaborated in other international instruments/arenas. For example, guideline 5 requires the use of the best available information, which parallels the requirements in other instruments such as the FAO Code of Conduct to use the “best scientific information”

Guidelines 6-8 outline the initial steps for applying the precautionary approach. In particular, Guideline 6 firstly suggests characterising the threat to the environment and then assessing the uncertainties surrounding the drivers of changes in conservation status. The guidelines contain further supplementary elaborations which suggest that the threats are not only direct ones, but also indirect, secondary and long-term ones. The threat in respect of the Antarctic krill has been discussed in Chapter 1, being a threat to both krill itself; its genetically distinct populations; localised dependent predator species; and other species higher in the Antarctic food web. The threat is a serious one because it has potential consequences for the entire Antarctic ecosystem. The uncertainties are also high concerning the exact effect of even a minimal level of krill fishing on the ecosystem and also concerning even the size of krill population.

Guideline 7 suggests identifying the available actions to address threats and assessing the likely consequences of various actions and inaction. The potential courses of action regarding krill will be assessed below but broadly these would include precautionary catch limits; no-take zones; a krill moratorium or complete fishing freedom in respect of krill. Guideline 8 elaborates on the application of the precautionary approach by suggesting that those who propose/benefit from an activity should bear the responsibility and costs of providing the evidence that those activities are, in fact, safe. Accordingly, krill fishers and those who benefit from the industry or others who propose that krill fishing should be conducted (i.e. there should be no moratorium) should be the groups providing evidence that krill fishing will not have a significant impact on the Antarctic ecosystem.

In respect of the application of particular precautionary measures in response to a threat, Guideline 10 suggests that measures should be adopted that are proportionate to the potential threats. The elaboration to this principle suggests that a reasonable balance must be struck between the stringency of the precautionary measures and the seriousness and irreversibility of the potential threat. This concept of proportionality will be discussed further below in respect of the Antarctic krill.

The strongest possible application of the precautionary approach would mean that no krill catch would be allowed until it was certain that there was no risk from harvesting.²⁴⁹ If the requirements of the Oslo Commission were adopted, then states would, arguably, actually have to prove that krill fishing would not cause harm before harvesting was allowed. Such a requirement may be too burdensome, particularly because of the difficulties in obtaining definitive data concerning krill and their interactions with other species.²⁵⁰ However, this does not mean that a comprehensive ban should not be introduced. Such a ban is necessary because of the vital role played by krill in the Antarctic ecosystem and the need to facilitate sustainable use of krill dependent species that provide greater economic returns than krill.

CCAMLR's precautionary approach falls short of this level of protection and takes into account current uses of krill resources and potential future economic opportunities involving krill.²⁵¹ Such an approach involves imposing precautionary catch limits but does not go so far as to ban krill fishing altogether. Economic considerations are relevant to the precautionary principle because costs will be incurred in order to prevent the occurrence of future harm.²⁵² However, if the precautionary principle is applied to maximum effect, then the future economic costs from potentially unnecessary action gives weight to arguments concerning economic inefficiency and reduces the validity of the principle in the future.²⁵³ Economic considerations should not become too important in applying the precautionary principle otherwise there is a danger that it will become a mere cost-benefit analysis which would provide minimal protection for the environment.²⁵⁴

²⁴⁹ Miller, D.G.M. 2002. Antarctic Krill and Ecosystem Management – From Seattle to Siena. *CCAMLR Science*, Vol 9: 175-212 at 179

²⁵⁰ eg See Chapter 1 for a discussion of the difficulties in obtaining accurate data on the size of krill population.

²⁵¹ Miller, D.G.M. 2002. *Supra*, fn 251, 179

²⁵² Gullett, W. *Supra*, fn 234, 58

²⁵³ *Ibid*, 59

²⁵⁴ *Ibid*

Even if economic considerations are important in applying a precautionary approach, a total ban would still be justified. Species higher in the food chain provide much greater economic returns than krill. Protecting krill, as a vital linchpin of the ecosystem, will help to facilitate the sustainable development of these higher species. However, stronger regulatory mechanisms must be introduced to ensure that any catch limits or total bans are effectively implemented.

Arguably, CCAMLR should adopt a stronger form of the precautionary approach that takes into account the *extent* of the potential harm that could occur from krill fishing and relies less on the loss of future economic benefits. Where there is a greater risk of harm, the precautionary principle permits action even where there is a high level of scientific uncertainty.²⁵⁵ Where anticipated harm is minimal, a greater level of certainty is necessary before action can be taken under the precautionary approach.²⁵⁶

If krill fishing does have a detrimental impact on krill and dependent species, the potential harm could be great. Krill fishing, as discussed in Chapter 1, affects localised predator and krill populations. Furthermore, the extreme importance of krill to the Antarctic food chain (including dependent species) means that high krill harvesting levels would have a dramatic effect on the whole Antarctic ecosystem. Because high levels of harvesting would, arguably, cause significant damage, a stronger form of the precautionary approach advocating a total krill ban is justified. Although, requiring proof that no harm will occur before *any* fishing activity can be conducted would not be justified because it would prevent the sustainable exploitation of higher species in the food chain without proof that fishing did not cause harm.

²⁵⁵ *Ibid*

²⁵⁶ *Ibid*

II. CCAMLR and the precautionary approach

The precautionary approach allows CCAMLR to consider effects of data uncertainty before making decisions. Possible long term impacts of delaying until sufficient data is available are minimised.²⁵⁷

CCAMLR currently allows depletion of krill stocks, provided that they can recover in several decades. Although krill are short lived, depleting the stock results in lower recruitment rates and a lower krill population in subsequent seasons. Permitting such activities will have dramatic effects on dependent species. For example, exploitation of krill will affect the rebuilding of depleted stocks of baleen whales.²⁵⁸ A reduction in whale numbers caused by large scale whaling has allowed krill numbers to grow. Resulting increases in other krill dependent species, such as seals, could prevent recovery of baleen whale numbers because of increased competition.²⁵⁹ Krill consumption by seals currently exceeds consumption by baleen whales.²⁶⁰ Further competition by krill fisheries will seriously hinder the recovery of whale numbers, especially given likely increases in harvesting levels. The vital role played by krill in the survival of direct and indirect predator species should mean that krill are protected from fisheries by a total harvesting ban. A harvesting ban will help to prevent detrimental changes to populations of dependent species in accordance with the conservation objectives of international treaties including the Madrid Protocol, the Biodiversity Convention and the Law of the Sea Convention.²⁶¹ At a minimum, current enforcement techniques in Antarctica must be improved if such a ban is to be effective. This is particularly the case because of the threat posed by IUU fishing from likely increased economic returns from krill harvesting. Ideally, the world community should work towards strengthening current legal regime in order to curtail IUU fishing on the high seas and in areas of national jurisdiction.

Krill fisheries will have some impact on dependent species. However, the exact effect of fisheries on such species is difficult to predict²⁶² because of the uncertainty and insufficiency of

²⁵⁷ CCAMLR website, <http://www.ccamlr.org>

²⁵⁸ Alverson, D.L. *Supra*, fn 75, 178

²⁵⁹ Gulland, J.A. *Supra*, fn 7, 220

²⁶⁰ Nagata, T. *Supra*, fn 110, 124

²⁶¹ These are discussed in detail in Chapters 3 and 4.

²⁶² Alverson, D.L. *Supra*, fn 75, 178

data on krill population and its interactions with these species. This uncertain data can also affect the mathematical models used by CCAMLR to set precautionary catch limits.²⁶³ The position of krill at the base of the marine Antarctic food chain may magnify the effect of krill fisheries on dependent species and harvesting of any species so low in the food chain may not be prudent. Larger species (such as anchovies) which share an analogous level in the food chain to krill have been harvested for many years.²⁶⁴ This implies that krill can be harvested in a sustainable manner without any lasting effects on dependent species. If other species at the base of a marine food chain can be harvested sustainably then, arguably, the mere fact that krill are at the base of the Antarctic food chain should not be a justification for preventing their exploitation. However, the extremely short Antarctic food chain distinguishes it from other ecosystems. The smaller number of species makes krill even more important than species at analogous levels in other marine ecosystems. This makes it vital that krill are protected by a comprehensive harvesting ban and current regulatory mechanisms must be strengthened to resolve weaknesses with the current regime and reduce the threat of IUU fishing.

Even if krill fisheries currently, or in the future, have a significant impact on dependent species there will be difficulties proving such effects. Opponents can argue that other factors are causing decline or that a particular decrease in population size is not significant.²⁶⁵ For example, they can argue that environmental factors are causing dependent species to decline, rather than overfishing. Alternatively, they can argue that a decline in population caused by fishing is insignificant when compared to the population as a whole. The lack of data concerning interrelationships between species makes it difficult to prove a decline has occurred or to present a counterargument to opponents of conservation. Furthermore, a lack of data would make it hard to show that a decline in dependent species was caused by excessive krill harvesting. However, as outlined below, when taking a precautionary approach a lack of data should not be used as a justification for not introducing conservation measures. Accordingly, strong regulatory measures supporting a moratorium or localised bans are necessary to adequately protect krill and conserve their dependent species.

Legal weaknesses in the Convention

²⁶³ These mathematical models (krill Yield Model is one of these) will be discussed further below.

²⁶⁴ Nicol, S. and Endo, Y. *op. cit.*, 115

²⁶⁵ Gulland, J.A. *op. cit.*, 237

CCAMLR itself also presents difficulties in protecting dependent species. Article II(3)(a) requires that harvested populations remain above levels ensuring “stable recruitment”. However, maintaining populations at a level corresponding to “stable recruitment” is dependent on the levels of other species and can affect the abundance of such species.²⁶⁶ “Stable recruitment” requires a level ensuring the “greatest net annual increment”. This level conflicts with the Convention’s conservation principles because harvesting at such a level is likely to be detrimental to other species protected by the Convention.²⁶⁷ This is especially true in light of the multiple species that feed on krill.²⁶⁸ An indirect impact on species that feed on krill-dependent predators is also likely. Removing krill from the diet of predators that do not feed exclusively on krill will result in a greater impact on other species on which those predators depend.²⁶⁹ Clarification of Article II(3)(a) has been advocated so that effects on predators are specifically recognised in the harvesting of prey species.²⁷⁰ This is to prevent adverse changes to populations of those predators. However, if the Article is read as a whole, then Article II(3)(b), in conjunction with Article II(3)(a), could remedy this legal flaw. Article II(3)(b) requires the maintenance of ecological relationships between harvested, dependent and related populations. A less equivocal statement is still necessary.²⁷¹ However, this could merely be a legal, rather than a practical, problem. Given CCAMLR’s ecosystem approach to management (discussed subsequently) this is unlikely to be a problem encountered in the practical implementation of the Convention. In practice, the mathematical models used by CCAMLR attempt to take into account interactions between species, rather than just focussing on a single species.²⁷²

The application of Article II(3)(a) is also fraught with legal difficulties because of the Article II(3)(b) requirement that depleted populations should be restored to the point of maximum net recruitment. With interdependent species, net recruitment of one stock is necessarily dependent on the numbers of the other stock and it is unlikely that both species can reach “the greatest net annual increment”.²⁷³ This problem makes it difficult to maintain krill at the levels advocated by the Convention whilst maintaining similar levels for dependent species. Such legal weaknesses must be resolved to provide a strong and certain legal regime that can adequately conserve krill in light of likely harvesting increases or protect krill if a complete ban is instituted.

²⁶⁶ Basson, M. and Beddington, J.R. *Supra*, fn 138, 56

²⁶⁷ This is the basis of the ecosystem approach that is promoted by CCAMLR which will be discussed later in this thesis.

²⁶⁸ Basson, M. and Beddington, J.R. *Supra*, fn 138, 58

²⁶⁹ *Ibid*, 63

²⁷⁰ Auburn, F.M. *Supra*, fn 30, 211

²⁷¹ Gardam, J.G. *Supra*, fn 404, 302

²⁷² Although such an approach was used in the first 8 to 10 years of CCAMLR.

²⁷³ Gulland, J.A. *Supra*, fn 7, 230

The precautionary catch limits introduced by CCAMLR set a point at which complex management procedures must take over.²⁷⁴ The form of precautionary approach used by CCAMLR looks at the proportion of unexploited biomass that can be exploited using certain management criteria.²⁷⁵ Precautionary measures for krill are required because of insufficient data regarding krill and interactions with other species.²⁷⁶ This particular form of the precautionary approach was adopted in relation to krill fisheries management because of the uncertainty concerning interactions between krill and other species; the uncertainty surrounding the effect of harvesting on krill and other species; and the fact that a krill stock collapse could have a much greater effect on dependent species higher in the ecosystem that could provide much more important benefits in terms of tourism, conservation and fishing.²⁷⁷ Precautionary catch limits are deliberately set at levels that will not compromise the future sustainability of krill fisheries.²⁷⁸ Such limits also aim to provide the fishing industry with a basis for future planning so that large investments are not made unnecessarily.²⁷⁹ Strong legal and regulatory mechanisms must be maintained if such precautionary measures are to be effectively enforced in light of the IUU fishing problem. Particularly important is the need to improve current enforcement mechanisms and to strengthen the legal safeguards in order to prevent IUU fishing in areas of the high sea in the Antarctic. A moratorium on krill harvesting must be supported by such reforms in order to be effective.

Precautionary catch limits for krill are calculated using conservation models. Statistical models are used to simulate the population levels of particular species both with and without fishing exploitation.²⁸⁰ These models derive estimates using variables such as total krill stocks; the natural mortality rate (including predation); the growth rates of krill; and inter-annual variability

²⁷⁴ Nicol, S. and De la Mare, W. *Supra*, fn 80, 44

²⁷⁵ Hewitt, R.P., Watkins, J.L., Naganobu, M., Tshernyshkov, P., Brierley, A.S., Demer, D.A., Kasatkina, S., Takao, Y., Goss, C., Malyshko, A., Brandon, M.A., Kawaguchi, S., Siegel, V., Trathan, P.N., Emery, J.H., Everson, I. and Miller, D.G.M. 2002. Setting a Precautionary Catch Limit for Antarctic Krill. *Oceanography*, Vol 15(3): 26-33 at 27

²⁷⁶ Nicol, S. 1991. *Supra*, fn 57, 235

²⁷⁷ Miller, D.G.M. 2002. *Supra*, fn 251, 178-9

²⁷⁸ CCAMLR website, <http://www.ccamlr.org>

²⁷⁹ Nicol, S. and De la Mare, W. *Supra*, fn 80, 45

²⁸⁰ Hewitt, R.P. et al. *Supra*, fn 245, 27

in recruitment.²⁸¹ Originally CCAMLR used a single species management approach, but has developed the “Krill Yield Model” to better meet the objectives of the Convention and to take into account the uncertainty surrounding potential krill yield.²⁸² One of the criteria used in formulating these precautionary catch limits is the viability of the species. For Antarctic krill there must be a less than 10% chance that the population will fall to less than 20% of its unexploited median level.²⁸³ Krill predator populations are also taken into account. The median population of krill predators must be at least 75% of unexploited median population level.²⁸⁴ Long term population projections are also used to calculate these risks.²⁸⁵ Precautionary limits can be difficult to determine because of data uncertainty and natural fluctuations, particularly with recruitment of young krill. Precautionary limits are not a completely accurate reflection of sustainable stock levels because of difficulties with estimating input variables.²⁸⁶ Much greater data on krill fishing is required to formulate more accurate models and precautionary limits.²⁸⁷ Although CCAMLR mathematical models do attempt to accurately utilise all variables in formulating precautionary catch limits, a comprehensive ban on krill fishing should still be introduced because of krill’s vital role in the ecosystem. A strong form of the precautionary approach would support such a move until more accurate scientific information is available.

CCAMLR’s preferred approach to krill management is a feedback system²⁸⁸ that adjusts management measures according to ecosystem monitoring.²⁸⁹ Implementing this approach fully may require improvements to the current CCAMLR ecosystem monitoring program.²⁹⁰ Better mathematical models that link krill, their predators, environmental factors and krill harvesting are

²⁸¹ Nicol, S. and Endo, Y. *Supra*, fn 77, 109

²⁸² CCAMLR website, <http://www.ccamlr.org>

²⁸³ Hewitt, R.P. et al. *Supra*, fn 245, 27

²⁸⁴ *Ibid*

²⁸⁵ *Ibid*

²⁸⁶ Nicol, S. and De la Mare, W. *Supra*, fn 80, 46

²⁸⁷ Miller, D.G.M. 2002. *Supra*, fn 251, 184

²⁸⁸ This is discussed further below in conjunction with the ecosystem approach.

²⁸⁹ Hewitt, R.P. et al. *Supra*, fn 245, 32

²⁹⁰ *Ibid*

also necessary.²⁹¹ Some of the data needed to improve current management systems can be obtained from observers placed on krill fishing vessels or from real-time satellite monitoring systems. In particular, a new automated fishery monitoring system has been trialled in Canada that provides more accurate real-time data without the need for observers.²⁹² More accurate data is also required if a comprehensive harvesting ban is introduced. Even if a seasonal or regional krill harvesting ban were introduced, the legal regime still needs to be stronger to make those bans effective.

The original krill conservation measure restricted the total catch in Area 48 to 1.5 million tonnes.²⁹³ CCAMLR conducted a krill survey in early 2000 in Area 48 to set new catch limits.²⁹⁴ The current limit in Area 48 is 4 million tonnes in a fishing season. If the catch in Area 48 exceeds 620,000 tonnes, then catch limits can be applied to smaller management units.²⁹⁵ This is a level of harvesting at which rapid increases in catch volumes are likely and it prevents krill harvesting becoming too concentrated in particular areas.²⁹⁶ Division 58.4.1 has a current limit of 440,000 tonnes²⁹⁷ and Division 58.4.2 has a limit of 450,000 tonnes.²⁹⁸ This may appear to be a huge jump in allowable krill catch. Arguably, if a precautionary approach is taken then, given the uncertainty of the data, krill catch limit should be set lower rather than higher. However, the precautionary catch limits are aimed at maintaining a sustainable krill industry. The CCAMLR survey supports an increase in the potential sustainable krill harvest. Relationships between krill and other species are factored into these precautionary limits but, as discussed, greater data certainty is required to formulate more accurate models.

The uncertainty that exists could result in detrimental impacts on dependent populations, despite the existence of precautionary catch limits. A complete ban on krill fishing is necessary to facilitate the conservation of dependent species. This would help to prevent detrimental decreases in predator populations and would support the Madrid Protocol's objective of the comprehensive protection of the Antarctic environment and dependant and associated

²⁹¹ *Ibid*

²⁹² These monitoring systems will be discussed in a subsequent Chapter.

²⁹³ CCAMLR website, <http://www.ccamlr.org>. See maps of CCAMLR areas in the Appendix.

²⁹⁴ CCAMLR website, <http://www.ccamlr.org>

²⁹⁵ CCAMLR Conservation Measure 32/XIX

²⁹⁶ Miller, D.G.M. 2002. *Supra*, fn 251, 180

²⁹⁷ CCAMLR conservation Measure 45/XX

²⁹⁸ CCAMLR conservation Measure 106/XIX

ecosystems.²⁹⁹ Uncertainty surrounding the size of krill stock could also diminish the effectiveness of precautionary catch limits, although CCAMLR's mathematical models try to take such uncertainty into account.

The estimated krill population from the 2000 acoustic survey is a biomass of 44.3 million tonnes and this has led to a proposed increase in krill catch limit to 4 million tonnes.³⁰⁰ This increase has now been implemented in CCAMLR's precautionary catch limits. There are, however, uncertainties that need to be resolved before the fishery can expand to 4 million tonnes.³⁰¹ More work must be done to ensure that krill fishing is not concentrated in localised areas threatening local land-based predator populations before the fishery can expand to 4 million tonnes.³⁰² As previously discussed, CCAMLR is trying to develop small-scale management units for krill fisheries. These units are necessary if krill precautionary catch limits are to be increased without threatening local populations. CCAMLR is also developing another mathematical model, the "Foraging Fishery Model", to assess interactions and potential overlap between krill fishery and krill predators.³⁰³ This model will be useful as a management tool for protecting localised predator populations.

Uncertainties surrounding the existence of a localised krill population must also be resolved before the fishery can increase to 4 million tonnes.³⁰⁴ Krill may migrate from the Bellingshausen Sea and the Weddell Sea. There are differences in DNA that may imply that krill from these areas could potentially constitute genetically distinct populations.³⁰⁵ Intense localised fishing would have an impact on any such distinct populations. As previously discussed, there is some evidence that suggests that krill reproduction levels depend on environmental factors such as the

²⁹⁹ The objectives of the Madrid Protocol are discussed in detail in Chapter 3.

³⁰⁰ Hewitt, R.P. et al. *Supra*, fn 245, 26

³⁰¹ *Ibid*, 32

³⁰² *Ibid*

³⁰³ CCAMLR website, <http://www.ccamlr.org>

³⁰⁴ Hewitt, R.P. et al. *Supra*, fn 245, 32

³⁰⁵ *Ibid*, 28

extent of sea ice.³⁰⁶ When sea ice is more abundant, krill reproduction is more extensive possibly due to less access from their *salp* competitors and greater access to ice algae and refuge from predators.³⁰⁷ Greater research needs to be done to reduce the uncertainty surrounding these environmental factors. The Antarctic and Southern Ocean Coalition (“ASOC”) has recently submitted a paper to CCAMLR recommending that further expansion of krill fishery in coastal areas be halted because of scientific uncertainty concerning impacts on local predators.³⁰⁸ ASOC has also recommended the subdivision of precautionary catch limits for krill for Area 48 among CCAMLR’s small scale management units for that Area due to this uncertainty.³⁰⁹

Because of the uncertainties outlined above, a strong form of the precautionary approach would advocate a moratorium on krill fishing. At the very least localised krill no-fish zones should be established to protect against the potential for decimation of genetically distinct local krill populations. Improvements in enforcement on the Antarctic high seas are necessary to facilitate any bans.³¹⁰ In particular, future international examination of IUU fishing should focus on legal mechanisms for enforcing CCAMLR precautionary catch limits against non-parties *or* on political means to expand CCAMLR to a greater number of parties. The expansion of CCAMLR (perhaps by way of economic or political pressure on non-parties) would give the Convention greater legal force in terms of combating IUU fishing.

III. Other Sources of Law

The Law of the Sea Convention

The *United Nations Convention on the Law of the Sea 1982* (“Law of the Sea Convention”) does not mention the use of the precautionary approach.³¹¹ Furthermore, the Law of the Sea

³⁰⁶ *Ibid*

³⁰⁷ *Ibid*

³⁰⁸ *Management of the Antarctic Krill: Ensuring the Conservation of the Antarctic Marine Ecosystem*. October 2004. A submission presented by the Antarctic and Southern Ocean Coalition (ASOC) to the CCAMLR Commission and Scientific Committee at 14

³⁰⁹ *Ibid*

³¹⁰ Potential means to improve enforcement are discussed later in this thesis.

³¹¹ Articles 61(2) and 119 of the 1982 Convention merely require states to base their conservation measures on the best scientific evidence available. From one perspective it could be argued that this

Convention advocates freedom of fishing on the high seas (albeit with some general conservation requirements) and this creates some problems for the precautionary approach.³¹² Any state can fish on the high seas without having to show that its activities are not adverse to existing fisheries.³¹³ Therefore, in the absence of clear evidence that harm will be caused by krill harvesting, the Law of the Sea Convention appears to give precedence to high seas fishing rights over precautionary catch limits for krill. However, the high seas fishing freedom must be exercised under Article 87 of the Law of the Sea Convention “under the conditions laid down by this Convention and by *other rules of international law*”. Furthermore, Article 87(2) requires “these freedoms [to be] exercised by all States with due regard for the interests of other States in their exercise of the freedom of the high seas and also with due regard for the rights under [the] Convention with respect of activities in the Area.” These requirements will be discussed in greater detail below. The Fish Stocks Agreement, as discussed in Chapter 3, also attempts to remedy many of the flaws in the Law of the Sea Convention.

FAO Code of Conduct

The *FAO Code of Conduct for Responsible Fisheries 1995* (“Code of Conduct”) also requires states to apply the precautionary approach widely to conservation management and exploitation of living aquatic resources.³¹⁴ In particular, Article 6.5 states that:

supports krill conservation measures because, although there is great uncertainty, it is the “best” evidence available. Alternatively, it could be argued that the 1982 Convention does not support krill conservation limits because the uncertainty of information concerning krill means that there is no real “evidence” to support krill precautionary catch limits.

³¹² Burke, W.T. 1995. Implications for Fisheries Management of US Acceptance of the 1982 Convention on the Law of the Sea. *The American Journal of International Law*, Vol 9: 792-806

³¹³ *Ibid*

³¹⁴ Article 7.5.1, *FAO Code of Conduct on Responsible Fisheries 1995*

States and subregional and regional fisheries management organizations should apply a precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment, taking account of the best scientific evidence available.

Article 6.5 goes on to state that the absence of scientific information is not to be used as a reason for failing to take conservation measures.³¹⁵ These principles are reiterated in Article 7.5 of the Code of Conduct, which outlines how the precautionary approach is to be applied.³¹⁶ Based on the wording of these articles, the Code of Conduct would appear to embody a stronger form of the precautionary approach than for example, the Convention on Biological Diversity (which is discussed further below), which requires a threat of “significant reduction or loss” in biological diversity before it applies. The Code of Conduct, however, requires a precautionary approach to be applied “widely” to conservation, management and exploitation of living aquatic resources.

One potential argument may be that applying the approach “widely” would require, not only the application of the approach in a wide range of circumstances, but in this respect, an application of a strong form of the precautionary approach. As discussed previously, a strong form of the precautionary approach would imply that, even with a lack of data on krill populations and species interactions, measures should be introduced to protect krill and dependent species. Furthermore, this argument is also supported by the stated objective in Articles 6.5 and 7.5 of applying the precautionary approach in this manner “*in order to protect and preserve the aquatic environment*”. Accordingly, the objective is one of protection and preservation, not one which requires exploitation of species to maximum sustainable yield. Although the Code of Conduct does embody sustainable use principles within its provisions,³¹⁷ the objectives of the Code include to “promote protection of living aquatic resources and their environments” as well as establishing principles “for responsible fishing and fisheries activities, taking into account all their relevant biological, technological, economic, social, environmental and commercial aspects”.³¹⁸

There is therefore clear support in the Code of Conduct’s precautionary approach for the protection and preservation of the aquatic environment. As discussed, krill are vital in protecting and preserving the Antarctic ecosystem because of the pivotal link that they form between phytoplankton and higher species and because of the relatively smaller number of species in the

³¹⁵ *Ibid*

³¹⁶ *Ibid*

³¹⁷ See, for example, Article 6.3, *FAO Code of Conduct on Responsible Fisheries* 1995

³¹⁸ Article 2, *FAO Code of Conduct on Responsible Fisheries* 1995

Antarctic ecosystem than other ecosystems around the world. Accordingly, the precautionary approach in the Code would appear to support krill conservation measures that are aimed at protecting other species even in the absence of scientific certainty.

Under Article 3.2 of the Code, it is to be applied and interpreted in a manner consistent with the “relevant provisions” of the Fish Stocks agreement, however, the Fish Stocks agreement, as will be discussed below, also requires a similar form of the precautionary approach to be adopted.

Although Article 7.5.3 of the Code of Conduct does require States and regional fisheries management organisations to determine stock specific target reference points and the action to be taken if they are exceeded, the Code also requires that the precautionary approach be applied widely taking into account the “best scientific evidence available” in accordance with the conservation objectives outlined above. As discussed in Chapter 1, the best scientific evidence in respect of krill clearly demonstrates that krill fishing has an adverse impact on dependent land-based predator species during breeding season. Furthermore, the best scientific evidence indicates that even a low level of krill harvesting could potentially have an adverse impact on dependent species. Accordingly, based on the best scientific evidence, the precautionary approach embodied in the Code of Conduct should support a krill moratorium or at the very least, local no-take zones.

The Code of Conduct also outlines uncertain factors that should be considered when implementing the precautionary approach including size and productivity of stocks; levels and distribution of fishing mortality; impact of fishing activities on dependent species; and environmental and economic conditions.³¹⁹ This means that, under the Code, the uncertainty concerning krill population size and interactions with dependent species should be considered when implementing precautionary catch limits. Furthermore, the uncertainty concerning the effect of sea ice distribution on krill recruitment should also be taken into account.

The uncertainty concerning these important factors provides a justification for arguing that, under a precautionary approach, it would be more prudent to initiate a complete krill harvesting ban.³²⁰ Krill’s role in the Antarctic ecosystem means that it is vital that they are protected so that

³¹⁹ Article 7.5.2, *FAO Code of Conduct on Responsible Fisheries* 1995

³²⁰ Article 7.5.4 of the Code also requires “cautious” conservation measures to be adopted for new or exploratory fisheries until there is sufficient data to allow assessment of the impact of fisheries on long-term sustainability of stocks. The large amount of uncertainty surrounding krill fishing may mean that there is still insufficient data to determine its impact and so “cautious” measures should still be maintained. “Cautious” measures could arguably include complete protection for krill until there is more data certainty. Krill fishing has gone on since the 1970s, but the need for continued research into harvesting technology may mean that it could still be classed as a “new or exploratory fisheries”. Article 7.5.2 of the Code also

dependant species are not adversely affected by krill harvesting, especially in light of likely increases in demand and fishing levels. Both the enforcement mechanisms and the legal machinery of the current regulatory regime should be strengthened over time in order to make the introduction of any ban a worthwhile exercise.

Furthermore, Article 6.5 states that the “absence of adequate scientific information should not be used as a reason for postponing or failing to take measures to conserve target species, *associated or dependent species and non-target species and their environment*.” Accordingly, the form of the precautionary approach embodied in the Code of Conduct does not just focus on conservation measures in respect of target species, it also applies to associated/dependent species, non-target species and their environment. Conservation measures which are aimed at protecting krill for the purpose of conserving dependent and non-target species are therefore covered by the precautionary approach in the Code of Conduct.

Article 7.5.4 of the Code also requires “cautious” conservation measures to be adopted for new or exploratory fisheries until there is sufficient data to allow assessment of the impact of fisheries on long-term sustainability of stocks. The large amount of uncertainty surrounding krill fishing may mean that there is still insufficient data to determine its impact and so “cautious” measures should still be maintained. “Cautious” measures could arguably include complete protection for krill until there is more data certainty. Krill fishing has gone on since the 1970s, but the fact that it has been previously carried on at relatively low levels, combined with the fact that new research is being done into harvesting technology to make it a more viable fishery may mean that it could still be classed as a “new or exploratory fisheries”. Article 7.5.2 of the Code also requires that uncertainty concerning economic factors be considered which would include potential harm to the harvesting and other krill industries and potential future harm to the aquaculture industry.

Fish Stocks Agreement

The *United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species 1995* (“Fish Stocks Agreement”) outlines the methods states should use to apply the precautionary approach to conserve straddling and highly migratory species.³²¹ As discussed in Chapter 3, the

requires that uncertainty concerning economic factors be considered which would include potential harm to the harvesting and other krill industries and potential future harm to the aquaculture industry.

³²¹ Article 6(1), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species 1995*

Agreement's precautionary approach will only be relevant to krill if they come within the definition of straddling fish stocks and highly migratory species. If krill do come under the Agreement, states cannot use the uncertainty surrounding krill populations and interactions with dependent species as a justification for failing to implement krill conservation measures.³²² The Fish Stocks Agreement also provides support for the adoption of a CCAMLR-type feedback management system.³²³ CCAMLR's management techniques would, therefore, seem to parallel the requirements of the Fish Stocks Agreement, which provides support for states to comply with the CCAMLR measures so that they are also in compliance with the Fish Stocks Agreement. Similarly, the Fish Stocks Agreement parallels the support for the precautionary approach found in other international instruments which gives greater weight to these agreements.³²⁴ Accordingly, there is strong support in international law for the adoption of the precautionary approach by all states. A strong form of this approach justifies a moratorium or localised krill fishing bans in sensitive areas because of scientific uncertainty surrounding the Antarctic krill and dependent species.

Furthermore, the Fish Stocks Agreement actually requires application of the precautionary approach. Article 5(c) requires application of the precautionary approach in accordance with article 6. Article 6(1) says that states "shall apply the precautionary approach *widely* [emphasis added] to conservation, management, and exploitation of straddling fish stocks and highly migratory fish stocks in order to protect the living marine resources and preserve the marine environment." One potential argument may be that applying the approach "widely" would require, not only the application of the approach in a wide range of circumstances, but in this

³²² Article 6(2) of the Agreement requires states to be more cautious when information is uncertain, unreliable or inadequate and they are not allowed to use the lack of adequate scientific information as a justification for failing to take conservation and management measures.

³²³ Further support for the adoption of CCAMLR catch limits may be found in Annex II of the Fish Stocks Agreement. Article 1 of Annex II sets out guidelines for the application of precautionary reference points which are estimated values corresponding to the state of the resource, and of the fishery, which can be used as a guide for fisheries management. Article 6(3)(b) requires states to apply the guidelines in Annex II and determine the action to take if reference points are exceeded. CCAMLR already has a feedback management system which determines specific stock reference points and catch limits. CCAMLR adjusts the catch limits according to stock and fisheries levels. As discussed, these limits also have specific critical "trigger" levels of fishing at which further management action is required.

³²⁴ Article 6(3)(c) of the Fish Stocks Agreement requires states to take into account when implementing the precautionary approach uncertainties as to size and productivity of stocks; the impact of fishing activities on dependent species; and existing and predicted oceanic, environmental and socio-economic conditions. This requirement is similar to the provision concerning uncertainties found in the FAO Code of Conduct. As previously discussed, the uncertainty surrounding environmental factors affecting krill may mean that, under a precautionary approach, complete krill protection is justified. The Fish Stocks Agreement also contains another provision concerning the precautionary approach that is similar to one found in the Code of Conduct. Article 6(6) of the Agreement requires states to adopt cautious conservation and management measures for new or exploratory fisheries that remain in force until there is sufficient data to allow assessment of the impact of the fisheries on the long-term sustainability of stocks. If krill come within this provision then "cautious" conservation measures could potentially include complete protection until greater data certainty exists.

respect, an application of a strong form of the precautionary approach. As discussed previously, a strong form of the precautionary approach would imply that, even with a lack of data on krill populations and species interactions, measures should be introduced to protect krill and dependent species.

In particular, Article 6(2) also requires that states “be more cautious when information is uncertain, unreliable or inadequate. The absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures.”

Arguably, due to the extreme uncertainty concerning krill population, its interaction with dependent species and the Antarctic ecosystem as a whole and the effect of krill harvesting on dependent species, states are required to be even “more cautious”. It is submitted that this extreme level of uncertainty should require a degree of caution evinced by no-take zones or a complete harvesting ban.

In this respect, in implementing the precautionary approach, Article 6(3) also requires states to implement “improved techniques for dealing with risk and uncertainty” and “take into account, inter alia, uncertainties relating to size and productivity of the stocks....and the impact of fishing activities on non-target and associated or dependent species”. This gives further weight to the argument that the high level of uncertainty concerning krill stock should require a higher level of caution concerning its exploitation.

Furthermore, Article 6(6) requires, in respect of new or exploratory fisheries, that states adopt “cautious conservation and management measures, including, inter alia, catch limits and effort limits. Such measures shall remain in force until there are sufficient data to allow assessment of the impact of the fisheries on the long-term sustainability of the stocks, whereupon conservation and management measures based on that assessment shall be implemented. The latter measures shall, if appropriate, allow for the gradual development of the fisheries.” Ostensibly, if these requirements could be applied to krill, the “cautious conservation and management measures” required until sufficient data is obtained would require either low precautionary catch limits or no-take zones, particularly in light of the extreme uncertainty surrounding krill population. Although, it is questionable whether krill fishery would constitute a “new” fishery given that it has been in place for decades, it may still constitute an “exploratory” fishery since it has never reached extremely high levels and cost pressures have previously been a disincentive for large numbers of fishers to enter this fishery.

Just because the Fish Stocks Agreement refers to concepts of sustainable use does *not* mean that a strong form of the precautionary approach is inconsistent with the agreement. However, if a strong form of the precautionary approach were not embodied in the agreement, then it could still *support* a krill harvesting ban or no-take zones, even though a lesser form of the precautionary approach would not *legally require* such measures to be introduced. As discussed previously, under the precautionary approach, action is required where a risk to the environment is identified that is proportionate to the potential damage, in the absence of scientific certainty/evidence. Because krill play a unique and pivotal role in the Antarctic ecosystem, the risk of harm to the ecosystem is extremely high from krill harvesting, including the risk to dependent species (for which there is already some scientific evidence), the risk to genetically distinct krill populations and the risk to already depleted populations such as the baleen whales. Accordingly, this high risk of a high level of potential damage to the Antarctic ecosystem justifies a proportionate response such as no-take zones or a moratorium even though there is not yet scientific certainty concerning the exact effects of krill harvesting on the ecosystem and what level of harvesting will be harmful. Accordingly, a lesser form of the precautionary approach in the Fish Stocks Agreement would still justify a ban even though, as stated above, it would not require a ban to be imposed.

Convention for Biological Diversity

Article 4 of the Convention on Biological Diversity sets out its jurisdictional scope. In particular, it applies in the case of “components of biological diversity” within areas of national jurisdiction and, in the case of processes and activities (regardless of where their effects occur) carried out under its jurisdiction or control, within the area of its national jurisdiction or beyond the limits of national jurisdiction. The difference between these two concepts is not outlined in the Convention which gives rise to possible ambiguities when interpreting the Convention because processes and activities will affect components of biological diversity.³²⁵ The Convention refers to “components of biological diversity”, however, this concept is not defined. “Biological diversity” is however, defined as the variability among living organisms from all

³²⁵ Anton, D.K. 1997. Law for the Sea’s Biological Diversity. *Columbia Journal of Transnational Law*, Vol 36: 341-371 at 356

sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. Accordingly, as a vital key to the Antarctic ecosystem, krill would be a “component” because of its necessity in maintaining the variability of the ecosystem. As such, krill would be covered by the Convention in areas of national jurisdiction. Furthermore, the more detailed provision in Article 9 dealing with conservation outside areas of national jurisdiction sets out requirements for states to adopt “measures” for ex-situ conservation of components of biological diversity. Accordingly, it would appear the “processes and activities” as referred to in respect of ex-situ conservation in Article 4, would include any activities such as fishing which could affect the conservation of components of biological diversity. Accordingly, krill harvesting should also be covered in respect of ex-situ conservation on the high seas.

The precautionary principle is also relevant to biodiversity because of the uncertainties surrounding this concept.³²⁶ The principle is recognised in the Convention for Biological Diversity’s preamble which states “that where there is a threat of *significant reduction* or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat” [emphasis added]. Furthermore, the preamble also notes “that it is vital to anticipate, prevent and attack the causes of significant reduction or loss of biological diversity at source”. The threat discussed in the preamble is a “significant” reduction or loss of biological diversity and, accordingly, it would appear that the Convention for Biological Diversity embodies a weaker form of the precautionary approach.

One argument may be that further support for this view is found in some of the main provisions of the Convention. For example, Article 10 advocates sustainable use of biological diversity and requires parties “as far as possible and as appropriate” to do things to this end such as adopting measures relating to the use of biological resources to avoid or minimise adverse impacts on biological diversity. Article 14 also requires parties to “as far as possible and as appropriate” introduce appropriate procedures requiring environmental impact assessment of its proposed projects that are likely to have “significant” adverse effects on biological diversity. Accordingly, it may be argued that these provisions show that the Convention is aimed at exploiting biological resources and so only “significant” risk of loss of these resources justifies conservation measures without full scientific certainty. Although, an alternative argument would be that these other provisions should not impact on how the precautionary approach embodied in the preamble is interpreted.

³²⁶ Bodansky, D.M. 1995. The Meaning of Biodiversity: International Law and the Protection of Biological Diversity. *Vanderbilt Journal of Transnational Law*, Vol 28: 623-634 at 627

The weaker form of the precautionary approach in the Convention should still support a krill fishing moratorium or no-take zones even though it would not legally *require* these to be implemented. In particular, as highlighted in Chapter 1, there is a threat of “significant reduction or loss of biological diversity” in respect of the Antarctic krill. As discussed, krill are a pivotal link in the Antarctic ecosystem and which the entire ecosystem depends on to channel energy and nutrients to species higher in the food web. There is a threat particularly because of the fact that, as highlighted in Chapter 1, even a small amount of krill fishing may have an adverse impact on other species. Accordingly, there is a threat of significant reduction or loss of biological diversity from krill fishing, not just to other Antarctic species, but also with localised and genetically distinct krill populations. There is already scientific evidence that krill fishing has a detrimental effect on localised predator populations during breeding season and further scientific certainty on the effect of krill fishing and the extent of krill population should not, in accordance with the Convention, be used as a reason to postpone measures to avoid or minimise a threat. Measures to avoid such a threat would be a moratorium. Measures to minimise such a threat could arguably be either a moratorium, no-take zones or extremely strict precautionary catch measures. Although, precautionary catch measures could not, in the absence of greater scientific certainty, be said to minimise a threat because as discussed in Chapter 1 in respect of the study by Everson and Goss, even a low level of krill harvesting may have an adverse effect on other Antarctic species.

Uncertainty about the effect that activities will have on ecosystems and species should mean that the precautionary principle should apply to biodiversity conservation.³²⁷ Its application to biodiversity may help to protect krill because of their important role in preserving biodiversity.³²⁸ The uncertainties surrounding the effect of even a small level of krill fishing on dependent species and the ecosystem as a whole means that, the precautionary approach supports a complete krill harvesting ban is required to protect against any threat to biodiversity. Parties to the Biodiversity Convention are, arguably, obliged to implement comprehensive krill protection because of its recognition of the precautionary approach, although as discussed earlier in this Chapter the exact *form* of the conservation measures is not mandated by a form of the precautionary approach less than the strongest form.³²⁹ As discussed in Chapter 3, the Biodiversity Convention is very weak and, unless it is amended to introduce stronger provisions, it is hamstrung by its lack of effective enforcement measures. However, its main strength is in

³²⁷ Tinker, C. 1995. The “Rio” Environmental Treaties Colloquium: A “New Breed” of Treaty: The United Nations Convention on Biological Diversity. *Pace Environmental Law Review*, Vol 13: 191-218 at 200

³²⁸ See Chapters 1 and 3 for a discussion of krill’s role in maintaining biodiversity.

³²⁹ Although that form does not dictate actual measures it ostensibly requires no activities to be undertaken until it is certain there is no detrimental harm from those activities.

providing legal justification for the introduction of a moratorium on krill harvesting, even though it may not legally require a moratorium to be introduced. Enforcement mechanisms can come from interested states, such as the Antarctic claimant states, or parties to CCAMLR.

The precautionary approach, although providing beneficial support for krill conservation, does not have significant binding effect in international law. The precautionary principle is often embodied in soft law instruments³³⁰ or, if included within binding treaties, it may not be given full binding force.³³¹ The precautionary approach could, however, have emerged as a principle of customary international law.³³² If it has evolved into custom then states would be under an obligation to apply its principles. This would require states to give complete, or at least a high level, of protection to krill because of the uncertainties surrounding environmental and other factors affecting krill and their dependent species.

Customary International Law

The precautionary approach has been embodied in a number of international instruments.³³³ There is also acceptance of the concept in the domestic law of several countries including the European Union and it has been accepted widely in respect of policy considerations.³³⁴ This high level of support for the principle may imply the existence of a state practice supporting the approach. However, most of these instruments are non-binding, which may suggest that *opinio juris* is lacking. The ICJ has also been unclear as to whether the precautionary approach is a principle of binding international law and the WTO in its jurisprudence has also found that the status of the approach in general international law is uncertain.³³⁵ Some commentators argue that the strong emphasis of the precautionary approach in some international instruments such as the

³³⁰ The FAO Code of Conduct, for example, is merely a soft law instrument. As discussed, there are, however, some binding treaties, such as the Fish Stocks Agreement, which have embraced the concept.

³³¹ Gullett, W. *Supra*, fn 234, 57

³³² For customary international law to arise there must be evidence of a State practice having arising and an intention for those States to be legally bound by that practice (i.e. *opinio juris*)

³³³ As discussed, the Code of Conduct and Fish Stocks Agreement endorse the approach. Article 10 of the Kyoto Declaration also gives support to states applying the precautionary approach as referred to in the Code of Conduct and Fish Stocks Agreement. The 1982 World Charter for Nature also recognises a form of the precautionary principle (see, for example Article 11 of the Charter). Finally, Principle 15 of the Rio Declaration gives direct support for the concept.

³³⁴ Birnie, P. and Boyle, A. *Supra*, fn 233, 118.

³³⁵ *Ibid*

Cartagena Protocol on Biosafety to the Convention on Biological Diversity, may lead to the precautionary approach reaching customary law status.³³⁶ Treaties can contribute to the development of customary law or provide evidence of customary law where they are widely accepted.³³⁷ Although, it should be noted that the existence of a Treaty alone does not necessarily mean customary law exists if the particular principle is not adopted in practice by states.³³⁸ There is also is not universal application of the precautionary approach in international treaties, which may suggest that the necessary *opinio juris* is lacking for the principle to become part of customary international law.³³⁹

Some commentators argue that the requirements for the precautionary approach to become customary law have not been satisfied.³⁴⁰ In particular, some argue that state practice has not materialised as yet and that *opinio juris* is not present because some states have not become parties to or ratified certain instruments embodying the precautionary approach.³⁴¹ Although it is not necessary for all states to accept a principle as legally binding for it to become part of custom (as will be discussed in Chapter 3 of this thesis) and just because particular instruments have not yet been accepted by certain states does not mean that those states do not accept the precautionary principle itself. The same commentators argue that a period of time needs to elapse before the precautionary approach can become part of customary law.³⁴² It is not contended that the approach *is* part of customary law as yet, however, one should note that although one would expect a period of time to elapse before state practice evolves and the necessary *opinio juris* is present, if those two ingredients are present, there would not appear to be any reason as to why customary law would not exist.

³³⁶ Stewart, T. and Johanson, D. 2003. *A Nexus of Trade and the Environment: The Relationship Between the Cartagena Protocol on Biosafety and the SPS Agreement of the World Trade Organization*. Colorado Journal of International Environmental Law and Policy, Volume 14

³³⁷ *Ibid*

³³⁸ *Ibid*

³³⁹ Birnie, P. and Boyle, A. *Supra*, fn 233, 119

³⁴⁰ Stewart, T. and Johanson, D. *Supra*, fn 341

³⁴¹ *Ibid*

³⁴² *Ibid*

In particular, in respect of the Rio Declaration, Priess and Pitschas argue that the participation of numerous states in the Rio Declaration does not “qualify” Principle 15 of the Declaration (regarding the precautionary principle) as customary international law. These commentators argue that it is a mere starting point, “if at all for the evolution of international customary law”.³⁴³ In a similar vein, these commentators argue that the inclusion of the principle in many other treaties such as the Biodiversity Convention does not mean that it is customary law because most of these do not require parties to follow the principle.³⁴⁴ Just because the Rio Declaration was accepted by most states does not necessarily mean that Principle 15 is customary law. However, the fact that most states have accepted the Principle may evidence acceptance to be bound by the principle, even though they may not yet have adopted it in their state practice. Furthermore, it is disputed that the claim by these commentators that the fact that many international instruments that contain the precautionary principle are soft law means that states do not accept to be bound by the principle. States may still believe that they have an obligation to follow the principle as a consequence of becoming party to soft law instruments evincing it, even though such instruments are not hard law treaties,

Furthermore, actual implementation of the approach by states would provide more definitive evidence of state practice. As discussed, parties to CCAMLR already apply the precautionary approach. However, there needs to be a widespread state practice for custom to exist. The lack of strong evidence of state practice and *opinio juris* concerning the precautionary principle suggests that it is not part of customary international law.³⁴⁵ Some commentators also argue that because the precautionary principle can be interpreted in a number of different ways and because some of its applications are new, it is not customary international law.³⁴⁶ The inclusion of the concept into a large number of international instruments may, at the very least, support it as a principle of international law.³⁴⁷ A state that has given its support to the principle may be liable for activities that could cause future environmental harm, although it may not be certain until some future date that damage will actually occur.³⁴⁸ If states were liable for potential future effects of krill fishing, there would be a greater incentive to comply with precautionary catch limits because states would be held responsible for future harm that could be caused by excessive

³⁴³ Priess, H. and Pitschas, C. *Protection of Public Health and the Role of the Precautionary Principle under WTO Law: A Trojan Horse Before Geneva's Walls?* Fordham International Law Journal, Volume 24: 519 at 527

³⁴⁴ *Ibid*

³⁴⁵ Gullett, W. *Supra*, fn 234, 57

³⁴⁶ Barton, C. 1998. *Note: The Status of the Precautionary Principle in Australia: Its Emergence in Legislation as a Common Law Doctrine*. Harvard Environmental Law Review, Volume 22: 509 at 517

³⁴⁷ *Ibid*

³⁴⁸ *Ibid*

krill fishing. However, strong enforcement mechanisms would still be needed to curb IUU fishing in the light of likely increases in demand for krill products.

The acceptance of the precautionary principle in customary law or as a means of regulation is difficult because of uncertainties concerning its exact meaning or how it is to be applied.³⁴⁹ In particular, the consequences of the approach differ widely and it is difficult to formulate a clear outcome of the precautionary approach applying.³⁵⁰ Accordingly, this makes it difficult to reach the status of customary international law. The concept's general nature hinders it from having any real practical impact.³⁵¹ However, not all instruments treat the approach as simply a general concept. The Fish Stocks Agreement, for example, outlines the approach in much greater detail than other instruments.³⁵² There are, however, still problems in defining exactly what constitutes a "precautionary approach". However, it may not be necessary for the precautionary principle to become part of customary law if it forms part of general international law principles.

General Law Principles

As discussed above, the Law of the Sea Convention requires the high seas fishing freedom to be exercised under the conditions laid down by other rules of international law. Article 31(3)(c) of the *Vienna Convention* also requires that any relevant rules of international law applicable in the relations between the parties are to be considered when interpreting a Treaty. It may be argued that the precautionary approach is a general principle of international law that needs to be taken into account when interpreting treaties. As a principle advocated in both international non-binding "soft" law (eg Rio Declaration) and binding "hard" law (eg Convention for Biological Diversity), arguably, the precautionary approach is a general international law principle, even if it has not hardened into binding customary law. Accordingly, it may be necessary to interpret the Law of the Sea Convention's high seas fishing freedom in light of the precautionary approach.³⁵³ If the high seas fishing freedom were interpreted as being subject to the precautionary approach as a general principle of international law then, as discussed above, a strong form of this approach would actually require an Antarctic krill fishing moratorium or local no-take zones in

³⁴⁹ *Ibid*

³⁵⁰ Birnie, P. and Boyle, A. *Supra*, fn 233, 119

³⁵¹ *Ibid*, 58

³⁵² Article 6 and Annex II of the Agreement both outline the precautionary approach in specific, rather than general, terms suggesting that it is more than simply a vague idea. Annex II also provides details on how the approach is to be applied in relation to precautionary reference points, suggesting that it is a concept that can be applied in practice.

³⁵³ See Boyle, A. 2005. *Further Developments of the Law of the Sea Convention: Mechanisms for Change*. International and Comparative Law Quarterly, Vol 54: 563-584 at 573-574 relying on the *Southern Bluefin Tuna Cases* (Provisional Measures) (1999) ITLOS Nos 3 and 4

Antarctica. The reason being that it requires proof that there is no risk from an activity before it is allowed. As highlighted with great vigour in Chapter 1, there is already *actual* scientific evidence that krill harvesting can cause harm to local predator populations and the study by Everson and Goss discussed in Chapter 1 concluded that even a small level of krill harvesting could potentially have an adverse impact on the Antarctic ecosystem (although there is no definite scientific evidence in this respect as yet).

Furthermore, as highlighted in Chapter 1, krill harvesting could have an adverse affect on dependent species that have already been depleted in number, such as the baleen whales and may reduce the rate of replenishment of such species. Accordingly, because, as discussed in Chapter 1, krill plays a vital and fundamental role in the Antarctic ecosystem, the risk of harm to the ecosystem is extremely high from krill harvesting. Because the risk is so high, even a form of the precautionary approach less than the strong form would still justify the introduction of a krill harvesting ban or no-take zones despite the scientific uncertainty concerning krill, although a lesser form of the precautionary approach would not legally require a ban to be introduced. As mentioned above, Article 87(2) also requires the high seas fishing freedoms to be exercised with due regard to the interests of other States. Arguably, taking account of the conservation interests of other States would provides further weight for other States' high seas fishing freedoms to be restricted by an Antarctic krill fishing moratorium if it were adopted by a regional organisation such as CCAMLR.

IV. Adoption of a Precautionary Approach?

There have been doubts as to whether a precautionary approach should be adopted at all. Some commentators argue that the precautionary principle is nothing more than a political ideology that rejects scientific method.³⁵⁴ Indeed, the approach did emerge as one of the Rio Declaration principles out of the Rio Summit, which was a predominantly political conference. The implementation of the approach has also been endorsed at the 2002 World Summit on Sustainable Development.³⁵⁵ However, because of the soft law status of many of these political texts the precautionary approach will not bind states unless, as discussed in Chapter 4, these soft law instruments achieve hard law status. Furthermore, arguably, a precautionary approach should not be adopted to protect krill if it has no scientific grounding. There are also concerns that a precautionary principle will embody a rejection of statistical predictions of future

³⁵⁴ *Ibid*, 55

³⁵⁵ Article 109(f), *Plan of Implementation of the World Summit on Sustainable Development 2002*

environmental consequences.³⁵⁶ Adoption of a precautionary principle for krill could constitute a rejection of the statistical data concerning the future effects of krill fishing and the future population levels of krill and dependent species. However, CCAMLR's implementation of a precautionary approach actually uses statistical data to determine precautionary catch limits so this criticism is not justified.

It has also been argued that the precautionary approach constitutes unnecessary precaution.³⁵⁷ However, although scientific certainty does exist, there will be much greater harm in the future if the approach is not implemented. Even if this harm does not actually materialise, arguably, it is better to guard against it than deal with the consequences of that damage in the future. In the case of krill, the harmful impact of krill fishing on the Antarctic ecosystem could be quite high. Arguably, avoiding this possible damage by adopting the precautionary approach would be preferable to dealing with the consequences after the damage has occurred. As already outlined in this thesis, the problem is effectively implementing a precautionary approach. Whether some form of krill ban is implemented (total or merely seasonal/regional) or precautionary catch limits are maintained, the current mechanisms still need to be stronger to provide the legal and enforcement mechanisms necessary to ensure that such management measures are effective.

There are also problems in determining exactly which precautionary measures should be adopted.³⁵⁸ As discussed above, if the precautionary approach is adopted in too strong a form it may draw criticism because of the lost future economic benefits.³⁵⁹ CCAMLR has adopted a form of the precautionary approach that allows continued exploitation of krill through precautionary catch limits. Such a formulation of the principle still permits the economic benefits of krill exploitation. CCAMLR may therefore avoid the criticism concerning lost social benefits that could arise if a stronger form of the precautionary approach was adopted. If a total ban on krill fishing were adopted under the precautionary approach, it may draw a high level of criticism because of foregone economic benefits. However, banning krill harvesting would still permit economic benefits to flow from more lucrative sustainable exploitation of species higher in the food chain. Protecting krill, as a vital link in the ecosystem, helps to maintain levels of these species thus permitting their continued sustainable exploitation.

The criticisms of the precautionary approach, particularly those concerning its scientific validity, are not fully justified. Science has often failed to anticipate environmental disasters and the

³⁵⁶ Gullett, W. *Supra*, fn 234, 56

³⁵⁷ *Ibid*

³⁵⁸ *Ibid*, 60

³⁵⁹ Charest, S. *Supra*, fn 243, 267

extent of some environmental problems is difficult to predict with certainty.³⁶⁰ The uncertainty surrounding krill and its interactions with other species has made it difficult to accurately predict the effect of krill harvesting on the ecosystem. The unique position of krill in the Antarctic food chain should provide a justification for the adoption of a precautionary approach in relation to krill. Because the potential for future harm from krill fishing is great, a precautionary approach should be implemented especially in light of likely increases in krill harvesting levels.

Conclusion

This Chapter has examined the precautionary approach in the context of Antarctica and krill conservation and management and concluded that adoption of a precautionary approach would justify the introduction of a krill fishing moratorium despite the scientific uncertainty outlined in chapter 1.

This chapter has examined CCAMLR's application of a form of the precautionary approach based on precautionary catch limits for krill and other marine species. The techniques used by CCAMLR to implement the approach suffer from some flaws and scientific uncertainties in respect of krill population and its interaction with other species. In light of this uncertainty, it is submitted that a stronger form of the precautionary approach should be applied by CCAMLR in respect of the Antarctic krill. This could involve either a moratorium on krill fishing or localised/seasonal krill bans in sensitive geographical areas. Such an approach would also need to be accompanied by a wider implementation of improved enforcement techniques and a strengthening of the legal mechanisms of enforcement against non-CCAMLR parties. Alternatively, CCAMLR Members could attempt to encourage more non-parties to accede to the Convention.

Support for the precautionary approach can also be found in many international agreements which gives weight to such an approach being adopted in respect of krill and other Southern Oceans species. The use of the approach in other international instruments provide a legal justification for CCAMLR adopting a much stronger form of the precautionary approach in respect of krill than is currently the case.

³⁶⁰ *Ibid*, 266

If there is weight to the argument that some form of a “precautionary approach/principle” has become enshrined in customary international law, this would give greater legal force to the need for States to comply with krill conservation measures such as a fishing moratorium. The ascendance of a “precautionary approach” into customary international law is constrained by the definitional uncertainty of the concept. However, the precautionary approach is, arguably, a general legal principle that should be taken into account when interpreting treaties such as the Law of the Sea Convention. Accordingly, the traditional high seas fishing freedoms of other States may be restricted by this principle, including the freedom of other States to harvest Antarctic krill. This chapter has examined the different forms of the precautionary approach and concludes that a stronger version of the precautionary approach should be applied in respect of krill than is currently being adopted by CCAMLR. A stronger form precautionary approach would require a comprehensive krill fishing ban to be implemented because of the risk of future damage to the Antarctic in light of current scientific uncertainties.

This chapter has examined criticisms that have been levelled at the precautionary approach and concluded that they are not fully justified. This thesis submits that the unique position of krill in the Antarctic food chain should provide a justification for the adoption of a precautionary approach in relation to krill. Such an approach is necessary to facilitate conservation of the Antarctic krill and the Antarctic ecosystem.

Krill conservation is facilitated by the plethora of hard law international instruments governing the world’s oceans and environment. “Hard” law instruments are formal international treaties and conventions that are binding on the parties that ratify them. The next chapter will focus on the Antarctic Treaty system as a whole and CCAMLR’s integration into that system. The chapter will also look at other hard law agreements such as the Madrid Protocol, the Law of the Sea Convention and the Convention on Biological Diversity to determine whether those instruments can provide effective aid in the conservation of krill.

CHAPTER 3 THE CONTEMPORARY HARD LAW REGIME

Introduction

The important role played by krill in the Antarctic ecosystem should be the basis for implementing a krill moratorium or localised conservation zones under the precautionary approach. There are many binding “hard” law instruments in existence that could provide the necessary protection needed to conserve krill. Part I of this Chapter gives a brief overview of the Antarctic Treaty System. Parts II and III of this chapter will examine the function served by these agreements and will analyse whether they can help to conserve krill in light of the precautionary approach. The most important agreement governing marine Antarctica is the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR). This chapter will look at the conflict between CCAMLR’s conservation and “rational use” objectives that could detract from conservation of krill, particularly in light of the form of precautionary approach adopted by CCAMLR. This section will also focus on several procedural issues surrounding the binding effect of the Convention and its decision making processes. These issues have the potential to reduce the effectiveness of CCAMLR in conserving krill and other species.

Part IV of this Chapter will then focus on the relationship between the Protocol on Environmental Protection to the Antarctic Treaty (the Madrid Protocol) and CCAMLR. The Madrid Protocol is important because it is the first single instrument that attempts to tackle the comprehensive protection of the Antarctic environment and its ecosystems. The Madrid Protocol is extremely significant for krill because it requires activities to be conducted in a way that prevents detrimental changes to populations. The potential for krill harvesting to conflict with the Protocol’s objectives will be discussed. The subordination of the Madrid Protocol to CCAMLR will also be examined, together with the consequent implications for a comprehensive krill ban. The need to align these instruments more closely will also be analysed.

Part V of this Chapter will focus on maritime sovereignty in the Antarctic. In particular, the potential existence of Exclusive Economic Zones (EEZs) in Antarctic will be outlined. This section will discuss coastal states and whether they can provide more effective, comprehensive protection to krill such as through the introduction of a krill fishing ban within zones of national jurisdiction. The conservation provisions of the Law of the Sea Convention and their relationship with these potential EEZs will also be analysed.

This Part will also look at the protection offered in the Law of the Sea Convention to straddling fish stocks and highly migratory species. Krill's status as a highly migratory species will be examined, together with the protection offered by the subsequent United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species 1995 (hereafter known as the Fish Stocks Agreement). The greater detail embodied in the Fish Stocks Agreement, and the extensive conservation provisions it contains, will be examined to determine their potential to facilitate a total krill harvesting ban. Finally, the Part will analyse the alternative protection offered by the Law of the Sea Convention for krill on the high seas if krill are not covered by the Fish Stocks Agreement. This Part will also look at the relationship between CCAMLR and potential Exclusive Economic Zones in Antarctica.

This chapter concludes with a discussion on the Convention on Biological Diversity. Biological Diversity relates to the variability of and within species and the variability of ecosystems. Part VI will begin by analysing how the concept of biological diversity can relate to krill and the importance of krill in maintaining biological diversity in Antarctica. The Convention on Biological Diversity could provide further protection for krill and could form the basis for a comprehensive harvesting ban because of the need to conserve krill to preserve Antarctic biological diversity. The precautionary approach would justify the protection measures canvassed by this thesis because of the uncertainty concerning the effect of krill fishing on biological diversity. The provisions of the Convention will be analysed to determine whether they can offer any substantive protection to krill. Finally, the relationship between the Convention on Biological Diversity, the Law of the Sea Convention and CCAMLR will be examined to determine whether there is scope for the more effective co-ordination of these instruments. An effective interaction between these instruments is necessary so that CCAMLR can be given full effect without any restrictions on its operation on the high seas by the Law of the Sea Convention. This is necessary to ensure that CCAMLR gives adequate protection to krill and their dependent species, particularly if potential Antarctic Exclusive Economic Zones are not valid.

I. The Antarctic Treaty System

The original legal regime governing Antarctic territory was the Antarctic Treaty. This instrument was concluded in 1959 and came into force in 1961. The Treaty does not directly look at living resource conservation.³⁶¹ This failing shows the lack of concern for conservation at the time.³⁶² However, Article IX(1)(f) does contemplate consultation on measures relating to the preservation and conservation of living resources in Antarctica. Following its entry into force, the third Consultative Party Meeting adopted the Agreed Measures for the Conservation of Antarctic Fauna and Flora.³⁶³ These measures declared the Antarctic Treaty zone to be a Special Conservation Area. The wording of the measures suggests that they are not applicable to marine life in the Southern Ocean.³⁶⁴ It is likely that the measures only apply to land areas and ice shelves because Article 1 introduces the wording of Article VI³⁶⁵ of the Antarctic Treaty, repeating the high seas exception included in that provision.³⁶⁶ Comprehensive measures for the protection of the marine environment were not introduced for some time after the Treaty was implemented.

II. The Convention for the Conservation of Antarctic Marine Living Resources

The Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) came into force in 1982 after it was concluded in 1980.³⁶⁷ CCAMLR can be seen as mainly an extension of the Antarctic Treaty because negotiations to implement it took place nearly exclusively under the Treaty system.³⁶⁸ The preamble also recognises the Antarctic Treaty System and the responsibilities under Article IX(1)(f) of the Treaty.³⁶⁹ The Convention extends the Antarctic Treaty, which covers areas south of 60 degrees, to the whole region south of the Antarctic convergence.³⁷⁰ This area can reach as far as 45 degrees.³⁷¹ The Antarctic convergence forms the barrier between cold surface water and warmer nutrient-rich sub-

³⁶¹ Baird, R. *Supra*, fn 25, 164

³⁶² Rothwell, D.R. 1994. A Maritime Analysis of Conflicting International Law Regimes in Antarctica and the Southern Ocean. *Australian Year Book of International Law* Vol 15: 155-181 at 169

³⁶³ Puissochet, J. *Supra*, fn 48, 72

³⁶⁴ Blay, S.K.N. 1992. New Trends in the Protection of the Antarctic Environment: The 1991 Madrid Protocol. *The American Journal of International Law*, Vol 86(2) 377-399 at 380

³⁶⁵ Article VI states that "nothing in the present Treaty shall prejudice or in any way affect the rights, or the exercise of the rights, of any state under international law with regard to the high seas".

³⁶⁶ Overholt, D.H. 1990. Environmental Protection in the Antarctic: Past, Present and Future. *The Canadian Yearbook of International Law*, Vol 28: 227-261 at 233

³⁶⁷ Baird, R. *Supra*, fn 25, 166

³⁶⁸ Howard, M. *Supra*, fn 35, 105

³⁶⁹ There are currently 24 state parties to the Convention, 7 acceding states and several observers.

³⁷⁰ Article I(1), CCAMLR

³⁷¹ Puissochet, J. *Supra*, fn 48, 72

Antarctic waters moving southwards. The convergence produces conditions allowing the development of heavy concentrations of phytoplankton, leading to an abundance of krill.³⁷²

Depletion in seals, whales and finfish was one of the main reasons for the implementation of CCAMLR.³⁷³ CCAMLR has therefore been regarded by some as a conservation convention for environmental protection, rather than a standard fishing convention.³⁷⁴ The origins and context of CCAMLR suggest that it was designed for environmental protection. Exploitation is not mentioned anywhere in the convention. Many of the articles are, however, similar to traditional regional fishery conventions.³⁷⁵

The Convention itself states that its objective is the conservation of Antarctic marine living resources.³⁷⁶ Conservation includes rational use³⁷⁷, but this term is not defined. Before the Convention was conceived, fishing States wanted to increase their territorial claims as well as implement a regime to exploit Antarctic resources.³⁷⁸ Non-fishing nations and Antarctic claimants wanted to preserve their claims and implement a strong conservation regime.³⁷⁹ The inclusion of “rational use” is a compromise between the twin goals of exploitation and conservation of living resources. The ambiguity of “rational use” prevents particular interests gaining ascendancy.³⁸⁰ A comprehensive krill harvesting ban would, arguably, not accord with “rational use”. However, this thesis submits that “rational use” of other krill dependent species would be facilitated by the introduction of a complete ban.

The Convention purports to have conservation as its main objective. However, “rational use” seems to give commercial exploitation equal priority to any conservation objective. The Soviet Union delegation to the Working Group of the fifth CCAMLR meeting submitted that “rational use” meant “obtaining maximum output of the highest quality with the minimum amount of effort during the course of an indefinitely long period of time”.³⁸¹ This highlights the possibility for the Convention to become focussed on sustainable commercial exploitation at the expense of conservation. If such a focus gained ascendancy, it would be extremely detrimental to krill and the Antarctic marine ecosystem as a whole.

³⁷² Auburn, F.M. *Supra*, fn 30, 218

³⁷³ Nicol, S. and De la Mare, W. *Supra*, fn 80, 36

³⁷⁴ Couratier, J. *Supra*, fn 9, 147

³⁷⁵ *Ibid*, 148

³⁷⁶ Article II, CCAMLR

³⁷⁷ Article II, CCAMLR

³⁷⁸ Gardam, J.G. 1985. Management Regimes for Antarctic Marine Living Resources - An Australian Perspective. *Melbourne University Law Review*, Vol 15(2): 279-312 at 294

³⁷⁹ *Ibid*

³⁸⁰ Baird, R. *Supra*, fn 25, 171

³⁸¹ Heap, J.A. *Supra*, fn 37, 51

In relation to krill, a focus on commercial exploitation would prevent or hinder the implementation of a total krill harvesting ban. As discussed above, the introduction of a krill moratorium would be consistent with the objectives of CCAMLR. A krill moratorium (or localised krill bans) would reduce the threat that krill fishing poses to dependent species. In accordance with CCAMLR's objectives, this would facilitate the "rational use" of other more commercially valuable species higher up the food chain. As such, this thesis submits that such conservation measures would be consistent with CCAMLR and could be introduced under the CCAMLR system.

III. CCAMLR Procedural Issues

At CCAMLR's inception, the parties were faced with many difficulties in developing management procedures for fish stocks.³⁸² Fishing nations were eager to implement a regime based on maximum exploitation and limited conservation measures that would allow efficient harvesting of marine species. Such a system would be similar to existing fisheries management conventions. Non-fishing states lobbied for the inclusion of the conservation measures in the Convention itself. However, this was contrary to the desires of the fishing states.³⁸³ At CCAMLR's inception, fears were also raised concerning fishing in areas claimed as sovereign by coastal states.³⁸⁴ The procedures used to implement conservation measures have been criticised because of the compromises embodied in CCAMLR. If such mechanisms are fundamentally flawed, then the Convention can arguably be said to provide krill with inadequate protection. Any weaknesses in the legal and management regime must be resolved because of the likely expansion of krill industry. As discussed below, a recent 2004 UN General Assembly resolution "affirms" the need to strengthen the international legal framework for intergovernmental cooperation in the management of fish stocks and in combating IUU fishing in a manner consistent with international law.³⁸⁵ Accordingly, this provides an impetus for states to look at strengthening international marine management instruments such as CCAMLR to combat IUU fishing in Antarctica. A strengthening of this and other international agreements would help to facilitate the effective implementation of a comprehensive krill harvesting ban. Such a ban is justified under the precautionary approach because of krill's pivotal role in the ecosystem and current scientific uncertainty in this regard.

³⁸² Nicol, S. and De la Mare, W. *Supra*, fn 80, 38

³⁸³ Gardam, J.G. *Supra*, fn 404, 301

³⁸⁴ Koch, M. *Supra*, fn 164, 120

³⁸⁵ Articles 26 and 28, *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments* A/RES/59/25, 2004

Binding Effect of the Convention

The Commission of the Convention can only recommend conservation measures,³⁸⁶ but these measures are binding on all members within 180 days of notification.³⁸⁷ However, there is an opt-out mechanism that enables states to evade the conservation measures. A member can avoid being bound by a measure by notifying the Commission that it is unable to accept the measure.³⁸⁸ This provision may allow nations to avoid measures that will be too restrictive on fishing.³⁸⁹ The actual effect of this procedure may, however, be minimal. The mechanism has only ever been utilised for practical reasons.³⁹⁰ The CCAMLR method of consensus decision making could make it morally difficult to object to conservation measures. The provision may have been applied more often if decisions were based on majority voting.³⁹¹ However, the very existence of such a mechanism provides a threat to krill. The exclusive use of the provision for practical reasons in the past does not negate the fact that it could be used to evade conservation measures in the future. The procedure is of particular concern to the introduction of a total krill fishing ban because such a ban must be consistently applied to be effective.

Effective sanctions for the breach of conservation measures are also necessary to fully protect krill stocks. Contracting parties to CCAMLR are required to take appropriate measures to ensure compliance with the Convention and its conservation measures.³⁹² Conservation measures have not been implemented uniformly by Antarctic claimants in claimed areas in the past.³⁹³ The Convention requires the Commission to draw the attention of contracting parties to any activities affecting the objectives of the Convention.³⁹⁴ This is the only method of dealing with infringements but it is not really an effective sanction.³⁹⁵ However, breach of the Convention would result in pressure from other states.³⁹⁶ A mere moral obligation is not sufficient to enforce a comprehensive krill ban.

³⁸⁶ Gardam, J.G. *Supra*, fn 404, 296

³⁸⁷ Article IX(6)(b), *CCAMLR*

³⁸⁸ Article IX(6)(c), *CCAMLR*

³⁸⁹ Peterson, M.J. *Supra*, fn 126, 156

³⁹⁰ Therefore, in reality, it may not pose a danger to the fulfilment of CCAMLR's objectives.

³⁹¹ *Ibid*

³⁹² Article XXI, *CCAMLR*

³⁹³ Rothwell, D.R. *Supra*, fn 388, 173

³⁹⁴ Article X, *CCAMLR*

³⁹⁵ Auburn, F.M. *Supra*, fn 30, 232

³⁹⁶ Howard, M. *Supra*, fn 35, 138

More effective sanctions are crucial if such a ban is to be enforced, particularly in light of likely increases in demand for krill products and greater economic returns from harvesting. These provisions would, *prima facie*, appear to provide CCAMLR with very little “teeth”. Efforts have been made recently by CCAMLR and its member states to introduce more effective enforcement mechanisms. These efforts will be discussed in detail in a later Chapter of this thesis. CCAMLR member states need to continue to improve these enforcement mechanisms and extend them to krill fishing so that krill conservation measures will prove effective.

CCAMLR raises an issue of whether conservation measures can be applied and enforced against non-members on the high seas.³⁹⁷ The Convention can be acceded to by any State interested in research or harvesting activities in relation to marine living resources covered by the Convention.³⁹⁸ There are, however, no legal obligations imposed on non-members.³⁹⁹ Antarctic claimant states can still enforce the Convention against non-members in coastal jurisdictions claimed by them.⁴⁰⁰ The Convention requires that attention be drawn to non-party states of any activities affecting the objectives of the Convention.⁴⁰¹ The effectiveness of such a provision is questionable. Because non-members are not bound by the Convention they could flout its conservation and management measures and prevent the effective implementation of an ecosystem approach. The Convention’s application to only member states on the high seas is one of its major weaknesses. A comprehensive krill harvesting ban can only prove effective if it binds *all* parties both in areas of national jurisdiction and on the high seas. Current efforts by the Commission to increase co-operation with non-parties to CCAMLR in order to combat IUU fishing are discussed in a subsequent Chapter. Such efforts may help to better control IUU fishing in Antarctica but, as discussed above, in accordance with the UN General Assembly’s recent resolution there needs to be a strengthening of international fisheries agreements to facilitate this objective.

Contracting parties are required under Article XXV of CCAMLR to solve disputes between themselves. A dispute resolution mechanism relying wholly on the parties may be ineffective.⁴⁰² The Convention contains no provisions compelling resolution. Such disputes will threaten krill stocks if timely resolution is not achieved. Article XXV provides a mechanism to refer disputes to the International Court of Justice (ICJ), but consent is required. Any party can become involved in a dispute which allows third parties to prevent referral of disputes to the ICJ or an

³⁹⁷ Rothwell, D.R. *Supra*, fn 388, 170

³⁹⁸ Article XXIX, *CCAMLR*

³⁹⁹ Rothwell, D.R. *Supra*, fn 388, 170

⁴⁰⁰ Koch, M. *Supra*, fn 164, 121

⁴⁰¹ Article X, *CCAMLR*

⁴⁰² Howard, M. *Supra*, fn 35, 138

arbitration tribunal. The Antarctic Treaty has similar weaknesses regarding dispute resolution.⁴⁰³ However, disagreement over CCAMLR is of much greater concern because of the likely threat to krill stocks from conflict over the Convention.

Decision Making

Decisions of the Commission are based on the research of CCAMLR's Scientific Committee. The Committee acts as a consultative body. It collects information and conducts activities as directed by the Commission.⁴⁰⁴ This requirement potentially gives the Commission control over the Scientific Committee. Political influences could affect the process as a result.⁴⁰⁵ Conservation measures passed by the Commission must accord with the conservation principles in Article II.⁴⁰⁶ Non-members and third parties could have some scope to argue that a particular measure does not fall within the objectives of the Convention.⁴⁰⁷ This can undermine the findings of the Commission. Decisions of the Commission are also subject to the views of contracting parties. These political weaknesses could prevent the introduction of conservation measures to protect krill even if those measures have a sound scientific basis. This will provide an obstacle to the introduction of a complete krill harvesting ban, although localised protection zones may be more politically palatable to such parties. In accordance with the General Assembly resolution, a greater strengthening is needed of international management instruments such as CCAMLR so that political interests do not affect sound conservation policy. Several recent General Assembly resolutions have urged states that have not currently acceded to the Law of the Sea Convention to do so and to implement its requirements. Even though CCAMLR is not an agreement originating from the UN, the General Assembly should make similar calls to non-parties to CCAMLR. Political pressure may be enough to sway at least some non-parties to accede to CCAMLR, which would likely enhance CCAMLR's effectiveness as a fisheries management regime.

⁴⁰³ Ibid

⁴⁰⁴ Article XV, *CCAMLR*

⁴⁰⁵ Auburn, F.M. *Supra*, fn 30, 230

⁴⁰⁶ Article IX(1), *CCAMLR*

⁴⁰⁷ Auburn, F.M. *Supra*, fn 30, 232

Convention decisions on matters of substance are made by consensus.⁴⁰⁸ The consensus approach has been criticised because it is a lengthy process. A single nation also has the ability to block a conservation measure.⁴⁰⁹ The inclusive nature of the consensus approach could make conservation measures more binding. If consensus is properly obtained with full agreement and no pressure or coercion it is morally difficult for parties to object to decisions.⁴¹⁰ However, actually making a decision could prove to be quite difficult.⁴¹¹ Once a decision is reached, the support of all parties for the decision increases the likelihood that it will be observed. Consensual agreement to a complete krill fishing ban would make those parties more likely to observe and enforce the decision. However, actually agreeing to such a ban would be a lengthy process because of the need to reach consensus. A likely expansion of krill industry means that fast decisions are required and CCAMLR parties cannot afford delay because of krill's vital role in the ecosystem.

IV. The Madrid Protocol

The Protocol on Environmental Protection to the Antarctic Treaty was approved at a meeting of the Antarctic Treaty States in Madrid in 1991.⁴¹² The objective of the Protocol is the comprehensive protection of the Antarctic environment and dependent and associated ecosystems.⁴¹³ The instrument also designates Antarctica as a "natural reserve, devoted to peace and science".⁴¹⁴ This protection is the fundamental consideration in the conduct of all activities in the Antarctic Treaty zone.⁴¹⁵ Activities are to be conducted in such a way as to prevent detrimental changes in distribution, abundance or productivity of species or populations.⁴¹⁶ Any interference with krill will have a detrimental effect on the Antarctic environment and dependent ecosystems because of krill's vital role in those ecosystems. Such effects would directly conflict with the main objective of the Madrid Protocol. Activities that deplete krill numbers will also conflict with the Protocol by causing detrimental changes in distribution and abundance of dependent species.

⁴⁰⁸ Article XII(1), *CCAMLR*

⁴⁰⁹ This is one of the drawbacks of a consensus decision making approach.

⁴¹⁰ *Ibid*

⁴¹¹ Overholt, D.H. *Supra*, fn 392, 242

⁴¹² Blay, S.K.N. *Supra*, fn 390, 377. Negotiation took place between both Antarctic consultative parties and non-consultative parties (Thornton, B.S. 1992. Protecting Antarctica: Suggestions for US Implementation of Three Specific Areas Addressed in the Protocol on Environmental Protection to the Antarctica Treaty. *Wisconsin International Law Journal*, Vol 11(1): 49-99 at 53). The Protocol was finally approved on 4 October 1991.

⁴¹³ Article 2, *Madrid Protocol on Environmental Protection to the Antarctic Treaty* 1991

⁴¹⁴ *Ibid*

⁴¹⁵ Article 3(1), *Madrid Protocol on Environmental Protection to the Antarctic Treaty* 1991

⁴¹⁶ Article 3(2)(b)(iv), *Madrid Protocol on Environmental Protection to the Antarctic Treaty* 1991

As mentioned, the Madrid Protocol is an amending Protocol to the Antarctic Treaty and, accordingly, parties to that Treaty are bound to implement the obligations set out in the Protocol. The Madrid Protocol places an obligation on states to adhere to certain requirements in respect of the planning and conduct of activities in Antarctica. In particular, Article 3 sets out a series of binding environmental principles, the most important of which is that the “protection of the Antarctic environment and dependent and associated ecosystems, including its wilderness and aesthetic values....shall be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area.” Furthermore, under Article 8, parties are obliged to conduct environmental impact and assessment studies before conducting any activities in Antarctica.

There are also annexes to the Protocol which contain more detailed obligations including an obligation to conduct environmental impact assessments before conducting any activities in Antarctica (Annex I), certain obligations in respect of Antarctic living species (Annex II), obligations in respect of waste disposal and management (Annex III), obligations in respect of marine pollution (Annex IV) and specifically protected areas (Annex V). The Protocol itself specifies in Article 9 that the Annexes form part of the Protocol and, accordingly, have the same binding effect as the Protocol.

Article 11 of the Protocol also establishes a Committee for Environmental Protection whose functions include providing advice to parties on implementation of the agreement and the effectiveness of measures taken pursuant to the agreement.

The provisions of the Protocol are intended to bind states with maximum possible effect. Article 13 requires parties to take measures to ensure compliance with the Protocol including adopting laws, administrative actions and enforcement measures and parties are required to exert appropriate efforts to ensure that no-one engages in activities in breach of the Protocol. For example, Canada introduced an Antarctic Environmental Protection Act in 2003 as part of Canada’s attempt to implement the Protocol’s requirements. Furthermore, unlike many other hard law environmental instruments, the Protocol requires the parties to put together a set of rules and procedures relating to liability for damage which are to be integrated as an Annex to the agreement (Article 16) and reservations are *not* permitted (Article 24). Accordingly, the Protocol has very strongly binding provisions.

Proponents of krill fishing can argue that the immediate economic benefits of the industry outweigh the possibility of harm to Antarctica's marine ecosystem.⁴¹⁷ The likely increase in economic returns from krill fishing gives weight to continued krill fishing industry in Antarctica. However, because the Madrid Protocol looks at adverse impacts purely on ecological grounds then any economic benefits will not be taken into consideration. If activities depleting krill numbers had an adverse impact on the Antarctic ecosystem then, under the Protocol, such activities should not be carried out, regardless of their economic advantages. A comprehensive krill harvesting ban must be introduced because of the adverse impacts on the Antarctic ecosystem that will stem from a likely expansion of krill industry. Such a ban would still provide economic benefits because a protected krill population would benefit dependent species and facilitate their continued exploitation. The precautionary approach justifies such a moratorium because of the scientific uncertainty concerning the effect of krill fishing on the Antarctic ecosystem.

The taking, or harmful interference with, native flora and fauna is also prohibited by the Protocol unless a person has a permit for scientific activities.⁴¹⁸ Harmful interference includes any activity resulting in significant adverse modifications of habitats of any species or population of native mammal, bird, plant or invertebrate.⁴¹⁹ Arguably, "harmful interference" is caused from decreases in populations of birds or mammals who rely directly or indirectly on krill if the abundance of krill is reduced by exploitation. This thesis submits that any harmful or negative affect from krill fishing on the Antarctic ecosystem would be a breach the Protocol. A complete krill fishing ban should be introduced to protect krill's pivotal role in the ecosystem and avoid breaches of the Madrid Protocol.

⁴¹⁷ The formulation of Article 3(2)(b) makes it clear that any adverse impacts on Antarctica's environment are based on ecological grounds and do not depend on an economic assessment (Francioni, F. 1993. The Madrid Protocol on the Protection of the Antarctic Environment. *Texas International Law Journal*, Vol 28(1): 47-72 at 60).

⁴¹⁸ Article 3, Annex 2, *Madrid Protocol on Environmental Protection to the Antarctic Treaty* 1991

⁴¹⁹ Article 1, Annex 2, *Madrid Protocol on Environmental Protection to the Antarctic Treaty* 1991

Avoidance of further jeopardy to endangered or threatened species or populations of such species is also a requirement of the Protocol.⁴²⁰ Krill fishing will conflict with such a necessity if reductions in krill numbers cause further jeopardy to endangered or threatened species that depend on krill either directly or indirectly. For example, some of krill dependent baleen whales are currently threatened. The World Conservation Union has classed the minke, sei and blue whales as currently endangered.⁴²¹ Large scale krill fishing would jeopardise such krill dependent species and breach the Madrid Protocol's requirement to avoid further jeopardy to endangered species. This thesis submits that such krill harvesting would also conflict with the Protocol's requirement to protect areas of biological and wilderness significance.⁴²² A complete harvesting ban must be introduced to prevent further harm to threatened or endangered krill dependent species and to ensure that the goals of the Madrid Protocol are fulfilled.

Activities in the Antarctic Treaty area must be planned and conducted to limit adverse impacts on the Antarctic environment and dependent and associated ecosystems.⁴²³ The requirement that protection extend to Antarctica's "dependent and associated ecosystems" means that the Protocol can apply beyond the Antarctic Treaty zone of enforcement.⁴²⁴ The Protocol's conservation objectives can therefore offer protection to ecosystems outside the Treaty area provided they are "dependent and associated" with the Antarctic ecosystem. The Antarctic Treaty applies south of 60 degrees latitude.⁴²⁵ However, many large concentrations of krill, such as those found around South Georgia, occur outside this area. Including "dependent and associated" ecosystems allows the Madrid Protocol to extend protection to krill and dependent species found outside the Treaty zone. This gives the Protocol a protective sphere at least equal to that provided by CCAMLR's Antarctic convergence boundary.

⁴²⁰ Article 3(2)(b)(v), *Madrid Protocol on Environmental Protection to the Antarctic Treaty* 1991

⁴²¹ McGonigal, D. and Woodworth, L. 2002. *Antarctica – the blue continent*. The Five Mile Press: Noble Park. at 106

⁴²² Finally, Article 3(2)(b)(vi) requires "activities to be planned and conducted to avoid degradation of, or substantial risk to, areas of biological, scientific, historic, aesthetic or wilderness significance." As one of only two polar ecosystems, and one with a food web of limited size, the Antarctic ecosystem is of biological significance. The Southern ocean is also unique because of its major influence on world climate and ocean currents (McGonigal, D. and Woodworth, L. *Supra*, fn 447, 30). The Antarctic ecosystem also differs from the world's other polar region. One of the major differences is the absence of an Arctic equivalent of the Antarctic convergence (McGonigal, D. and Woodworth, L. *Supra*, fn 447, 31). The convergence of cold and warm waters in the Arctic is not circumpolar. The Southern Ocean and the Antarctic sea ice are also major drivers of biological activity (Nicol, S. and Allison, I. *Supra*, fn 218, 426). Any threat to krill would endanger Antarctica's unique ecosystem that is an area of biological, scientific, aesthetic and wilderness significance. This would constitute a breach of Article 3(2)(b)(vi) of the Madrid Protocol.

⁴²³ Article 3(2)(a), *Madrid Protocol on Environmental Protection to the Antarctic Treaty* 1991

⁴²⁴ Francioni, F. *Supra*, fn 443, 60

⁴²⁵ Article VI, *Antarctic Treaty* 1959

For a krill harvesting ban to be effective, krill must be protected in all areas of the Southern Ocean. However, any regulatory regime or conservation instrument must bind all parties on the high seas to prove effective and this is one of the major legal weaknesses of current instruments that must be resolved. As previously mentioned, the UN General Assembly is now making efforts towards strengthening international instruments to combat IUU fishing. This provides an opportunity for the introduction of stronger legal measures to curb IUU fishing on the high seas.

The Madrid Protocol appears, however, to be consistent with some level of krill fishing in Antarctica.⁴²⁶ Although krill fishing does have an adverse impact on the environment, engaging in such fishing is, arguably, not at odds with the Protocol provided that its harmful effects on krill and dependent species are limited.⁴²⁷ However, permitting a change up to a point where it threatens the existence of a species would not be in accordance with the Protocol's objective of protecting the Antarctic environment and ecosystem.⁴²⁸ A complete harvesting ban is crucial so that dependent species are not threatened by krill fishing, particularly localised predator populations.

⁴²⁶ Article 3(2)(a) of the Protocol states that activities should be conducted to "limit" adverse impacts on the environment. This suggests that activities adversely affecting the environment can be conducted so long as measures are taken to limit the impact.

⁴²⁷ Article 3(2)(b)(iv) also aims to avoid "detrimental" changes to the abundance of species. Krill fishing may result in changes to populations of species, however, if they are not "detrimental" then krill fishing may not conflict with the Protocol. "Detrimental" change is not defined in the Protocol. One interpretation would be that change is detrimental if it threatens the future viability of the species.

⁴²⁸ Article 2(2) of Annex 1 does permit activities that, after an Environmental Impact Assessment, are shown to have more than a "minor or transitory" impact. However, if such an impact is possible then appropriate procedures, possibly including monitoring, must be put into place to verify the impact of the activity. The requirement for special procedures to be put into place once an activity has more than a "minor or transitory impact" may suggest that the Protocol gives special status to such activities because of the danger that they may infringe the Protocol's conservation objectives. This requirement could aid in the interpretation of other sections of the Protocol. The special status given to activities that are more than "minor or transitory" may imply that activities having more than a "minor or transitory" impact will be "detrimental". If so, a "detrimental change" would ensure from any krill fishing that resulted in more than a "transitory" period being necessary to restore stocks of krill or dependent species. Alternatively, "detrimental" change may refer to a "significant" change such as a large decrease in populations that did not affect species' viability. Any change that took a long period of time to reverse in order to restore population numbers could also come within such an interpretation. Precautionary catch limits may be a means of allowing krill fishing that does not conflict with the Protocol if these limits prevent "detrimental" changes to krill and dependent species and "limit" the adverse impacts of fishing. The Madrid Protocol also requires that, in conducting and planning activities, priority be given to scientific research and preserving the value of Antarctic as an area for the conduct of such research (Article 3(3)). "Priority" to scientific research suggests that other activities in Antarctica are permitted but they must be subordinate to scientific programmes (Watts, A. 1992. *International Law and the Antarctic Treaty System*. Grotius Publications: Cambridge at 280). Krill fishing is obviously an activity that is primarily commercial, rather than scientific, in nature. However, this particular section does not prevent such activities taking place. Provided that krill fishing does not interfere with scientific research and "priority" is given to such research, then fishing will not conflict with this section of the Protocol.

The Madrid Protocol's obligations do not derogate from rights and obligations in other international instruments under the Antarctic Treaty System.⁴²⁹ The use of marine resources could be included in the definition of such "rights".⁴³⁰ The consultative party meeting noted that the Protocol will not derogate from rights and obligations under CCAMLR.⁴³¹ The Preamble to the Madrid Protocol also reaffirms the conservation principles of CCAMLR.⁴³² As such, CCAMLR's notion of rational commercial exploitation is preserved under the Protocol. Krill can still be exploited, despite any potential ecosystem effects that conflict with the Protocol's conservation objectives. This is a major legal weakness of the Protocol that must be resolved for a total krill fishing ban to be effectively introduced. CCAMLR's exploitation objectives should not be used as a barrier to a ban which would protect a pivotal part of the Antarctic ecosystem.

Parties to the Protocol are under an obligation to cooperate with parties to other international instruments to ensure that the objectives of the Protocol are achieved and to avoid inconsistency between the implementation of those instruments and the Protocol.⁴³³ Parties also have an obligation to take appropriate measures to comply with the Protocol.⁴³⁴ Although the Madrid Protocol is subordinate to CCAMLR, the two instruments are not fully consistent. The Madrid Protocol is aimed at comprehensive protection by avoiding detrimental changes to species populations whereas CCAMLR allows species to be commercially exploited, and even significantly depleted, so long as the species will recover. Parties are under an obligation to resolve any potential inconsistencies between these instruments.

The Protocol also designates Antarctica as a natural reserve, devoted to peace and science.⁴³⁵ This provision implies that all activities within the Antarctic Treaty zone should be conducted and managed in conformance with the Protocol.⁴³⁶ The provision places another obligation on parties to act in a manner consistent with the Protocol. Although the Protocol is subordinate to CCAMLR, this thesis submits that such provisions imply that parties still need to avoid acting inconsistently with the Protocol's provisions. A complete krill fishing ban would facilitate the preservation of krill, their dependent species and the whole Antarctic ecosystem because of krill's pivotal role in the ecosystem.

⁴²⁹ Article 4, *Madrid Protocol on Environmental Protection to the Antarctic Treaty* 1991

⁴³⁰ Francioni, F. *Supra*, fn 443, 56

⁴³¹ *Final Act of the 11th Antarctic Treaty Special Consultative Meeting*, Madrid, 1991

⁴³² *Madrid Protocol on Environmental Protection to the Antarctic Treaty* 1991

⁴³³ Article 5, *Madrid Protocol on Environmental Protection to the Antarctic Treaty* 1991

⁴³⁴ Article 13, *Madrid Protocol on Environmental Protection to the Antarctic Treaty* 1991

⁴³⁵ *Ibid*

⁴³⁶ Cordonnery, L. 1997. Area Protection and Management in Antarctica: A Proposed Strategy for the Implementation of Annex V of the Madrid Protocol Based on Information Management. *Environmental and Planning Law Journal*, February: 38-51 at 38

CCAMLR allows for decreases in population size but not to levels below those ensuring stable recruitment. Stable recruitment does not allow the population to fall below a level close to one ensuring the greatest net annual increment.⁴³⁷ Depletion that is potentially reversible over two or three decades is permitted.⁴³⁸ The permissibility of such depletion may not be entirely compatible with the Madrid Protocol. Population decreases of such magnitude would be prohibited as “detrimental changes” to krill abundance. Such depletion would also have a serious effect on the whole Antarctic ecosystem and may not be consistent with the Protocol’s goal of conserving the ecosystem.

The Protocol also prohibits such changes affecting distribution of species. If localised krill fishing does have an affect on localised predator populations, then rational exploitation of such stocks will also conflict with the Protocol because the distribution of species will be affected.⁴³⁹ The obligation to comply with the Protocol and to resolve inconsistency between the Protocol and other instruments should be the impetus for changes to CCAMLR. The Convention should be more consistent with the Protocol. Krill’s vital role as the linchpin of the Antarctic ecosystem should give it complete protection from fishing. Only a comprehensive krill fishing ban will be sufficient to ensure that the Protocol’s goal of protecting the Antarctic ecosystem is met. CCAMLR currently permits a species to be significantly depleted, provided that it can recover in several decades. The likely detrimental effects to the ecosystem from depletion of krill should warrant the total protection of the species. A complete krill fishing ban will allow the Madrid Protocol’s conservation objectives to be fulfilled, whilst still allowing sustainable exploitation of less vital species under CCAMLR. Accordingly, this thesis submits that a moratorium on krill fishing could be introduced under the current CCAMLR system whilst conforming with the objectives of both CCAMLR and the Madrid Protocol.

The Madrid Protocol is the first international instrument that outlines a comprehensive system binding all human activity beyond the bounds of national jurisdiction.⁴⁴⁰ Some environmentalists see the Protocol as an enormous move towards a comprehensive environmental management regime in Antarctica.⁴⁴¹

⁴³⁷ Article II(3)(a), *CCAMLR*

⁴³⁸ Article II(3)(c), *CCAMLR*

⁴³⁹ This may not pose a problem if CCAMLR’s new regime for local fisheries is effective. As previously discussed, there is also uncertainty as to whether localized krill fishing does affect predator populations.

⁴⁴⁰ Francioni, F. *Supra*, fn 443, 51

⁴⁴¹ McCulloch, R.R. 1992. Protocol on Environmental Protection to the Antarctic Treaty. *Georgia Journal of International and Comparative Law*, Vol 22: 211-232 at 211

The core of the Madrid Protocol is the consolidation of previous environmental measures into one instrument under the Antarctic Treaty.⁴⁴² However, the Protocol still fails to provide a truly comprehensive “stand-alone” legal regime. Article 4(1) of the Protocol states that it merely supplements the Antarctic Treaty and does not modify or amend the Treaty. The Protocol was therefore intended to maintain the existing system while supplementing it with a regime that takes a major step towards a comprehensive system of protection.⁴⁴³ The comprehensive conservation principles of the Protocol are, however, diluted by their subordination to other instruments such as CCAMLR. Parties have an obligation to ensure consistency between these instruments and to fulfil the Protocol’s objectives. However, the Protocol really needs to have dominance over these instruments to offer truly comprehensive protection to Antarctica’s marine ecosystem and krill. Only with a single unified and legally strong system can the international community hope to protect krill and other Antarctic species from overexploitation. The UN General Assembly resolution mentioned above may provide a catalyst to strengthening instruments like the Protocol in order to combat IUU fishing.

Marine “rights” cannot be regulated under the Protocol on more restrictive terms than other instruments because of the existence of Article 4. This impossibility is an inappropriate restriction of the Protocol’s scope.⁴⁴⁴ If these rights were inconsistent with the wider need to effectively protect Antarctica’s environment, then it should be possible to curtail them through the Madrid Protocol’s system of annexes.⁴⁴⁵ Rights allowing commercial exploitation of krill conflict with the conservation goals of the Protocol by threatening the Antarctic ecosystem. Because such rights are inconsistent with the protection of Antarctica, it should be possible to restrict them through the Protocol’s annexes. Such a system would give the Protocol a form that is capable of ongoing revision and expansion in order to more effectively respond to new threats to the Antarctic environment.⁴⁴⁶ A strengthening of the current legal regime would make any future krill moratorium or local fishing ban more effective. An effective ban is crucial because of the likely expansion of krill industry and the consequent threats that IUU fishing would pose if a ban were introduced.

⁴⁴² Joyner, C.C. 1992. *Antarctica and the Law of the Sea*. Martinus Nijhoff Publishers: London at 273

⁴⁴³ Blay, S.K.N. *Supra*, fn 390, 388

⁴⁴⁴ Francioni, F. *Supra*, fn 443, 56

⁴⁴⁵ *Ibid*

⁴⁴⁶ *Ibid*

A more appropriate formulation could have simply required consistency between the Protocol and the Antarctic Treaty itself, rather than subordinating the Protocol to other instruments such as CCAMLR.⁴⁴⁷ The Madrid Protocol would then have the potential to introduce more restrictive environmental mechanisms than exist under current Antarctic instruments.

Comprehensive measures protecting the marine environment, including krill, could have been introduced under the Protocol's annex system.⁴⁴⁸ Regional management regimes will make it easier to apply the integrated ecosystem and coastal zone management advocated by the United Nations Conference on Environment and Development UNCED's 21st century blueprint action plan, Rio de Janeiro ("Agenda 21").⁴⁴⁹ The Madrid Protocol adopts a similar approach⁴⁵⁰ making it an appropriate method of conserving krill and the marine environment.

The effectiveness of the Madrid Protocol in protecting krill is dependent on the enforcement mechanisms that underpin it. The Protocol allows observer inspections, but leaves them up to the Antarctic Treaty Parties.⁴⁵¹ Leaving inspection to the Parties has the disadvantage of allowing them to determine whether they have complied. A weakening of standards or breaches of the Protocol could be the result. Some of the Parties that have ratified the Protocol were found by Greenpeace in the mid-1990s to have permitted major breaches of the Protocol.⁴⁵² This illustrates the result of poor inspection procedures in the past and highlights some of the previous deficiencies of the regulatory regime. An effective inspection system is vital if a complete krill fishing ban is to be successful. Even the maintenance of current precautionary catch limits requires an effective inspection system if they are to prove effective. A later Chapter of this thesis will discuss improvements in current enforcement and inspection mechanisms that, if

⁴⁴⁷ *Ibid*, 57

⁴⁴⁸ These annexes form a major part of the Protocol. Article 9 allows annexes to be adopted in accordance with Article IX of the Antarctic Treaty. As a result, only Antarctic Treaty Consultative Parties can decide whether further annexes should be adopted. Furthermore, there must be consensus in such decisions and those changes must be accepted by Contracting states, which include both Consultative and non-Consultative parties. Adoption of a new annex could therefore prove difficult, however, if such an annex was introduced it could provide a new restrictive regional management regime to protect krill.

⁴⁴⁹ Birnie, P. and Boyle, A. *Supra*, fn 233, 355. Agenda 21 will be discussed in the subsequent chapter.

⁴⁵⁰ *Ibid*, 355

⁴⁵¹ Article 14 states that the ATCPs "shall arrange, individually or collectively, for inspections by observers to be made". However, there is no mention of any specific method of carrying out such inspections. This leaves the provision open to interpretation and could result in different (and possibly even extremely ineffective) inspection systems being adopted in the legislation of different States. Such a system would provide inadequate protection for the Antarctic krill. The Antarctic and Southern Ocean Coalition (ASOC) (A coalition of non-governmental organizations.) suggested implementing an environmental monitoring group to conduct all inspections to ensure compliance with the Protocol (Barnes, J.N. and Webb, C.W. 1996. Implementing the Protocol: State Practice and the Role of Non-Governmental Organisations. in *International Law for Antarctica*. Edited by Francioni, F. and Scovazzi, T. Kluwer Law International: London at 500). A monitoring group would have the advantage of standardising inspections so that a uniform standard for implementing the Protocol was in place (Barnes, J.N. and Webb, C.W. 1996. *Supra*, 500). Such a group could also be made independent from the ATCPs to ensure full implementation of the Protocol.

⁴⁵² Barnes, J.N. and Webb, C.W. 1996. *Supra*, fn 477, 500

introduced more widely, would aid in combating IUU fishing and making an Antarctic krill moratorium effective.

The Protocol contains some provisions aimed at securing the compliance of non-parties with its objectives.⁴⁵³ The provisions may be an attempt to persuade third parties to abide by the Protocol's objectives. However, there is no direct suggestion in any section that third parties are bound by the Protocol.⁴⁵⁴ This is consistent with the principle that treaties do not bind third parties without their consent.⁴⁵⁵ However, the conservation objectives of the Protocol will not be fully implemented if third parties are not bound by it. Third parties would be free to flout those objectives and so the Protocol would not be able to offer a legally effective fishing ban to Antarctic krill if it was adopted as the main instrument for conserving marine Antarctica. Current legal instruments must be strengthened to remove such flaws because of complete harvesting ban will only be effective if all states are bound by it. If a large proportion of influential States fully implemented the Protocol there will, however, be some pressure on non-parties to comply with its objectives. Furthermore, if enough states adopted and complied with the Protocol over a sufficient period of time, then its principles could enter into customary international law. Treaties that become customary international law can bind third parties without their consent.⁴⁵⁶ To fully conserve krill and their dependent species, third parties must comply with any conservation principles espoused by the Protocol or any other international instrument offering protection. The likely expansion of krill fishing industry should necessitate moves towards strengthening such legal deficiencies in the Protocol. As discussed, the UN General Assembly has supported in a recent resolution the strengthening of international instruments in order to combat IUU fishing.

⁴⁵³ Article 13(5) states that ATCPs shall draw attention to non-parties of any activity that affects implementation of the principles and objectives of the Protocol. Article 13(2) goes further stating that parties "shall exert appropriate efforts...to the end that no one engages in any activity contrary to the Protocol".

⁴⁵⁴ Watts, A. *Supra*, fn 454, 191

⁴⁵⁵ Article 34 *Vienna Convention on the Law of Treaties 1969*

⁴⁵⁶ Article 38 *Vienna Convention on the Law of Treaties 1969*

One of the major gaps in the Madrid Protocol is the lack of civil or international liability for damage to the environment.⁴⁵⁷ Provisions detailing liability and compensation for damage are necessary to ensure that the Protocol is effective as a tool for environmental protection.⁴⁵⁸ Compliance can only be achieved if States and their nationals are held responsible for breaches of the Protocol. Major breaches of the Protocol are likely if State governments and their nationals are not punished for violation of the Protocol's conservation objectives. If the Protocol were given the main responsibility for protecting the marine environment and krill, then an adequate liability mechanism would be needed to fully ensure that States and their fishing vessels complied with its provisions.⁴⁵⁹ National sanctions have been used as an effective mechanism against individuals engaged in IUU fishing.⁴⁶⁰ The introduction of some type of liability clause into the Protocol would provide a deterrent to States and their nationals against flouting its provisions. This would be particularly important if the Protocol were to be used as the legal instrument justifying the introduction of a krill moratorium so that there would be a punishment for violating such a ban.

The Madrid Protocol also states that activities in the Treaty area should be planned and conducted "on the basis of information sufficient to allow prior assessments of, and informed judgments about, their possible impacts on the Antarctic environment and dependent and associated ecosystems and on the value of the Antarctic for the conduct of scientific research".⁴⁶¹ The Protocol's requirement to have sufficient information on the impact of activities, combined with the requirements for monitoring of activities, provides one mechanism to protect krill and their dependent species. These mechanisms are aimed at ensuring that harmful impacts are gauged before fishing activities take place and any ongoing activities should be extensively monitored to determine their impact.

⁴⁵⁷ Francioni, F. *Supra*, fn 443, 70. Article 16 states that "Parties undertake to elaborate rules and procedures relating to liability for damage", but those rules have yet to be formulated.

⁴⁵⁸ Thornton, B.S. *Supra*, fn 438, 97

⁴⁵⁹ Discussions on introducing a liability annex to the Protocol have already taken place (*Supra*, fn 266, 97). If these discussions eventually culminate in an adequate liability mechanism, then Parties would have a much greater incentive to comply with the Protocol.

⁴⁶⁰ See the discussion on national legislation later in this thesis.

⁴⁶¹ Article 3(2)(c), *Madrid Protocol on Environmental Protection to the Antarctic Treaty* 1991. These judgments need to look at the scope, area, duration and intensity of any potential activities (Article 3(2)(c)(i). They must also consider the cumulative impacts of the activity with other activities in the Treaty area. A determination of whether the activity will detrimentally affect other activities in the area is also required (Article 3(2)(c)(ii) and (iii)). The capacity to monitor key environmental parameters and ecosystem components in order to identify and to provide early warning of any adverse effects of the activity is also a consideration (Article 3(2)(c)(v)). Regular and effective monitoring of activities is to take place to allow assessment of the impacts of ongoing activities (Article 3(2)(d)).

The Treaty also restricts the conduct of activities having more than a minor or transitory effect on the environment.⁴⁶² However, the Protocol does not specify what standard is to be used to determine such an effect.⁴⁶³ Different nations may adopt different standards and the absence of a single measure may prevent the Protocol from being effective.⁴⁶⁴ Krill and their dependent species can never be adequately protected by a Protocol that allows each State to effectively determine whether a particular level of fishing has more than a minor or transitory impact. Dispute resolution procedures contained in the Protocol can offer a solution to this problem.⁴⁶⁵ Allowing independent decisions through the ICJ is a way of resolving interpretative difficulties. Independent settlement by the ICJ is not compulsory.⁴⁶⁶ However, more detailed or clearer definitions in the Protocol of terms such as “minor or transitory impact” would prevent disputes over interpretation occurring at all. Such disputes can also be reduced if an independent body makes decisions concerning whether a particular activity can proceed.⁴⁶⁷ These interpretative difficulties provide further examples of legal areas that could be strengthened so that the Protocol and other international conservation instruments can adequately regulate krill fishing. The chances of a krill fishing ban being successful will be enhanced if the current legal regime is strengthened, in accordance with the recent pronouncements of the UN General Assembly resolutions.

⁴⁶² Annex 1, Article 2, *Madrid Protocol on Environmental Protection to the Antarctic Treaty* 1991

⁴⁶³ Blay, S.K.N. *Supra*, fn 390, 392

⁴⁶⁴ *Ibid*

⁴⁶⁵ Article 18 requires parties on request to consult among themselves with a view to resolving any dispute either by negotiation, mediation, conciliation, arbitration, judicial settlement or other peaceful means to which the parties agree. Article 19 gives parties to the Protocol a choice to settle disputes through the International Court of Justice or the Arbitral Tribunal by making a written declaration.

⁴⁶⁶ If the parties cannot agree on a settlement mechanism, disputes can only be settled by the Arbitral Tribunal (Article 19(5)). Unresolved disputes will be sent to that Tribunal on request if they are not resolved in 12 months (Article 20(1)). Including these dispute resolution mechanisms may reduce problems of interpreting the Protocol.

⁴⁶⁷ The efficacy of the Protocol depends on who makes the decision to proceed with a particular activity. Article 4 of Annex 1 states that “any decision on whether a proposed activity...should proceed...shall be based on the Comprehensive Environmental Evaluation as well as other relevant considerations”. The Article could potentially imply that consultative meetings can determine if an activity proceeds (Blay, S.K.N. *Supra*, fn 390, 392). The passage “any decision on whether a proposed activity...should proceed” could also mean that a nation that suggests an activity makes the decision (Blay, S.K.N. *Supra*, fn 390, 392). Article 3(5) provides support for such an interpretation by stating that “no **final decision** shall be taken to proceed...unless there has been an opportunity for consideration...by the Antarctic Treaty Consultative Meeting” (Blay, S.K.N. *Supra*, fn 390, 392). Consideration by the Consultative Meeting would involve a decision prior to consideration of the Comprehensive Environmental Evaluation, suggesting that Article 3(5)’s “final decision” is the one taken by the nation suggesting the activity. This may mean that a Consultative Meeting cannot veto an activity having more than a minor or transitory impact. If the Protocol’s conservation goals were adopted as the main marine protection regime then protection of krill could truly be ensured only if the Consultative Meetings or another independent body had the final decision.

Despite some areas which could be strengthened, the Madrid Protocol outlines a comprehensive set of principles aimed at protecting Antarctica and its dependent ecosystems. Currently CCAMLR is the main instrument governing marine Antarctica and krill. The protection of krill was a significant reason for CCAMLR's creation. The potential for depletion of krill stocks and the possible consequences on predators was seen as a serious possibility at the inception of the Convention.⁴⁶⁸ The increased krill fishing in the 1970s was also the impetus for guidelines to be drafted in the Second, Fifth and Ninth Consultative Party meetings.⁴⁶⁹ Brian Roberts, a member of the UK delegations to Antarctic Treaty Consultative meetings, believed that CCAMLR's objective should be the prevention of a krill fishing industry that would follow a similar disastrous pattern to the whaling industry.⁴⁷⁰ Nicol argues that the omission from the convention of a specific reference to krill "is probably a legal nicety".⁴⁷¹ However, Croxall contends that the Convention was not concerned with any particular species.⁴⁷² Conservation measures for krill were not adopted until 1991, which highlights the difficulties with the current system.⁴⁷³ CCAMLR cannot afford to wait before acting in the future because of the likely expansion of krill industry.

If krill protection was one of the main objectives of CCAMLR, then surely CCAMLR should be made more consistent with the Madrid Protocol by introducing a comprehensive ban on krill fishing. Although CCAMLR is subordinated to the Madrid Protocol, its objectives concerning comprehensive conservation of Antarctica could be more effectively achieved if krill were completely protected by a harvesting ban. Krill's vital role in the Antarctic ecosystem means that a ban on fishing would help to better protect the ecosystem and krill dependent species. Such an approach would potentially reduce detrimental changes to the Antarctic ecosystem and would still allow the continued commercial exploitation of other species under CCAMLR. The application of a strong form of the precautionary approach justifies a krill fishing moratorium or localised bans because of the scientific uncertainty surrounding krill and its interaction with other Antarctic species. Any harvesting ban could be made more effective if the current legal regime is strengthened, a goal which the UN General Assembly has advocated in a 2004 resolution.

⁴⁶⁸ Overholt, D.H. *Supra*, fn 392, 239

⁴⁶⁹ Couratier, J. *Supra*, fn 9, 144

⁴⁷⁰ Heap, J.A. *Supra*, fn 37, 44-47

⁴⁷¹ Nicol, S. 1992. Management of krill fishery: was CCAMLR slow to act? *Polar Record*, Vol 28: 155-157 at 155

⁴⁷² Croxall, J.P, Everson, I. and Miller, D.G.M. *Supra*, fn 49

⁴⁷³ Baird, R. *Supra*, fn 25, 175

V. Law of the Sea and Sovereignty

The first United Nations Conference on the Law of the Sea (UNCLOS 1) adopted agreements governing the world's maritime areas in 1958, during which time the Antarctic Treaty was in the process of formation.⁴⁷⁴ Since that time changes in fishing patterns have increased interest in the Southern Ocean and this has led to changes in the old Antarctic regime.⁴⁷⁵ There were several agreements at the third United Nations Conference (UNCLOS III) concerning coastal state jurisdiction.⁴⁷⁶ This conference culminated in the formulation of a new Law of the Sea Convention (the 1982 Convention).⁴⁷⁷ The new Law of the Sea Convention contains some provisions concerning marine exploitation and conservation that can apply to the Antarctic krill and its dependent species.

Sovereignty

The Law of the Sea Convention can offer some protection for krill through its concepts of territorial seas and exclusive economic zones. The Law of the Sea Convention recognises a territorial sea, over which an adjacent coastal state has sovereignty, extends to a distance of 12 nautical miles from the baseline (usually the low tide mark).⁴⁷⁸ Article 2 recognises that states have sovereignty over the sea, its air space, bed and subsoil. Under Article 33, a contiguous zone is recognised in which states can exercise control to prevent customs, immigration etc violations and to punish infringements that have taken place within its territorial sea. The contiguous zone can extend up to 24 nautical miles from the baseline. The Convention also provides for an Exclusive Economic Zone (EEZ)⁴⁷⁹ adjacent and beyond the territorial sea under which the rights and jurisdiction of the coastal state and other states are governed by the Law of the Sea Convention. The EEZ can extend up to 200 miles from the territorial sea baselines.⁴⁸⁰ The Law of the Sea Convention recognises a coastal state's sovereign rights over all natural resources and other activities involving economic exploitation within that zone.⁴⁸¹

⁴⁷⁴ Peterson, M.J. *Supra*, fn 126, 139

⁴⁷⁵ *Ibid*

⁴⁷⁶ *Ibid*

⁴⁷⁷ Signature for this new Convention closed in 1984. One hundred and fifty-six countries signed the Convention at that time (1985. Antarctic Resource Jurisdiction and the Law of the Sea: A Question of Compromise. *Brooklyn Journal of International Law*, Vol XI(1): 45-78 at 60). Four of the Antarctic Treaty parties did not sign the Law of the Sea Convention at the time (Oxman, B.H. 1986. Antarctica and the New Law of the Sea. *Cornell International Law Journal*, Vol 19: 211-247 at 218).

⁴⁷⁸ Articles 2 and 3, *United Nations Convention on the Law of the Sea 1982*

⁴⁷⁹ Article 55, *United Nations Convention on the Law of the Sea 1982*

⁴⁸⁰ Article 57, *United Nations Convention on the Law of the Sea 1982*

⁴⁸¹ Kwiatkowska, B. 1989. *The 200 Mile Exclusive Economic Zone in the New Law of the Sea*. Martinus Nijhoff Publishers: London. at 4

Article 77 of the Law of the Sea Convention recognises a coastal state's sovereign rights over its continental shelf, including its right to exploit natural resources. The continental shelf comprises the seabed and subsoil of the submarine areas that extend beyond the territorial sea of a state throughout the natural prolongation of its land territory to the outer edge of the continental margin or to 200 nautical miles from the baseline.⁴⁸²

EEZs became extremely popular with states proclaiming them even before UNCLOS III had finished drafting a formal instrument.⁴⁸³ Depletion of world fish stocks meant that fishing fleets needed new sources of fish and governments became more protective of their coastal fishing resources.⁴⁸⁴

The existence of territorial seas and EEZs in Antarctica depends on the validity of Antarctic claims of sovereignty by some parties to the Antarctic Treaty. Argentina, Australia, Chile, France, New Zealand, Norway and the UK have made claims over parts of Antarctica's mainland.⁴⁸⁵ As will be discussed further in the following paragraph, these claims and the potential Law of the Sea effects flowing from them are frozen by the provisions of the Antarctic Treaty from being expanded, but the existence of them is not denied. The non-application of many international conservation instruments to high seas areas is one of the major deficiencies of current instruments. The existence of territorial seas and EEZs in Antarctica would provide a means of applying a comprehensive krill harvesting ban to a greater number of states through the exercise of sovereign rights within these zones.

⁴⁸² Article 76, *United Nations Convention on the Law of the Sea* 1982

⁴⁸³ Twelve nations had claimed such zones in 1975 and by 1978 there were 54 nations claiming EEZs (Peterson, M.J. *Supra*, fn 126, 152).

⁴⁸⁴ Peterson, M.J. *Supra*, fn 126, 151

⁴⁸⁵ *Ibid*, 139. Argentina, Chile and the UK have made overlapping territorial claims (1985. Antarctic Resource Jurisdiction and the Law of the Sea: A Question of Compromise. *Brooklyn Journal of International Law*, Vol XI(1): 45-78 at 56).

Article IV of the Antarctic Treaty states that “no new claim, or enlargement of an existing claim, to territorial sovereignty in Antarctica shall be asserted while the present Treaty is in force”. There are disagreements as to whether declaring an EEZ in Antarctica would constitute an impermissible increase of an existing claim under the Antarctic Treaty.⁴⁸⁶ An EEZ or fisheries zone is not an inherent right of coastal sovereignty. There must be a positive act declaring such zones.⁴⁸⁷ Declaring an EEZ in Antarctica may therefore breach Article IV as an enlargement of an existing claim or assertion of a new claim.⁴⁸⁸ If such EEZs were not proclaimed when the Antarctic Treaty came into force they would not constitute part of the existing claim. Some claimant states and commentators, however, believe that Article IV of the Antarctic Treaty does not prohibit EEZs and that they can be declared without breaching the Treaty because EEZs do not represent an enlargement of an existing claim or a new claim.⁴⁸⁹ The legality of such EEZs would allow the sovereign states to enforce a krill fishing ban within them against states that would otherwise be able to claim freedom of the high seas as a justification for flouting such a ban.

Offshore areas, arguably, come within Article IV despite the reference to “territorial sovereignty” in that provision.⁴⁹⁰ Maritime jurisdiction is based on the exercise of sovereignty over land.⁴⁹¹ It is submitted that Article IV applies to territorial seas and EEZs because of the reliance of those zones on a land based claim for sovereign rights to exist within them.⁴⁹² Maritime sovereignty is arguably a mere extension of territorial sovereignty.⁴⁹³ As such, the emergence or claim of maritime sovereignty after the Treaty came into effect may be prohibited.⁴⁹⁴ This would include the declaration of an EEZ. Any existing sovereign rights in the seas surrounding Antarctica,

⁴⁸⁶ Koch, M. *Supra*, fn 164, 121

⁴⁸⁷ Harry, R.L. 1981. The Antarctic Regime and the Law of the Sea Convention: An Australian View. *Virginia Journal of International Law*, Vol 21(4): 727-744 at 733

⁴⁸⁸ Rothwell, D.R. *Supra*, fn 388, 162

⁴⁸⁹ Conforti, B. 1986. Territorial Claims in Antarctica: A Modern Way to Deal with an Old Problem. *Cornell International Law Journal*, Vol 19: 249-258 at 250. Declaration of an EEZ may not come within the ambit of Article IV. Maritime claims may not have a “territorial” content and therefore may not be governed by Article IV(2) of the Treaty (Vicuna, F.O. 1983. The application of the law of the sea to the Antarctic continent. in *Antarctic Resources Policy*. edited by Vicuna, F.O. Press Syndicate of the University of Cambridge: Melbourne. at 245). The type of sovereignty given by an EEZ may also not equate to “territorial sovereignty” (Rothwell, D.R. *Supra*, fn 388, 163). EEZs give sovereignty over resources in a maritime area, not sovereignty over the entire area. Maritime claims may simply give jurisdiction over maritime areas (Oxman, B.H. *Supra*, fn 503, 225). An EEZ declaration may therefore not be a claim of sovereignty governed by Article IV (Harry, R.L. *Supra*, fn 513, 733). This would mean that proclaiming an EEZ around Antarctica would not be an enlargement of any existing claim of sovereignty or a new claim.

⁴⁹⁰ Oxman, B.H. *Supra*, fn 503, 226

⁴⁹¹ Peterson, M.J. *Supra*, fn 126, 141

⁴⁹² Oxman, B.H. *Supra*, fn 503, 225

⁴⁹³ *Ibid*, 225

⁴⁹⁴ *Ibid*, 226

such as the proclamation of an EEZ before the Treaty came into effect, would not breach Article IV.

However, the Antarctic Treaty does not affect existing territorial claims OR the consequences of such existing sovereignty.⁴⁹⁵ Claimant states have asserted that their land claims give them sovereignty over adjacent maritime areas pursuant to the Law of the Sea.⁴⁹⁶ If Law of the Sea rights were already attached to the original claims, then the exercise of sovereignty over such areas would not constitute a new claim or an enlargement of an existing one. If such claims are valid, then the claimant states can assert sovereignty in these areas by enforcing a krill ban that they would have no power to enforce on the high seas.

However, the concept of an EEZ was not recognised in international law before 1961.⁴⁹⁷ The Antarctic Treaty was concluded before this time and, accordingly, the concept of an EEZ was not present when the Treaty came into force. As discussed, all sovereign claims were frozen when the Treaty came into force. Because EEZs did not exist in international law when the sovereign claims were frozen, arguably, they may not attach to the original land claims that existed at that time. An alternative argument is that the original territorial claims that existed at the time of freezing such claims also had attached to them *potential* sovereignty rights that might only become apparent under future developments in international law.⁴⁹⁸ Under this interpretation, EEZs would be attached to the original claims because they were a *potential* sovereign right that crystallised under future international law developments. However, the requirement to declare an EEZ before it comes into existence, arguably, means that even as a potential sovereign right, EEZs did not attach to the original claims.

The proclamation requirement suggests that something new is being created, rather an existing right arising from the land claims. The proclamation can arguably be seen as simply a formal recognition of a right that is already attached to the land claims and a declaration is merely required to “activate” the rights associated with an EEZ. If EEZs were not attached as a potential right to the original claims, then it is likely that the declaration of an EEZ would breach Article IV of the Antarctic Treaty. This reduces the likelihood of states using EEZs as a legal basis for enforcing a complete krill ban, further highlighting the need to vastly strengthen the current legal regime.

⁴⁹⁵ Harry, R.L. *Supra*, fn 513, 734

⁴⁹⁶ Zegers, F. 1983. The Canberra Convention: objectives and political aspects of its negotiation. in *Antarctic Resources Policy*. edited by Vicuna, F.O. Press Syndicate of the University of Cambridge: Melbourne. at 152

⁴⁹⁷ Rothwell, D.R. *Supra*, fn 388, 162

⁴⁹⁸ Oxman, B.H. *Supra*, fn 503, 226

There is uncertainty as to whether “coastal states” even exist in Antarctica because of the doubt surrounding the Antarctic land claims.⁴⁹⁹ Because any maritime claim is dependent on the land claim, this uncertainty prevents claimant’s exercising sovereignty and Law of the Sea rights over adjacent seas. However, nothing in international law requires the formal recognition of coastal state sovereignty before sovereignty over the sea can be declared.⁵⁰⁰ Antarctic claimants can therefore make maritime claims despite the legal questions surrounding the land claims.⁵⁰¹ Although it should be noted, that actual sovereignty must eventually be found to exist over the adjacent land for the maritime sovereign claim to be valid. Even if exercising jurisdiction over the adjacent seas did not breach Article IV, such an act would still be an implied recognition of continental claims and this would be in violation of the Treaty’s prohibition on new or enlarged claims.⁵⁰² If claimants cannot legally assert sovereignty over adjacent seas then some other legally binding mechanism must be introduced to regulate third parties on high seas Antarctica.

Even if EEZs are prohibited by the Antarctic Treaty as new or enlarged claims, this does not mean that territorial seas cannot be valid claims. Arguably, asserting a territorial sea does not breach Article IV because it is an inherent right of coastal nations.⁵⁰³ The territorial sea would automatically be attached to the original land claims and so would not constitute a new claim if sovereign rights were enforced within it. However, increasing an existing claim to a territorial sea would mean that sovereignty was exercised over a greater area and so this may constitute an enlargement of a claim under Article IV.⁵⁰⁴ Under the original Law of the Sea Convention, the territorial sea was 3 miles but under Article 3 of the new Convention it is 12 miles. States claiming this extension in Antarctica have, arguably, enlarged their claim because a 3 mile area would have attached to the original land claim. However, if the “rights” referred to in Article IV evolve with changes in international law, then the territorial sea rights attaching to the original land claim may have changed without breaching the provision. This would give the Antarctic claimants a potential 12 mile territorial sea which would provide a legal justification for asserting sovereignty against fishing vessels within the sea to enforce a krill fishing ban. Assertion of Antarctic territorial seas provides a legal justification to overcome the flaws with the traditional freedom of fishing on the high seas.

⁴⁹⁹ Rothwell, D.R. *Supra*, fn 388, 158

⁵⁰⁰ *Ibid*

⁵⁰¹ *Ibid*

⁵⁰² 1985. Antarctic Resource Jurisdiction and the Law of the Sea: A Question of Compromise. *Brooklyn Journal of International Law*, Vol XI(1): 45-78 at 69

⁵⁰³ Rothwell, D.R. *Supra*, fn 388, 160

⁵⁰⁴ *Ibid*

The Antarctic Treaty's application to maritime areas is also ambiguous because of the existence of Article VI. Article VI states that "nothing in the...Treaty shall prejudice or in any way affect the rights, or the exercise of the rights, of any State under international law with regard to the high seas within that area". "High seas" means all parts of the sea that are not included in the territorial sea or in the internal waters of a state under the old Law of the Sea.⁵⁰⁵ The Antarctic Treaty does not define the boundaries of the high seas so claimant states may view fishing within 200 miles of their Antarctic claims as an interference with their sovereignty.⁵⁰⁶ The provision also does not mention territorial seas or other coastal state jurisdiction. There is no reason to interpret the article as excluding from the Antarctic Treaty such areas that individual states can regulate by themselves.⁵⁰⁷ Arguably, these areas could come within the ambit of the Treaty by implication.⁵⁰⁸ If they do come within the Treaty, then Article IV can apply to them.⁵⁰⁹ There is also a potential argument that Article VI excludes maritime zones from the Treaty altogether.⁵¹⁰ If maritime areas are excluded from the Treaty, then potential EEZs and territorial seas would not be constrained by the prohibition on new or enlarged claims in Article IV. There is, however, ambiguity in the Treaty in respect of the reference to high seas rights in this provision.⁵¹¹ Such

⁵⁰⁵ Article 1, *Convention on the High Seas*

⁵⁰⁶ 1985. Antarctic Resource Jurisdiction and the Law of the Sea: A Question of Compromise. *Brooklyn Journal of International Law*, Vol XI(1): 45-78 at 56

⁵⁰⁷ Oxman, B.H. *Supra*, fn 503, 231

⁵⁰⁸ *Ibid*, 224

⁵⁰⁹ *Ibid*

⁵¹⁰ The reference to "high seas" prevents states exercising power that could not be exercised by a coastal state acting alone (Oxman, B.H. *Supra*, fn 503, 231). Reference to the high seas within the area in Article VI expressly includes them within the Treaty zone (Van Der Essen, A. 1983. The application of the law of the sea to the Antarctic continent. in *Antarctic Resources Policy*. edited by Vicuna, F.O. Press Syndicate of the University of Cambridge: Melbourne. at 233). However, it is not clear whether this express reference to "high seas" impliedly excludes the existence of territorial seas and EEZs within the Treaty zone. Under such an interpretation all areas within the Treaty zone would be high seas. The provision may also exclude maritime zones altogether from the Treaty area and simply recognise that the Treaty does not affect high seas rights, rather than making the Treaty applicable to the high seas. Article VI of the Antarctic Treaty states that the Treaty applies to "the area" south of 60 degrees "including all ice shelves". Arguably, the inclusion of these words could also implicitly exclude maritime areas from the Treaty zone (Van Der Essen, A. 1983. The application of the law of the sea to the Antarctic continent. in *Antarctic Resources Policy*. edited by Vicuna, F.O. Press Syndicate of the University of Cambridge: Melbourne. at 233).

⁵¹¹ The reference to high seas rights in Article VI raises issues concerning the definition of such "rights". The provision could mean that all high seas rights recognised in international law when the Treaty commenced remain in force during its term of operation. The provision could also mean high seas rights that exist at particular points in time during the Treaty's operation (Rothwell, D.R. *Supra*, fn 388, 157). If the second interpretation is valid, then parties may be bound by high seas rights in the new Law of the Sea Convention. Article VI also refers to rights "under international law" which may mean that these rights change as international law changes (Oxman, B.H. *Supra*, fn 503, 231). Such an interpretation would mean that the Treaty can apply to exploitation of natural resources. Ambiguity also surrounds the question of whether "high seas" in Article VI impliedly presupposes the existence of a territorial sea. If high seas are defined as areas beyond territorial seas or the internal waters of a state, then expressly recognising that high seas exist in Antarctica may also imply that territorial seas exist. Such an interpretation would give rise to internal inconsistencies with Article IV of the Treaty. Contradictions within Article VI may be a result of changes made during the drafting of the provision. (Van Der Essen, A. *Supra*, fn 536, 233). Article VI of the Antarctic Treaty's high seas exclusion arguably does not apply to areas that could potentially be seen as territorial sea under international law (Oxman, B.H. *Supra*, fn 503, 230)

ambiguity causes uncertainty as to the application of the Treaty. This further highlights the need to strengthen the legal side of the current regulatory system to provide better protection to krill and other Antarctic species in accordance with the UN General Assembly's recent resolution.

Activities to Assert Sovereignty

If declaration of an EEZ does constitute a prohibited new claim then Antarctic claimant parties cannot exercise control over krill fishing within the EEZ. Control over vessels within such EEZs would provide a means of enforcing a krill ban. Without universal application, a comprehensive harvesting ban cannot be effective. Even current precautionary catch limits will fail if all parties are not bound by them and there is no legal means of enforcing the limits against all states. Exercising control over a potential EEZ, arguably, amounts to a prohibited enlargement of a claim.⁵¹² Although claims under the Treaty system are not recognised, they are also not dismissed.⁵¹³ Article IV therefore does not negate maritime claims. A Treaty article freezing relations between states may not be able to stop states conducting activities to establish sovereignty.⁵¹⁴ In the *Eastern Greenland*⁵¹⁵ case, despite the existence of an agreement to freeze sovereignty claims, Denmark's activities to establish territorial sovereignty in Eastern Greenland were permissible.⁵¹⁶ This thesis submits that the analogous Article IV in the Antarctic Treaty is therefore unable to prevent claimants from conducting activities that would strengthen claims of sovereignty when the Treaty expires.⁵¹⁷ Despite the existence of Article IV, Antarctic Treaty parties can, arguably, exert fisheries control over possible EEZs in Antarctica's surrounding waters. Such control would provide a crucial means of enforcing a krill fishing ban or other conservation measures in order to establish the potential sovereignty of Antarctic claimants.

⁵¹² Peterson, M.J. *Supra*, fn 126, 153

⁵¹³ 1985. Antarctic Resource Jurisdiction and the Law of the Sea: A Question of Compromise. Brooklyn Journal of International Law, Vol XI(1): 45-78 at 59

⁵¹⁴ Parriott, T.J. Territorial Claims In Antarctica: Will the United States Be Left Out In the Cold? *Stanford Journal of International Law*, 67-121 at 93

⁵¹⁵ *Legal Status of Eastern Greenland (Norway v Denmark)* 1933 PCIJ

⁵¹⁶ Parriott, T.J. *Supra*, fn 540, 93

⁵¹⁷ *Ibid*

Other countries do not give much credence to the territorial assertions of Antarctic claimant nations.⁵¹⁸ Some countries do not recognise the sovereignty of Antarctic claimant states, which makes it difficult for their claims to form the basis for exercising rights over the adjacent maritime zones.⁵¹⁹ States with no land claim would not have accepted a 200 mile EEZ over maritime areas.⁵²⁰ Non-claimants would have been firmly opposed to any possible exercise of control over fishing in these areas.⁵²¹ Non-claimant states can simply regard the Southern Ocean as high seas.⁵²² This makes it difficult for claimant states to exercise control over fishing to enforce a krill harvesting ban in any EEZ adjacent to Antarctica. However, as mentioned previously, an uncertain land claim does not prevent the assertion of sovereignty over maritime areas. Furthermore, the freezing provisions of Article IV will not necessarily prevent parties carrying out activities to establish sovereignty. Exercising control over fishing in the Southern Ocean would help to establish maritime sovereignty whilst also providing protection for krill. However, proclamation of EEZs or EFZs by Antarctic claimant states could upset the balance of the Antarctic Treaty.⁵²³

There is also a question whether such control can be validly exercised against non-Antarctic Treaty parties who simply view all of the Southern Ocean as high seas. If control cannot be exercised against such parties, then this would give rise to the same problems with illegal, unreported and unregulated fishing that exist under CCAMLR. Non-Treaty nations can exploit resources freely because only parties to the Antarctic Treaty are bound by its provisions.⁵²⁴ If claimants can assert sovereignty over such states, they would be able to control fishing activities of the flag vessels of these nations. Strong universally binding measures must exist if krill are to be fully protected. A total fishing ban can only be successful if all parties are legally obliged to comply with it and a strong form of the precautionary approach would require all parties to abide by such a ban because of current scientific uncertainty.

⁵¹⁸ 1985. Antarctic Resource Jurisdiction and the Law of the Sea: A Question of Compromise. *Brooklyn Journal of International Law*, Vol XI(1): 45-78 at 58

⁵¹⁹ Oxman, B.H. *Supra*, fn 503, 222

⁵²⁰ Zegers, F. *Supra*, fn 522, 153

⁵²¹ Peterson, M.J. *Supra*, fn 126, 153

⁵²² *Ibid*, 141

⁵²³ Miller, D.G.M. *To Krill or Overkrill that is the Question: Sustainable Use of Antarctic Marine Living Resources*. 1-28 at 16

⁵²⁴ Parriott, T.J. *Supra*, fn 540, 95

Declaration of Sovereignty in Marine Antarctica

The existence of either territorial seas or Exclusive Economic Zones around Antarctica would provide significant protection for the Antarctic krill. A large proportion of krill harvesting areas in Antarctica are covered by potential 200 mile EEZs.⁵²⁵ Large concentrations of krill are found in the Ross Sea adjacent to the New Zealand claim and off Wilkes Land which is claimed by Australia.⁵²⁶ Territorial seas to 12 miles would also provide limited protection. There is a question of whether seasonal pack-ice and ice-shelves form part of the Antarctic continent.⁵²⁷ If they do, then Antarctic claimants could assert jurisdiction over a much wider area and provide greater protection to krill. The Law of the Sea Convention gives states sovereignty over their territorial seas and EEZs, in particular, giving them sovereign rights to exploit, conserve and manage living resources within the EEZ.⁵²⁸ This would give Antarctic claimants the right to manage krill resources in any EEZs surrounding Antarctica. Because large concentrations of krill are found in some of these areas, a ban enforced by claimants in these areas would give significant protection to krill. Such a ban could be justified by the precautionary approach and, as discussed, if the precautionary approach is or did become part of customary international law then there would be a legal justification for enforcement of such a ban within Antarctic EEZs.

Several Antarctic claimants have asserted sovereignty over some maritime areas adjacent to the Antarctic continent. Chile claimed a 200 mile economic zone in 1947 and asserted sovereignty over that area.⁵²⁹ Because this claim existed before the Antarctic Treaty came into effect it is not a "new" claim that is forbidden by Article IV. Claims over a territorial sea have been made by Argentina, Chile, Norway, and the UK in conjunction with their territorial claims.⁵³⁰ Australia and France have made separate claims to a territorial sea.⁵³¹ New Zealand did not make a formal declaration, but there was gradual recognition of such a sea.⁵³²

⁵²⁵ Auburn, F.M. *Supra*, fn 30, 207

⁵²⁶ Alverson, D.L. *Supra*, fn 75, 174

⁵²⁷ Kindt, J.W. *Supra*, fn 3, 57

⁵²⁸ Articles 2 and 56, *United Nations Convention on the Law of the Sea*

⁵²⁹ Van Der Essen, A. *Supra*, fn 536, 234

⁵³⁰ Rothwell, D.R. *Supra*, fn 388, 159

⁵³¹ *Ibid*

⁵³² *Ibid*, 160

Control over fishing by these states would lead to a more effective means of preventing unreported fishing. Under CCAMLR, states can only enforce conservation measures against parties to the Convention. There is also a problem with fishing vessels using “flags of convenience” to avoid compliance with CCAMLR.⁵³³ The recognition of territorial seas and EEZs around Antarctica would enable claimants to enforce conservation measures against all states within those zones. An adequate regulatory system for krill must have some form of universally binding legal obligation. Enforcement of a krill moratorium by Antarctic claimants in areas near the continent would make it more likely that such a moratorium would succeed, particularly in light of the problem with IUU fishing in Antarctica.

States will require some kind of incentive to proclaim and then enforce fisheries measures in territorial seas and EEZs around Antarctica. Non-enforcement by claimant states of their rights in these zones will lead to a weakening of their claims.⁵³⁴ Such a weakening effect would be detrimental to the compromise achieved by Article IV of the Antarctic Treaty.⁵³⁵ Introducing 200 mile EEZs in the new Law of the Sea Convention will also have placed greater value on Antarctic claims by giving potential control over maritime areas to claimants in addition to their land claims.⁵³⁶ This would be a major incentive for claimants to declare EEZs in Antarctica. Potential oil and gas reserves off the Antarctic coastline would also provide a major impetus for declaring such EEZs.⁵³⁷ Claimant states will be likely to desire as large a claim as possible. Despite uncertain benefits, dropping the claim subsequently would be easier than making a new claim at a later stage.⁵³⁸ Uniform assertions by claimants of EEZs would allow them to introduce legislation within the EEZs that supported CCAMLR.⁵³⁹ If the claimant nations introduced a krill fishing ban within Antarctic EEZs and territorial seas, they would be able to receive benefits from sustainable exploitation of more lucrative fish stocks. Because krill form the base of the Antarctic ecosystem, their total protection would give greater protection to these krill dependent fish stocks. Furthermore, it would be justified by the precautionary approach because of the current scientific uncertainty.

⁵³³ Flags of convenience and unregulated fishing will be discussed in more detail in a subsequent chapter.

⁵³⁴ Auburn, F.M. *Supra*, fn 30, 207

⁵³⁵ *Ibid*

⁵³⁶ Peterson, M.J. *Supra*, fn 126, 159

⁵³⁷ *Ibid*, 160

⁵³⁸ *Ibid*, 169

⁵³⁹ Rothwell, D.R. *Supra*, fn 388, 180

The existence of maritime sovereignty adjacent to Australia's Antarctic claim provides a somewhat different case to other Antarctic claimants. Australia has asserted a 200 mile exclusive fishery zone (EFZ) giving it jurisdiction over Australian fishers.⁵⁴⁰ This zone included "waters adjacent to an external Territory, whether within or beyond the territorial sea adjacent to the Territory"⁵⁴¹ when it was proclaimed on 1 November 1979. The government later excluded the Antarctic territory from this definition.⁵⁴² Australian vessels are still subject to Australian law in these areas because of their status as "proclaimed waters" under the Fisheries Management Act 1991 (Cth).⁵⁴³ Australia declared an EEZ around its Antarctic territory on 1 August 1994.⁵⁴⁴ However, the old EFZ still exists in the new EEZ and so only Australian flag ships and nationals are subject to Australian law within the zone.⁵⁴⁵ The declaration of an EEZ could infringe Article IV of the Treaty as being a new claim or enlargement of an existing one. Proclamation by Australia of an EFZ in its Antarctic Territory is, arguably, an attempt to regulate Australian flag vessels, rather than a means of strengthening Australia's claim to Antarctic sovereignty.⁵⁴⁶ The Australian EFZ is really just an extension of Australia's domestic laws to regulate its citizens in Antarctica.⁵⁴⁷ The zone does not attempt to control fishing by foreign vessels and so it would not be prohibited by Article IV of the Antarctic Treaty. However, its usefulness in protecting krill fishing is limited if it does not apply to foreign vessels.⁵⁴⁸ Fishing regulations must be applicable to all states for them to ensure effective protection for krill, especially if a krill harvesting ban is introduced within the Australian EFZ.

⁵⁴⁰ Harry, R.L. *Supra*, fn 513, 732

⁵⁴¹ s3(a) *Fisheries Amendment Act 1978*

⁵⁴² Van Der Essen, A. *Supra*, fn 536, 241

⁵⁴³ Rothwell, D.R. *Supra*, fn 388, 164

⁵⁴⁴ *Ibid*

⁵⁴⁵ *Ibid*

⁵⁴⁶ Miller, D.G.M. *Supra*, fn 549, 16

⁵⁴⁷ *Ibid*

⁵⁴⁸ Australia has also claimed a territorial sea in Antarctica. The *Australian Antarctic Territory Acceptance Act* entered into force on August 24, 1936 and gives the Australian Antarctic territory the same status under Australian sovereignty as any other land in Australia. Australia's sovereignty may extend over a territorial sea of 3 miles under Australian law. Australia has not separately proclaimed such a sea for Antarctica. This is because Australia claims such a sea over all its territory (Harry, R.L. *Supra*, fn 513, 730). Australia extended its territorial sea in Antarctica from 3 miles to 12 miles in 1990 (Rothwell, D.R. *Supra*, fn 388, 163). As previously discussed, this may constitute an impermissible enlargement of an existing claim. A valid territorial sea in Antarctica could be used by Australia to assert control over krill fishing in this zone.

There have been recent developments concerning the potential extension of Australia's Antarctic EEZ. Section 76 of the Law of the Sea Convention effectively allows parties to extend their territorial claim beyond an EEZ if the continental shelf extends beyond this zone. Under section 77, the relevant coastal state has sovereign rights over the continental shelf and its natural resources. Parties are required to provide the necessary information delineating the extent of the continental shelf 10 years from the date that the Law of the Sea Convention entered into force for them. Australia submitted the requisite information concerning its continental shelf on 15 November 2004.⁵⁴⁹ This submission included information concerning the extent of the continental shelf in respect of Australia's Antarctic territory. However, in its submission Australia specifically recognised Article IV of the Antarctic Treaty and requested the Commission not to take any action for the time being in respect of that part of the submission relating to the continental shelf of Antarctica. Australia's submission is being considered by the Commission during 2005. Some States have already provided specific feedback to the Commission on Australia's submission regarding the Antarctic continental shelf. For example, the USA informed the Commission that, pursuant to the Antarctic Treaty, it does not recognise any State's claim to Antarctica nor to marine areas adjacent to Antarctica. The USA acknowledged "with appreciation Australia's request to the Commission that it not take any action on that portion of its submission relating to areas of the seabed and subsoil adjacent to Antarctica."⁵⁵⁰

Although Australia did ask the Commission not to take action, it only requested the Commission to refrain "for the time being". This leaves open the possibility of Australia claiming sovereignty over part of the Antarctic continental shelf in the future under section 77 of the Law of the Sea Convention. This potential assertion of sovereignty gives rise to the same legal arguments discussed previously in respect of Antarctic EEZs. One argument would be that a claim by Australia over the continental shelf would infringe Article IV of the Antarctic Treaty as a prohibited new claim. Arguably, as Australia has only just submitted its continental shelf information in 2004, assertions of sovereignty over the continental shelf would post-date the Antarctic Treaty and accordingly would constitute a new claim.

⁵⁴⁹ *Continental Shelf Submission of Australia*, Commonwealth of Australia, 15 November 2004.

⁵⁵⁰ United States Mission to the United Nations, New York, Diplomatic Note dated 3 December 2004. Similar comments were provided to the Commission by the Russian Diplomatic mission, Permanent Mission of the Russian Federation to the United Nations, New York, 9 December 2004.

The alternative argument would be either that maritime areas are excluded from the application of the Antarctic Treaty or that the continental shelf claim over the marine environment attaches to the original land claim and so does not constitute a new or extended claim. If there is legal merit to the extension of Australia's sovereignty over marine areas in Antarctica, then Australia has a justification to enforce conservation measures against non-parties to CCAMLR whose flag vessels fish within those extended areas. Furthermore, as discussed above, a further argument would be that the mere freezing of sovereign claims over marine Antarctica does not prevent Australia from conducting activities to assert sovereignty over these areas, including marine areas falling within any extended area based on the Antarctic continental shelf.

Sovereignty over sub-Antarctic Islands

Many States that hold sovereignty over sub-Antarctic islands have proclaimed 200 mile EEZs or fishing zones around them.⁵⁵¹ An EEZ has been stated to exist by Australia around Heard, McDonald and Macquarie Islands.⁵⁵² Australia has also recently established a form of marine protected zone in these areas. Kerguelen Island has also had an EEZ declared around it by France.⁵⁵³ France has, in the past, restricted fishing in this zone to allow recovery of depleted fish numbers.⁵⁵⁴ Hence, fish stocks in the area are in a better state than in other Antarctic zones. This French experience shows that declaration of EEZs can help to conserve species because of the greater level of control that states can exercise over such zones.

⁵⁵¹ Peterson, M.J. *Supra*, fn 126, 153

⁵⁵² Baird, R. *Supra*, fn 25, 168

⁵⁵³ *Ibid*

⁵⁵⁴ *Ibid*

States also have a greater incentive to police areas of the sea if they recognise them as part of their homeland by a declaration of sovereignty. There are large concentrations of krill around many sub-Antarctic islands. The South Orkney Islands, South Georgia, South Sandwich Islands, (all claimed by the UK) and Bouvet island (claimed by Norway) are home to substantial krill stocks in the surrounding seas.⁵⁵⁵ South Georgia is particularly important because it is the only area where a year round krill fishing industry is viable.⁵⁵⁶ Declaration of EEZs around these islands would provide significant protection for the Antarctic krill. The UK could exercise substantial control over fishing in these zones. The UK has already proclaimed 200 mile “maritime zones” in May 1993 around South Georgia and the South Sandwich Islands in which it has introduced regulations and a licensing system to regulate fishing, although Argentina⁵⁵⁷ contests the validity of these regulations.⁵⁵⁸ Argentina also disputes the validity of the UK’s claims to the South Orkney Islands. Norway claims a 4 mile territorial sea around Bouvet Island.⁵⁵⁹ These EEZs can be used to enforce a limited krill ban against all vessels within them. The current regulatory regime has no legal power over non-parties on the high seas because of the traditional fishing freedom. Enforcement of a krill ban within the EEZs of these sub-Antarctic islands would alleviate that problem, particularly because of the high concentration of krill that are found within some of these zones.

The declaration of EEZs around sub-Antarctic islands by Antarctic Treaty parties is constrained somewhat by the Treaty itself. If maritime claims are prohibited by Article IV, coastal states outside the Treaty zone may not be able to extend their maritime claims within the zone.⁵⁶⁰ Arguably, the Treaty does not make a distinction between claims based on Antarctic continental land and claims based on land outside the Treaty zone.⁵⁶¹ If all claims are treated in the same manner, then Article IV would apply regardless.⁵⁶² If sub-Antarctic island EEZs are valid, then krill can be protected against vessels of both CCAMLR parties and non-parties. Control over non-parties will significantly reduce the level of unregulated fishing and the use of “flags of convenience”. Such control is vital for the implementation of a successful krill harvesting ban.

⁵⁵⁵ Alverson, D.L. *Supra*, fn 75, 174

⁵⁵⁶ Nicol, S. 1995. *op. cit.*, 397

⁵⁵⁷ Argentina disputes the UK’s claims to South Georgia and the South Sandwich Islands.

⁵⁵⁸ UK Foreign and Commonwealth Office website, <http://files.fco.gov.uk/info/briefs/falklands.pdf>

⁵⁵⁹ The World Factbook 2002 website, <http://www.cia.gov/cia/publications/factbook/fields/2106.html>

⁵⁶⁰ Oxman, B.H. *Supra*, fn 503, 227

⁵⁶¹ *Ibid*

⁵⁶² *Ibid*

Other Protection in the Law of the Sea Convention

The existence of Exclusive Economic Zones surrounding Antarctica or the sub-Antarctica islands would provide enormous benefits for the Antarctic krill. The Law of the Sea Convention gives coastal states exclusive coastal rights to manage, exploit and conserve living resources.⁵⁶³ This gives the coastal state the right to conserve krill by determining an acceptable level of harvesting. Coastal states can therefore place a complete ban on krill fishing within their EEZs. This thesis submits that the Convention's provisions also place an obligation on states to ensure that krill dependent species are not threatened by exploitation of krill.⁵⁶⁴ The likely expansion of krill industry because of increased demand for krill products and higher economic returns would further threaten krill dependent species. A complete krill fishing ban would ensure that other species were not threatened within a State's EEZ and would fulfil the requirements of the Law of the Sea Convention within such zones.

A total krill harvesting ban within EEZs would, arguably, conflict with other provisions of the Law of the Sea Convention. The Law of the Sea Convention's focus on economic factors does not sit comfortably with a complete ban on krill fishing.⁵⁶⁵ The requirement in the Convention to promote "optimum utilisation", arguably, conflicts with a complete fishing ban. This would prevent states from introducing such a measure within their EEZs.⁵⁶⁶ This highlights the need to strengthen current international legal instruments like the Convention so that IUU fishing can be combated in an effective manner. As discussed above, the UN General Assembly itself has recently supported the need to strengthen international agreements to combat IUU fishing.

⁵⁶³ Article 56, *United Nations Convention on the Law of the Sea* 1982

⁵⁶⁴ The Law of the Sea Convention Article 56 gives exclusive sovereign rights to the coastal state to manage, exploit and conserve living resources. Article 61(1) also provides that coastal nations "shall" determine the allowable catch of living resources in the EEZ. Article 61(2) also obliges nations through proper conservation and management measures to ensure that the maintenance of living resources is not endangered by overexploitation. This provision is supplemented by Article 61(4) which requires states to take into account the effect on associated or dependent species when another species is harvested so that such species are restored above levels that may seriously threaten them.

⁵⁶⁵ Article 61(3) requires any measures to maintain or restore populations to maximum sustainable yields, taking into account economic needs, fishing patterns and the interdependence of stocks. The use of the term "maximum sustainable yield" in conjunction with "economic needs" and "fishing patterns" suggests rational exploitation of species such as krill is required by the Convention and total protection of krill may conflict with this goal. Article 62(1) also says that coastal states shall promote the objective of optimum utilization of living resources in the EEZ without prejudice to Article 61.

⁵⁶⁶ However, the provision says states shall "promote" the objective of optimum utilization. It does not say that States MUST optimally utilise EVERY species of living resources within the EEZ. Furthermore, the article says that this objective is to be promoted without prejudice to Article 61. The conservation requirements of Article 61 may be threatened if krill were optimally utilised.

Other krill dependent species that are currently exploited will be threatened if krill were exploited to an optimum level. This would breach the provisions in the Law of the Sea Convention that are aimed at maintaining population levels.⁵⁶⁷ A krill fishing ban would also be difficult because of a possible need to give third states access to living resources in the EEZ.⁵⁶⁸ If the coastal state prohibits its own vessels from harvesting krill, third party states, arguably, should be able to access krill on their own. However, there is no legal right of access of third party states to fishing resources in an EEZ.⁵⁶⁹ Access *may* be granted to foreign vessels on conditions conforming to domestic fisheries policy, according to the Convention's requirements for conservation and rational management.⁵⁷⁰ Coastal states can determine which species are caught, catch quotas and enforcement procedures for foreign nationals fishing within their EEZs.⁵⁷¹ A complete ban is therefore legally justified within these EEZs and coastal states have the power to declare such a ban.

Straddling Stocks and Highly Migratory Species

Conservation or total protection of krill is difficult because krill are circumpolar in distribution. Krill can occur in several different EEZs and also on areas of high seas in the Southern Ocean. This can lead to inconsistent policies concerning krill in different EEZs and also on the high seas.⁵⁷² Although krill occur in several potential EEZs and on the high seas in Antarctica, fishing nations that are parties to the Law of the Sea Convention are still under an obligation to ensure conservation of the species and other species dependent on krill. Krill dependent species that provide greater economic returns than krill would have better prospects if krill were protected by a comprehensive harvesting ban. Such benefits would give nations that fish on the high seas an incentive to protect krill.⁵⁷³

⁵⁶⁷ This potential breach of Article 61 may allow coastal States to give total protection to krill rather than optimally utilizing them. Such protection would also allow krill dependent populations to be restored to levels of maximum sustainable yield in accordance with Article 62(3).

⁵⁶⁸ Article 62(2) gives the coastal state the ability to determine its capacity to harvest living resources and to give other States access to the surplus where it does not have that ability.

⁵⁶⁹ The provisions in Article 62 are merely guidelines (Kwiatkowska, B. *Supra*, fn 507, 60).

⁵⁷⁰ *Ibid*

⁵⁷¹ Nationals of other states fishing in the EEZ are required by Article 62(4) to comply with conservation measures and other laws and regulations established by the coastal state.

⁵⁷² Article 63(1) obliges states, where stocks of species or associated species occur within two or more EEZs, to coordinate directly or through subregional or regional organisations, to agree upon measures to ensure the conservation of such stocks. Article 63(2) places the same obligation on states in relation to stocks that occur in both an EEZ and an area beyond and adjacent to the EEZ. So although Article 87 gives freedom of fishing on the high seas, nations are still under an obligation to liaise with coastal states to ensure conservation of stocks occurring in EEZs and on the high seas.

⁵⁷³ Article 63(1) merely obliges states to "seek" agreement concerning fisheries where stocks or stocks of associated species occur within EEZs of two states, not to actually reach such an agreement (Kwiatkowska, B. *Supra*, fn 507, 78). However, this may still place states under a moral obligation to act in good faith in

Joint management already occurs in Antarctica for parties to CCAMLR and the Law of the Sea requirements can strengthen such a system in potential EEZs in Antarctica. The precautionary approach justifies introducing a krill moratorium because of the scientific uncertainty concerning krill population and the effect of krill fishing on dependent species. A moratorium would be supported by strong, consistent regulatory practices. Such a strengthening of international fisheries management agreements has recently been advocated by the UN General Assembly resolution which may provide an impetus for reforms to the current system.

A co-operative regime for harvesting of some species is also required by other provisions of the Law of the Sea Convention.⁵⁷⁴ Highly migratory species are specifically covered by these provisions. However, the Convention does not include krill as a “highly migratory” species.⁵⁷⁵ As previously mentioned, it is unclear whether there are localised populations of krill or whether there is simply one global population of krill that migrates around Antarctic waters. Krill can therefore constitute a highly migratory species despite not being defined as such in the Convention.⁵⁷⁶ Failing to provide for krill reduces the possibility of cooperation to ensure conservation of krill as required by the Convention. The Convention’s provisions relating to highly migratory species do not outline any specific conservation measures and provide little protection for such species.

attempting to reach agreement (Bratspies, R. 2001. Finessing King Neptune: Fisheries Management and the Limits of International Law. *The Harvard Environmental Law Review*, vol 25: 213-257 at 228). States may still be unable to reach a consensus despite a moral obligation. In many regions, coastal states have accepted joint responsibility for conserving and managing these stocks in accordance with the Law of the Sea Convention (Kwiatkowska, B. *Supra*, fn 507, 78).

⁵⁷⁴ Article 64(1) obliges coastal states and states whose nationals fish for stocks of highly migratory species to cooperate directly or through appropriate international organisations to ensure conservation and promote optimum utilisation within and beyond the EEZ. The article requires states to “cooperate” rather than to reach agreement on ensuring conservation of highly migratory species. This wording may reduce the binding effect of the provision.

⁵⁷⁵ Highly migratory species are defined as those listed in Annex 1 of the Convention. However, Annex 1 of the Law of the Sea Convention is not comprehensive because it does not include stocks such as krill or squid which could potentially be defined as “highly migratory” species (Birnie, P. and Boyle, A. *Supra*, fn 233, 665). Krill float around Antarctica in swarms, so that they will sometimes come within 200 miles zones and sometimes come outside such zones (Peterson, M.J. *Supra*, fn 126, 159).

⁵⁷⁶ Annex 1 would also be difficult to amend, making it unlikely that Article 64 will place such obligations on states in relation to krill in the future (Birnie, P. and Boyle, A. *Supra*, fn 233, 665).

In order to combat the weakness of the “highly migratory” provisions in the Law of the Sea Convention and to provide more effective protection for such species, a UN legal agreement was formulated to deal with this issue. This agreement is known as the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (the UN Fish Stocks Agreement).⁵⁷⁷ The agreement applies to high seas areas beyond national jurisdiction.⁵⁷⁸ The UN Fish Stocks Agreement’s objective is the long term conservation and sustainable use of straddling fish stocks and highly migratory fish stocks.⁵⁷⁹ Krill are not necessarily covered by the agreement. “Highly migratory” species are not defined in the instrument. “Fish” is defined in Article 1 to include crustaceans, meaning that krill could potentially be included in this definition. The omission of krill from the definition of “highly migratory species” in the Law of the Sea Convention may, however, suggest that krill are also excluded from the Fish Stocks Agreement. Such an argument is strengthened by Article 4 of the agreement which requires the agreement to be interpreted and applied in the context of and in a manner consistent with the Law of the Sea Convention. If krill are not included in the definition of “highly migratory” species and “straddling fish stocks” then they will not receive the protection of the agreement.

Assuming that krill are covered by the Fish Stocks Agreement, then the main objective of the Agreement is their long term conservation and sustainable use through the *effective* implementation of the 1982 Convention.⁵⁸⁰ The Fish Stocks Agreement contains a number of principles that directly impact on the appropriate level of krill harvesting. The Agreement’s objectives include the optimum utilisation of stocks and a level of stock maintenance that produces maximum sustainable yield.⁵⁸¹ As previously discussed, maximum sustainable yield is a problematic concept. Interdependence between stocks means that it is not possible to optimally utilise all stocks whilst also maintaining or restoring them to a level of maximum sustainable yield.

⁵⁷⁷ This “Fish Stocks Agreement” was introduced by the General Assembly on 4 December 1995 (Christopherson, M. 1996. Toward a Rational Harvest: The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species. *Minnesota Journal of Global Trade*, Vol 5: 357-379 at 358). The agreement tries to solve the problems with overfishing on the high seas that have resulted in reductions of fish stocks in EEZs (Anton, D.K. 1997. *Supra*, fn 330, 363)

⁵⁷⁸ Article 3(1), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁵⁷⁹ Article 2, *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁵⁸⁰ Article 2, *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁵⁸¹ Article 5(a), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995. Including an objective of optimum utilisation could mean that complete krill protection is at odds with the Fish Stocks Agreement. Furthermore, Article 5(b) requires such measures to be designed to maintain or restore stocks at levels capable of producing maximum sustainable yield.

This is especially true for krill because of their important position in the food chain. If krill are optimally utilised, then some krill dependent stocks such as the baleen whales will be prevented from being restored to a level of maximum sustainable yield. Adopting a strong form of the precautionary approach would, as previously mentioned, require some form of Antarctic krill protection because of scientific uncertainty surrounding krill and dependent species. This would permit other more commercially valuable species to be exploited at maximum sustainable yield in accordance with the objectives of the Fish Stocks Agreement.

Optimum utilisation is also merely a desirable objective of the Fish Stocks Agreement, rather than a mandatory one.⁵⁸² Accordingly, a krill fishing moratorium is not necessarily inconsistent with the Fish Stocks Agreement. As discussed, protecting krill would allow other species to be maintained at levels capable of producing maximum sustainable yield and would allow such species to be optimally utilised. Furthermore, the Agreement also requires production at maximum sustainable yield to be “qualified by relevant environmental and economic factors”.⁵⁸³ Exploitation of krill at maximum sustainable yield would have an extremely detrimental effect on krill dependent species. If the interdependence of stocks qualifies the requirement to exploit species at this level then, this thesis submits that krill do not have to be harvested at maximum sustainable yield. Qualification by relevant environmental factors could also include factors such as sea ice cover which affect krill recruitment levels. Such factors will necessitate a lower level of krill exploitation.⁵⁸⁴ Alternatively, qualification by relevant “economic” factors means that the effect of lower harvesting levels on krill fishers and krill product markets, such as aquaculture, must be taken into account and this is, arguably, a justification for higher levels of exploitation. However, conservation should come before exploitation and this thesis submits that the precautionary approach justifies a krill fishing moratorium despite any negative economic impacts on krill product market. The potential economic benefits from increased sustainability of krill dependent species is also a justification for ignoring any harm that would be caused to krill fishers and krill product markets.

⁵⁸² Article 5 merely requires states to “promote” optimum utilisation, rather than making optimum utilisation obligatory.

⁵⁸³ Article 5(b) requires production at maximum sustainable yield to be “qualified by relevant environmental and economic factors” including interdependence of stocks and generally recommended international minimum standards (including regional standards).

⁵⁸⁴ Furthermore, a regional international minimum standard could possibly be CCAMLR’s precautionary catch limits for krill. Article 5(b) may therefore require krill exploitation at maximum sustainable yield to be qualified by CCAMLR’s catch limits. Although such limits do not offer complete protection for krill, they may help to conserve krill.

Further support for krill conservation can be found in other general principles of the Fish Stocks Agreement.⁵⁸⁵ The Agreement does, however, only require dependent species to be maintained or restored above levels that could seriously threaten their reproduction. The dependence of many other species upon krill means that their optimal exploitation will have a detrimental effect on these species. A lower level of exploitation (and the introduction of conservation measures to facilitate such a lower level) would allow dependent species to be maintained above levels which can seriously threaten their reproduction.⁵⁸⁶ The need to maintain populations at levels that only “seriously” threaten reproduction also implies that a much greater level of krill exploitation is permitted, however, as discussed, the uncertainty surrounding krill populations and species interactions means that even a low level of exploitation could “seriously” threaten the reproductive capacity of dependent species. Accordingly, under the precautionary approach, krill must receive the protection of a total harvesting ban because of their pivotal role in the Antarctic ecosystem.

Furthermore, the Fish Stocks Agreement actually requires application of the precautionary approach. Article 5(c) requires application of the precautionary approach in accordance with article 6. Article 6(1) says that states “shall apply the precautionary approach *widely* [emphasis added] to conservation, management, and exploitation of straddling fish stocks and highly migratory fish stocks in order to protect the living marine resources and preserve the marine environment.” It is submitted that applying the approach “widely” would require, not only the application of the approach in a wide range of circumstances, but in this respect, an application of a strong form of the precautionary approach. As discussed in Chapter 2, a strong form of the precautionary approach would imply that, even with a lack of data on krill populations and species interactions, measures should be introduced to protect krill and dependent species.

In particular, Article 6(2) also requires that states “be more cautious when information is uncertain, unreliable or inadequate. The absence of adequate scientific information shall not be used as a reason for postponing or failing to take conservation and management measures.”

⁵⁸⁵ Article 5(d) requires states to “assess” the impacts of fishing on species belonging to the same ecosystem as the target stock or associated with or dependent upon the target stocks. Although simply “assessing” impacts is unlikely to provide support for krill conservation, Article 5(e) also requires states to “adopt, where necessary, conservation and management measures for species belonging to the same ecosystem or associated with or dependent upon the target stocks, with a view to maintaining or restoring populations of such species above levels at which their reproduction may become seriously threatened”.

⁵⁸⁶ However, such measures only need to be implemented “where necessary”, suggesting either state discretion or that reproduction must already be seriously threatened before measures can be introduced.

Arguably, due to the extreme uncertainty concerning krill population, its interaction with dependent species and the Antarctic ecosystem as a whole and the effect of krill harvesting of dependent species, states are required to be even “more cautious”. It is submitted that this extreme level of uncertainty should require a degree of caution evinced by no-take zones or complete harvesting bans.

In this respect, in implementing the precautionary approach, Article 6(3) also requires states to implement “improved techniques for dealing with risk and uncertainty” and “take into account, inter alia, uncertainties relating to size and productivity of the stocks....and the impact of fishing activities on non-target and associated or dependent species”. This gives further weight to the argument that the high level of uncertainty concerning krill stock should require a higher level of caution concerning its exploitation.

Furthermore, Article 6(6) requires, in respect of new or exploratory fisheries, that states adopt “cautious conservation and management measures, including, inter alia, catch limits and effort limits. Such measures shall remain in force until there are sufficient data to allow assessment of the impact of the fisheries on the long-term sustainability of the stocks, whereupon conservation and management measures based on that assessment shall be implemented. The latter measures shall, if appropriate, allow for the gradual development of the fisheries.” Ostensibly, if these requirements could be applied to krill, the “cautious conservation and management measures” required until sufficient data is obtained would require either low precautionary catch limits or no-take zones, particularly in light of the extreme uncertainty surrounding krill population levels. Although, it is questionable whether krill fishery would constitute a “new” fishery given that it has been in place for decades, it may still constitute an “exploratory” fishery since it has never reached extremely high levels and cost pressures have previously been a disincentive for large numbers of fishers to enter this fishery.

The fact that the Fish Stocks Agreement also applies to other fishing nations whose vessels fish on the high seas⁵⁸⁷ means that these general principles could provide significant impetus to krill conservation (particularly because of the problems of IUU fishing plaguing regional fisheries organisations like CCAMLR on the high seas).⁵⁸⁸ The general principles of protecting marine biodiversity and eliminating overfishing are also supported by the Fish Stocks Agreement.⁵⁸⁹

The Fish Stocks Agreement outlines strategies to ensure the compatibility of conservation and management measures.⁵⁹⁰ The provisions of the Agreement make it a requirement that conservation and management measures are compatible.⁵⁹¹ There is no scope to merely cooperate and then not introduce consistent measures. Conservation measures *must* be compatible. As discussed, this is important if such measures are to be effective. A number of

⁵⁸⁷ Article 1(3), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁵⁸⁸ Article 5 also contains a number of other general principles that may be relevant to krill. Article 5(f) requires states to minimise catch of non-target species and impacts on associated or dependent species, in particular endangered species. As previously discussed, it is unclear whether a problem exists with by-catch of juvenile fish during krill harvesting. However, the precautionary approach (required by Article 6 of the Fish Stocks Agreement) would advocate measures being introduced even if there is a lack of scientific data. This may require the adoption of some of the possible solutions that have previously been discussed such as targeting only krill swarms of high density (where it is less likely that juvenile fish will be swimming) or avoiding areas where juvenile fish are likely to be caught.

⁵⁸⁹ The Fish Stocks Agreement also gives some support to marine biodiversity. The preamble states that parties are “conscious” of the need to preserve biodiversity and maintain the integrity of marine ecosystems. The general principles of Article 5 also require states to protect biodiversity in the marine environment and maintain the integrity of marine ecosystems. Protecting krill, as a vital species in the ecosystem, may also help to maintain biodiversity within the Antarctic ecosystem. Finally, the general principles of Article 5(h) require states to take measures to prevent or eliminate overfishing (This provision also mentions “excess fishing capacity”, a concept which will be discussed fully later in this thesis). Although this principle (and the other principles that have been discussed above) is very general and does not specify how overfishing and other problems are to be eliminated, the Agreement does go into much greater detail in latter provisions. This greater level of detail considerably strengthens the conservation and sustainable use objectives of the 1982 Convention.

⁵⁹⁰ Article 7 of the Agreement outlines strategies to ensure the compatibility of conservation and management measure. Article 7(1)(b) says that, for highly migratory stocks, relevant coastal states and other states whose nationals fish for such stocks in the region “shall” cooperate with a view to ensuring conservation and promoting the objective of optimum utilisation of such stocks throughout the region within and beyond national jurisdiction. The provision is potentially applicable to krill if they are a highly migratory species. Cooperation is necessary to ensure that consistent conservation measures are introduced. If inconsistent strategies were used to manage krill and other stocks, then such measures would be less likely to be effective. Cooperation is particularly important between states whose vessels fish on Antarctic high seas and nations that may have claims to potential EEZs around Antarctica and declared EEZs around sub-Antarctic islands such as South Georgia. Use of the word “shall” shows that there is a clear requirement to cooperate in ensuring conservation, although there is no requirement to actually reach agreement. The provision is similar to the requirements of Article 64 of the 1982 Convention. The provision does not actually require states to cooperate to ensure optimum utilisation, there is merely a requirement to cooperate with a view to “promoting” such utilisation. Optimum utilisation of krill is not an essential requirement of this provision, however, Article 7(1) does state that the provision is “without prejudice” to the right of all states for their nationals to engage in high seas fishing. Despite the requirement to cooperate to conserve species, they still have a right to exploit krill even though complete krill protection may advance the conservation of other species.

⁵⁹¹ The Agreement, in Article 7(2), reiterates this duty of cooperation between coastal and high seas fishing states to achieve compatible conservation and management measures for highly migratory stocks.

factors must be considered when formulating compatible measures. States are required to take into account conservation and management measures adopted by coastal states in areas of national jurisdiction in respect of the same stocks and to ensure that measures introduced on the high seas do not undermine the effectiveness of the coastal state measures.⁵⁹² States are also required to take into account previously agreed measures applied on the high seas by relevant coastal states and high seas fishing states.⁵⁹³ Finally, states are required to take into account measures established by regional fisheries management organisations.⁵⁹⁴

All of these provisions give support to the precautionary catch limits that CCAMLR has already introduced for krill. These fisheries management organisation measures have already been applied by coastal states (in sub-Antarctic islands) and on the high seas. States are only required to take such regional organisation measures into account when formulating compatible measures, however, there is a requirement that compatible high seas measures not undermine the effectiveness of coastal state measures. This means that any measures introduced on the high seas cannot undermine CCAMLR's measures that have been applied by coastal states such as around krill fishing grounds of South Georgia. This provision gives a greater legal scope for protecting krill on the high seas. High seas measures that allowed a much greater level of krill exploitation than the CCAMLR measures (as introduced by coastal states of sub-Antarctic islands) would undermine the effectiveness of those CCAMLR measures. Therefore, greater krill protection would be facilitated by the requirement not to undermine CCAMLR measures as they have been applied by coastal states. However, even if these provisions provide the necessary legal justification for CCAMLR conservation measures to have a binding effect on third parties on the high seas, greater protection in the form of a complete harvesting ban must be introduced. Furthermore, even with legal obligations that bind third parties, there must still be effective enforcement mechanisms in place to adequately regulate krill.⁵⁹⁵

⁵⁹² Article 7(2)(a), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁵⁹³ Article 7(2)(b), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁵⁹⁴ Article 7(2)(c), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁵⁹⁵ Enforcement mechanisms are discussed in a later Chapter of this thesis.

When determining compatible measures, states are also required to take into account a number of factors that relate to species interdependence including biological relationships and characteristics.⁵⁹⁶ Krill fishing, as discussed, is only possible on a year round basis in the waters surrounding South Georgia. Furthermore, krill population size may be affected by the extent of sea ice so that they are more prevalent near the boundary of sea ice and the open ocean.⁵⁹⁷ Any compatible measures that are introduced need to specifically consider the fact that krill fishing is conducted in specific areas and these measures should be adjusted to take into account distribution and other environmental factors. Compatible measures are also required to take into account the dependence of fishing states on the stocks concerned.⁵⁹⁸

A comprehensive krill fishing ban is, arguably, not sanctioned by this provision because of the dependence of some fishing vessels on krill harvesting and the dependence of some fishing states on krill products and markets. The currently low levels of krill fishing imply that this dependence is only minimal, however, this still needs to be considered when formulating measures. There is also a need to ensure that the measures do not result in a harmful impact on living marine resources as a whole.⁵⁹⁹ The vital role played by krill in the Antarctic ecosystem means that a high level of krill exploitation would not be sanctioned by this provision because of the detrimental effect on living marine resources as a whole.

The cooperation between states to introduce consistent conservation and management measures will be to no avail if such measures are not introduced in a timely manner. Conservation measures need to be implemented quickly and changed quickly, if the need arises, so that marine species are not subjected to any more harm than is necessary. The Fish Stocks Agreement requires states to formulate compatible measures within a reasonable period of time.⁶⁰⁰ Even if

⁵⁹⁶ Article 7(2)(d) requires states to take into account biological unity and other biological characteristics of the stocks and the relationships between the distribution of the stocks, the fisheries and the geographical particularities of the region concerned. This provision may require states to look at the unique characteristics of both Antarctica and krill.

⁵⁹⁷ These factors have been discussed in detail in Chapter 1.

⁵⁹⁸ Article 7(1)(e), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁵⁹⁹ Article 7(1)(e) and (f), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁶⁰⁰ To that end, Article 7(3) requires states to agree on compatible measures within a reasonable period of time. Such a provision is necessary to avoid lengthy and drawn out negotiations that could allow potential harm to occur to krill and other species, although what constitutes a “reasonable period of time” is not defined which leaves the provision with some scope for manipulation.

parties cannot reach agreement within the allotted time, the Agreement allows them to use its dispute settlement procedures to effect a speedy resolution.⁶⁰¹

Furthermore, there is some scope for interim protection for fish stocks before agreement is reached between states.⁶⁰² Any provisional measures introduced by states are required to have regard to the rights and obligations of all states.⁶⁰³ Additionally, they must not jeopardise or hamper the reaching of a final agreement on compatible conservation and management measures and must not prejudice the settlement of any dispute.⁶⁰⁴ These requirements mean that states can freely enter into provisional arrangements without fear that those measures will become permanent. States would be unlikely to enter into provisional arrangements if those arrangements were irreversible and overrode their rights. This is important because it gives krill and other species interim protection while agreement is being reached on compatible conservation measures, without compromising the rights of states who are negotiating over those measures.

The provision on compatibility of measures also advocates a policy of openness between states. Coastal states are required to regularly inform high seas fishing states of measures they have adopted for highly migratory species within areas of national jurisdiction.⁶⁰⁵ These provisions also help to ensure that states are complying with compatible conservation and management measures that have been negotiated between states.⁶⁰⁶ The provisions concerning cooperation between states are necessary to ensure that parties reach agreement quickly over conservation

⁶⁰¹ Article 7(4), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁶⁰² Article 7(5) also requires states, pending agreement, “to make every effort to enter into provisional arrangements of a practical nature”. This section gives krill and other species some interim protection whilst agreement is being reached. This requirement may prevent species being detrimentally harmed by a lack of compatible measures. “Arrangements of a practical nature” are not defined, leaving states with some discretion but, arguably, a “practical nature” could be interpreted as concrete, practical measures that are going to give practical effect to the conservation and sustainable use objectives of the Fish Stocks Agreement. The provision only requires states to “make every effort” to implement such provisional arrangements potentially weakening its effect but, if they cannot agree on these arrangements, then provisional measures can be granted by a court or tribunal under the Agreement’s dispute settlement procedures. This provision prevents states that are unable to agree being locked in a stalemate, which would only cause further harm to stocks that were to be the subject of the compatible measures.

⁶⁰³ Article 7(6), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁶⁰⁴ *Ibid*

⁶⁰⁵ Article 7(7), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁶⁰⁶ High seas fishing states, on the other hand, are required to regularly inform other “interested” states of measures they have adopted to regulate the activities of flag vessels fishing for highly migratory species on the high seas (Article 7(8), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995). Both of these provisions can ensure greater compatibility of conservation and management measures because, if states are consistently informed of the measures other nations have introduced, then they can make adjustments to their own measures to ensure compatibility.

measures so that harm is not done to krill and other species while negotiations are taking place.⁶⁰⁷ Cooperation is necessary concerning krill and other Southern Ocean species because of the problem with non-parties to CCAMLR not observing its conservation measures.

The Fish Stocks Agreement also focuses on the use of regional fisheries organisations to conserve and manage highly migratory species.⁶⁰⁸ If krill came within the scope of the Agreement then CCAMLR conservation measures may apply to all parties to the Agreement provided that CCAMLR is “competent” to establish relevant conservation measures. As an established fisheries regime in Antarctica it would appear to be competent, however, as a subsidiary regime of the Antarctic Treaty system it may, arguably, not be competent because of non-recognition of some states of that Treaty system. The inclusion of CCAMLR as part of the Fish Stocks Agreement would permit it to be enforced against a much wider range of countries that are parties to the Fish Stocks Agreement.

The Fish Stocks Agreement only allows access to fishery resources to those states that are members of the relevant regional fisheries organisation or those states that have agreed to apply its conservation and management measures.⁶⁰⁹ This is an extremely significant provision because it denies states access to highly migratory stocks (which could potentially include krill)

⁶⁰⁷ The duty of cooperation between states is outlined in much greater detail in Article 8. Article 8(1) requires parties to “pursue cooperation” in managing straddling and highly migratory stocks either directly or through “appropriate” regional fisheries management organisations, taking into account the specific characteristics of the region to ensure effective conservation and management. Cooperation concerning krill (if they are highly migratory species) could be carried out through CCAMLR which, as the main organisation managing Antarctic marine species, is arguably an “appropriate” organisation. The Agreement also requires states to enter into consultations in “good faith and without delay”, especially where evidence exists of a threat of exploitation or a new fishery is being developed (Article 8(2)). As discussed, krill are a relatively new fishery and scope exists for a significant expansion of the current fishery. Parties would, therefore, be required to negotiate in good faith and without delay if krill are a highly migratory species (Article 8(2)). Any interested state can initiate consultations with a view to establishing appropriate arrangements to ensure conservation and management of the stocks (Article 8(2)). While consultations are taking place, Article 8(2) also gives protection to states and highly migratory stocks by requiring them to observe the provisions of the Agreement and to act in good faith with regard to the rights of other states.

⁶⁰⁸ Article 8 of the Fish Stocks Agreement also focuses heavily on the use of regional fisheries organisations to conserve and manage highly migratory species. Article 8(3) requires high seas fishing states and relevant coastal states (in order to give effect to their duty to cooperate) to become members of or participants in, or to apply the conservation measures of, regional fishing organisations where such organisations have the competence to establish conservation and management measures for straddling and highly migratory stocks.

⁶⁰⁹ Section 8 also permits states with a “real interest” in the relevant fisheries to become members of, or participants in, the organisation. There is also a requirement that the organisation not preclude these states from becoming members or participants and that the organisation not discriminate against any of these states (Article 8(3)). CCAMLR must therefore allow all states with a “real interest” in krill fisheries (arguably states must have some involvement in that industry) to become members or participants and must not discriminate in any way against those states. Furthermore, Article 8(4) requires that only states that are members or participants in these regional fisheries organisations, or which agree to apply their conservation and management measures, shall have access to the fishery resources to which the measures apply.

unless they are members of, or apply the conservation measures of, regional organisations such as CCAMLR. This is a major limitation on the traditional high seas fishing rights of states. States would not be permitted by the Fish Stocks Agreement to harvest krill unless they applied CCAMLR precautionary catch limits. However, there will still be difficulties in enforcing such a measure.

The duty to cooperate through regional fisheries management organisations is also accompanied by a number of obligations placed on states. States are required to agree on and comply with conservation and management measures to ensure the long-term sustainability of highly migratory stocks.⁶¹⁰ This provision is necessary to ensure that states do actually comply with conservation measures of organisations like CCAMLR. However, the provision says that states are required to comply with such measures “to ensure the long-term sustainability of highly migratory stocks”. It could be argued that, if a CCAMLR measure concerning krill was not likely to ensure long-term sustainability, then states may not be required to comply with it. States are also obliged to agree “as appropriate” on participatory rights such as allocations of allowable catch or levels of fishing effort.⁶¹¹ CCAMLR does not contain provisions that permit an allocation of allowable catch or levels of fishing effort.⁶¹² Therefore, states with larger fishing fleets can catch the greatest proportion of CCAMLR’s precautionary catch limits. This section of the Fish Stocks Agreement arguably requires CCAMLR (if it is to act as a competent regional fisheries organisation within the scope of the Agreement) to rethink its approach to national catch allocations and allowable levels of fishing effort.⁶¹³ States are only obliged to agree “as appropriate” on such rights and, because these rights are not contemplated in CCAMLR, it is not “appropriate” for states to agree on them under the CCAMLR system.⁶¹⁴ The current CCAMLR

⁶¹⁰ Article 10(a), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁶¹¹ Article 10(b), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁶¹² Catch allocation and excess fishing capacity will be discussed in greater detail later in this thesis.

⁶¹³ The Fish Stocks Agreement also contains other requirements that are designed to ensure that regional fisheries organisations are able to manage highly migratory species in an efficient manner. Article 10(i) emphasises the rights of new members of organisations like CCAMLR by requiring states to agree on means by which their fishing interests can be accommodated. This may require CCAMLR to make some adjustments to its precautionary catch limits or even require it to introduce national catch allocation so that the interests of new members are accommodated. However, such accommodations would, arguably, only be necessary if they did not threaten the long-term sustainability of a straddling or highly migratory stock (if they did pose such a threat, then this would be inconsistent with the main objective of the Fish Stocks Agreement).

⁶¹⁴ There is also a need for states to agree on decision-making procedures that will facilitate the adoption of conservation and management measures “in a timely and effective manner”. The problem with CCAMLR’s decision making procedures, as discussed, is that they require consensus. Such a requirement can potentially result in a lengthy process of decision making. CCAMLR may have to look at mechanisms to speed up its decision making process if it is to act as a competent regional organisation under the Fish Stocks Agreement so that it can comply with the need to adopt measures in a timely and effective manner.

system should be strengthened to provide more effective protection to krill and its dependent species.

Even if non-parties to CCAMLR become members or participants, or agree to apply its measures, there is still a need for those states to actually implement their obligations.⁶¹⁵ If states force their own government departments and fisheries bodies to cooperate with organisations such as CCAMLR, there is a greater likelihood that those bodies will work towards implementing CCAMLR's measures. The Fish Stocks Agreement also requires states to give "due publicity" to the measures of organisations such as CCAMLR. Greater publicity means that fishing vessels will have a greater awareness of their obligations and makes it more likely that those measures will be observed.⁶¹⁶ Vessels must be made aware of a comprehensive ban so there is a greater likelihood of observance.

The Fish Stocks Agreement requires the existing level of fishing effort in respect of a particular stock to be considered when determining the nature and extent of participatory rights for new members of a regional fisheries management organisation.⁶¹⁷ Presumably, if current fishing levels are low and the stock is not endangered, then new members would have greater participatory rights. Currently krill harvesting is at low levels (in comparison to the actual level of CCAMLR's precautionary catch limits) and this will allow greater participatory rights for any new krill harvesting nations that join CCAMLR. CCAMLR does not currently allocate fishing rights to particular states.

States must also take into account the interests, fishing patterns, and practices of current and new members.⁶¹⁸ Currently, krill harvesting occurs in many localised areas, such as around South Georgia.⁶¹⁹ New members of CCAMLR would therefore (if CCAMLR introduced participatory rights) be unlikely to gain many participatory rights in such areas because of the current concentration of krill fishing in those localised zones. Another factor to be considered is the

⁶¹⁵ Article 10(l) requires states to "ensure the full cooperation of their relevant national agencies and industries in implementing the recommendations and decisions of the organisation".

⁶¹⁶ Article 10 also contains a requirement to "adopt and apply any generally recommended international minimum standards for the responsible conduct of fishing operations" (Article 10(c)). Arguably, the FAO Code of Conduct for Responsible Fisheries, although voluntary, is a generally recommended standard that comes within the ambit of this provision. Requiring parties to the Fish Stocks Agreement to adopt and apply the Code would give krill much greater protection from the Code's detailed consideration of the actions needed to ensure responsible fisheries.

⁶¹⁷ Article 11(a), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁶¹⁸ Article 11(b), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁶¹⁹ Localised krill fishing and the areas where krill harvesting is greatest have been discussed in Chapter 1.

contribution of new and existing members to conservation and management of the stocks.⁶²⁰

Each existing member state would need to be examined to determine how effectively they had implemented the conservation and management measures of CCAMLR and such decisions would need to be made in a transparent manner.⁶²¹

The UN Fish Stocks Agreement's focus on regional organisations will also enhance the effectiveness of such organisations in conserving species such as krill. CCAMLR can only enforce its measures against Member states on the high seas and this has left non-parties free to act inconsistently with CCAMLR conservation measures. CCAMLR would be a much more effective management regime if it had power to enforce conservation measures against non-member states. Management measures must bind all states if they are to be effective and this is particularly important for any comprehensive krill fishing ban that is introduced. If states ignore CCAMLR measures then species like krill receive less protection because the management regime is less effective. Requiring parties to the Fish Stocks Agreement to deter non-party vessels from activities that undermine the Agreement's effective implementation is a major step towards achieving non-party compliance and reducing the problem of IUU fishing.⁶²² One way

⁶²⁰ Article 11(c), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁶²¹ The Fish Stocks Agreement has several measures designed to ensure that regional fisheries organisations conduct their activities in a transparent manner.

Article 12(1) requires states to provide for transparency in the decision-making process and other activities of such regional organisations. One area of CCAMLR's decision making that may lack transparency is the right of any Member to call for a vote by secret ballot (Rule 5, *Rules of Procedure of the Commission*, adopted at CCAMLR conference I in paragraph 13). Keeping the votes secret may prevent states being held accountable to the world community and political pressure for their position on a particular issue. Article 12(2) also requires representatives from intergovernmental organisations and non-governmental organisations concerned with highly migratory stocks to be given the opportunity to take part in the meetings of regional organisations as observers or otherwise as appropriate, subject to the procedures of the organisation. CCAMLR currently conforms to this requirement by allowing the Commission to invite these organisations to attend as observers, as appropriate, so long as no Member objects (Rule 30(e), *Rules of Procedure of the Commission*, adopted at the first Meeting of CCAMLR in paragraph 13). Observers can attend both public and private sessions of the Commission, (Rule 32(a), *Rules of Procedure of the Commission*, adopted at the first Meeting of CCAMLR in paragraph 13) which increases the transparency of the organisation. These NGOs are also to be permitted timely access to the regional organisation's records and reports, subject to procedural rules on access (Article 12(2)). CCAMLR itself does not mention access to records or reports. CCAMLR's procedural rules do allow the transmission of reports of CCAMLR meetings to organisations that have been present as observers (Rule 37, *Rules of Procedure of the Commission*, adopted at the first Meeting of CCAMLR in paragraph 13). CCAMLR's procedural rules also allow all Members free access to data (Data could potentially come with the term "record".), but its rules of access do not mention non-governmental organisations (Rule (a), *Rules for Access and Use of CCAMLR Data*, adopted at the eleventh Meeting of CCAMLR in paragraph 4.35). A change may have to be made if CCAMLR is to comply with this requirement.

⁶²² The Fish Stocks Agreement also contains a number of provisions that relate to its legal status. Article 33(1) requires parties to the Agreement to "encourage" non-parties to become parties and adopt legislation consistent with its provisions. Merely "encouraging" non-parties to join is unlikely to have much effect, however, this provision also contains much stronger procedures aimed at gaining the compliance of non-parties. State parties are required to take measures consistent with the Fish Stocks Agreement and international law to deter the activities of non-party flag vessels that undermine the effective implementation of the Agreement. The enforcement of the Fish Stocks Agreement against non-parties and

in which the effectiveness of CCAMLR could be improved is if pressure was placed on more non-parties to accede to the Convention. As previously discussed, several recent UN General Assembly resolutions have placed political pressure on states to accede to and implement the UN Law of the Sea Convention. Although CCAMLR is not a UN agreement, the General Assembly could still place pressure on states to join by passing similar resolutions in respect of CCAMLR.

As discussed above, it is not certain that the Agreement actually applies to krill. This would prevent krill from receiving the much greater protection offered by the Agreement in relation to high seas fishing than the Law of the Sea Convention provides.⁶²³ Greater clarity could be sought by the CCAMLR Commission itself from the UN on the applicability of the Fish Stocks Agreement to krill.

High Seas Fishing and the Law of the Sea Convention

If claims over the adjacent sea are not recognised, then Antarctica's continental shelf and its seas could be perceived as beyond any national jurisdiction.⁶²⁴ Actual practice can also support an argument that all oceanic areas surrounding Antarctica are high seas.⁶²⁵ Even if coastal States do exist, a large proportion of the Southern Ocean would still be high seas. Non-parties to

issues of consenting to treaties shall be discussed in greater detail in both Chapters 3 and 4. General compliance and enforcement procedures and flag states duties under the Agreement will be discussed in Chapter 4 in relation to IUU fishing). This provision is extremely significant because it attempts to ameliorate one of the major problems that regimes like CCAMLR have had in enforcing their measures.⁶²³ The Fish Stocks Agreement, as discussed, contains many detailed provisions that improve on the generality of the Law of the Sea Convention. Article 10, for example, contains general requirements to compile statistical data and conduct scientific research on stocks. Annex 1 then expands on these requirements for data collection and sharing by, for example, outlining the types of fisheries and vessel data required (Annex 1, Articles 3 and 4). The added specificity in the Fish Stocks Agreement increases the effectiveness and reduces the flexibility in interpreting the general provisions of the Law of the Sea Convention in relation to straddling fish stocks and highly migratory species. These more detailed provisions may, in the future, contribute to a greater protection of such species on the high seas. Specific high seas obligations place a much greater restraint on the high seas fishing freedom than the general provisions in the Law of the Sea Convention. If krill are included in the agreement, it may strengthen any protection they receive under CCAMLR and the Law of the Sea Convention. If krill do not come within the definition of "highly migratory species" then amendment of the Agreement may be possible. The Agreement contains an amendment procedure under Article 45 which allows amendments by proposing amendments and requesting a conference to the UN Secretary General (Article 45(1). If at least half the parties agree, a conference can be held to consider the proposed amendments. The amendment conference should "make every effort" to reach agreement by consensus and no voting on the amendments should take place until the efforts to reach a consensus have been exhausted (Article 45(2). Such an amendment mechanism could provide the means to include krill under "highly migratory" species so that they receive protection on the high seas from the Fish Stocks Agreement.

⁶²⁴ 1985. Antarctic Resource Jurisdiction and the Law of the Sea: A Question of Compromise. *Brooklyn Journal of International Law*, Vol XI(1): 45-78 at 69

⁶²⁵ Vicuna, F.O. *Supra*, fn 515, 244

CCAMLR can still fish on the high seas and this would mean that they could freely exploit krill.⁶²⁶ However, if they are party to the 1982 Convention they are bound by its provisions.

The Law of the Sea Convention does provide for high seas fishing freedom, but it contains conservation provisions that constrain this freedom. Although Article 87 of the 1982 Convention does provide for freedom of fishing on the high seas, it makes that freedom subject to several constraints. States have a duty under Article 117 to take or cooperate with other states in taking conservation measures concerning their nationals on the high seas. States must also, under Article 118, cooperate in the conservation and management of marine living resources on the high seas. The introduction of any conservation must involve a consideration of the interdependence of stocks (Article 119). These provisions place an obligation on parties to the Law of the Sea Convention to introduce measures to conserve the Antarctic krill. Furthermore, the requirement in the Convention to consider the interdependence of stocks means that such states should consider a total fishing ban because of krill's vital role in the ecosystem.

This thesis submits that protecting krill on the high seas in Antarctica is necessary for fishing nations to fulfil their obligation of conserving other fish stocks. The obligation in these provisions is merely to "cooperate" with states on high seas fishing rather than reaching agreement, giving the sections limited force. The duties are also extremely general. However, there are no detailed provisions outlining how conservation on the high seas is to be achieved and there is little in the way of detailed laws governing fishing on the high seas.⁶²⁷ Other krill dependent stocks that are currently exploited on the Antarctic high seas would be more easily conserved if krill were given the protection of a comprehensive harvesting ban by fishing nations who were also parties to the Law of the Sea Convention. The General Assembly's recent resolution provides an opportunity for states to push towards strengthening current legal agreements such as the Convention so that krill and other species receive better protection. A later Chapter of this thesis will also consider improved enforcement techniques that could aid in protecting Antarctic species from IUU fishing. During a recent 2005 UN Consultative

⁶²⁶ This is, of course, assuming that krill are not highly migratory species that receive high seas protection under the Fish Stocks Agreement.

⁶²⁷ Anton, D.K. *Supra*, fn 330, 363

Process,⁶²⁸ delegations from some states expressed support for a network of high seas protected areas as proposed by the Johannesburg Plan of Implementation which was drafted at the World Summit for Sustainable Development in 2002.⁶²⁹ Other delegations responded by highlighting that marine protection zones could restrict high seas freedoms and so their introduction should be subject to state consent.⁶³⁰ This once again illustrates the difficulties with controlling the fishing activities of some states in high seas areas such as in the Southern Ocean.

The UN Fish Stocks Agreement contains further provisions concerning the high seas fishing freedom recognised by the Law of the Sea Convention. In particular, Article 7 places a duty on states to cooperate with a view to conservation and optimum utilisation of highly migratory species on the high seas. Furthermore, coastal states and states fishing on the high seas have a duty to cooperate to ensure compatibility of conservation measures on the high seas. If agreement cannot be reached then the dispute settlement procedures of the Fish Stocks Agreement apply in order that agreement can be reached. Provisional measures are also required in the respect of the high seas before agreement is met. However, these duties are detracted from somewhat, because the opening paragraph of Article 7 makes the duties “without prejudice” to the right for all states for their nationals to engage in fishing on the high seas.

The duties to cooperate are expanded upon in Article 8 of the UN Fish Stocks Agreement. In particular, a duty to cooperate in respect of areas where specific regional management regimes exist to ensure conservation and effective management of straddling stocks and highly and migratory species in respect of such areas, including on the high seas. Furthermore, the Article goes on to require states to enter into consultations, particularly where there is evidence of highly migratory or straddling stocks being under threat of potential overexploitation or where a new fishery is being developed for such stocks. If krill could come within highly migratory stocks, then as discussed above, it is still questionable whether krill fishery is a “new” fishery, particularly because it has existed for several decades. Accordingly, these duties may not be applicable in respect of krill.

CCAMLR

⁶²⁸ Report on the work of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its sixth meeting, A/60/99, 2005

⁶²⁹ The World Summit is discussed in greater detail in Chapter 4 of this thesis.

⁶³⁰ Paragraph 44, Report on the work of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its sixth meeting, A/60/99, 2005

The Law of the Sea Convention and possible EEZs in Antarctica resulting from it will create problems for parties to CCAMLR. Article IV of CCAMLR upholds the approach in Article IV of the Antarctic Treaty. However, there was some recognition of state sovereignty in Antarctica in CCAMLR. The Chairman's statement, which was included in the final act to formulate CCAMLR, was intended to show how CCAMLR applied to the Kerguelen and Crozet Islands and other islands whose sovereignty was recognised by all contracting parties.⁶³¹ France can apply stricter conservation measures than those advocated by CCAMLR in these waters. France can also accept or reject any system of observation and inspection chosen by the Convention.⁶³² A distinction between the Convention's application north and south of 60 degrees could have been made to accommodate the recognition of island sovereignty.⁶³³ However, these states did not want such a regime because it may have implied that limited sovereignty existed south of 60 degrees.⁶³⁴ The express recognition of sovereignty over such islands and the ability to apply stricter conservation measures means that an EEZ around such islands may not be in conflict with CCAMLR's recognition of Article IV of the Antarctic Treaty. EEZs give complete sovereignty over living resources to the coastal state and CCAMLR's recognition of sovereignty for particular islands could permit an EEZ to exist around them without breaching CCAMLR. Such EEZs are necessary because of the protection that they can provide to krill existing within. Coastal states can enforce conservation measures within EEZs, such as a krill fishing ban, thus alleviating the problem of non-party compliance in these zones.

Difficulties arise as to whether EEZs can be declared in other areas to which CCAMLR applies. CCAMLR does not provide a definitive answer as to whether a declaration of such zones is valid under the Treaty system.⁶³⁵ Article IV of CCAMLR freezes claims to territorial sovereignty and "to any right or claim or basis of claim to exercise coastal state jurisdiction". "Coastal state jurisdiction" could either mean jurisdiction around the entire coast of mainland Antarctica or it could relate only to jurisdiction over islands of undisputed sovereignty.⁶³⁶ The ambiguity of the term makes it difficult to determine the effect of CCAMLR on territorial claims.⁶³⁷ Article IV of CCAMLR, unlike the Antarctic Treaty's Article IV, also contains a specific reference to maritime jurisdiction.⁶³⁸ When Chile ratified the Convention, its ratification contained a reservation that the Convention did not affect the rights of Contracting Parties with respect to

⁶³¹ Van Der Essen, A. *Supra*, fn 536, 240

⁶³² *Ibid*

⁶³³ *Ibid*

⁶³⁴ *Ibid*

⁶³⁵ Conforti, B. *Supra*, fn 515, 250

⁶³⁶ *Ibid*, 251

⁶³⁷ *Ibid*

⁶³⁸ Vicuna, F.O. *Supra*, fn 515, 245

maritime jurisdiction or to legal positions proclaimed concerning maritime jurisdiction.⁶³⁹ However, other claimant states do not have such protection so the effect of CCAMLR on their Antarctic sovereignty is unclear.

The EEZ provision embodied in the 1982 Convention can also be seen as similar to the ideas of cooperative rational utilisation of living resources as embodied in CCAMLR.⁶⁴⁰ The EEZ, arguably, therefore already has application in Antarctica through the Convention's management regime.⁶⁴¹ The Convention's area is also larger than the area that would be encompassed in a normal EEZ.⁶⁴² However, unlike EEZs, CCAMLR can only be enforced against parties to the Convention. An EEZ would offer greater protection to krill because it could be enforced against all vessels. Coastal states can therefore enforce a krill fishing ban within the confines of the EEZ.

VI. Biological Diversity

Biological diversity relates to the variability of species and their ecosystems.⁶⁴³ Biological diversity is a concept of maintaining differentiation between species and the prevention the destruction of different species.⁶⁴⁴ Biodiversity is necessary for nature to adapt to changes in the environment.⁶⁴⁵ When particular circumstances cause species to decline heavily in number, biodiversity can help species to adapt to such changes.⁶⁴⁶ Biodiversity refers to three different types of variability: genetic variability between separate populations of species; variability between different types of species and the maintenance of different types of world ecosystems.⁶⁴⁷

⁶³⁹ *Ibid*, 246

⁶⁴⁰ *Ibid*

⁶⁴¹ *Ibid*

⁶⁴² *Ibid*

⁶⁴³ Hubbard, A. 1997. The Convention on Biological Diversity's Fifth Anniversary: A General Overview of the Convention – Where Has it Been and Where is it Going? *Tulane Environmental Law Journal*, Vol 10: 415-446 at 416

⁶⁴⁴ *Ibid*, 417

⁶⁴⁵ Tinker, C. *Supra*, fn 332, 200

⁶⁴⁶ Bodansky, D.M. *Supra*, fn 331

⁶⁴⁷ Anton, D.K. *Supra*, fn 330, 345

In relation to krill, if there are localised populations of krill then krill harvesting in localised areas can threaten the genetic biodiversity of the whole krill population. Localised krill fishing can also threaten the genetic biodiversity of localised predator populations. A likely expansion in krill fishing industry will threaten some krill dependent species. Such an outcome would threaten species biodiversity within the Antarctic marine environment. Any threat to krill would also threaten ecosystem variability. The Antarctic marine ecosystem is a unique ecosystem and, because krill forms the base of that ecosystem, they are vital for its survival. Accordingly, due to the scientific uncertainty concerning the impact of krill fishing on biological diversity, the precautionary approach would justify a krill fishing moratorium being introduced.

The benefits of biological diversity are often seen in economic terms. Maintaining biodiversity helps to keep valuable genetic information that could be used in the future in the pharmaceutical or agriculture industries.⁶⁴⁸ As discussed previously, the strong enzymes in krill can provide pharmaceutical companies with a host of new products. For example, as previously discussed in Chapter 1, the 2005 patent that was lodged for an osteoporosis treatment using krill by-products. Such treatments would inevitably be an economic incentive to preserve potential genetic biodiversity among krill. However, there is an intrinsic, as well as an economic, value of biodiversity. Biological diversity in the marine environment also has a large effect on world climate; produces a significant proportion of the world's oxygen; and provides a major food source.⁶⁴⁹ As such, biodiversity is something worth conserving for its own sake.

Intergenerational equity is a principle suggesting that resources must be protected for the benefit of future generations.⁶⁵⁰ This principle supports the preservation of biodiversity because future generations will benefit from biodiversity.⁶⁵¹ A comprehensive krill fishing ban is crucial because of the security it can provide to the maintenance of biodiversity in the Antarctic. Any economic costs from a cessation of krill industry should not be used as a justification for avoiding the introduction of a ban, particularly because of the economic benefits a ban could provide by helping to preserve krill dependent species whose exploitation can provide greater economic returns.

Migration of species, or species found in common global areas of the high seas, makes biodiversity of international concern.⁶⁵² The Convention on Biological Diversity was drafted in the early 1990s to deal with biodiversity issues. The Convention's objectives are outlined in

⁶⁴⁸ Bodansky, D.M. *Supra*, fn 331, 626

⁶⁴⁹ Anton, D.K. *Supra*, fn 330, 348

⁶⁵⁰ Bodansky, D.M. *Supra*, fn 331, 627

⁶⁵¹ *Ibid*, 628

⁶⁵² *Ibid*, 624

Article 1 as the conservation of biological diversity; the sustainable use of its components; and the fair and equitable sharing of benefits arising from using genetic resources. Biological diversity is defined in Article 2 of the Convention as “the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems”. The Antarctic marine environment comes within the scope of this instrument. The Convention, if effective, can therefore provide krill with further protection because of krill’s vital role in maintaining Antarctic biodiversity. The Convention would also appear to provide a justification for a krill fishing moratorium because of the need to maintain biological diversity. The precautionary approach would support measures to maintain biological diversity of the Antarctic ecosystem even though there is scientific uncertainty as to the effect of krill fishing on biological diversity.

The Convention on Biological Diversity attempts to conserve biodiversity by dealing with the concept in a comprehensive manner.⁶⁵³ Individual countries are required to introduce legislation and programs to maintain biodiversity because many of the world’s biological resources come within the jurisdiction of such nations.⁶⁵⁴ The Convention recognises sovereign rights over resources to states so that they have an incentive to introduce legislation that supports the Convention’s goals.⁶⁵⁵

Article 4 of the Convention on Biological Diversity sets out its jurisdictional scope. In particular, it applies in the case of “components of biological diversity” within areas of national jurisdiction and, in the case of processes and activities (regardless of where their effects occur) carried out under its jurisdiction or control, within the area of its national jurisdiction or beyond the limits of national jurisdiction. The difference between these two concepts is not outlined in the Convention which gives rise to possible ambiguities when interpreting the Convention because processes and activities will affect components of biological diversity.⁶⁵⁶ The Convention refers to “components of biological diversity”, however, this concept is not defined. “Biological diversity” is however, defined as the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. Accordingly, as a vital key to the Antarctic ecosystem, krill would be a “component” because of its necessity in maintaining the variability of the ecosystem. As such,

⁶⁵³ Hubbard, A. *Supra*, fn 677, 419

⁶⁵⁴ *Ibid*, 423

⁶⁵⁵ Anton, D.K. *Supra*, fn 330, 356. Article 3 and Article 15(1) give states the sovereign right to exploit their own resources and Article 4 also gives Contracting Parties jurisdiction over “components of biological diversity” within limits of national jurisdiction.

⁶⁵⁶ Anton, D.K. *Supra*, fn 330, 356

krill would be covered by the Convention in areas of national jurisdiction. Furthermore, the more detailed provision in Article 9 dealing with conservation outside areas of national jurisdiction sets out requirements for states to adopt “measures” for ex-situ conservation of components of biological diversity. Accordingly, it would appear the “processes and activities” as referred to in respect of ex-situ conservation in Article 4, would include any activities such as fishing which could affect the conservation of components of biological diversity. Accordingly, krill harvesting should also be covered in respect of ex-situ conservation on the high seas.

This thesis submits that krill are protected by the Convention in potential or declared Exclusive Economic Zones surrounding Antarctica and the sub-Antarctic islands. A krill harvesting ban within these zones would be consistent with the Convention’s goal of conserving biodiversity. An alternative view would be that a krill fishing moratorium would be inconsistent with the objective of sustainable use of such biodiversity. A krill harvesting ban would not allow the sustainable use of the Antarctic krill species for fishing purposes. However, conserving krill would still allow sustainable use of krill’s genetic biodiversity and any potential pharmaceutical benefits from its enzymes (provided such enzymes could be synthetically produced or produced using a minimal volume of krill). Furthermore, conserving krill would conserve the biodiversity of the whole Antarctic marine ecosystem and allow the sustainable use of krill dependent fish stocks. Accordingly, this thesis submits that a krill fishing moratorium would be consistent with sustainable use of biodiversity because it helps to sustain species higher up in the tropic levels of the food web and so allows sustainable use of this variety of other species.

Although a krill fishing ban, arguably, comes within the ambit of the Convention, this instrument is not an appropriate means of conserving krill. The Convention appears to contain few legally binding provisions to achieve its conservation and sustainable use objectives.⁶⁵⁷ Many proponents of biodiversity were unhappy with the weak conservation duties outlined in the Convention.⁶⁵⁸ The provisions of the Convention were seen as lacking the substance needed to take firm steps to conserve biodiversity.⁶⁵⁹ The Convention also supplements previous treaties rather than creating a comprehensive new agreement dealing with biodiversity.⁶⁶⁰ The Convention does deal with more areas of biodiversity than antecedent treaties, however, it does not detail any specific areas or species to be protected.⁶⁶¹ The use of such general provisions make the Convention extremely weak. The Convention does not contain any detailed provisions

⁶⁵⁷ Anton, D.K. *Supra*, fn 330, 356

⁶⁵⁸ Ward, W.R. 1995. Is a United Nations Convention the Most Appropriate Means to Pursue the Goal of Biological Diversity?: Man or Beast: The Convention on Biological Diversity and the Emerging Law of Sustainable Development. *Vanderbilt Journal of Transnational Law*, Vol 28: 823-833 at 827

⁶⁵⁹ *Ibid*

⁶⁶⁰ Bodansky, D.M. *Supra*, fn 331, 630

⁶⁶¹ *Ibid*

or obligations outlining how conservation of biodiversity is to be achieved. Without such detailed provisions, states will simply apply a minimalist attitude to implementing the Convention's objectives within areas of national jurisdiction, including potential Southern Ocean EEZs. The Convention is also extremely ambiguous and that will give rise to different interpretations by states in their national legislation.⁶⁶² As discussed, the Convention does however provide a legal justification for introducing a krill fishing moratorium in the Southern Ocean. Although the Convention does lack detail and is ambiguous in some respects, this legal justification is its real strength. The enforcement mechanisms under CCAMLR could be used to enforce a krill ban, but the Convention could give a ban legal force against a wider range of parties.

Article 6 of the Convention requires Contracting parties to develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity.⁶⁶³ However, the Convention contains no detailed provisions outlining the scope or requirements of such plans. Many states that have signed and ratified the Convention have recognised their duties under it⁶⁶⁴, although there are no enforcement mechanisms or sanctions that arise for breach of the provisions. This shows a willingness by states to fully implement the Convention, despite its lack of detailed provisions concerning national strategies.

The Convention also contains other provisions that, although general in nature, are legally binding and provide some protection in areas of national jurisdiction. Article 7 requires parties to identify components of biological diversity important for its conservation and sustainable use and monitor such components. The provision also requires states to identify processes and activities which are likely to have a significant adverse impact on the conservation and

⁶⁶² Tinker, C. *Supra*, fn 332, 192

⁶⁶³ The objectives of the Convention in Article 1 should provide weight to interpretation of other provisions (Tinker, C. *Supra*, fn 332, 204). Strategies required by Article 6 should therefore do their upmost to ensure conservation and sustainable use of biological diversity. A provision like Article 5 could be criticised because it allows states to determine the adequacy of conservation strategies.

⁶⁶⁴ Tinker, C. *Supra*, fn 332, 203

sustainable use of biodiversity and monitor such activities. Parties are, arguably, required to monitor krill populations within any potential or declared EEZs because krill's important role in the marine ecosystem makes it vital for the conservation of biodiversity in Antarctica. Krill fishing, as an activity which is likely to have a significant impact on conservation of biodiversity, should also be monitored within these zones. Monitoring of such activities provides information that is necessary to determine what effect krill fishing has on biodiversity.

There are also a number of provisions in the Convention concerning in-situ conservation. Article 2 defines in-situ conservation as "the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties". The Convention provides for the establishment of protected areas to conserve biodiversity.⁶⁶⁵ Arguably, potential Antarctic EEZs could be established as protected areas. As previously discussed, Australia has established form of marine protected area near Heard and Macdonald Islands. Parties to the Convention are also required to regulate and manage biological resources that are important for the conservation of biodiversity.

Article 8(c) requires parties to regulate and manage biological resources that are important for the conservation of biodiversity. Biological resources are defined in Article 2 as "genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity". Krill have potential value, both pharmaceutically and in food and aquaculture, placing them within the ambit of this requirement as a biological resource. Parties are therefore under an obligation to regulate krill, as a biological resource important for conserving Antarctic biodiversity, within any potential or declared Antarctic EEZs.

However, the Convention focuses on "biological resources" as economic resources rather than resources with an intrinsic value. However, if krill were totally protected then they may not be "biological resources" because they could not be processed for economic return, although they may still have "actual" or "potential" value for humanity despite not actually being harvested. Their "actual" value to humanity may also come from their importance to other harvested species or they may have an "intrinsic" value to Antarctica's ecosystem. This is so despite the fact that the "sustainable use" objective of the Convention seems to suggest that the Convention has an economic focus. The preamble to the Convention does recognise the "intrinsic value of biological diversity" and "the importance of biological diversity for evolution and for

⁶⁶⁵ Article 8

maintaining life sustaining systems of the biosphere". However, within the actual provisions themselves there is an extremely strong focus on "sustainable use" and the economic benefits of biodiversity, rather than any intrinsic worth of biodiversity. The Convention places minimal importance on preserving species such as krill simply for their intrinsic value but they, arguably, still have "potential" value even if that value is never exploited.

Despite this focus on the economic benefits of biodiversity, the protection of ecosystems is still a central theme of the Biodiversity Convention. Article 8(d) requires parties to "promote" the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings. The protection of the marine Antarctic ecosystem necessarily depends on krill as does the maintenance of many viable populations, such as some of the baleen whales. Article 8(d) requires parties to "promote" the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings. The Convention offers some protection to threatened species by requiring parties to rehabilitate degraded ecosystems and to "promote" the recovery of threatened species. Article 8(f) requires parties to rehabilitate and restore degraded ecosystems and "promote" the recovery of threatened species. Article 8(k) also requires parties to develop or maintain necessary legislation for the protection of threatened species and populations. A complete fishing ban for the Antarctic krill would allow threatened species such as the baleen whales to recover more quickly. However, the provision simply requires parties to "promote" the recovery of threatened species. Parties can therefore argue that allowing some level of krill fishing within EEZs does not conflict with "promoting" this recovery, even if it is not achieved in the long term.

Article 8(i) also requires parties to "endeavour" to provide the conditions needed for compatibility between present uses and the conservation of biological diversity and the sustainable use of its components. A krill fishing industry is one of the present uses. Krill fishing on a moderate scale may be possible without endangering biodiversity and as such, compatibility between the two goals might be achieved. However, the article merely requires parties to "endeavour" to achieve this goal. If it is not possible to have a krill fishing industry and conserve biodiversity within EEZs, then parties could still permit krill fishing within the EEZ without infringing this article. Given the UN General Assembly's recent focus on

strengthening international fish management agreements, politically it may be difficult for states to adopt such a stance in the future.

The conservation provisions of the Biodiversity Convention do suffer from some common flaws. Many of the sections are extremely general and provide no detail as to how their goals are to be carried out. States can still implement them in good faith according to the spirit of the Convention, but specificity would give much greater certainty and strength to the Convention's obligations. General provisions provide a level of uncertainty and flexibility in their implementation that is not appropriate for conserving marine biodiversity in potential Antarctic EEZs.

All of the subsections in Article 8, when referring to in-situ conservation, also adopt the limitation "as far as possible and as appropriate". This further dilutes the strength of Article 8 and may give weak support to krill and the Antarctic biodiversity that depends on them. Similar criticism can be made of Article 10 of the Convention. The provision requires measures to be adopted relating to use of biological resources to avoid or minimise adverse impacts on biodiversity. Avoidance of adverse impacts on Antarctic biodiversity would necessarily involve the adoption of comprehensive protection for krill by states within any potential Antarctic EEZs that they may control. However, the provision is still very general and contains no specifics in relation to these measures. The provision, similar to article 8, is watered down by the inclusion of the phrase "as far as possible and as appropriate". This reduces the strength of any legally binding effect the provision may have and thus decreases the Convention's potential protection for krill within areas of national jurisdiction. As previously discussed, the Convention can be useful in providing a broad legal justification for introducing a krill fishing moratorium. It would be up to more specific documents, such as those arising from the FAO's International Plan of Action for IUU fishing, to specify how such conservation goals are to be achieved.

Biological Diversity outside National Jurisdiction

The Convention for Biological Diversity must also provide security in areas beyond national jurisdiction to give krill adequate protection. If valid Exclusive Economic Zones do not exist around Antarctica or the sub-Antarctic islands, then many areas of significant krill concentration

would not be within any areas of national jurisdiction. Even with valid EEZs, some areas of the Southern Ocean would not come within state jurisdiction. There is insufficient protection of marine biological diversity at present outside national jurisdiction.⁶⁶⁶

The Convention appears to contemplate the governance of biological diversity in areas outside national jurisdiction. "Biological diversity" includes "marine and other aquatic ecosystems and the ecological complexes of which they are part".⁶⁶⁷ This definition seemingly incorporates all marine ecosystems, including high seas areas. However, the rest of the Convention makes little mention of the need to protect marine biodiversity in areas that do not come within the jurisdiction of any state.⁶⁶⁸ There is merely a requirement to cooperate to achieve conservation in such areas.⁶⁶⁹ The conservation and sustainable use of biological diversity in high seas areas in Antarctica receives little protection from this provision. As the bedrock of the Antarctic ecosystem, krill are essential for conserving Antarctic biodiversity and hence the sustainable use of such biodiversity. The provision provides merely a token obligation to protect high seas biodiversity in Antarctica and can give little aid to the conservation of krill. A comprehensive krill ban will only prove effective if it is universally applicable to all states in all areas of the marine Antarctic. Any international instruments such as the Biodiversity Convention must apply to all parties on the high seas if they are to provide adequate protection.

The Convention also appears to place a different emphasis on areas within and beyond national jurisdiction. Article 4(a) of the Convention gives Contracting parties jurisdiction over "components of biological diversity" within limits of national jurisdiction. Contracting parties have jurisdiction, under Article 4 over "processes and activities, regardless of where their effects occur, carried out under its jurisdiction or control", within the area of national jurisdiction or beyond that area. The difference between these two concepts is not outlined in the Convention which gives rise to possible ambiguities when interpreting the Convention because processes and activities will affect components of biological diversity.⁶⁷⁰

⁶⁶⁶ Anton, D.K. *Supra*, fn 330, 343

⁶⁶⁷ Article 2, *The Convention on Biological Diversity* 1992

⁶⁶⁸ Anton, D.K. *Supra*, fn 330, 355

⁶⁶⁹ Article 5 requires each Contracting party "as far as possible and as appropriate" to "cooperate" with other Contracting parties directly or through competent international organisations in respect of areas beyond national jurisdiction for the conservation and sustainable use of biological diversity. The requirement to simply "cooperate" limits the obligation on states in areas beyond national jurisdiction (Anton, D.K. *Supra*, fn 330, 357). The Conference of the Parties to the Biodiversity Convention is trying to further define the "cooperation" obligation (Anton, D.K. *Supra*, fn 330, 357). However, very little has happened since on that front (Anton, D.K. *Supra*, fn 330, 358). The inclusion of the words "as far as possible and as appropriate" further reduces the strength of this provision.

⁶⁷⁰ Anton, D.K. *Supra*, fn 330, 356

Law of the Sea and Biodiversity

The Convention on Biological Diversity, arguably, has limited application on the high seas in Antarctica because of the Law of the Sea Convention. The Biodiversity Convention would appear to be subordinate to the Law of the Sea Convention in maritime areas. There is some recognition of the concept of biodiversity in the Law of the Sea Convention.⁶⁷¹ The Law of the Sea Convention, however, contains the traditional freedom of the high seas. High seas freedoms granted by the Law of the Sea Convention can prevent the conservation and sustainable use of marine biological diversity.⁶⁷² States can assert high seas freedoms to ensure open access to high seas marine resources.⁶⁷³ The Fish Stocks Agreement does recognise a duty on high seas fishing states to preserve marine biodiversity, but this is only in relation to straddling stocks and highly migratory species.⁶⁷⁴ The subordination of the Biodiversity Convention to the Law of the Sea Convention gives such rights precedence over marine biodiversity, even where the high seas freedom could be extremely detrimental to biodiversity. As previously discussed, there are conservation obligations placed on Law of the Sea Convention parties on the high seas. However, the generality of such obligations limits their effectiveness in maintaining biodiversity and does not place a huge restraint on high seas krill fishing in Antarctica.

There are protective provisions in the Biodiversity Convention that could conflict with the Law of the Sea in other respects. Principle 21 of the Stockholm Declaration on the Human Environment (June 16, 1972) recognises that States have a responsibility not to harm territory of other states or areas beyond national jurisdiction.⁶⁷⁵ This principle has been adopted in Article 3

⁶⁷¹ Article 22(2) requires parties to implement the Convention in relation to the marine environment consistently with the rights and obligations of states under the Law of the Sea. This provision effectively subordinates the Biodiversity Convention to the Law of the Sea in maritime areas. The 1982 Law of the Sea Convention contains little recognition of the concept or need for biodiversity in the marine environment (Anton, D.K. *Supra*, fn 330, 354). The obligation in Article 192 of the Law of the Sea Convention to “protect and preserve the marine environment” may point towards an obligation to conserve marine biodiversity (Anton, D.K. *Supra*, fn 330, 357). Article 194(5) also defines the “environment” as “rare and fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life” which may suggest an obligation to preserve marine biodiversity.

⁶⁷² Anton, D.K. *Supra*, fn 330, 361

⁶⁷³ *Ibid*

⁶⁷⁴ Article 5(g), *The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species* 1995

⁶⁷⁵ Tinker, C. *Supra*, fn 332, 195

of the Biodiversity Convention, now making it binding law. The inclusion of this principle, arguably, conflicts with the possible exercise of high seas fishing freedoms that could harm marine biodiversity.⁶⁷⁶

If high seas fishing (including krill fishing) had a detrimental effect on marine biodiversity, the Biodiversity Convention's objectives would not be upheld even though the Convention, arguably, allows such fishing.⁶⁷⁷ As such, the Convention provides weak protection for the Antarctic krill and other aspects of Antarctic biological diversity that depend on krill's conservation because of its vital role in the ecosystem. If Antarctic EEZs are not legal, then a large proportion of Antarctic waters would be high seas. The Biodiversity Convention gives limited protection to these waters because of the existence of Article 22 and high seas freedoms under the Law of the Sea Convention. Although Antarctic krill are vital for the continued biodiversity of marine Antarctica, the Biodiversity Convention provides only limited protection to any krill located in high seas areas. As discussed, it may be up to other international agreements, such as CCAMLR, to fulfil this role.

CCAMLR and Biodiversity

The Convention for Biological Diversity must also be looked at in light of CCAMLR. Although CCAMLR does not specifically mention biological diversity, it is likely that the two Conventions are consistent or at least not open to conflict. CCAMLR's ecosystem approach to fisheries management seeks to manage and conserve all aspects of the ecosystem, with a focus on the interdependence of species. Arguably, such an approach is similar to the Biodiversity Convention's goal of conserving variability among species. An ecosystem approach that monitors and attempts to conserve all levels of the ecosystem will also conserve biological variability. The Biodiversity Convention is also aimed at the sustainable use of biological diversity, which may take a similar economic focus to the idea of "rational use" embodied in CCAMLR. The two Conventions therefore appear to exist without conflict.⁶⁷⁸

⁶⁷⁶ Anton, D.K. *Supra*, fn 330, 358

⁶⁷⁷ Article 22 may permit such fishing.

⁶⁷⁸ This does not take into account the possible subordination of the Convention on Biological Diversity to the Law of the Seas Convention because of Article 22(2) of the Biodiversity Convention.

The failings of the Convention for Biological Diversity in relation to marine biodiversity have been recognised and there have been some moves towards correcting the problem.⁶⁷⁹ A strengthening of the current regime and more detailed and legally binding provisions⁶⁸⁰ may be necessary to effectively conserve biodiversity both within national jurisdictions and on the high seas. The Subsidiary Body of Scientific, Technical and Technological Action (SBSTTA) has proposed an amendment to either the Law of the Sea Convention or the Convention for Biological Diversity in order to conserve high seas biodiversity.⁶⁸¹ One commentator has argued that this may still result in conflict between the two regimes.⁶⁸² A new system could be devised⁶⁸³ but this would take a great deal of time and would probably encounter a great deal of political resistance, not to mention the problems of conflict or uniformity with existing international instruments. This thesis submits that the most appropriate approach in respect of Antarctic species would be to strengthen CCAMLR in line with the UN General Assembly's recent declaration of the need to strengthen such international fish management agreements. Although CCAMLR is not a UN agreement, if the UN General Assembly passed a similar resolution urging states to accede to CCAMLR, it would place political pressure on non-parties and may result in more states becoming members. Greater membership of CCAMLR combined with improvements in enforcement methods would help to make CCAMLR a more effective management regime, especially in light of the need to combat IUU fishing.

⁶⁷⁹ The Second meeting of the Conference of Parties to the Convention formulated a program in 1995 (the Jakarta Mandate) examine marine and coastal biodiversity (UN website, <http://www.un.org>). Decision II/10 encourages parties to establish national legislation so that they can introduce an integrated approach to conserve and sustainably use biodiversity (Decision II/10, paragraphs 2 and 3, Report of the Second Meeting of the Conference of Parties to the Convention on Biological Diversity, November 1995). The decision also requires the Executive Secretary to carry out certain investigations including options for a pragmatic, ecosystem approach to marine biodiversity and the activities affecting conservation and sustainable use of this biodiversity and the implications on the Biodiversity Convention on such activities (Decision II/10, Annex 2(a) and paragraph 2(b) and (c), Report of the Second Meeting of the Conference of Parties to the Convention on Biological Diversity, November 1995). These directives go some way towards investigating improvements needed for protection of marine biodiversity. Although the Decision does not solve the inadequacies of the Convention concerning marine biodiversity, it is at least a beginning.

⁶⁸⁰ Anton, D.K. *Supra*, fn 330, 343

⁶⁸¹ *Ibid*, 367

⁶⁸² *Ibid*, 368

⁶⁸³ *Ibid*, 369

Conclusion

A strong form of the precautionary approach justifies the introduction of a krill moratorium (or at least localised protection zones) because of the scientific uncertainty concerning krill population and the effect of krill fishing on dependent species. However, this chapter concludes that international “hard” law instruments do not provide an adequate legal regime for the conservation of the Antarctic krill, particularly if a fishing moratorium is introduced.

CCAMLR, the primary Southern Ocean fisheries management regime, is weakened because it does not bind third parties and may not support a moratorium because of its “rational use” objective. However, a later chapter of this thesis will examine improvements that are being made and that can be made to enforcement techniques so that CCAMLR becomes more effective in combating IUU fishing. Furthermore, the UN General Assembly has recently advocated in a 2004 resolution a strengthening of international management instruments, which may lead states to reconsider amending management instruments like CCAMLR or pressure non-members to join.

The Madrid Protocol, as the first international instrument to attempt to provide relatively comprehensive protection for the Antarctic environment and its ecosystems, has the potential to give krill significant protection. The Madrid Protocol does not derogate from CCAMLR but Parties to both treaties do, however, have an obligation to cooperate to ensure that the Protocol’s objectives are achieved and to avoid inconsistency between the implementation of the Protocol and other instruments. As such, greater efforts should be made to reconcile the Protocol’s conservation objectives with the sustainable harvesting goals of CCAMLR. However, the Madrid Protocol is currently subordinate to CCAMLR, making it subordinate to the rational exploitation objectives of that instrument. This thesis submits that a krill fishing moratorium could still be consistent with the CCAMLR objective of rational exploitation whilst protecting Antarctic krill stocks. A krill fishing moratorium would allow greater recruitment and recovery of species that are directly and indirectly dependent on krill. Accordingly, this would permit a greater opportunity for such species to be rationally exploited in accordance with CCAMLR’s objectives.

This chapter also concludes that the existence of Exclusive Economic Zones (“EEZs”) under the Law of the Sea Convention would provide significant protection for krill because a large proportion of krill population would fall within these zones. There is, however, some conflict between a krill fishing ban within these EEZs and other provisions of the Law of the Sea Convention, particularly those concerning optimum utilisation of stocks and third party access to

stocks. If claimants can assert sovereignty over third party states within Antarctic EEZs, they would be able to control fishing activities of the flag vessels of those nations. Control over fishing vessels within these EEZs would reduce the problem of unregulated fishing and allow claimant nations to fully implement a krill fishing ban within the zones claimed by them.

The Law of the Sea Convention also offers some general protection to straddling fish stocks and highly migratory species, although krill are not specifically classed as such by the Convention. The Fish Stocks Agreement contains much more detailed provisions concerning the conservation and management of such stocks. One of the main advantages of the Agreement is that it authorises fishing by only those states that are members of, or apply the conservation measures of, regional organisations. Krill can benefit from the protection provided by such provisions which can reduce the problem of non-parties flouting the conservation measures of organisations like CCAMLR on the high seas (although it is unclear whether the Agreement actually applies to krill). *Prima facie*, a krill fishing moratorium would not seem to be consistent with the Fish Stocks Agreement because of its focus on optimum utilisation of stocks. However, this thesis submits that a fishing ban could still be consistent with the Fish Stocks Agreement because it would permit greater annual recruitment and recovery of species that are directly and indirectly dependent on krill and so would facilitate a greater optimum utilisation of such dependent species.

The existence of localised krill populations mean that localised krill harvesting can threaten genetic biodiversity of krill and localised predator populations, the genetic resources of which could have important future economic potential. The position of krill at the base of the Antarctic marine food chain justifies a total harvesting ban because of krill's important role in maintaining species biodiversity. Although the Biodiversity Convention has sustainable use objectives, the precautionary approach should justify a krill fishing moratorium because of the scientific uncertainty surrounding krill. The Biodiversity Convention's conservation provisions, although legally binding, offer little real protection to krill because of their extremely general nature and use of vague language that does not suggest the imposition of substantive obligations. However, the Biodiversity Convention provides a legal justification for a krill fishing moratorium because of the potential effects of krill fishing on biodiversity. Such a moratorium could be administered in practice by CCAMLR parties, the Biodiversity Convention is simply a potential means of giving greater scope to CCAMLR so that it applies to a wider range of parties and to place political pressure on non-parties to comply with a moratorium.

This Chapter has looked at the protection that can be offered to krill by various hard law instruments and the possibility that these agreements may sanction complete krill protection. The binding effect of these instruments suggests that they can provide strong protection for krill, although the very fact that they are binding has led to the inclusion of general and weak language in them that reduces their effectiveness. However, the UN General Assembly's recent goals of strengthening international fisheries management regimes may provide the impetus to improve the current regulatory regime and place political pressure on non-complying states. The next chapter will focus on non-binding quasi-legal "soft" law instruments that may be able to facilitate conservation of krill. Such instruments appear weak because they are merely voluntary, however, this fact allows them to cover a much wider range of topics in much greater detail. More countries can also be encouraged to adopt them because of their voluntary nature, which could lead to greater protection for krill and other marine species.

CHAPTER 4: THE CONTEMPORARY SOFT LAW REGIME

Introduction

Krill and other Antarctic species need a strong legal and regulatory regime if they are to be conserved in the future. Binding formal treaties and conventions (i.e. "hard" law) could offer strong protection to krill but only if they have sufficient legal strength and are fully implemented. This chapter will focus on the plethora of non-binding quasi-legal instruments and resolutions that do not arise from a formal Treaty process (i.e. "soft" law) to determine whether they can provide a similar means of effectively regulating krill and other fisheries in the Southern Ocean. The first major "soft" law instrument focussing on the environment, the Stockholm Declaration, will be examined in Part I to determine whether a comprehensive krill harvesting ban would conform to its environmental principles. The principles of the subsequent Rio Declaration will also be analysed to see whether they can offer any meaningful legal or regulatory protection to krill. In particular, the concept of sustainable development will be outlined to determine any potential conflict with a complete or limited ban on krill harvesting. As discussed in previous chapters of this thesis, a comprehensive ban on krill harvesting is justified under the precautionary approach because of the vital role played by krill in the ecosystem and the uncertainty surrounding krill population and interactions with other species. At the least, a seasonal or regional ban should be introduced to protect areas most susceptible to overexploitation which could have a damaging effect on localised predator and krill populations. Likely increases in harvesting caused by increased demand for krill products, reduced harvesting costs and overexploitation of larger fish species make it essential to have a strong legal and management regime in place. An analysis of soft law instruments will help to determine whether they can provide extra support for the objectives of hard law instruments and for a krill fishing moratorium.

Parts II and III of this chapter will focus on the plan for sustainable development that arose out of the UNCED Rio Conference, known as Agenda 21, and the subsequent Earth Summit +5.

Agenda 21 is aimed at creating a plan for the conservation and sustainable use of the world's environment. This plan will be analysed to determine whether it can offer effective regulatory mechanisms for the Antarctic krill and whether it would sanction a complete krill harvesting ban.

Part IV of this chapter will look at the UN FAO's Code of Conduct which attempts to create a comprehensive outline of the actions needed to ensure responsible and sustainable fishing. In particular, this section will examine whether the Code can offer any real protection to krill and whether its sustainable development objectives would accord with a comprehensive harvesting

ban. The Code's principles also offer support for the conservation measures of regional management organisations such as CCAMLR. Furthermore, the potential for the Code's principles to become part of customary international law will be analysed to determine whether new customary rules would offer greater protection to krill. This Chapter submits that support given to the Code of Conduct for Responsible Fishing in subsequent instruments such as the Rome, Kyoto and Reykjavik Declarations can help new customary law to develop. The development of new customary law creates a binding legal obligation on states which would require states to abide by the principles of the Code of Conduct. Such a development would strengthen the current legal regime and provide much greater legal protection for krill on the high seas. If the principles of the Code became universally binding there would be a much stronger legal obligation on states to conserve krill, although practical problems of enforcement would still exist.

Sustainable development and conservation of the world's oceans were vigorously discussed at the World Summit on Sustainable Development in late 2002. Two formal instruments, the Johannesburg Declaration and Plan of Implementation, arose from this conference. Part V of this chapter will examine the role that these instruments can play in achieving sustainable development in the future. In particular, their effectiveness and their support for conservation measures of organisations such as CCAMLR will be discussed. The potential entry of the conference's principles into customary law will also be examined to determine whether that would have any real impact on krill conservation or whether those principles would support a comprehensive harvesting ban.

Part VI of this Chapter will focus on the General Assembly resolutions in respect of the world's oceans that were introduced after the World Summit. These resolutions give support to the World Summit's principles, but they may not have any substantive binding effect. This section will examine the binding nature of the resolutions to determine if their principles can help to conserve the Antarctic krill through sustainable exploitation or to facilitate a comprehensive krill harvesting ban.

I. The Stockholm Declaration and the rise of Environmental Protection

What is soft law?

Non-binding international agreements are known as “soft law”.⁶⁸⁴ In particular, these agreements are often a stage along the process of forming strict, legally binding obligations in the form of international treaties.⁶⁸⁵ In all areas there is a scale of hardness or softness where prescriptions as to behaviour are made.⁶⁸⁶

Soft law agreements are often in the form of non-binding agreements such as codes of practice or declarations.⁶⁸⁷ Soft law instruments are extremely different in their scope. Some are very vague and generalised whereas others are much more specific in their provisions.⁶⁸⁸ Soft law is an ambiguous term because a principle must usually be compulsory to be considered as “law”.⁶⁸⁹ Soft law has been argued to be something less than “law” because of the apparent lack of an intention to impose controls on behaviour.⁶⁹⁰ However, because they go through a rigorous negotiation process and do contain expected standards of behaviour,⁶⁹¹ they do still form part of the body of international law even though they do not constitute traditional, legally binding international instruments (although one commentator has raised the possibility that soft law agreements are not governed by international law at all⁶⁹²).

Soft law often embodies aspirational objectives that set out expected norms of behaviour. However, one critical characteristic is that these expected standards have been agreed to by a number of states and this agreement has been recorded.⁶⁹³

⁶⁸⁴ Teece, D.R. 1997. Global Overfishing and the Spanish-Canadian Turbot War: Can International Law Protect the High Seas Environment? *Colorado Journal of International Law and Policy*, Vol 8: 89 at 102

⁶⁸⁵ Birnie, P. and Boyle, A. *Supra*, fn 233, 25

⁶⁸⁶ Panel Discussion. 1988. *A Hard Look at Soft Law*. Proceedings of the American Society of International Law, Vol 82: 371-395 at 375

⁶⁸⁷ Birnie, P. and Boyle, A. *Supra*, fn 233, 25

⁶⁸⁸ Chinkin, C.M. 1989. *The Challenge of Soft Law: Development and Change in International Law*. *International and Comparative Law Quarterly*, Vol 38: 850-866 at 852

⁶⁸⁹ Panel Discussion. 1988. *A Hard Look at Soft Law*. Proceedings of the American Society of International Law, Vol 82: 371-395 at 381

⁶⁹⁰ Panel Discussion. 1988. *A Hard Look at Soft Law*. Proceedings of the American Society of International Law, Vol 82: 371-395 at 374

⁶⁹¹ Birnie, P. and Boyle, A. *Supra*, fn 233, 25

⁶⁹² Schachter, O. 1977. *The Twilight Existence of Nonbinding International Agreement*. *American Journal of International Law*, Vol 71: 296-304 at 300

⁶⁹³ Birnie, P. and Boyle, A. *Supra*, fn 233, 25-26

Weaknesses of Soft law

There are many perceived weaknesses with international soft law. Some argue vehemently against soft law because they see its non-binding nature as weakening the system of international law making.⁶⁹⁴ Soft law may also create uncertainty in international law because of its non-binding nature and, accordingly, states have no degree of certainty that other states will follow any soft law instruments to which they have been a party.⁶⁹⁵ Arguably, states need to be able to anticipate the actions of other nations in the international arena in order to formulate their own international policies.⁶⁹⁶

Because soft law instruments do not legally bind states and their principles are very general in nature, arguably, they can have little substantive effect because states can choose to avoid their prescriptions whenever they wish to. Soft law is often quite broad and the standards embodied in it may appear to be discretionary.⁶⁹⁷ Accordingly, it could be argued that states are able to interpret soft law instruments in a manner that suits their own self-interest and they have discretion as to how to apply soft law principles.

Soft law agreements also suffer from the disadvantage that breaching them does not give rise to a right to demand compensation or other remedies.⁶⁹⁸ Accordingly, because there may be no real sanctions from breaching soft law instruments (although other state parties to those agreements could still unilaterally or multilaterally decide to impose sanctions), there is arguably not a strong disincentive to avoid breaching them, although this is not necessarily the case. Furthermore, even where disputes may arise between states concerning the interpretation and application of soft law principles, the subjective and discretionary nature of soft law instruments makes them a difficult subject for adjudication of disputes.⁶⁹⁹

⁶⁹⁴ Panel Discussion. 1988. *A Hard Look at Soft Law*. Proceedings of the American Society of International Law, Vol 82: 371-395 at 377

⁶⁹⁵ Panel Discussion. 1988. *A Hard Look at Soft Law*. Proceedings of the American Society of International Law, Vol 82: 371-395 at 392

⁶⁹⁶ Panel Discussion. 1988. *A Hard Look at Soft Law*. Proceedings of the American Society of International Law, Vol 82: 371-395 at 393

⁶⁹⁷ Palmer, G. 1992. New Ways to Make International Environmental Law. *The American Journal of International Law*, Vol 86: 259-283 at 269

⁶⁹⁸ Schachter, O. 1977. The Twilight Existence of Nonbinding International Agreement. *American Journal of International Law*, Vol 71: 296-304 at 300

⁶⁹⁹ Chinkin, C.M. *Supra*, fn 733, 862

What effect can soft law have?

Soft law becoming hard

Soft law may also provide a means to change the international legal framework by outlining new ideas and solutions that may change state practice or opinions.⁷⁰⁰ Accordingly, the raising of new ideas in this manner can culminate in new hard law treaties which are legally binding on states and for breach of which sanctions can be imposed legitimately by other states.⁷⁰¹ Even if soft law does not culminate in hard law instruments, it may still perform important functions in the international legal regime, despite its aspirational nature.⁷⁰²

Expected Behaviour

Even though soft law is not binding, it can help to outline the standards of behaviour that states would be expected to comply with.⁷⁰³ Soft law can help to create standards of conduct to guide the actions of states.⁷⁰⁴ Expected standards can, in turn, influence the behaviour of states and can help to instigate change in customary international law or give rise to new binding treaties.⁷⁰⁵

Political Behaviour

Soft law may influence the political decisions of nations⁷⁰⁶ and, accordingly, could have an impact on domestic policy and law. In this manner, soft law environmental principles could go from a non-binding statement of principle, to binding obligations that are present in the domestic legislation of a particular state. Having a very specific, binding instrument is more desirable, but the usefulness of such instruments will be minimal if states simply ignore their provisions. Soft law instruments can be implemented with greater vigour by states because their generalist nature allows more scope for state discretion.

⁷⁰⁰ Palmer, G. *Supra*, fn 742, 269

⁷⁰¹ *Ibid*

⁷⁰² Panel Discussion. 1988. *A Hard Look at Soft Law*. Proceedings of the American Society of International Law, Vol 82: 371-395 at 376

⁷⁰³ Panel Discussion. 1988. *A Hard Look at Soft Law*. Proceedings of the American Society of International Law, Vol 82: 371-395 at 388

⁷⁰⁴ Wirth, D.A. *Supra*, fn 762, 603

⁷⁰⁵ Teece, D.R. *Supra*, fn 729, 102

⁷⁰⁶ Palmer, G. *Supra*, fn 742, 270

Controlling behaviour

Just because there may appear to be a great deal of discretion in states deciding when and how to apply soft law does not mean that they can ignore such agreements wholesale. Just because it is soft law does not necessarily mean that states have a right under international law to breach such agreements or ignore them altogether when acting.⁷⁰⁷ At the very minimum, soft law gives rise to a moral or political duty of good faith compliance,⁷⁰⁸ although the precise meaning of a moral or political obligation may not be clear.⁷⁰⁹

Compromise and Flexibility

One of the great benefits of soft law is that, because of its non-binding nature and often general language, it can be used as a compromise to difficult international disputes or problems.⁷¹⁰ The requirement of unanimous consent is one of the major problems in Treaty making that makes it difficult to achieve agreement in a timely manner.⁷¹¹ Agreement is more easily achieved precisely because soft law instruments are so broad.⁷¹²

Furthermore, the length of time required to negotiate new treaties means that often changes in circumstances can occur that make the negotiated Treaty obsolete.⁷¹³ Speedy agreement is essential in environmental law because of the need for flexibility and rapid change.⁷¹⁴ The lengthy negotiation process of hard law instruments creates significant problems because of the changing needs of environmental regulation. Because soft law instruments are general and non-binding, they can be adapted relatively easily and relatively quickly in order to accommodate changing circumstances. This provides flexibility and dynamism to allow states to react quite quickly to changing conditions.

⁷⁰⁷ Schachter, O. fn 743, 300

⁷⁰⁸ *Ibid*, 303

⁷⁰⁹ *Ibid*

⁷¹⁰ *Ibid*, 376

⁷¹¹ Palmer, G. *Supra*, fn 742, 272

⁷¹² *Ibid*, 269

⁷¹³ Palmer, G. *Supra*, fn 742, 271

⁷¹⁴ Panel Discussion. 1988. A Hard Look at Soft Law. *Proceedings of the American Society of International Law*, Vol 82: 371-395 at 382

Legal Justification

Although soft law itself may not be legally binding, soft law can be used as a justification by states to argue that particular actions are legitimate or illegitimate.⁷¹⁵ Accordingly, states can use soft law to mount arguments, and accordingly, pressure against states with, for example, poor environmental practices that may not be in accordance with soft law. Thus, soft law can strengthen standards as a consequence, even though it is not actually legally binding on states.

The journey to customary law

As will be discussed further in this Chapter, soft law may result in states following new practices which eventually leads to the creation of new customary international law.⁷¹⁶ Although customary law is not the same as a hard law Treaty, it still should be binding on states and thus, soft law can lead to binding obligations even where no formal Treaty is eventually concluded.

The Stockholm Declaration

Modern international environmental law had its origins in the United Nations Conference on the Human Environment that took place in Stockholm in June 1972.⁷¹⁷ The Stockholm conference resulted in 26 environmental principles being formulated as part of the Stockholm Declaration.⁷¹⁸ Although non-binding, these principles provide guidelines as to the environmental objectives that states should aim to achieve. Several of the Declaration's principles are aimed at maintaining the environment for developmental benefits to mankind.⁷¹⁹

⁷¹⁵ *Ibid*, 393

⁷¹⁶ Chinkin, C.M. 1989. *The Challenge of Soft Law: Development and Change in International Law*. International and Comparative Law Quarterly, Vol 38: 850-866 at 857

⁷¹⁷ Wirth, D.A. 1995. The Rio Declaration on Environment and Development: Two Steps Forward and One Back, or Vice Versa? *Georgia Law Review*, Vol 29: 599-652 at 600

⁷¹⁸ *Ibid*, 602

⁷¹⁹ Principle 1 of the Stockholm Declaration advocates the need for "environment of a quality that permits a life of dignity and well-being". Principle 11 of the Stockholm Declaration goes in the other direction by stating that "the environmental policies of all States should enhance and not adversely affect the present or future development potential of developing countries, nor should they hamper the attainment of better living conditions for all..."

If these principles were strictly followed in relation to krill, then a comprehensive krill harvesting ban would be in conflict with the Declaration's goals. Such a ban would prevent krill being used as an aquaculture feed or supplement. Because krill are extremely useful for expanding aquaculture production, preventing their exploitation would harm an industry that can benefit developing countries, especially those with food shortages. As previously discussed, krill has been touted in the past as a source of protein that could solve some of the food shortage problems of developing nations. A comprehensive ban would prevent such a goal being fulfilled and would "hamper the attainment of better living conditions for all" and "adversely affect the...development potential of developing countries". However, disregarding the need for a complete harvesting ban would result in adverse impacts on the quality of the environment in conflict with principle 1. The status of the principles as mere guidelines means that strict adherence is not obligatory, particularly in light of the potential for conflict between them.

The Declaration also advocates the need to protect natural resources and the environment for the benefit of present and future generations.⁷²⁰ Some form of krill conservation is necessitated by these principles so that krill are protected for future generations. The concept of intergenerational equity is, *prima facie*, inconsistent with a complete harvesting ban. Allowing present and future generations to benefit from krill implies an exploitative, rather than an aesthetic, benefit. If so, sustainable exploitation of krill would be consistent with intergenerational equity. However, a comprehensive harvesting ban would give greater protection to *other* dependent species, allowing them to be exploited to provide benefits to present and future generations. Indeed, if krill were protected then dependent species would have a greater chance of survival so that future generations would benefit from them.

⁷²⁰ Principles 1 and 2 (Wirth, D.A. *Supra*, fn 762, 625)

The Declaration does focus on the necessity to reconcile developmental and environmental needs.⁷²¹ The goal of achieving compatibility between development and environmental protection, at first glance, appears to be at odds with a comprehensive krill harvesting ban. Arguably, krill can be commercially harvested and, as long as there are appropriate and effective catch limits in place, this would be consistent with environmental protection goals. However, even limited krill exploitation can have an extremely detrimental effect on the ecosystem (especially on localised predator populations) and this will not allow compatibility between development and Antarctic environmental protection to be achieved.⁷²² The uncertainty surrounding the interrelationships between Antarctic species and krill population makes it even more difficult to predict the impact that development will have on the ecosystem.⁷²³ Accordingly, the precautionary approach would justify a complete fishing ban because of these difficulties in reconciling developmental and environmental needs.

States have a duty to ensure that activities within their jurisdiction or control do not cause damage to areas beyond the limits of national jurisdiction.⁷²⁴ Krill fishing by flag vessels on the high seas would come within the jurisdiction of the flag state. The difficulties in introducing conservation measures to govern Antarctic high seas areas have already been outlined. States must ensure that their flag vessels do not fish in a manner that causes damage to the Antarctic high seas environment if they are to fulfill this duty. Unrestricted krill fishing would not only cause damage to krill population, it would harm the entire Antarctic ecosystem. Therefore, states need to enforce krill conservation measures of some sort against their flag vessels on the high seas to comply with the Stockholm Declaration's environmental principles. Furthermore, they, arguably, need to comply with conservation measures of regional organisations such as CCAMLR in order to "ensure that international organisations play a coordinated, efficient and dynamic role for the protection and improvement of the environment".⁷²⁵

⁷²¹ Principle 13 of the Stockholm Declaration favours states taking "an integrated and coordinated approach to their development planning so as to ensure that development is compatible with the need to protect and improve environment for the benefit of their population". Principle 14 is also in favour of reconciling conflicts between development needs and environmental protection through rational planning. Similarly, Principles 15 and 17 of the Stockholm Declaration advocate the need for planning to avoid adverse impacts on the environment. (Wirth, D.A. *Supra*, fn 762, 632)

⁷²² The potential effect of krill exploitation on the ecosystem has been discussed in detail in Chapter 1.

⁷²³ The uncertainty concerning such relationships has been discussed in detail in Chapter 1.

⁷²⁴ Principle 21, *Stockholm Declaration*

⁷²⁵ Principle 25, *Stockholm Declaration*

Environmental concerns first raised by the Stockholm conference were examined once again 20 years later at the 1992 United Nations Conference on the Environment and Development (UNCED).⁷²⁶ The UNCED was held as a result of the World Commission on Environment and Development's study⁷²⁷ in 1987.⁷²⁸ This report gave rise to the concept of "sustainable development" and recommended the formulation of a Declaration and Convention on environmental protection and sustainable development.⁷²⁹ The idea of sustainable development was fully adopted at the Rio Conference in the Rio Declaration on Environment and Development.⁷³⁰ There are, however, uncertainties as to what exactly is meant by sustainable development.⁷³¹

The Rio Declaration does focus on the needs of humans in sustainable development.⁷³² The way some of its principles are formulated suggests that humans are the primary concern in sustainable development and the environment is of secondary concern.⁷³³ This is a step back from the environmental focus of the Stockholm Declaration.⁷³⁴ The Declaration also appears to sanction the need for development to benefit future generations, rather than a focus on simply conserving the environment for future generations.⁷³⁵ The Rio Declaration's greater emphasis on development, rather than just environmental protection, limits its usefulness in providing a basis for a complete krill harvesting ban. Giving development a greater emphasis suggests that krill should be preserved for their commercial benefits to future generations rather than simply their intrinsic value for environmental protection. An alternative argument is that a comprehensive harvesting ban would allow more sustainable commercial harvests of other species and so krill's complete protection would, under the Rio Declaration, have future benefits beyond the mere aesthetic.

⁷²⁶ The conference, also known as the "Earth Summit", took place in Rio de Janeiro between 3 and 14 June 1992. (Wirth, D.A. *Supra*, fn 762, 599) The Rio Earth Summit was attended by more than 170 countries and was intended to be a successor to the Stockholm Conference. (Wirth, D.A. *Supra*, fn 762, 601)

⁷²⁷ This was also known as the Brundtland Commission.

⁷²⁸ Grzybowski, D.M. 1995. The "Rio" Environmental Treaties Colloquium: A Historical Perspective Leading Up to and Including the United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks. *Pace Environmental Law Review*, vol 13: 49-74 at 57

⁷²⁹ Wirth, D.A. *Supra*, fn 762, 606

⁷³⁰ This Declaration embodied a series of 27 principles that outlined the concept of sustainable development.

⁷³¹ Birnie, P. and Boyle, A. *Supra*, fn 233, 85

⁷³² The Rio Declaration in Principle 1 recognises that human beings are the central concern of sustainable development and Principle 3 states that a right to development exists to meet the needs of present and future generations.

⁷³³ Wirth, D.A. *Supra*, fn 762, 614

⁷³⁴ Principle 1 of the Stockholm Declaration has an environmental focus. Wirth, D.A. *Supra*, fn 762, 615

⁷³⁵ Principle 3 of the Rio Declaration states that the "right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations". (Wirth, D.A. *Supra*, fn 762, 627)

Other provisions of the Rio Declaration appear to recognise the importance of environmental protection.⁷³⁶ The aim of these provisions is to prevent states disregarding the environment when they are considering development.⁷³⁷ These principles, however, still appear to allow environmental protection to be of secondary concern to development and economic goals.⁷³⁸ Environmental protection must be paramount because the continued existence of many species will not be ensured if economic and developmental goals are allowed to gain ascendancy over environmental concerns.

There is nothing specific in the Rio Declaration that refers to natural resources.⁷³⁹ However, there are some principles that do offer protection for natural resources.⁷⁴⁰ Although these principles do not specifically mention marine resources, they require unsustainable consumption of resources to be eliminated through national legislation. Krill should therefore receive national protection from vessels that harvest them in an unsustainable manner. This would advocate national governments enacting environmental measures to prevent their flag vessels engaging in unsustainable harvesting of krill on the high seas. These principles do not justify a total harvesting ban, but they at least justify greater protection on the high seas from flag vessels of states that are not party to current Antarctic or high seas conservation regimes. The uncertainty surrounding krill populations cannot be used as a basis for refusing to apply such measures. This is because the Rio Declaration requires a precautionary approach that does not allow scientific uncertainty to be used as a reason for postponing conservation measures that may prevent environmental damage.⁷⁴¹

⁷³⁶ Principle 4 appears to recognise the importance of environmental protection by stating that, to achieve sustainable development, “environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.”

⁷³⁷ Birnie, P. and Boyle, A. *Supra*, fn 233, 86

⁷³⁸ *Ibid*, 87

⁷³⁹ *Ibid*, 88

⁷⁴⁰ Principle 2 reiterates the Stockholm Declaration’s principle that states must ensure that activities within their control do not harm areas beyond national jurisdiction. As discussed, this could potentially offer protection to krill in the Antarctic high seas. Principle 8 also places states under an obligation to “eliminate unsustainable patterns of production and consumption” in order to “achieve sustainable development”. States are also placed under an obligation by principle 11 to enact effective environmental legislation.

⁷⁴¹ Principle 15, *Rio Declaration*. The precautionary approach will be discussed in detail in the subsequent chapter.

The Rio Declaration also provides a justification for pressuring states to conform to regional conservation measures such as CCAMLR or at least to try to reach agreement with such bodies.⁷⁴² Because regional organisations such as CCAMLR are aimed at rational exploitation or sustainable use of resources, as well as having ecosystem conservation objectives, this thesis submits that the Rio Declaration obliges non-parties to cooperate with such organisations in order to achieve sustainable use of resources. As discussed, one of the major problems with instruments such as CCAMLR is that they do not bind third parties, which can hamper the implementation of conservation measures for species such as krill. Although the Rio Declaration only requires cooperation between states, it still goes some way towards establishing a guideline for third party states which may make it easier to achieve their cooperation in the future. At the very least, it provides a justification for exerting pressure on third party states to attempt to secure their compliance with conservation measures. As discussed, the UN General Assembly has recently made several resolutions that urge states to accede to particular UN agreements including the Law of the Sea Convention and the Fish Stocks Agreement. As such, the UN General Assembly could be a useful mechanism to exert pressure on states to comply with CCAMLR conservation measures in the Antarctic.

The Stockholm and Rio Declarations may be seen by some as less effective than hard law instruments because of their non-binding status. Non-binding international agreements are known as “soft law”.⁷⁴³ Because these declarations do not bind states and their principles are very general in nature, they can have little substantive effect. Soft law is often quite broad and the standards embodied in it may appear to be discretionary.⁷⁴⁴ Soft law can, however, be advantageous because it is often used as a compromise solution to a problem.⁷⁴⁵ Agreement is more easily achieved precisely because soft law instruments are so broad.⁷⁴⁶ Speedy agreement is essential in environmental law because of the need for flexibility and rapid change.⁷⁴⁷ The lengthy negotiation process of hard law instruments creates significant problems because of the changing needs of environmental regulation. Soft law can be used to argue that particular actions are legitimate or illegitimate.⁷⁴⁸ The Stockholm Declaration has been used by many

⁷⁴² Principles 7 and 27 place states under a good faith obligation to cooperate to achieve sustainable development and to “conserve, protect and restore the health and integrity of the Earth's ecosystem”.

⁷⁴³ Teece, D.R. 1997. Global Overfishing and the Spanish-Canadian Turbot War: Can International Law Protect the High Seas Environment? *Colorado Journal of International Law and Policy*, Vol 8: 89 at 102

⁷⁴⁴ Palmer, G. *Supra*, fn 742, 269

⁷⁴⁵ *Ibid*, 376

⁷⁴⁶ Palmer, G. *Supra*, fn 742, 269

⁷⁴⁷ Panel Discussion. 1988. A Hard Look at Soft Law. *Proceedings of the American Society of International Law*, Vol 82: 371-395 at 382

⁷⁴⁸ *Ibid*, 393

governments as a legal justification for their actions or rights and state practice has also been influenced by its provisions.⁷⁴⁹

Furthermore, just because instruments are ratified does not mean that nations will observe them.

⁷⁵⁰ Soft law instruments can be implemented with greater vigour by states because their generalist nature allows more scope for state discretion. The general nature of the Stockholm and Rio Declarations does, however, make them difficult to implement in any effective manner for the very reason that it is difficult to determine precisely what they mean.⁷⁵¹ The environmental principles of these instruments provide a greater legal justification for krill conservation and these principles can be used to pressure other states into accepting krill conservation measures. These benefits are reduced because of practical difficulties in determining exactly what the principles mean and how they are to be implemented, however, they can still be a useful political tool.

Despite the advantages of soft law, the Stockholm and Rio Declarations are still weakened because of their nonbinding status. Nonbinding agreements, arguably, do not have legal effect. Breaching such agreements does not give rise to a right to demand compensation or other remedies.⁷⁵² However, soft law gives rise to a moral or political duty of good faith compliance.⁷⁵³ The precise nature of such a duty is unclear. The obligation provides a justification for the international community to exert pressure on states that do not comply with the principles of the Stockholm and Rio Declarations. Hence there would a justification for pressuring states that do not abide by environmental protection measures for krill such as a comprehensive ban or current CCAMLR catch limits.

⁷⁴⁹ *Ibid*, 383

⁷⁵⁰ Palmer, G. *Supra*, fn 742, 265

⁷⁵¹ Panel Discussion. *Supra*, fn 704, 377

⁷⁵² Schachter, O. fn 743, 300

⁷⁵³ *Ibid*, 303

Soft law can help to create standards of conduct to guide the actions of states.⁷⁵⁴ Expected standards can influence the behaviour of states and can help to instigate change in customary international law or give rise to new binding treaties.⁷⁵⁵ For soft law to create customary international law there needs to be evidence of state practice and *opinio juris*.⁷⁵⁶ In the context of the Rio Declaration, its environmental protection principles will benefit krill if they have entered into customary international law. Hard law instruments such as CCAMLR have no binding effect on third party states. Parties to such treaties have no justification for enforcing conservation measures against non-parties. Third parties can create major difficulties if they do not observe conservation measures and there can also be problems with reflagging of vessels to avoid such measures.⁷⁵⁷ This is already a major problem in Antarctica and other world fishing zones, particularly on the high seas. Major krill concentrations occurring on the high seas will be subjected to these problems because of likely expansions in the current krill industry caused by higher demand for krill products and reduced harvesting costs. If third party states were bound by a concept such as sustainable development, they would be under an obligation to harvest krill and other stocks in a sustainable manner. This would provide a much stronger legal regime to govern krill. As discussed above, the concept of sustainable development outlined in the Rio Declaration does, arguably, permit a comprehensive krill fishing ban because of the benefits to sustainable exploitation of other species and the threat to sustainable development if krill is not protected. A binding obligation also gives other states the justification to introduce such a ban and to exert pressure on non-CCAMLR members to abide by it.

Any assertions that soft law principles have attained the status of hard law are based on the view that state practice has caused a change in the effect of those principles. One way in which state practice can be ascertained is from the introduction of binding hard law treaties.⁷⁵⁸ The concept of sustainable use has been referred to in many international instruments concluded after the Rio Declaration including the Convention on Biological Diversity; the International Tropical Timber Agreement; the Desertification Convention; the Agreement for the Conservation of Straddling and Highly Migratory Fish Stocks; the FAO Code of Conduct; and the Convention on the Non-Navigational Uses of International Watercourses.⁷⁵⁹

⁷⁵⁴ Wirth, D.A. *Supra*, fn 762, 603

⁷⁵⁵ Teece, D.R. *Supra*, fn 729, 102

⁷⁵⁶ Dixon, M. and McCorquodale, R. 2000. *Cases and Materials on International Law* (3rd ed). Blackstone Press: London at 30

⁷⁵⁷ The practical problems of flag vessels will be discussed at a later stage.

⁷⁵⁸ Panel Discussion. *Supra*, fn 704, 387

⁷⁵⁹ Birnie, P. and Boyle, A. *Supra*, fn 233, 88

State practice also includes the actions of states as well as declarations made by them.⁷⁶⁰ The attendance of the Rio conference by over 170 states and the fact that all agreements were consensus based⁷⁶¹ places a strong moral obligation on states to implement the Rio Declaration. Domestic law is also evidence of state practice.⁷⁶² Many countries, including Australia, have adopted the concept of sustainable use in domestic fisheries legislation.⁷⁶³ This provides some evidence of a new emerging practice of sustainable use⁷⁶⁴ in the marine environment.

However, for sustainable use to become part of customary law there needs to be some kind of consistent practice⁷⁶⁵, although a practice does not need to be accepted by all states only a majority of states. The problem of IUU fishing in the Antarctic suggests that many states do not follow the practice of sustainable use because IUU fishing directly threatens the sustainable use of many Southern Oceans stocks. In the *Military and Paramilitary Activities in and against Nicaragua Case (Nicaragua v USA) (Merits)*⁷⁶⁶ it was held that it is sufficient if state practice is generally consistent with a particular principle for it to be part of customary law.⁷⁶⁷ If there are examples of inconsistent behaviour, they are arguably simply breaches of the principle rather than negating it as customary law.⁷⁶⁸ Therefore, if a customary law of sustainable use has emerged, states condoning IUU fishing are simply breaching the law rather than negating its existence. However, this is usually only true for practices that have been established over time from a strong original period of formation.⁷⁶⁹ State practices that are, from the outset, inconsistent with a particular principle make it extremely difficult to argue that it has become part of customary law.⁷⁷⁰ IUU fishing took place before the Rio Declaration was formulated (although it first identified in a CCAMLR meeting in 1997) so inconsistent state practice in the marine environment has existed even at the inception of the concept of sustainable development which will hinder its ascendancy into customary law. This provides an obstacle to the creation of a universally binding principle of sustainable use.

⁷⁶⁰ Chinkin, C.M. *Supra*, fn 733, 857

⁷⁶¹ Bratspies, R. *Supra*, fn 599, 231

⁷⁶² Chinkin, C.M. *Supra*, fn 733, 858

⁷⁶³ In Australia the relevant legislation is the *Fisheries Management Act*.

⁷⁶⁴ Sustainable use is part of the concept of sustainable development.

⁷⁶⁵ Chinkin, C.M. *Supra*, fn 733, 857

⁷⁶⁶ ICJ Rep 1986 14

⁷⁶⁷ Panel Discussion. *Supra*, fn 704, 379

⁷⁶⁸ *Ibid*

⁷⁶⁹ *Ibid*

⁷⁷⁰ *Ibid*

For sustainable development in the marine environment to truly become part of customary law, there must be specific state practices identifying what constitutes “sustainable use”.⁷⁷¹ Otherwise, this general label becomes too difficult to define in practice and leaves states too much discretion to determine its meaning. In the marine environment, the existence or development of fisheries management regimes that utilise the concept provides sufficient specificity of practice.⁷⁷² The Fish Stocks Agreement outlines the concept of sustainable use and has some very specific provisions as to its implementation. The agreement has enough specificity to define the practice of sustainable use in a marine context. CCAMLR, although preceding the formulation of “sustainable development” as a concept, works on the basis of “rational exploitation” which appears to be akin to the concept of sustainable use. Both concepts seek to harvest species in a manner that can be continued indefinitely in the future. If CCAMLR’s provisions can be equated with sustainable use, then they can help to define the practices that constitute sustainable use in the marine environment. Certainty is absolutely vital for a clearly defined customary law obligation to emerge. A customary law principle of sustainable use will strengthen the current legal regime because third parties will be bound by it and if it is sufficiently specific, it can be implemented in practice. Third parties to current management regimes must be subject to some form of binding obligation if a comprehensive krill harvesting ban is to prove effective and is necessary even for the maintenance of current precautionary catch limits, particularly because of likely increases in krill fishing levels. A sufficiently specific binding principle is vital so that third parties cannot seek to avoid their obligations by relying on ambiguities or uncertainties in the principle.

The formulation of a new principle of customary international law also needs *opinio juris*. *Opinio juris* requires an intention to be bound by a principle and such an intention may be negated by the express words of the agreement or implicitly by the soft law nature of the agreement.⁷⁷³ The Rio Declaration is a soft law instrument which may suggest that states acting in accordance with the concept of sustainable development do not intend such a practice to bind them. However, the subsequent adoption of the concept of sustainable use of natural resources in hard law instruments such as the Fish Stocks Agreement and the Convention on Biological Diversity suggests that states have formed the requisite intention to be bound. The concept of sustainable use has also been introduced in subsequent soft law instruments such as the FAO Code of Conduct. General or vague provisions in an instrument, such as those in the Biodiversity Convention, support an argument that there is no intention to be bound by the

⁷⁷¹ Birnie, P. and Boyle, A. *Supra*, fn 233, 89

⁷⁷² *Ibid*

⁷⁷³ Chinkin, C.M. *Supra*, fn 733, 857

concept.⁷⁷⁴ If *opinio juris* and state practice are both evident, then a customary international law principle supporting sustainable use of marine living resources can exist.

The acceptance of a customary international law principle of marine sustainable use needs to have some kind of practical effect for it to be of any substantive value to krill. Customary law does not have sufficient strength to protect krill because of its inability to provide and enforce adequate sanctions to prevent breaches of the law.⁷⁷⁵ However, it can provide the necessary universally binding legal obligation that is lacking with current legal instruments. All parties must be under a legal obligation to uphold any krill fishing ban if it is to prove effective. Even if the current system is maintained, a universally binding obligation to follow precautionary catch limits is required, particularly because of likely increases in harvesting levels. Such an obligation provides the legal justification to pressure states into complying and places a legal duty on them to comply. Customary law can also be useful if domestic courts use it in interpreting law or the International Court of Justice is used to determine disputes concerning the implementation of a rule of marine sustainable use in Antarctica.⁷⁷⁶ However, the subjective and discretionary nature of soft law instruments makes them a difficult subject for adjudication of disputes.⁷⁷⁷ A general principle such as sustainable use is difficult to adjudicate on, although guidance on its application in the marine environment is present in hard law instruments that have adopted the concept. Customary international law can actually strengthen standards because it allows nations to mount strong arguments against poor environmental practices that have led to breach of customary law.⁷⁷⁸ States would have a justification to place pressure on those nations acting contrary to sustainable development principles in the Southern Ocean. A rule of customary international law supporting marine sustainable use also gives states a justification to enforce conservation measures against other states in Antarctic waters.

⁷⁷⁴ Schachter, O. fn 743, 298

⁷⁷⁵ Palmer, G. *Supra*, fn 742, 266

⁷⁷⁶ The ICJ will, of course, only be able to resolve disputes if parties submit to its jurisdiction.

⁷⁷⁷ Chinkin, C.M. *Supra*, fn 733, 862

⁷⁷⁸ Palmer, G. *Supra*, fn 742, 264

II. The impact of Agenda 21 on krill management and regulation

The Rio Conference also gave birth to a plan of action for sustainable development known as Agenda 21.⁷⁷⁹ The Agenda has outlined a plan that recommends the changes that need to be made to achieve sustainable development and preserve the environment.⁷⁸⁰ Chapter 17 of the report deals with the oceans and the marine environment.⁷⁸¹ Coastal states commit themselves under the plan to integrated management and sustainable development of the marine environment under their jurisdiction. Planning is to be on a precautionary basis with a focus on promoting compatibility and a balance of uses.⁷⁸² International cooperation must support such national efforts by coastal states.⁷⁸³

Area C of Agenda 21 concerns the sustainable use and conservation of marine living resources on the high seas. The problems with enforcement of conservation measures against non-parties to CCAMLR in high seas areas of the Southern Ocean makes this extremely relevant to krill and other Antarctic species. Agenda 21 uses similar language to CCAMLR requiring populations to be maintained or restored to levels that can produce maximum sustainable yield, taking account of relationships between species.⁷⁸⁴ As with CCAMLR, the concept of maximum sustainable yield can create some difficulties. If krill were exploited to maximum sustainable yield then it would not be possible to fully protect and restore endangered species such as baleen whales. It would also be difficult to achieve maximum sustainable yield for krill whilst still trying to restore other dependent species to such a level because of their reliance on krill.

⁷⁷⁹ Hafetz, J.L. 2000. Fostering Protection of the Marine Environment and Economic Development: Article 121(3) of the Third Law of the Sea Convention. *American University International Law Review*, Vol 15: 583-636 at 608. Agenda 21 had its roots in the calling of the UNCED by the UN General Assembly on 22 December 1989 (Grzybowski, D.M. *Supra*, fn 773, 56). Most of the text of Agenda 21 was written when the summit commenced (Grzybowski, D.M. *Supra*, fn 773, 58).

⁷⁸⁰ Grzybowski, D.M. *Supra*, fn 773, 56

⁷⁸¹ The opening paragraph of Chapter 17 outlines a need for new integrated approaches to marine management in areas such as the sustainable use and conservation of marine living resources of the high seas and in national jurisdiction.

⁷⁸² Paragraph 17.5, Agenda 21

⁷⁸³ Paragraph 17.10, Agenda 21

⁷⁸⁴ Paragraph 17.46 requires states to commit themselves to conservation and sustainable use of these resources on the high seas. The provision also requires states to protect and restore endangered marine species.

Agenda 21 also focuses on human nutritional, economic and development needs.⁷⁸⁵ As discussed, the use of krill as a protein source or as a feeding stimulant have been touted as major benefits to human nutrition in both aquaculture and in krill products for human consumption. A comprehensive krill harvesting ban seems to be contrary to this provision because of the nutritional, economic and developmental benefits of krill. However, the instrument still advocates sustainable use of marine resources, so some level of krill conservation or the introduction of catch limits would still be required. The problems surrounding maximum sustainable yield also highlight the need to improve current instruments aimed at marine conservation.

Chapter 17 also advocates the need to take “effective” action including multilateral cooperation to ensure that high seas fisheries are managed in accordance with the Law of the Sea.⁷⁸⁶ The extremely general nature of the Law of the Sea provisions regarding the high seas and the lack of specific conservation measures in the Convention means that these sections add little to high seas krill protection. As previously discussed, there is simply a duty in the Law of the Sea Convention to “cooperate” in relation to high seas conservation which weakens the requirements of its high seas conservation provisions. Chapter 17’s need for “effective” action and “full effect” to be given to provisions relating to highly migratory species suggests that states really need to make some good faith effort so that effective conservation measures on the high seas are put in place. However, what is meant by “effective” action is really a matter for each state to subjectively determine. Krill also receive little benefit from the provision in relation to highly migratory species because of their exclusion from the definition of “highly migratory species” in the Law of the Sea Convention. Chapter 17’s greatest strength has been to focus the attention of states on the need to better regulate high seas fishing. The Agenda’s objectives have been examined in subsequent fora such as the 2002 World Summit on Sustainable Development, which has given the issue greater consideration by the world community.

⁷⁸⁵ Paragraph 17.46 requires states to “develop and increase the potential of marine living resources to meet human nutritional needs, as well as social, economic and development goals”.

⁷⁸⁶ Paragraph 17.49, Agenda 21. “Full effect” is to be given to provisions regarding highly migratory species (Paragraph 17.49(b), Agenda 21).

Chapter 17 also tackles the problem of flag state control over fishing vessels on the high seas that has plagued fisheries management regimes such as CCAMLR.⁷⁸⁷ In relation to krill fishing, if a problem with juvenile fish by-catch does exist, vessels are likely to be required to implement some of the previously suggested solutions such as not harvesting krill swarms of low density or avoiding areas where other species are likely to be caught.⁷⁸⁸ States must also take measures to increase availability of marine living resources as human food by reducing wastage and improving processing, distribution and transportation techniques. Recently there have been many new advances in krill processing technology that are aimed at using a greater proportion of each individual krill. These techniques would reduce wastage in compliance with Agenda 21.⁷⁸⁹ Agenda 21 does, therefore, contain some positive legal requirements that are beneficial to Antarctic krill conservation.

Agenda 21 also places obligations on states to control their nationals to ensure that they comply with conservation and management measures and to take effective action to deter them from reflagging their vessels to avoid compliance. Problems with reflagging and non-compliance by non-parties on the high seas have plagued regional organisations such as CCAMLR in the past and reduced the efficacy of conservation measures. These provisions make it a state's responsibility to control their nationals to ensure that they do comply with conservation and management regimes.⁷⁹⁰ State control is fundamental to the enforcement of any krill harvesting ban (regional or comprehensive) or even to the enforcement of precautionary catch limits. These provisions concerning state control must have legally binding effect to have a substantive value.

⁷⁸⁷ Paragraph 17.51 requires states to ensure that their flag vessels fishing on the high seas conduct activities in a manner to minimize incidental catch.

⁷⁸⁸ The possible problem of by-catch from krill fishing is discussed in detail in Chapter 1.

⁷⁸⁹ These advances have been discussed in Chapter 1. Paragraph 17.56 refers to "human food", so utilizing a greater proportion of krill for other products would not come within the ambit of the provision.

⁷⁹⁰ Furthermore, paragraph 17.61 says that states with an "interest" (States whose flag vessels fish within high seas areas of the CCAMLR zone would, presumably, have an interest in that high seas fishery activity). in high seas fishery regulated by an existing regional fisheries organisation of which they are members should be encouraged to join, where appropriate. Although this may influence some states with vessels fishing in Antarctic waters to join CCAMLR, the non-mandatory language used makes it a weak provision. States are merely "encouraged" to join and only "where appropriate", giving the provision little force. Provisions governing flag states may also have less importance if they do not have binding effect.

Agenda 21 is not a binding legal text requiring ratification by states which implies that it constitutes a soft law instrument.⁷⁹¹ Even as a soft law instrument it can have some use to krill. States are under a strong moral obligation to comply, particularly in light of the large number of states that were involved in the report's formation. The effectiveness of a moral obligation is, however, questionable. Such an obligation provides states with a means to apply pressure to nations who do not comply, although it has little usefulness beyond this role. Agenda 21 does, at the very least, force states to re-examine basic regulatory programs and their application.⁷⁹² Agenda 21's general goals are now being implemented in national regulatory regimes.⁷⁹³ As discussed, soft law instruments can create expected standards that influence how states behave. Creating a standard that requires states to conserve and sustainably use high seas fisheries resources and control their high seas flag vessels will influence more states to adopt that standard. This would go some way towards alleviating the problem of non-compliance with conservation measures on the Antarctic high seas.

The likely expansion of krill industry from new krill products and reductions in harvesting costs⁷⁹⁴, makes high seas protection from non-parties to CCAMLR essential to ensure effective conservation. The introduction of a comprehensive krill fishing ban would make this even more important. As discussed, soft law standards can result in hard customary law if a new state practice is established. The standards outlined in Chapter 17 could eventually harden into new rules of customary law, although the usefulness of such customary laws in protecting the high seas is questionable. The *Icelandic Fisheries Case (UK v Iceland)*⁷⁹⁵ and the *Icelandic Fisheries Case (Germany v Iceland)* arguably, already support a customary international law rule for cooperation between states to achieve the conservation and sustainable use of high seas fisheries resources.⁷⁹⁶ The repetition of Chapter 17's principles in other international law instruments makes it more likely that a new customary rule will evolve. Chapter 17 has already been adopted in part by a hard law instrument in the UN Fish Stocks Agreement. The hardening of Chapter 17 principles into customary law would arguably provide CCAMLR parties with a legal justification to enforce conservation measures against non-parties on the Antarctic high seas.

⁷⁹¹ Birnie, P. and Boyle, A. *Supra*, fn 233, 566

⁷⁹² Carr, C.J. and Scheiber, H.N. 2002. Dealing with a Resource Crisis: Regulatory Regimes for Managing the World's Marine Fisheries. *Stanford Environmental Law Journal*, Vol 21: 45-79 at 77

⁷⁹³ *Ibid*, 72

⁷⁹⁴ See Chapter 1 for a discussion of the potential for a large scale krill industry to arise.

⁷⁹⁵ ICJ Rep. (1974)

⁷⁹⁶ Birnie, P. and Boyle, A. *Supra*, fn 233, 88

The Fish Stocks Agreement includes the ideas of conservation and sustainable use outlined in Agenda 21. The Agreement also implements the provisions relating to the precautionary approach⁷⁹⁷ and those relating to states with an interest in high seas fishing becoming members of regional organisations. The Fish Stocks Agreement also goes further than previous instruments in placing obligations on non-parties.⁷⁹⁸ A comprehensive krill ban, or even precautionary catch limits, can only be effective if third parties are bound. Accordingly, the Fish Stocks Agreement would, if it applies to krill, appear to provide greater legal protection than other international agreements.

The Fish Stocks Agreement restricts access to fisheries resources to states applying the conservation measures of regional management organisations and obliges states to cooperate for the conservation of highly migratory species. This places conservation duties on even flag vessels of non-parties to the agreement.⁷⁹⁹ Failure to comply will mean that a flag state is not able to participate in the fishery.⁸⁰⁰ The instrument, in effect, has the capacity to solve the problems with third party states ignoring conservation measures on the high seas. In particular, inspectors could enforce krill conservation measures by using force on vessels in Antarctic high seas.⁸⁰¹ This would only be the case if krill were covered by the agreement or an amendment was made.

A Treaty is only binding if a state consents to it, which brings into question the legality of measures that aim to bind third party states. The need for consent has been one of the major constraints on international environmental law.⁸⁰² There is nothing in the Vienna Convention that explicitly states or implies that nations can be bound without consent.⁸⁰³ The Rio Conference involved a majority of world nations and, because Agenda 21 was formulated out of this conference, states have arguably committed themselves to its principles.⁸⁰⁴ If any commitment in Agenda 21 to “sustainable use and conservation of marine living resources of the high seas” necessitated a constraint of the traditional high seas freedom, then the Fish Stocks Agreement is a means of applying the consent that nations have arguably given to Agenda 21.⁸⁰⁵

⁷⁹⁷ A more detailed discussion of the precautionary approach will take place in Chapter 4.

⁷⁹⁸ Article 8(4) of the Fish Stocks Agreement says that only nations that are members or participants of regional fishing organisations or apply their conservation measures shall have access to the fishery resources. Article 17(1) places an obligation on states to cooperate in the conservation and management of straddling and highly migratory stocks even if the state is not a member of a fishing organisation.

⁷⁹⁹ Bratspies, R. *Supra*, fn 599, 239

⁸⁰⁰ *Ibid*

⁸⁰¹ Article 22(1)(f) also gives inspectors the power to use force against vessels on the high seas even if they are non-parties.

⁸⁰² Palmer, G. *Supra*, fn 742, 271

⁸⁰³ *Ibid*, 272

⁸⁰⁴ Bratspies, R. *Supra*, fn 599, 244

⁸⁰⁵ *Ibid*

If so, states would be bound by the Fish Stocks Agreement because of their consent to Agenda 21. This also raises implications about other future Treaties that embody the principles of Agenda 21. States could find themselves bound by provisions of such Treaties simply by consenting to Agenda 21. However, an alternative argument is that Agenda 21 is simply a means of outlining possible future goals rather than evidencing consent to new management regimes.⁸⁰⁶ The generality of Agenda 21 and the absence of specific proposals for future regimes make it improbable that states intended to be bound by future agreements that arise from its principles.⁸⁰⁷ The high seas provisions of the Fish Stocks Agreement that affect non-parties would have been implicitly agreed to by those parties if it constitutes customary international law.⁸⁰⁸ Consistent state practice is a necessary prerequisite for the formation of customary law and the absence of similar enforcement mechanisms in the management regimes of any regional management organisations implies that the enforcement procedures are not customary law and are therefore invalid.⁸⁰⁹

Agenda 21 also contains a chapter on biological diversity. Krill, as the base of the Antarctic marine ecosystem, are a necessity for maintaining species biological diversity in Antarctica.⁸¹⁰ Chapter 15 of Agenda 21 is directed more towards supporting the Convention on Biological Diversity, which was simultaneously introduced at the Rio Conference, rather than outlining any new principles. Indeed, one of its stated intentions is to support the Biodiversity Convention as well as to improve the conservation and sustainable use of biological diversity.⁸¹¹ The principles contained in Agenda 21, like the Biodiversity Convention, are also very general and do not go into a great deal of detail as to how they are to be achieved.⁸¹² These requirements are similar to those of the Biodiversity Convention and, like that Treaty, there are few specific provisions outlining how such goals are to be achieved.

⁸⁰⁶ *Ibid*

⁸⁰⁷ Paragraph 17.50 also simply calls for a conference to be held on highly migratory species. There are no detailed provisions governing such species, making it less likely that states consented to a management regime concerning them.

⁸⁰⁸ Bratspies, R. *Supra*, fn 599, 244

⁸⁰⁹ *Ibid*, 246

⁸¹⁰ The importance of krill to biological diversity has been discussed in the previous chapter.

⁸¹¹ Paragraph 15.1, Agenda 21

⁸¹² Paragraph 15.5, for example, requires governments to develop or strengthen plans for the conservation and sustainable use of biological diversity; integrate such strategies; take action to conserve ecosystems through *in situ* conservation; and promote the recovery of threatened and endangered species.

Agenda 21 also uses similar vague language to the Biodiversity Convention calling on states to “promote cooperation” and “strengthen support” for regional instruments. Such provisions fall a long way short of a strong requirement for coordinated efforts to achieve conservation and sustainable use of biological diversity. The provisions of Agenda 21 add little to the Convention on Biological Diversity. Both instruments are extremely weak because of their general nature. As discussed previously, their real strength lies in focussing the attention of states on the issue of conserving biodiversity and placing political and legal pressure on states to adopt necessary conservation measures.

III. Earth Summit +5

Five years after Agenda 21 was introduced, in June 1997, the UN General Assembly held a special session (also known as the Earth Summit +5) to review the implementation of the Agenda.⁸¹³ Out of this conference came a General Assembly resolution called the Programme for the Further Implementation of Agenda 21. The opening paragraphs of this resolution constitute an acknowledgement of the problems still being faced since Agenda 21 was formulated.⁸¹⁴ These provisions merely recognise current problems and do not suggest any solutions, making them of little consequence. However, they do once again focus the attention of states on these issues and the need to strengthen and improve environmental regulation such as international fisheries management regimes.

⁸¹³ Lee, J. 2000. The Underlying Legal Theory to Support a Well-Defined Human Right to a Healthy Environment as a Principle of Customary International Law. *Columbia Journal of Environmental Law*, Vol 25:283-340 at 322. 133 countries took part in Earth Summit +5 (Lee, J. *Supra*, fn 859, 322).

⁸¹⁴ Paragraph 9 of the programme acknowledges that marine fish stocks are still being used at rates beyond their viable rates of regeneration. Paragraph 10 lists achievements since the Rio Conference, including the Convention on Biological Diversity and the Fish Stocks Agreement and observes that they still need to be carried out and their provisions may need to be strengthened for this to occur.

The Programme also has a section devoted to the oceans and seas.⁸¹⁵ This section recognises the problems with overfishing and the need for greater implementation of regional fisheries agreements. However, the section simply states that there is “an urgent need” for action in these areas, creating no binding obligations and doing nothing at all to address the problem. The Earth Summit +5 resolution outlines no potential solutions for such problems and contains no binding agreements in relation to marine resources. As such it offers nothing additional to Agenda 21 that could help to protect the Antarctic krill.

Earth Summit +5 has been touted as a failure because there was no formulation of binding environmental targets by the participants.⁸¹⁶ Participants in the conference did not support a renegotiation of Agenda 21.⁸¹⁷ Earth Summit +5 added little to Agenda 21 but it still reiterated the need for the world community to take further action to deal with problems facing the environment such as the issue of overfishing in the world’s oceans.

⁸¹⁵ Paragraph 36 recognises the progress made since the Rio Conference in the fisheries area, but that fish stocks continue to decline. The paragraph also acknowledges that “there is a need for” concerted action by all countries so that relevant international agreements concerning fisheries management and conservation can be implemented. However, simply recognising a “need” for such action creates no binding obligation and there is nothing to say how this will be achieved. Paragraph 36 acknowledges that “there is an urgent need for” a number of actions to be conducted by states. These actions include the ratification and effective implementation of relevant fisheries agreements; better identification of priorities for action to promote conservation and sustainable use of marine resources; greater international cooperation to support the strengthening of regional agreements for protection and sustainable use of the oceans; and governments to prevent or eliminate overfishing by adopting management regimes to ensure sustainable management.

⁸¹⁶ Farr, K.T. 2000. A New Global Environmental Organisation. *The Georgia Journal of International and Comparative Law*, Vol 28: 493-525 at 493

⁸¹⁷ *Earth Summit Review Ends with Few Commitments*. United Nations Department of Public Information - DPI/1916/SD - July 1997, UN website <http://www.un.org>. Even the President of the General Assembly at the time, Ambassador Razali Ismail of Malaysia, stated that the outcome of the Earth Summit +5 was “sobering” and a “wake-up call” for states. The President observed that the absence of any strong agreements for action from the conference was a result of the “enormous difficulties of overcoming short-term and vested interests that would enable concrete commitments to specific targets and to global programmes” (*Earth Summit Review Ends with Few Commitments*. United Nations Department of Public Information - DPI/1916/SD - July 1997, UN website <http://www.un.org>).

IV. The Code of Conduct for Responsible Fishing

The Code of Conduct for Responsible Fishing is a Code that outlines the duties of states that need to be fulfilled in order to promote responsible fishing.⁸¹⁸ The UN Food and Agriculture Organisation (FAO) completed the Code in 1995 and it was adopted by the Twenty-eighth Session of the FAO Conference on 31 October 1995.⁸¹⁹ The Code of Conduct is a voluntary agreement,⁸²⁰ leaving it open to the criticism that it is a weak instrument that states will only follow when it suits them. The voluntary nature of the Code has actually been a major benefit because it has allowed the instrument to address a much wider range of topics than a binding Treaty ever could.⁸²¹ The Code's principles are intended to apply universally to fishing activities⁸²² which gives it a greater scope than a binding Treaty could ever hope to achieve. The rationale behind the Code is that structural change is needed if sustainability objectives are to be met for world fisheries.⁸²³ The Code's provisions adopt the idea of sustainable use and are relevant to the protection of krill on the Antarctic high seas. High seas protection is vital for the effective introduction of a krill fishing ban and is equally necessary if precautionary catch limits are maintained instead.

The universal connotations of the Code make it extremely beneficial for the protection of high seas Antarctic krill. The Code applies to all fishing and all bodies having an interest in it, including states, fishing organisations and individuals involved in the industry.⁸²⁴ The Code's principles are mainly intended to apply to the conservation, management and development of fisheries, although they also apply to other fisheries areas such as processing, trade, aquaculture and research.⁸²⁵ One of the main objectives of the Code is to formulate principles for responsible fishing and for the implementation of national policies governing such fishing.⁸²⁶

⁸¹⁸ The Code had its origins in the International Conference on Responsible Fishing that was held in Cancún, Mexico in May 1992. The Declaration of Cancún was the result of that conference. This instrument outlined the need for a comprehensive fisheries regime governing the concept of responsible fisheries, which included the sustainable use of such fisheries resources. The Declaration also gave support to a Code of Conduct for Responsible Fishing being drafted in the future (Doulman, D.J. 1998. *The Code of Conduct for Responsible Fisheries: The Requirement for Structural Change and Adjustment in the Fisheries Sector*. *UN FAO website*, <http://www.fao.org>). Some movement towards drafting the Code took place, but the impetus for its completion came from the Rome Consensus on World Fisheries in 1995. This consensus urged governments to complete the Code (Annex 2, *FAO Code of Conduct on Responsible Fisheries* 1995) so that greater action could be taken to prevent overfishing and it was adopted by the FAO Ministerial Conference on Fisheries in 1995.

⁸¹⁹ UN FAO website, <http://www.fao.org>

⁸²⁰ Article 1.1, *FAO Code of Conduct for Responsible Fisheries* 1995

⁸²¹ Doulman, D.J. 1998. *Supra*, fn 864

⁸²² Carr, C.J. and Scheiber, H.N. *Supra*, fn 837, 70

⁸²³ Doulman, D.J. 1998. *Supra*, fn 864

⁸²⁴ Article 1.2, *FAO Code of Conduct for Responsible Fisheries* 1995

⁸²⁵ Article 1.3, *FAO Code of Conduct for Responsible Fisheries* 1995

⁸²⁶ Article 2, *FAO Code of Conduct for Responsible Fisheries* 1995

The Code can be used as a guideline when states are formulating legislation on responsible fisheries or are drafting international instruments on the subject.⁸²⁷ This guidance function also aids individuals who are involved in the fishing industry.⁸²⁸ Like many soft law instruments, this guidance function helps to outline expected standards of behaviour. States can draw on the Code's provisions when drafting national legislation because of these expected standards. The Code will benefit krill if states adopt its provisions because of its detailed conservation goals. However, these goals will only help to justify a comprehensive fishing ban if they have a primarily environmental focus.

The Code is intended to "promote protection of living aquatic resources and their environments and coastal areas".⁸²⁹ The Code recognises that a right to fish comes with an obligation to fish in a responsible manner that ensures conservation.⁸³⁰ The Code's focus on maximum sustainable yield and optimum utilisation does imply that there is an underlying development goal in the Code. However, as previously mentioned, a concept of sustainable use that requires the objectives of optimum utilisation and maximum sustainable yield could still leave room for a moratorium on krill fishing if one focuses on the optimum utilisation of other species in the Antarctic ecosystem. Protecting krill would allow the Antarctic ecosystem as a whole to have greater biological security and produce a greater biological yield. Accordingly, a krill fishing moratorium would still arguably be consistent with the Code's objectives.

⁸²⁷ *Ibid*

⁸²⁸ *Ibid*

⁸²⁹ Article 2(g), *FAO Code of Conduct for Responsible Fisheries* 1995

⁸³⁰ Article 6.1, *FAO Code of Conduct for Responsible Fisheries* 1995. States are required, under Article 7.1.1 to adopt measures for the long-term conservation and sustainable use of fisheries resources. Such measures should be aimed at long-term sustainability by "promoting the objective of optimum utilisation." (Article 7.1.1). This provision also requires resources to be available for present and future generations (Article 7.1.1). The provision recognises the concepts of sustainable development and intergenerational equity that have been previously outlined in other instruments such as Agenda 21. Article 6.2 of the Code also supports these concepts. Article 7.2.1 also recognises the overriding importance of long-term sustainability in management measures. However, it also requires states to adopt measures to "maintain or restore stocks at levels capable of producing maximum sustainable yield".

The objective of maximum sustainable yield does, as previously discussed, carry with it a unique set of problems. As discussed, the maintenance of a particular stock at a level ensuring its maximum sustainable yield will not necessarily mean that interrelated stocks will be kept at such a level. Maintaining one stock at a level ensuring maximum sustainable yield can actually prevent some dependent species being restored to levels of maximum sustainable yield. However, it is submitted that the Code permits krill conservation measures that do not embrace the concept of optimum utilisation of krill at a level of maximum sustainable yield.⁸³¹ If the short-term goals of krill harvesting compromise the conservation and sustainable use of krill or their dependent species, then a comprehensive ban (or a level of protection less than optimum utilisation) is arguably permissible. Relevant environmental factors, such as the potential for dependent species to be depleted or unable to recover to levels of maximum sustainable yield would also qualify the need to maintain krill at maximum sustainable yield. Requiring krill fishing at a level lower than maximum sustainable yield can facilitate the recovery of other species, such as the baleen whales, in accordance with the long-term conservation objectives of the Code. The long-term conservation and sustainable use of dependent fish stocks would be threatened if krill were optimally utilised and maintained at maximum sustainable yield. This is more likely given increased demand for krill products and the development of new products. A comprehensive ban, or a level of protection that did not permit optimum utilisation, would prevent the Code's objectives being compromised.

The Code of Conduct also appears to allow a less stringent approach than optimum utilisation of all target species. The Code recognises the need to consider the impact on species that are associated with, or dependent upon, target stocks or belong to the same or an associated ecosystem.⁸³² This seems to embody a similar approach to ecosystem management because it is an approach that does not just focus on conserving target species.⁸³³ Such an approach would allow conservation of krill at less than a level of optimum utilisation and, arguably, allows a complete krill harvesting ban, at least in the short-term because of the likely expansion of krill industry. The key role of krill in the Antarctic ecosystem means that its exploitation can have a major impact on dependent species populations and, as discussed, its harvesting can dramatically effect local predator populations. This thesis submits that the Code's recognition of interspecies impacts permits a complete krill fishing ban because such species are likely to be affected by krill harvesting in a way that does not permit their long-term conservation and sustainable use.

⁸³¹ Article 7.2.1 states that this requirement is to be "qualified by relevant environmental and economic factors". Article 7.1.1 also states that short term considerations should not compromise the objectives of long-term conservation and sustainable use.

⁸³² Article 7.2.3 and Article 6.2, *FAO Code of Conduct for Responsible Fisheries* 1995. This provision also requires relationships among ecosystem populations to be assessed.

⁸³³ Song, Y. 1997. Concluding Perspectives on Ecosystem Management: Comments on Mr. Carr's Presentation. *Ecology Law Quarterly*, Vol 24: 861-864 at 862

Furthermore, Article 7.5 of the Code of Conduct specifically recognises that states should take a precautionary approach to fisheries management. The Code does not outline which form of the precautionary approach should be adopted. Accordingly, because of the scientific uncertainty surrounding krill population a strong form of the precautionary approach would justify the introduction of a krill fishing moratorium and would appear to be consistent with the provisions of the Code.

The Code also offers krill protection in its requirement that measures conserve the biodiversity of ecosystems and protect endangered species.⁸³⁴ The Code supports this requirement by making it a necessity for users of living resources to conserve aquatic ecosystems⁸³⁵ and to promote the diversity of fisheries resources.⁸³⁶ The Code, if adopted by states, will be important for ensuring that the fisheries objectives of the Convention on Biological Diversity are achieved.⁸³⁷ The previously discussed importance of krill to maintaining biodiversity, arguably, permits a complete ban under the Code, or at least allows exploitation at a level less than optimum utilisation. The Code also requires that any depleted stocks should be allowed to recover or be actively restored “where appropriate”.⁸³⁸ Depleted stocks that are dependent on krill can be actively restored, or allowed to recover, by protecting their main food supply of krill. A greater food supply would allow greater levels of recruitment for depleted stocks and hasten their recovery. The requirement to correct adverse environmental impacts merely “where appropriate” weakens the application of these provisions to a complete krill fishing ban because of krill fishing interests.⁸³⁹ This is despite the fact that a comprehensive harvesting ban could allow the reversal of environmental impacts on depleted species such as baleen whales.

⁸³⁴ Article 7.2.2, *FAO Code of Conduct for Responsible Fisheries* 1995

⁸³⁵ Article 6.1, *FAO Code of Conduct for Responsible Fisheries* 1995

⁸³⁶ Article 6.2, *FAO Code of Conduct for Responsible Fisheries* 1995

⁸³⁷ De Fontaubert, C., Downes, D.R. and Agardy, T.S. 1998. *Biodiversity in the Seas: Implementing the Convention on Biological Diversity in Marine and Coastal Habitats*. Georgetown International Law Review, Vol 10: 753-854 at 791

⁸³⁸ Article 7.2.2, *FAO Code of Conduct for Responsible Fisheries* 1995. This is mirrored in article 6.3 which requires states to take measures to rehabilitate populations “as far as possible and when appropriate”.

⁸³⁹ Active recovery only applies “where appropriate”, which weakens this provision. In determining long-term conservation and sustainable use, fishers’ interests are also to be taken into account (Article 7.2.2). The adverse environmental impacts from human activities on resources are also to be assessed and corrected “where appropriate” (Article 7.2.2). The interests of krill fishers may appear to prevent complete conservation of krill under the Code’s provisions, despite potential threats to other species from krill harvesting.

Management measures

The Code also focuses on the preferred approach to stock management. Its approach is similar to that of CCAMLR.⁸⁴⁰ Such an approach is necessary for krill because of the effects on localised predator krill harvesting and the possibility of separate genetic populations of krill existing.⁸⁴¹ The Code of Conduct contains guidelines on management measures that require states to ensure that fishing volumes are consistent with the level of fisheries resources.⁸⁴² The Code requires states and regional fisheries organisations to implement measures to facilitate the sustained recovery of resources threatened with depletion.⁸⁴³ This paper submits that these Code provisions support a krill fishing moratorium. The recovery of currently depleted krill dependent stocks, such as baleen whales, can be hastened by a comprehensive harvesting ban. As previously discussed, current competition from other krill dependent stocks inhibits the recovery of baleen whales and their recovery can be facilitated by total krill protection.

When evaluating alternative conservation and management measures, the Code requires cost effectiveness and social impact to be considered.⁸⁴⁴ The choice between a comprehensive harvesting ban and a lesser form of protection (such as maintaining precautionary catch limits) will be influenced by the social impact on current krill fishers and the impact and cost of a total fishing ban on current krill markets. However, the comprehensive approach embodied in the Code can help fishers to avoid the competitive need to fish in an unsustainable manner. The vessels of all states will be required to use the same methods, rather than being forced to cut costs by using unsustainable practices.⁸⁴⁵ The Code also requires conservation and management measures to be continually reviewed to determine their efficacy.⁸⁴⁶

Any comprehensive ban that was implemented now could be reviewed and lifted or limited to sensitive areas in the future if it was not effective or it was not facilitating the recovery of depleted stocks such as baleen whales.

⁸⁴⁰ Article 7.3.1 advocates a management approach that focuses on the whole stock unit over its entire area of distribution.

⁸⁴¹ These two issues and the uncertainty surrounding them are discussed in Chapter 1.

⁸⁴² Article 7.6.1, *FAO Code of Conduct for Responsible Fisheries* 1995

⁸⁴³ Article 7.6.10, *FAO Code of Conduct for Responsible Fisheries* 1995

⁸⁴⁴ Article 7.6.7, *FAO Code of Conduct for Responsible Fisheries* 1995

⁸⁴⁵ De Fontaubert, C., Downes, D.R. and Agardy, T.S. *Supra*, fn 883, 793

⁸⁴⁶ Article 7.6.8, *FAO Code of Conduct for Responsible Fisheries* 1995

The Code of Conduct also specifically focuses on straddling, highly migratory and high seas fish stocks. However, it only offers weak protection for these species because of the way in which its provisions are drafted.⁸⁴⁷ It is also unclear whether krill come within the definition of highly migratory stocks because the expression is not defined, and as mentioned earlier, it is not clear whether krill are localised or highly migratory. The Code states that its provisions are to be “interpreted and applied in conformity” with the Law of the Sea Convention and in “a manner consistent” with the Fish Stocks Agreement.⁸⁴⁸ The Fish Stocks Agreement does not define the expression either but the Law of the Sea Convention does not include krill within its specific definition of highly migratory stocks. If the Code is to be “interpreted and applied in conformity” with the Law of the Sea Convention, then krill may not be highly migratory stocks and would not be covered by these provisions of the Code.

The Code of Conduct also contains provisions that strengthen the role of regional fisheries organisations. If such an organisation already exists and has competence to establish conservation and management measures, states are required to cooperate by becoming a member or participants of the organisation.⁸⁴⁹ States that are not members should still cooperate by giving effect to conservation and management measures of the organisation.⁸⁵⁰ These provisions can give weight to the validity of CCAMLR’s conservation and management measures and can help to persuade other states to either join the organisation or to conform to its measures. However, the Code still does not give total support to regional management organisations.⁸⁵¹

⁸⁴⁷ Article 7.1.3 states that nations “should cooperate to ensure effective conservation and management” of highly migratory, straddling, transboundary and high seas fish stocks. As discussed, an obligation to “cooperate” may weaken conservation provisions aimed at these fish stocks. Despite this failing, the obligation to ensure “effective” conservation and management may place a greater duty on the state than merely one to cooperate. The requirement of “effectiveness” may mean that a state has to take genuine measures to protect these stocks, rather than simply cooperating regardless of the outcome. However, “effectiveness” may also cause problems of interpretation because of the subjectivity involved in defining such a concept (Bratspies, R. *Supra*, fn 599, 235). States may place their own slant on what constitutes “effective” conservation of these stocks. The objective is to be achieved “where appropriate” by establishing a regional fisheries organisation (Article 7.1.3). This may suggest that parties should conform to CCAMLR’s conservation measures.

⁸⁴⁸ Article 3.1 and 3.2(a), *FAO Code of Conduct for Responsible Fisheries* 1995

⁸⁴⁹ Article 7.1.4, *FAO Code of Conduct for Responsible Fisheries* 1995

⁸⁵⁰ Article 7.1.5, *FAO Code of Conduct for Responsible Fisheries* 1995

⁸⁵¹ Article 7.3.4 also requires states and “where appropriate” regional fisheries organisations to “foster and promote” international cooperation and coordination in all matters related to fisheries. This provision gives added support to the need for consistent conservation measures governing Antarctic krill that are subscribed to by all states. Simply requiring these bodies to “foster and promote” such coordination and only “where appropriate” decreases the strength of the section. Although there is an increased emphasis on regional organisations in the Code, there is still less than total support for such organisations. If States wish to take action through non-fishery organisations which could affect a competent organisation’s measures, they are required to consult in advance “to the extent practicable” and take its views into account (Article 7.3.5). However, prior consultation is not essential and even with consultation an

The Code attempts to provide a comprehensive guide for responsible fisheries that can ensure conservation and sustainable development of fisheries resources. The Code is, however, too broad in scope to provide adequate protection and is not be defined with sufficient clarity.⁸⁵² Such an approach weakens the Code because states have discretion in how it is to be implemented and the generality of the provisions also makes it difficult for states to know how they should be applied. There are articles of the Code that outline areas, such as fisheries management and operations measures, in much greater detail. Furthermore, the FAO has developed, and is continuing to develop, technical guidelines that describe how the Code is to be applied.⁸⁵³ Such guidelines provide much greater detail on how the provisions of the Code should be implemented.⁸⁵⁴ FAO members have voiced their strong support for these guidelines as important tools for the implementation of the Code.⁸⁵⁵

The Code's generality is one of many problems that hamper its implementation. For the Code to operate effectively, it is necessary for cooperation to exist between a large number of different groups including government, fishers, non-government organisations, and consumers.⁸⁵⁶ The large scale of cooperation required means that implementation of the Code will result in gradual changes, rather than rapid results.⁸⁵⁷ This is especially true for krill because of the unique difficulties surrounding Antarctic sovereignty and the large area of high seas that krill inhabit in the Southern Ocean. Many FAO members have also expressed concern at the lack of financial and technical support they have received to implement the Code.⁸⁵⁸ If some states do not have the funds or knowledge to introduce the Code then it will be less effective and its potential to provide a truly comprehensive regime will be reduced.

organisation's views simply need to be taken into account. The provision detracts from the other Code provisions that support regional organisations because it allows states to potentially take actions that conflict with a regional organisation's conservation measures.

⁸⁵² Bratspies, R. *Supra*, fn 599, 235. For example, the Code's general principles outlined in Article 6 require states to prevent overfishing, however, they do not specify when states should take such measures, how overfishing is to be prevented, or the definition of overfishing. This particular section (Article 6), however, forms part of the Code's general principles.

⁸⁵³ Doulman, D.J. 1998. *Supra*, fn 864

⁸⁵⁴ For example, the technical guidelines concerning sustainable development advocate the need to introduce a "sustainable development reference system" that could be used to develop and organise indicators that allow states to determine if sustainable development goals are being met within the ocean environment.

⁸⁵⁵ FAO Report of the 24th Session of the Committee on Fisheries, Rome, 26th February – 2nd March 2001.

⁸⁵⁶ Doulman, D.J. 1998. *Supra*, fn 864

⁸⁵⁷ *Ibid*

⁸⁵⁸ FAO Report of the 24th Session of the Committee on Fisheries, Rome, 26th February – 2nd March 2001.

Other developed states are now being called on by the FAO to give increased technical support and financial assistance to ensure that the Code is effectively implemented by developing states.⁸⁵⁹ This demonstrates another major obstacle that must be overcome to effectively introduce a comprehensive harvesting ban. Not only must there be strong legal obligations on all states in respect of marine species, states must also actually implement those measures in practice. Without sufficient technical and financial support, many states will find it impossible to adequately implement the conservation measures of international instruments such as the Code. Efforts are currently being made by the UN to resolve the difficulties arising from a lack of resources (see, for example, the discussion later in this Chapter concerning the creation of an Assistance Fund by the UN General Assembly). However, the UN FAO itself has recently expressed concerns “over the lack of concrete steps taken to ensure the effective application of [the FAO Compliance plan; the FAO Code of Conduct; the FAO International Plan of Action; and the UN Fish Stocks Agreement], despite national commitments. This situation was caused by a variety of reasons, most importantly by the lack of technical and financial capacity and administrative hurdles.”⁸⁶⁰

Although the Code can provide a comprehensive conservation regime, its voluntary status lessens its potential effectiveness. If the Code is merely voluntary then states can simply ignore its provisions when it suits them or can interpret or apply them in a convenient manner. This will also prevent the Code being a truly comprehensive regime because some states can always decide to ignore its provisions. As discussed, enforcement against third parties is one of the major problems of fisheries conventions. If states refuse to abide by the Code, then it would be in danger of failing to provide any meaningful solution to the overfishing problem. The Code, however, like many other soft law instruments, provides guidelines on how states should act or provides an expected standard of behaviour. There is already some evidence that states do regard the Code as the proper standard for responsible fisheries. The Code has already been voluntarily implemented by the national legislation of many states.⁸⁶¹

⁸⁵⁹ *Ibid*

⁸⁶⁰ Paragraphs 46 and 47, Report on the work of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its fifth meeting, A/59/122, 2004

⁸⁶¹ The Philippines, for example, has adopted the Philippine Fisheries Code which incorporates many of the provisions in the Code of Conduct (Shannon, D. 2002. The Future of Municipal Fisheries in the Philippines: Does the Philippine Fisheries Code Do Enough? *Pacific Rim Law and Policy Journal*, Vol 11: 717-743 at 732). Canada is also developing a national Code that draws on the provisions of the FAO Code (Carr, C.J. and Scheiber, H.N. *Supra*, fn 837, 72) and the National Marine Fisheries Service of the US supports the Code of Conduct and has outlined a plan to implement it (Vigneron, G. 1998. The Most Recent Efforts in the International Community to Implement the 1995 United Nations Straddling Fish Stocks Agreement. *Colorado Journal of International Law and Policy*: 225).

As discussed previously, soft law instruments can “harden” into customary law if there is evidence of a state practice consistent with such agreements and if there is evidence of *opinio juris*. The adoption by states of the Code’s provisions provides some evidence of state practice, although it would need to be adopted by a majority of states before it became part of customary law. The soft law nature of the instrument suggests that there is no *opinio juris* because states may not regard it as a binding practice. However, the adoption of its principles in national legislation and the support for its principles in subsequent international instruments can provide evidence of *opinio juris*. Even if the Code is customary law this will not necessarily add to its effectiveness because, as discussed, customary law imposes only a weak obligation, although as discussed it is unlikely that the Code would currently constitute customary law.

The Rome Declaration

One of the subsequent instruments that provide support for the Code of Conduct is the Rome Declaration.⁸⁶² The Declaration gives direct support for the Code, calling upon users of fisheries resources to apply it.⁸⁶³ The Declaration also adds its support to other approaches outlined in the Code such as sustainability⁸⁶⁴ and the ecosystem approach.⁸⁶⁵ It also mandates encouraging further growth in sustainable aquaculture.⁸⁶⁶ This objective is, arguably, not in accordance with a total krill fishing ban. As discussed, krill has recently been used in aquaculture both as a diet supplement and as an additive that stimulates feeding and can increase production. A complete ban⁸⁶⁷ would not accord with the objective of encouraging further growth in aquaculture because of krill’s potential to substantially increase that growth.⁸⁶⁸

⁸⁶² This Declaration was adopted unanimously by an FAO Ministerial Meeting in Rome on 10 and 11 March 1999 (*The Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries* 1999). 126 Members of the FAO supported the Rome Declaration.

⁸⁶³ Article 12(l), *The Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries* 1999

⁸⁶⁴ Article 12(c) and (n), *The Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries* 1999

⁸⁶⁵ Article 6 and Article 12(c), *The Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries* 1999

⁸⁶⁶ Article 12(n), *The Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries* 1999

⁸⁶⁷ There are, of course, other species of krill that exist outside Antarctica.

⁸⁶⁸ However, Article 12(c) states that highest priority is to be accorded to achieving sustainability of aquaculture “within the framework of the ecosystem approach”. Because of the reliance of so many other species on krill, its exploitation for aquaculture growth may not be necessary under the Rome Declaration if an ecosystem approach is applied.

The Rome Declaration also emphasises the central role that is given to regional organisations in the Code of Conduct.⁸⁶⁹ Strengthening of regional management organisations such as CCAMLR will aid the implementation of the Code's principles and could therefore benefit the Antarctic krill. There is also recognition in the Declaration of the need for financial and technical assistance for developing states to achieve this goal.⁸⁷⁰

The use of language in the Rome Declaration suggests that it is a non-binding soft law instrument.⁸⁷¹ However, the reiteration of the Code of Conduct's principles in the Declaration is a step towards customary acceptance, especially since it was unanimously adopted by 126 states. At the very least, it will increase pressure on other States to abide by the Code of Conduct's principles which could potentially give added protection on the high seas in Antarctica if more pressure were placed on States to join regional fishing organisations such as CCAMLR.

A further Rome Declaration on IUU fishing was made by the FAO Ministerial Meeting on Fisheries on 12 March 2005. The Declaration made statements including that participants would "renew our efforts" to undertake activities such as implementing effective catch certification schemes; adopting market-related measures (in accordance with international law including principles contained in WTO agreements); ensuring appropriate deterrent sanctions are contained in national legislation; and taking action to implement appropriate monitoring, control and surveillance mechanisms.⁸⁷² This new Rome Declaration goes much further because it actually attempts to describe some of the measures that should be taken to prevent IUU fishing, including:

- Supplementation of current monitoring, control and surveillance systems by encouraging fishing fleets to report any suspected IUU fishing they observe;
- Exchanging vessel monitoring system and observer data between regional management organisations;
- Developing a comprehensive global record of fishing vessels with the FAO;

⁸⁶⁹ Article 8 recognised the "important role that regional fishery management organisations can play in respect of the implementation of the Code of Conduct." Article 12(d) gives an undertaking by the parties that adopted the Declaration that they will collaborate with states and governmental and non-governmental organisations to promote the effective implementation of the Code of Conduct.

⁸⁷⁰ Article 5, *The Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries* 1999. Article 12(i) also "urges" the FAO to aid such countries and "invites" donor agencies and funding institutions to increase technical and financial assistance. The lack of any clear requirement for parties to the Declaration to provide aid to developing countries is a weakness and merely "urging" or "inviting" them to do so will not solve the implementation problems caused by poor funding and lack of technical knowledge.

⁸⁷¹ The Declaration uses terms such as "encourage", "call upon", "invite" and "urge", rather than using language that would designate a binding obligation.

⁸⁷² *Rome Declaration 1995*. FAO Ministerial Meeting on Fisheries, 12 March 2005.

- Developing and effectively implementing internationally agreed boarding and inspection regimes in accordance with international law;
- Strengthening coastal and port state measures and effectively regulating transshipment with the objective of preventing IUU fishing; and
- Resolving to provide financial and technical assistance to developing states to implement measures such as vessel monitoring systems.⁸⁷³

This new Rome Declaration highlights real actions that need to be taken to combat IUU fishing. As such, it provides a real blueprint for action and gives strong guidance to states as to what they need to do to fight IUU fishing. The methods of enforcement outlined by this new Rome Declaration will be analysed later in this thesis.

The Kyoto Declaration

Another international instrument that lends support to the Code of Conduct is the Kyoto Declaration.⁸⁷⁴ The aim of the conference leading up to the Declaration was to formulate measures that would ensure that fishing makes a sustainable contribution to food security in the future.⁸⁷⁵ The Declaration also recognises the FAO's prediction of a potential shortfall in the supply of fishery products by 2010 which could adversely affect world food security.⁸⁷⁶ The Declaration contends that this shortfall can be reduced by adopting the measures included in the instrument.⁸⁷⁷ The Declaration supports states taking "steps for effective application" of the FAO Code of Conduct, including timely enactment of domestic legislation, in order to alleviate the potential future shortfall.⁸⁷⁸ It also gives support to the Law of the Sea, Fish Stocks and Compliance Agreements as a means of solving the potential problem.⁸⁷⁹

⁸⁷³ *Ibid*

⁸⁷⁴ The International Conference on the Sustainable Contribution of Fish to Food Security took place in Japan on 4 to 9 December 1995. The 95 countries that attended the conference adopted the Kyoto Declaration and Plan of Action on the Sustainable Contribution of Fisheries to Food Security by consensus (UN FAO website, <http://www.fao.org>).

⁸⁷⁵ UN FAO website, <http://www.fao.org>

⁸⁷⁶ Article 3, *Kyoto Declaration on the Sustainable Contribution of Fisheries to Food Security* 1995

⁸⁷⁷ Article 4, *Kyoto Declaration on the Sustainable Contribution of Fisheries to Food Security* 1995

⁸⁷⁸ Article 5, *Kyoto Declaration on the Sustainable Contribution of Fisheries to Food Security* 1995

⁸⁷⁹ *Ibid*

Parties to the Declaration are, however, under little real obligation, besides a moral one, to effectively apply the Code.⁸⁸⁰ The Kyoto Declaration, like the Rome Declaration, is useful as a justification for applying political pressure or as a means of cementing the Code of Conduct's principles as expected standards of behaviour or as customary law.

The Kyoto Declaration recognises the role that marine fisheries and aquaculture play in providing food security to the world.⁸⁸¹ The main objective of the Declaration is therefore the protection of future fisheries resources for the purpose of providing a sustainable food source in the future and to also use aquaculture for this goal.⁸⁸² The Rome Declaration also supports the Kyoto Declaration and Plan of Action⁸⁸³ and the objective of ensuring a sustainable contribution of fisheries to the attainment of world food security.⁸⁸⁴ The Rome Declaration requires fisheries management to "promote" the availability of fisheries resources for food security.⁸⁸⁵ This goal of food security appears to be at odds with a complete krill fishing ban. As discussed, krill can have enormous benefits to the aquaculture industry both as a dietary supplement and as a feeding stimulant. Krill have also been touted as a potential protein source for human consumption. Given the potential for krill to contribute to world food security, then it is unlikely that a comprehensive harvesting ban would accord with this goal.

Another objective of the Kyoto Declaration is to make optimum use of harvests, including unexploited or underexploited resources, and to identify new, harvestable aquatic resources.⁸⁸⁶ At present, Antarctic krill are exploited at a level that does not even come close to the precautionary catch limits set by CCAMLR, so they could be seen as an underexploited resource⁸⁸⁷ that, under the Kyoto Declaration, should be exploited to optimum level.

⁸⁸⁰ However, parties to the Declaration are merely required to "consider" being parties to these instruments, which provides little real obligation for them to join. The declaration of support for the Code of Conduct requires "steps for effective application", rather than merely a consideration, but what constitutes "effective" application is really, without specific guidance, a subjective matter for each state. The parties to the Declaration also "declare that we should" adopt such measures, rather than requiring them to be adopted.

⁸⁸¹ Article 1, *Kyoto Declaration on the Sustainable Contribution of Fisheries to Food Security* 1995

⁸⁸² The Code of Conduct itself also recognises this food security objective and the Code is intended to "promote the contribution of fisheries to food security and food quality, giving priority to the nutritional needs of local communities" (Article 2(f), *FAO Code of Conduct for Responsible Fisheries* 1995).

⁸⁸³ Article 11, *The Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries* 1999

⁸⁸⁴ Article 12(n), *The Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries* 1999

⁸⁸⁵ Article 6.2, *The Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries* 1999

⁸⁸⁶ Articles 15 and 16, *Kyoto Declaration on the Sustainable Contribution of Fisheries to Food Security* 1995

⁸⁸⁷ Although given the uncertainty of krill population estimates and the potential effects of krill exploitation on another species, it is not certain that krill are actually underexploited.

The Declaration also “seeks to provide an environment” in which commercial fishers can “make an optimum contribution to economic and social welfare”.⁸⁸⁸ Arguably, allowing commercial fishers to exploit krill to some extent is necessary to provide them with an environment that can help to make an optimum contribution to economic welfare. However, a comprehensive ban is not completely at odds with the Kyoto Declaration.

The Kyoto Declaration also supports the goal of conserving and sustainably using aquatic biological diversity including the prevention of genetic erosion and species’ extinction.⁸⁸⁹ Krill, as discussed, are important for maintaining aquatic biological diversity in Antarctica and their exploitation, even to a minor degree, could threaten currently depleted species that are dependent on krill. Krill fishing, even on a small scale, can also cause genetic erosion by potentially endangering local predator populations because of localised krill fishing.⁸⁹⁰ Furthermore, the endorsement of the Code of Conduct in the Kyoto Declaration suggests support for Code provisions that advocate an ecosystem approach. Such an approach requires the conservation of species that are related to a target stock. Therefore, an Antarctic krill fishing ban would not cause a major conflict with the Kyoto Declaration because, under an ecosystem approach, krill protection is necessary to ensure that other dependent species are maintained and can be exploited in a sustainable manner.⁸⁹¹ Environmental concerns surrounding krill must always remain paramount because of the pivotal role played by krill in the Antarctic ecosystem. Economic and developmental objectives relating to krill should not be given priority in legal instruments for this reason.

⁸⁸⁸ Article 1, *Kyoto Declaration on the Sustainable Contribution of Fisheries to Food Security* 1995

⁸⁸⁹ Article 12, *Kyoto Declaration on the Sustainable Contribution of Fisheries to Food Security* 1995

⁸⁹⁰ Although, as discussed in Chapter 1, the effect of krill fishing on local predator populations is still uncertain.

⁸⁹¹ The Kyoto conference also formulated a set of immediate actions that needed to be taken in its Kyoto Plan of Action. These actions included the assessment and monitoring of present and future fishery product production and supply and demand (Article 1, *Kyoto Plan of Action on the Sustainable Contribution of Fisheries to Food Security* 1995). The plan of action also required the enhancement of regional cooperation and cooperation to strengthen “where necessary” existing regional fishery organisations (Article 2, *Kyoto Plan of Action on the Sustainable Contribution of Fisheries to Food Security* 1995). This supports the Code of Conduct’s focus on regional organisations. Cooperation to strengthen an organisation like CCAMLR could provide greater protection for krill, especially because of the large areas of high seas in Antarctica in which krill dwell.

The Kyoto Declaration and the FAO Code of Conduct have both had subsequent support in the Reykjavik Declaration.⁸⁹² The conference was an opportunity to decide how ecosystem considerations could form part of fisheries management strategies.⁸⁹³ The concepts of sustainable development that were set forth in the Rio Declaration and Chapter 17 of Agenda 21 have found support in the preamble of the Reykjavik Declaration which “recalls” those political commitments. The preamble and main body also give support to the conservation of living marine resources by reaffirming the principles of the Law of the Sea Convention and the Code of Conduct.⁸⁹⁴

The Reykjavik Declaration places considerable emphasis on adopting an ecosystem approach and exploring the best methods of applying such an approach.⁸⁹⁵ The Declaration gives clear support for an ecosystem approach in any fisheries management regime. At first glance, the instrument appears to provide extra support for conservation in the marine environment and appears to benefit krill. The instrument’s preamble also acknowledges that further scientific research is necessary to fully implement such an approach.⁸⁹⁶ Such undertakings, if carried out in relation to krill, would enhance krill management processes and would provide them with better protection.

⁸⁹² The Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem took place between 1 and 4 October 2000 in Reykjavik, Iceland (International Institute for Sustainable Development website, <http://www.iisd.ca>). The conference was hosted by Iceland with the cooperation of the FAO and Norway (Statement by Halldor Asgrimsson, Minister for Foreign Affairs and External Trade of Iceland, During the General Debate at the 56th Session of the General Assembly of the United Nations, 21 November 2001). 59 FAO members and observers from 2 non-member nations took part in the conference (UN FAO website, <http://www.fao.org>). Representatives of 3 UN agencies attended and 16 Intergovernmental and 10 Non-Government Organisations were also present (*The Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem*. Presentation by Thorsteinn Ingolfsson, Permanent Representative of Iceland to the United Nations Commission on Sustainable Development acting as the preparatory committee for the World Summit on Sustainable Development. Second preparatory session, Agenda Item 2(c), 28 January 2002).

⁸⁹³ International Institute for Sustainable Development website, <http://www.iisd.ca>

⁸⁹⁴ Iceland’s foreign minister believes there has been little movement on sustainable development (Statement by Halldor Asgrimsson, Minister for Foreign Affairs and External Trade of Iceland, During the General Debate at the 56th Session of the General Assembly of the United Nations, 21 November 2001). The instrument declares the “determination” of parties to continue effective implementation of the Code, which is the “common and agreed guide in strengthening and building fisheries management systems” (Article 1, *Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem* 1995).

⁸⁹⁵ The preamble “recognises” that an ecosystem approach involves taking into account the impacts of fisheries on the marine ecosystem and declares that states are “convinced” that such an approach would enhance management performance. The preamble also “affirms” that more effective conservation and sustainable use can stem from an ecosystem approach that takes species interactions into account.

⁸⁹⁶ Article 5 recognises this problem and says that parties “undertake” to identify and describe marine ecosystems; species interactions; diet composition and physical and oceanographic factors affecting ecosystems. There is also an undertaking to “build or enhance systematic monitoring of natural variability” and to “improve the monitoring of by-catch”.

Uncertainty still surrounds interactions between krill and other species and how environmental factors affect krill populations. Uncertainty also surrounds the issue of by-catch from krill harvesting. More research concerning these factors would benefit krill by reducing some of this uncertainty. However, the Reykjavik Declaration provides little detail regarding which ecosystems and which species the further research is to be carried out on. Furthermore, there is no clear financial commitment by specific states to carry out such research.

The Reykjavik Declaration does recognise that problems still exist with current management regimes.⁸⁹⁷ The Declaration also gives weight to regional fisheries organisations by stating that it is “important to strengthen, improve and where appropriate establish” them. Such a provision could provide further support for CCAMLR, however, the Declaration fails to specify how such organisations can be improved and does not place obligations on specific states to help improve them.⁸⁹⁸ The lack of detail in the Reykjavik Declaration is a significant failing. The more recent soft law embodied in the 2005 Rome Declaration shows the kind of detail that a soft law instrument should embody. The 2005 Rome Declaration is a high value soft law instrument because it contains detailed steps that need to be undertaken to combat IUU fishing.

The Reykjavik Declaration also declares its support for the food security objectives present in the Kyoto Declaration.⁸⁹⁹ This gives greater weight to the Kyoto Declaration’s support of the Code of Conduct and its food security goals.⁹⁰⁰ The support for the Kyoto Declaration’s food security goals must also be clarified by the Reykjavik Declaration’s strong emphasis on ecosystem approaches to fisheries management. An ecosystem approach means that having some level of krill harvesting is not mandatory because of krill’s vital role at the base of the ecosystem, despite the contribution krill can make to food security.

⁸⁹⁷ Article 2 states that there is a “clear need to introduce immediately effective management plans with incentives that encourage responsible fisheries and sustainable use of marine ecosystems, including mechanisms for reducing excessive fishing efforts to sustainable levels.” The Declaration identifies the “clear need” but then fails to specify how and by whom “immediately effective management plans are to be introduced”.

⁸⁹⁸ This flaw is also present in Article 6 which states that the “interaction between aquaculture development in the marine environment and capture fisheries should be monitored through relevant institutional and regulatory arrangements.” Monitoring of such interaction could aid krill by looking at the interaction between levels of krill harvesting and the use of krill in aquaculture. However, the provision simply says monitoring is to take place through relevant institutional and regulatory arrangements without placing specific obligations on any relevant institutions and without giving any details of the kind of monitoring that is to take place.

⁸⁹⁹ The preamble states the “awareness” of parties of the contribution that sustainable use of living marine resources makes to food security and “confirms” that the ecosystem approach is aimed at ensuring the contribution of fisheries to long-term food security as well as conservation and sustainable use. Article 1 also expresses the “determination” of the parties to continue the effective implementation of the Kyoto Declaration.

⁹⁰⁰ Although, merely expressing “determination” falls a long way short of any binding obligation.

The Reykjavik Declaration has also identified some of the problems in implementing the Code of Conduct and seeks to rectify them. The Declaration does seek to address the problem that some states have in implementing the Code because of financial and technical deficiencies, but simply “urging” organisations to help and expressing “determination” to support such countries may not be enough.⁹⁰¹ A solid commitment or a binding agreement to help such countries is necessary to ensure that the provisions of the Code are implemented. The Code will be a lot more effective if it is implemented by as many countries as possible. This deficiency must be remedied for the Code’s principles to provide any substantive benefit to krill. As discussed above, the FAO itself has recently stated its concerns to the UN over the lack of effective implementation of the Code due to inadequate financial and technical resources. Without having binding effect on all states, its principles will not have the necessary legal power to regulate krill fishing. The Reykjavik Declaration also addresses one of the other perceived problems of implementation which is the supposed lack of detail on how the Code’s provisions are to be carried out.⁹⁰²

Although the Reykjavik Declaration does not introduce binding obligations, it does reinforce the principles espoused in the FAO Code of Conduct. Continual reiteration of these principles in instruments such as the Rome, Kyoto and Reykjavik Declarations can only reinforce them as the expected standards of behaviour in relation to world fisheries. This gives more states an incentive to adopt their provisions and place pressure on states that do not. Eventually, this increased acceptance can lead to new customary law rules embodying the principles of the Code. Continued reaffirmation of the Code’s principles in more international instruments could also result in a binding Treaty. Although, many commentators agree that the mere signing and ratification of international instruments will not prevent overfishing, one reason being that they will not prevent illegal fishing.⁹⁰³ Achieving compliance with the Code is more important for krill conservation than simply introducing binding agreements.

⁹⁰¹ Article 7 expresses “determination” to support developing countries in incorporating ecosystem considerations into fisheries management including building expertise in such areas through training. Article 9 also “urges” relevant technical and financial organisations and the FAO to cooperate in providing technical advice and information about effective management regime.

⁹⁰² Article 10 of the Declaration gives further support to the FAO’s development of technical guidelines for best practices including introducing ecosystem considerations into fisheries management. These guidelines provide the detail needed for effective implementation of the Code’s principles.

⁹⁰³ Nelson, N. 1999. International Concern for the Sustainability of the World’s Fisheries: United Nations Efforts to Combat Over-Fishing and International Debate Over State Fishing Subsidies. *Colorado Journal of International Law and Policy*: 157

The problem of third party non-compliance with CCAMLR conservation and management measures (and the measures of other fishing conventions) threatens the effectiveness of such instruments in Antarctica and is the main threat to krill and other exploited Antarctic species. Only by finding a means of securing third party compliance can greater protection for Southern Ocean species be assured. As mentioned earlier, the UN General Assembly has advocated a strengthening of international fisheries management agreements in order to combat IUU fishing. This should be seen as a signal that the UN General Assembly will take real action to attempt to deal with the problem of third party non-compliance.

V. World Summit on Sustainable Development 2002

The World Summit on Sustainable Development (WSSD) was held in Johannesburg, South Africa, from the 26 August to 4 September 2002.⁹⁰⁴ The WSSD recognised that the management of natural resources involves problems, because of the transboundary nature of some resources, requiring integrated ecosystem strategies at a regional level.⁹⁰⁵ Greater regional integration and cooperation will aid krill because of the large proportion of Antarctic fishing that is conducted outside the auspices of CCAMLR on the high seas. The need for further implementation of sustainable development and previous agreements, such as Agenda 21, was outlined in the instruments that were adopted by the WSSD.⁹⁰⁶

⁹⁰⁴ The Summit was intended as a successor conference to the Rio Earth Summit which was held 10 years prior. Before the WSSD was concluded, there were a number of conferences and discussions held on the problems facing the implementation of sustainable development. Four round tables were held between 2 and 4 September (World Summit on Sustainable Development 2002, Agenda Item 11, Round Tables, Document A/CONF. 199/17/Add.1) and a number of partnership events were also held. These discussions noted the usefulness of regional sustainable development strategies for regional cooperation and integration (World Summit on Sustainable Development 2002, Agenda Item 11, Round Tables, Document A/CONF. 199/17/Add.1).

⁹⁰⁵ World Summit on Sustainable Development 2002, Agenda Item 8, Summary of the partnership plenary session on regional implementation, Document A/CONF. 199/16/Add.3

⁹⁰⁶ The round tables also identified the slow progress in implementing Agenda 21 and suggested that a lack of political will was the main reason (World Summit on Sustainable Development 2002, Agenda Item 11, Round Tables, Document A/CONF. 199/17/Add.1). They also acknowledged the need for additional financial resources to implement Agenda 21 and the agreements arising out of Johannesburg.

The WSSD adopted two political resolutions at the conclusion of the conference at the 17th plenary meeting on 4 September 2002. The first resolution approved the Johannesburg Declaration on Sustainable Development.⁹⁰⁷ The Johannesburg Declaration reaffirms the commitment of the conference attendees to sustainable development.⁹⁰⁸ However, most of the Declaration consists of generalised statements that either state current problems without outlining solutions or use flowery language to make highly idealistic statements that have no real substance.⁹⁰⁹ The Declaration has, however, identified a general problem with institutions such as CCAMLR which can be ineffective because non-parties are not obliged to comply with their measures.⁹¹⁰

The Declaration does identify some of the needs and problems facing natural resource management.⁹¹¹ Although the Declaration does identify the problem of natural resource depletion and the need for sustainable development of such resources, it does so only in a very general manner. It also fails to outline potential solutions to these problems. These weaknesses mean that the Declaration offers little to the regulation of krill and its dependent species. The Plan of Implementation contains some more specific solutions to the problem of natural resource depletion.⁹¹²

The Plan of Implementation was adopted by the second political resolution of the WSSD.⁹¹³ The Plan contains several sections that are specifically aimed at the sustainable development of the world's oceans and seas.⁹¹⁴ These provisions focus on the economic usefulness of marine resources and their role in human food security. Arguably, this suggests that human development and human needs are the priority and conservation for the oceans' intrinsic value is a subordinate objective.⁹¹⁵ However, recognition of the oceans as an "essential component of the Earth's ecosystem" also implies that the oceans have intrinsic value. Recognition of this intrinsic

⁹⁰⁷ *Report of the World Summit on Sustainable Development 2002*, Document A/CONF. 199/20

⁹⁰⁸ Article 1, *Johannesburg Declaration on Sustainable Development 2002*

⁹⁰⁹ eg Article 4, "As part of our response to these children, who represent our collective future, all of us, coming from every corner of the world, informed by different life experiences, are united and moved by a deeply felt sense that we urgently need to create a new and brighter world of hope."

⁹¹⁰ Article 31 states that more effective, democratic and accountable international and multilateral institutions are necessary to achieve sustainable development. However, the provision does not mention specific problems or institutions and fails to outline even any general solutions.

⁹¹¹ Article 11 of the Declaration recognises that protecting and managing natural resources are "overarching objectives of and essential requirements for sustainable development". Article 13 also acknowledges the continuing loss of biodiversity and depletion of fish stocks.

⁹¹² Article 36 commits the parties to the Plan of Implementation of the World Summit on Sustainable Development and to expediting the objectives in it.

⁹¹³ *Report of the World Summit on Sustainable Development 2002*, Document A/CONF. 199/20

⁹¹⁴ Article 30 recognises that these areas form "an integrated and essential component of the Earth's ecosystem and are critical for global food security and for sustaining economic prosperity."

⁹¹⁵ Article 35 of the Johannesburg Declaration also "commits parties to act together to promote human development."

value would give greater support to a comprehensive krill ban because of the pivotal role played by krill in the Antarctic ecosystem.

The Plan outlines a number of actions that may be necessary to ensure sustainable development.⁹¹⁶ It offers support for the Law of the Sea Convention.⁹¹⁷ As previously discussed, the Law of the Sea Convention provides some support for krill conservation, both in Exclusive Economic Zones and on the high seas. Unrestricted fishing by third parties on the Antarctic high seas is a major problem. Although many of its provisions are very general, ratification of the Convention by more parties would place an obligation on such states to conduct high seas fishing in accordance with the Convention.⁹¹⁸ Regulation of krill fishing on the high seas is crucial if they are to be effectively managed, particularly if a comprehensive krill fishing ban is introduced.

The Plan also supports the sustainable development objectives of Agenda 21.⁹¹⁹ Supporting Agenda 21 makes it unnecessary for the Plan of Implementation to provide a detailed programme of action to achieve sustainable development of the world's oceans because a plan of action is already detailed in chapter 17 of Agenda 21.⁹²⁰ However, as with the Law of the Sea Convention, simply calling on states to "promote" Agenda 21's implementation is unlikely to resolve the problem of slow implementation that was identified in the Johannesburg Declaration.⁹²¹ Strong conservation measures that are binding on all states must be introduced quickly because of the likely expansion of krill industry.

⁹¹⁶ Article 30 recognises that ensuring sustainable development of the oceans requires effective coordination and cooperation between relevant bodies.

⁹¹⁷ Article 30(a) acknowledges the Law of the Sea Convention's role in providing the overall legal framework for ocean activities and "invites" states to ratify or accede to it.

⁹¹⁸ However, merely "inviting" parties to ratify the 1982 Convention may not be enough to persuade other states to ratify the Convention. If those nations supporting the Johannesburg Plan of Implementation were "required" to ratify the 1982 Convention, then it is far more likely that more states would become parties to it.

⁹¹⁹ There is support in Article 30(b) of the Plan for Agenda 21 and its objectives of sustainable development. The section provides a brief outline of Chapter 17's goals of sustainable development of oceans (including exclusive economic zones); sustainable use and conservation of marine living resources; and strengthening international cooperation and coordination.

⁹²⁰ Article 30(b) merely seeks to "promote the implementation of Chapter 17 of Agenda 21" rather than creating a new plan of action.

⁹²¹ If, 10 years after Agenda 21 was formulated, progress is still extremely slow, then it is unlikely that a call to "promote" its implementation will solve the problem. As discussed, Chapter 17 of Agenda 21 may be particularly relevant to krill because of its requirements for conservation and sustainable use of marine resources on the high seas. The timely implementation of Agenda 21 may be facilitated by a "requirement" of implementation rather than its mere promotion.

The Plan of Implementation, by referring to Agenda 21's implementation, does place political pressure on other states to comply with Agenda 21's objectives. As such, it has the potential to act as a catalyst for other states to support conservation measures in Antarctica such as those adopted under the CCAMLR management regime.

The Plan of Implementation also focuses on an ecosystem approach as a means of achieving sustainable development of the oceans.⁹²² The Plan does not outline what is meant by an ecosystem approach, which may make it difficult to implement. However, it does "note" the Reykjavik Declaration and decision V/6 of the Conference of Parties to the Convention on Biological Diversity. This implies that these instruments can be used to define the ecosystem approach as the term is used in the Plan of Implementation.⁹²³ The ecosystem approach, if applied by all states, will help to conserve krill because of its requirement to consider species' interactions. The approach arguably justifies a krill fishing ban because dependent species (especially local predator populations) will be adversely affected by high levels of krill harvesting. However, merely requiring parties to "encourage" its application is unlikely to persuade states to adopt its principles if they already show reticence in applying the approach.

The Plan also supports the establishment of marine protected areas, especially during breeding periods.⁹²⁴ As discussed previously, there is uncertainty as to where krill breeding and maturation take place but there is some speculation that it occurs under or on the boundary of Antarctic sea ice. Closing such areas to krill fishing or closing them during krill breeding periods would help the recruitment rate and be extremely beneficial to their conservation. As discussed, the area around South Georgia is the only year-round krill fishing zone which makes it more susceptible to overexploitation, particularly if localised krill populations exist.⁹²⁵ Closing this area for certain periods could prevent its overexploitation.

⁹²² Article 30(d) requires that parties to the Plan "encourage the application by 2010 of the ecosystem approach".

⁹²³ Both of these instruments delve into the ecosystem approach in greater detail. The Reykjavik Declaration outlines some of the factors that are part of the ecosystem approach, such as considering interactions between species and understanding the impact of human activities on the ecosystem. Decision V/6 outlines a number of principles that should guide the ecosystem approach and also provides operational guidelines for their application (These principles and the ecosystem approach as a whole will be discussed in greater depth in Chapter 4 of this thesis). Furthermore, other international instruments that have been discussed previously also refer to the ecosystem approach.

⁹²⁴ Article 32(c) supports the ecosystem approach and suggests the development and use of other diverse approaches in accordance with Agenda 21. Other approaches suggested by this provision include the establishment of marine protected areas (in a manner consistent with international law) and time/area closures of fishing areas for the protection of nursery grounds, especially during breeding periods.

⁹²⁵ The uncertainty surrounding the existence of genetically distinct populations of krill was discussed in Chapter 1.

Areas where local predators have suffered from localised krill fishing would also benefit from such closures, although there is uncertainty as to whether local predator depletion is actually a problem.⁹²⁶ Localised krill fishing bans could therefore provide an alternative to a krill fishing moratorium if it were not possible to gain sufficient state support for a complete ban. A local fishing ban could still provide some protection to areas which are most sensitive to krill harvesting. These provisions do, however, need to be carried out in accordance with Chapter 17 of Agenda 21.⁹²⁷ Closing areas would therefore be necessarily based on the sustainable use of resources and the achievement of maximum sustainable yield. Prima facie, areas could not be closed simply as a precautionary measure if sustainable use were not threatened or as a means of conserving stocks for their intrinsic worth.⁹²⁸ An alternative argument is that, because the precautionary approach now has widespread support in many conservation instruments including the FAO Code of Conduct, then closure of krill fishing areas would be justified to allow the sustainable use of other Antarctic species because of the uncertainty concerning the effect of krill fishing on the Antarctic ecosystem.

⁹²⁶ The effect of krill fishing on local predator populations was discussed in Chapter 1.

⁹²⁷ Article 32, *Plan of Implementation of the World Summit on Sustainable Development 2002*

⁹²⁸ Article 30 of the Plan of Implementation also outlines a number of institutional measures that may aid resource management in the Southern Ocean and other world marine environments. One of these measures is the strengthening of regional cooperation and coordination between the relevant regional organisations and programmes, regional fisheries management organisations, other regional organisations and the United Nations Environment Programme. There is also a call to promote integrated, multidisciplinary and multisectoral ocean management and to encourage and assist coastal states to develop such policies. Achieving an integrated and coordinated management approach and having cooperation between relevant parties is especially important in the Southern Ocean. The vast distance of the Southern Ocean from most States and the large proportion of that ocean that potentially consists of high seas areas, make it essential that management measures are consistent. If relevant parties do not cooperate and there is not one overall integrated management approach, then it is unlikely that conservation measures will be effective because different parties will be taking different, and possibly inconsistent, management approaches. Article 30(c) also calls for the establishment of an “effective, transparent and regular inter-agency coordination mechanism on ocean and coastal issues” that could help to achieve an integrated approach within the United Nations system. Although cooperation and consistency are necessary if Antarctic species are to be effectively conserved, the Plan of Implementation fails to give specifics on how these goals are to be achieved. The Plan of Action also outlines a number of actions that are “required” in order to achieve sustainable fisheries (Article 31). Using the word “required”, rather than the discretionary or general language used in other provisions, suggests that there is an obligation to perform these actions. Article 31(a) requires the maintenance or restoration of stocks to levels that can produce the maximum sustainable yield. This provision is similar to requirements found in other international instruments such as Agenda 21 and the FAO Code of Conduct. As previously discussed, such requirements create problems because the interdependence of stocks means that it is difficult to maintain or restore all stocks to those levels. The provision also has the aim of achieving such levels for depleted stocks on an “urgent” basis and “where possible” not later than 2015. Such a requirement may give support to a low level of krill fishing or a total Antarctic krill fishing ban. A comprehensive fishing ban may allow krill-dependent depleted stocks to be restored on an “urgent” basis. Stocks such as the baleen whales, as previously discussed, are not being restored in a timely manner because of the competition for krill as a food source from other species. A total krill fishing ban may provide a greater food supply and may speed the recovery of depleted species, although competition from other species could still hamper that process.

The Plan also requires the adoption of “relevant United Nations” agreements and “associated” regional fisheries agreements.⁹²⁹ Although “relevant” agreements are not defined, the objective of the section is to “achieve sustainable fisheries” and so, arguably, “relevant” agreements would be those that are aimed at achieving sustainable fisheries. CCAMLR is a regional fisheries agreement that seeks to achieve sustainable fisheries which parties would be “required” to not only ratify or accede to, but also to effectively implement. Although CCAMLR is not a United Nations Agreement, there is still scope to argue that it is an “associated” regional fisheries agreement of other United Nations instruments such as the Law of the Sea Convention and Fish Stocks Agreement. The reason being that these UN agreements attempt to deal with fisheries species in general, which is obviously relevant to the Southern Ocean fish stocks. However, a regional fisheries management agreement like CCAMLR is really necessary to ensure that the broad principles of such a UN agreement are applied in practice when managing regional fish stocks. If non-parties to CCAMLR were required to become parties and also effectively implement its provisions, then this would go a long way to providing a more effective management and conservation regime for the Southern Ocean. Krill would benefit if more nations were required to comply with CCAMLR conservation measures, particularly on the Antarctic high seas. Third party state compliance is vital if CCAMLR’s current conservation measures, or a complete krill fishing ban, are to prove effective in the face of likely increases in demand for krill products. Problems, however, exist concerning the application of the Plan to CCAMLR and other fisheries instruments. The Plan’s provisions appear to allow states themselves to determine when it is appropriate to ratify an international agreement.⁹³⁰ Furthermore, CCAMLR does not necessarily fall within the types of international agreements covered by the Plan.⁹³¹

⁹²⁹ Article 31 of the Plan of Implementation also requires the adoption of several international instruments. Article 31(b) requires parties to “ratify or accede to and effectively implement the relevant United Nations, and where appropriate, associated regional fisheries agreements or arrangements”.

⁹³⁰ A word such as “effectively” could be interpreted in a very subjective manner which could leave states a great deal of discretion as to what constitutes “effective” implementation. An alternative argument may be that “effective” implementation should include steps to comply with CCAMLR conservation measures and to enforce those measures against national fishing vessels. The provision does, however, qualify the requirement of ratification by requiring it only “where appropriate”. Such a qualification weakens the provision and it may allow states themselves to determine when it is appropriate to refuse to ratify an agreement.

⁹³¹ CCAMLR may not constitute an “associated” regional fisheries agreement. The section requires parties to ratify relevant “United Nations” agreements. Arguably, CCAMLR is not “associated” with any “United Nations” agreement. It is not a United Nations agreement itself and the Antarctic Treaty, the agreement under which it was concluded, is also not a United Nations agreement and so CCAMLR may not fall within the provision’s ambit. Although, CCAMLR may potentially be seen as an “associated” agreement of other United Nations agreements such as the FAO Code of Conduct because those agreements embrace the idea of states acting consistently with the measures of regional fisheries management organisations and also are in accordance with the “rational use” objectives of CCAMLR.

The Plan also appears to require specific ratification of the Fish Stocks Agreement.⁹³² The Agreement, as discussed, has much stronger conservation provisions than the Law of the Sea Convention and so requiring its ratification could benefit the conservation of krill. However, as mentioned, it is not entirely certain that the Fish Stocks Agreement applies to krill. The Compliance Agreement could also help to curb the problem of IUU fishing in the Southern Ocean.⁹³³ This is a major problem that has plagued fisheries conventions like CCAMLR and a requirement to ratify and effectively implement the Compliance Agreement will go some way towards solving the problem although, what constitutes “effective” implementation is a subjective concept. This will be one of the threats to a comprehensive krill harvesting ban, especially because of likely increases in economic returns from krill fishing.

The Plan also requires the implementation of a related international instrument, the Code of Conduct and its international plans of action (IPOAs).⁹³⁴ The comprehensive nature of the Code of Conduct, covering all fishing activities and areas, makes this requirement extremely important. The Code of Conduct’s support for long-term conservation and sustainable use on the high seas, combined with its support for regional fisheries organisations, makes it an important instrument for CCAMLR and krill conservation. The further requirement in the Plan, that the Code’s technical guidelines and plans of action be implemented, enhances the implementation of the Code. As previously mentioned, the Code itself could be criticised for being too general but the technical guidelines provide much more detail to guide the Code’s implementation. Requiring the application of the technical guidelines gives this requirement much greater force because it reduces the danger of parties using their discretion when implementing the Code. The International Plans of Action also provide further details on how the Code is to be implemented.⁹³⁵

⁹³² Article 31(b), after its requirement for relevant UN agreements to be ratified, also “notes” in particular the Fish Stocks Agreement and the 1993 Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas. This suggests that these agreements are specific agreements that require ratification by article 31.

⁹³³ The Compliance Agreement will be discussed in Chapter 4.

⁹³⁴ Article 31(c) requires the implementation of the Code of Conduct for Responsible Fisheries, and the relevant international plans of action and technical guidelines of the FAO.

⁹³⁵ The Plans of Action are supported by Article 31(d) which requires parties to “urgently develop and implement national and, where appropriate, regional plans of action, to put into effect” the Plans of Action. In particular, support is given to the Plan of Action to Prevent, Deter and Eliminate IUU Fishing and the Plan for Management of Fishing Capacity. These provisions strengthen the other sections that support the Plans of Action, by requiring states to develop and implement specific national strategies to apply the Plans. Requiring states to set out specific actions that need to be undertaken and then requiring that states actually take those actions, makes it more likely that the Plans will be implemented. Although the section requires strategies to be “urgently” developed and implemented, no specific time frame is given and the term “urgent” may be open to interpretation. The provision would be more effective if specific time frames were given for states to develop and implement strategies to apply the Plans of Action. The section also requires states to “establish effective monitoring, reporting and enforcement, and control of fishing vessels, including by flag States” to further the IUU Plan. This gives greater weight to the need for states

The Plan of Implementation of the World Summit on Sustainable Development also recognises the technical and financial problems that many countries have had in implementing their fisheries obligations.⁹³⁶ Although no specifics are given, if states actually do give technical aid to developing countries it will help them to develop more effective fisheries policies.⁹³⁷ If developing countries are given sufficient financial aid to implement their regional fisheries obligations, then such instruments are likely to be more effective and there may be fewer instances where the instruments are breached. Such an outcome can only bolster the conservation of world marine resources. Universally binding conservation requirements will place an obligation on states to protect krill, however, measures such as a total ban can only be effective if all states have the technical and financial resources to implement their obligations. As discussed below, the UN General Assembly has made efforts to provide assistance to developing countries so that they can implement their fisheries conservation obligations.

The Plan of Implementation also focuses briefly on aquaculture.⁹³⁸ As previously discussed, krill can be extremely useful to the aquaculture industry as a feeding stimulant and food supplement. Therefore, if the sustainable development of aquaculture is to be supported then a total krill fishing ban is, arguably, inappropriate. The Plan is, however, aimed at achieving sustainable fisheries and sustainable use of other fish stocks will, arguably, be unachievable if krill are exploited to a high level for aquaculture. However, the Plan also advocates the adoption of the ecosystem approach. This thesis submits that a comprehensive krill fishing ban is still be consistent with the Plan because an ecosystem approach would suggest that krill should not be exploited for aquaculture use if other species would be detrimentally affected.

to implement the IUU Plan, although what constitutes “effective” monitoring and enforcement is a matter that is left open for interpretation.

⁹³⁶ Article 30(g) requires states to assist developing countries “in coordinating policies and programmes at the regional and subregional levels aimed at the conservation and sustainable management of fishery resources.”

⁹³⁷ Article 31(g) also requires the strengthening of “donor coordination and partnerships between international financial institutions, bilateral agencies and other relevant stakeholders to enable developing countries....to develop their national, regional and subregional capacities for infrastructure and integrated management and the sustainable use of fisheries”.

⁹³⁸ Article 31(h) requires states, in order to achieve sustainable fisheries, to “support the sustainable development of aquaculture....given its growing importance for food security and economic development”.

The WSSD was also concerned with biological diversity within the world's ecosystems.⁹³⁹ The WSSD stated that, for the conservation and sustainable use of biodiversity to continue, the ecosystem approach of the Biodiversity Convention needs to be implemented. National action was seen as the main priority in order to implement this approach, rather than on drafting more international agreements.⁹⁴⁰ Krill, as one of the key components of the Antarctic marine ecosystem, could also benefit from implementation of the Biodiversity Convention.

Implementation of the Convention is likely to give krill more protection than the introduction of yet more international instruments that are never fully applied. The failings of the biodiversity convention and its very general provisions have been discussed, and some specific guidance on its implementation is required before national implementation can be fully achieved. There was also a recognition in the WSSD discussions that biodiversity has a cultural and spiritual value, rather than just an economic value.⁹⁴¹ The acknowledgment of more than simply a monetary value to biodiversity is important because it recognises that preserving the biodiversity of Antarctic marine species, such as krill, can have an intrinsic value. The discussions on biodiversity at the WSSD were reflected in several provisions of the Plan of Implementation.⁹⁴²

⁹³⁹ One of the partnership discussions stressed the need to immediately deal with human threats to biodiversity (World Summit on Sustainable Development 2002, Agenda Item 8, Chairperson's summary of the partnership discussion on water and sanitation, energy, health, agriculture and biodiversity (WEHAB), Document A/CONF. 199/16/Add.2).

⁹⁴⁰ World Summit on Sustainable Development 2002, Agenda Item 8, Chairperson's summary of the partnership discussion on water and sanitation, energy, health, agriculture and biodiversity (WEHAB), Document A/CONF. 199/16/Add.2

⁹⁴¹ World Summit on Sustainable Development 2002, Agenda Item 8, Chairperson's summary of the partnership discussion on water and sanitation, energy, health, agriculture and biodiversity (WEHAB), Document A/CONF. 199/16/Add.2

⁹⁴² Article 32(a) of the Plan of Implementation requires states to "promote the conservation and management of the oceans, giving due regard to the relevant international instruments to...maintain the productivity and biodiversity of important and vulnerable marine and coastal areas" including areas beyond national jurisdiction. This gives support to the Biological Diversity Convention as a "relevant" instrument that aims at maintaining biodiversity. Krill, as the base of the marine Antarctic ecosystem, are vital for maintaining biodiversity in that ecosystem. The unique status of Antarctica's marine ecosystem and the short length of its food chain also make it an "important and vulnerable" marine area whose biodiversity should be maintained under the Plan of Implementation. States are also required to develop national, regional and international programmes for halting the loss of such marine biodiversity (Article 32(d)). Such programmes are necessary because of the lack of specificity in the Biodiversity Convention. If the Convention is ever to be fully implemented and is to provide any benefit for krill and Antarctica's ecosystem, then national programmes are necessary.

The Plan of Implementation also advocates the urgent mobilisation of financial resources and technological assistance and the development of human and institutional capacity in order to implement specific programmes of the Convention on Biological Diversity, such as the Jakarta Mandate's work programme.⁹⁴³ Such financial and technological assistance are necessary if the Convention on Biological Diversity is ever to be fully implemented and if the biodiversity of Antarctica's marine ecosystem is to be preserved. There have already been moves to provide funding and to implement the World Summit's commitments. Both state governments and the United Nations have already made moves to develop plans of action and to provide the necessary funding to implement the goals of the World Summit.⁹⁴⁴ Such initiatives make it much more likely that the commitments made at the World Summit will actually be implemented.

The effective implementation of the two formal instruments arising from the World Summit on Sustainable Development, the Johannesburg Declaration and the Plan of Implementation, may also depend on the legal effect of those instruments. As previously discussed, the Johannesburg Declaration consists of extremely general statements of little real substance that are not couched in terms of legal obligation, suggesting it is a non-binding instrument. Neither instrument requires ratification and this suggests that they do not have the status of legally binding hard law agreements.⁹⁴⁵ The adoption by consensus of the Plan by such a large section of the international community⁹⁴⁶ does, however, suggest that it is binding, or that its principles have at least entered into customary law. The Plan must be legally binding on all states if its provisions are to provide support for a complete krill ban.

⁹⁴³ Article 32(b), *Plan of Implementation of the World Summit on Sustainable Development 2002*

⁹⁴⁴ United Nations officials, after the conclusion of the WSSD, have begun to develop an agenda for action within the UN system to implement the Johannesburg commits (Feature Story, *UN Taking First Steps Toward Implementing Johannesburg Outcome*, <http://www.johannesburgsummit.org>). Governments have also made specific announcements as to programmes and partnership initiatives to which they have committed in order to comply with their obligations (Feature Story, *With a Sense of Urgency, Johannesburg Summit Sets an Action Agenda*, <http://www.johannesburgsummit.org>). The partnership initiatives are aimed at implementing the sustainable development objectives of Agenda 21 (Partnerships for Sustainable Development, <http://www.johannesburgsummit.org>). There are already commitments to implement 228 partnerships constituting \$235 million worth of resources (Feature Story, *With a Sense of Urgency, Johannesburg Summit Sets an Action Agenda*, <http://www.johannesburgsummit.org>).

⁹⁴⁵ Some of the language of the Plan of Implementation such as "inviting" states to ratify the Law of the Sea Convention; "promoting" the implementation of Agenda 21; and "encouraging" the application of the ecosystem approach is phrased in generalised terms that do not suggest a binding obligation. However, the Plan of Implementation, in Article 31, "requires" a particular set of actions to be taken to achieve sustainable fisheries. The use of the word "requires", rather than using the general language of other provisions, suggests a legally binding obligation to perform the actions. The absence of any requirement to ratify the Plan could, however, suggest a non-binding instrument.

⁹⁴⁶ 104 Heads of Government were involved in the Summit. There were also more than 9,000 delegates and 8,000 members of NGOs (Feature Story, *With a Sense of Urgency, Johannesburg Summit Sets an Action Agenda*, <http://www.johannesburgsummit.org>).

Customary international law, as previously mentioned, requires evidence of state practice as well as *opinio juris*. Traditional customary law requires a pattern of behaviour established over time and *opinio juris* that suggests that states regard it as a legal obligation.⁹⁴⁷ The adoption by consensus of the Plan of Implementation may constitute *opinio juris* to some of the principles contained within.⁹⁴⁸ The requirements to ratify and implement relevant instruments such as the Fish Stocks and Compliance Agreements and to implement the Code of Conduct and its technical guidelines and plans of action are principles that could constitute new custom. Based on the language used in the section “requiring” these agreements to be adopted and implemented it could be argued that *opinio juris* exists because it implies that states believe they are bound to follow these instruments. The adoption of the Plan of Implementation by consensus also provides support for the existence of *opinio juris*. The alternative argument is that the Plan of Implementation is a soft law instrument which implies that states did not intend to be bound by its principles. Furthermore, some of the language of the Plan is not in binding terms. *Opinio juris* does not appear to exist for principles such as the “promotion” of Agenda 21’s implementation or the “encouragement” of the ecosystem approach’s application. However, the continued support for instruments such as the Fish Stocks Agreement, the Compliance Agreement and the Code of Conduct in other international agreements such as the Rome, Kyoto and Reykjavik Declarations gives further weight to the existence of customary principles supported by *opinio juris*. If such principles were to become custom they will bind all states and provide a much stronger legal regime for the management of krill. They will also provide a legal justification for states to enforce conservation measures on the high seas against flag vessels of non-parties to regional management agreements such as CCAMLR.

The creation of new customary law also requires the existence of state practice, which is traditionally shown by the behaviour of states. Domestic law is often evidence of state practice.

⁹⁴⁹ As discussed previously, states such as the Philippines, the US and Canada have supported the Code of Conduct and its related plans of action and technical guidelines by adopting national plans and legislation. Such efforts constitute evidence of state practice relating to the adoption of the principles contained within these agreements. The technical guidelines and plans of action of the Code of Conduct can also provide a level of detail necessary to establish a specific custom. The existence of state practice and *opinio juris* are also subjective matters.⁹⁵⁰ The period of time

⁹⁴⁷ Charney, J.I. 1993. Universal International Law. *The American Journal of International Law*, Vol 87: 529-551 at 543

⁹⁴⁸ The requirement in Article 31(a) to maintain stocks at maximum sustainable yield and to restore depleted stocks may be one such principle.

⁹⁴⁹ Chinkin, C.M. *Supra*, fn 733, 858

⁹⁵⁰ Charney, J.I. *Supra*, fn 993, 545

and the continuity of the practice along with the number of state participants may be flexible.⁹⁵¹ That means it is difficult to determine how many states would need to adopt agreements such as the Code of Conduct in their domestic practices before its principles became customary law.

Traditional notions suggesting that evidence of the actual behaviour of an overwhelming proportion of states is required before customary law arises may have changed somewhat. The International Court of Justice often does not look at the actual behaviour of a large section of the international community before it declares principles to be law.⁹⁵² The expanding scope of international law also suggests that the traditional method is no longer the only means of establishing customary law.⁹⁵³ International forums including regional organisations; conferences; and the UN General Assembly can now help to create new custom.⁹⁵⁴ Some commentators believe that the results of such forums can be seen as state practice or *opinio juris*.⁹⁵⁵ The World Summit on Sustainable Development, as an international forum that was attended by a large proportion of the world community, can be seen as such a forum. The principles of the Plan of Implementation can therefore be seen as evidence of state practice or *opinio juris*, even if there is no evidence of a sustained pattern of behaviour by states. This can be criticised as a means of circumventing the traditional requirement that states must consent to a Treaty to be bound by it.⁹⁵⁶ States do, however, have an opportunity to present their opinion about a principle at the forum itself or after it has concluded.⁹⁵⁷ If they do not object then, arguably, voluntary consent exists. Acquiescence of states can also establish a general principle of law, even if states do not voluntarily consent.⁹⁵⁸ This arguably constitutes consent, but only if the state is aware that they will be taken to consent if they do not object.⁹⁵⁹ If, however, states object after a new custom becomes law, then they may still be bound by it.⁹⁶⁰ International forums such as the World Summit on Sustainable Development could, therefore, provide a legitimate avenue for the creation of new international law.

⁹⁵¹ *Ibid*

⁹⁵² *Ibid*, 537

⁹⁵³ *Ibid*, 543

⁹⁵⁴ *Ibid*, 544

⁹⁵⁵ *Ibid*, 545

⁹⁵⁶ Schachter, O. 1994. United Nations Law. *The American Journal of International Law*, Vol 88: 1-23 at 3

⁹⁵⁷ Charney, J.I. *Supra*, fn 993, 550

⁹⁵⁸ *Ibid*, 535

⁹⁵⁹ *Ibid*, 537

⁹⁶⁰ *Ibid*, 538

Customary law does not require the consent of individual states for it to be binding.⁹⁶¹ So if the World Summit's principles are accepted by a majority of states, then that is sufficient for new custom to be created. One of the major problems with fisheries regimes such as CCAMLR is that they do not bind non-parties. Antarctic resources, such as krill, can be put in extreme danger because of third parties who fish on the high seas and who do not abide by CCAMLR's conservation and management measures. As discussed, this thesis submits that the Plan of Implementation requires a regional fisheries agreement like CCAMLR to be applied by states that are currently not parties to it. Such a requirement would provide substantial protection to krill and other Southern Ocean marine resources by reducing the number of states that are not bound by the Convention's conservation measures. All states must be bound by the management regime's measures if a comprehensive krill harvesting ban is to prove effective. Even if the Plan does not require states to accede to CCAMLR, agreements such as the Code of Conduct; the Fish Stocks Agreement; and Compliance Agreements can provide substantial support for krill in high seas Antarctic areas.⁹⁶² If the Plan of Implementation (or any of its provisions on oceans and fisheries) does constitute customary international law then it would be binding on all states. All states would be required to implement agreements such as the Code of Conduct, although the practical reality of enforcing such a binding obligation on third party states is another matter.

The need for third party states to be bound by instruments such as the Code of Conduct is even greater because of the extreme threat that overfishing poses to the whole world community and its marine ecosystems. States that do not comply with such instruments will benefit from the measures introduced by other states to combat overfishing. New rules of international law that bind all states, despite the reticence of some states to be bound, are essential to combat such threats.⁹⁶³ A comprehensive krill harvesting ban will only prove effective if all vessels are bound by it. Despite the traditional sovereign freedom that states enjoy, modern environmental threats that can harm the whole world community may justify some diminution of sovereignty.⁹⁶⁴ This thesis submits that overfishing is one such threat. As discussed, consent of states is usually required to make a rule binding and that fact may prevent the formulation of universally binding rules. However, even persistent objectors to a customary law rule cannot prevent that rule becoming a new custom.⁹⁶⁵ So even if there are states that object to principles designed to prevent overfishing, such principles can still become customary law.

⁹⁶¹ *Ibid*, 531

⁹⁶² The support that the Code of Conduct and the Fish Stocks Agreement can provide has been discussed earlier in this Chapter and also in Chapter 2.

⁹⁶³ *Supra*, fn 770, 529

⁹⁶⁴ *Ibid*, 530

⁹⁶⁵ *Ibid*, 542

If a rule of international law can be binding on a state, despite it voicing active dissent, then it must also be acknowledged that the international legal system has the capacity to legislate universally binding principles despite some states objecting.⁹⁶⁶ If such a proposition is valid, then the international community may be able to introduce principles to prevent overfishing (such as those in the Code of Conduct) that have universal application. Universally binding principles are crucial for a total krill fishing ban to be successful. Even current CCAMLR precautionary catch limits will not be effective unless they are binding on all states.

Universally applicable rules in the Southern Ocean can help to protect krill by alleviating the current problem of non-parties fishing on the high seas in a manner inconsistent with CCAMLR's conservation measures. The formation of such universal principles can arise out of a level of acceptance that would put the principle in an exceptional category such as *jus cogens* or the common heritage of mankind.⁹⁶⁷ Principles embodied in the Plan of Implementation that are designed to combat overfishing may come within the theoretical category of the common heritage of mankind. Fisheries resources and the world's marine ecosystems (especially high seas resources), arguably, belong to the whole of mankind as a common heritage. This category is especially fitting for the Southern Ocean, most of which could potentially consist of high seas areas.⁹⁶⁸ Such categories give universal principles a theoretical strength, although in real terms the international community will have practical reasons for establishing a principle in the face of some dissent.⁹⁶⁹ The strength of consensus and the consequences of non-acceptance help to create universal principles.⁹⁷⁰ The Plan of Implementation was adopted with the consensus of all states attending the World Summit and, as discussed, the international instruments supported by the Plan have also received continual support in other international declarations and agreements.

⁹⁶⁶ *Ibid*

⁹⁶⁷ *Ibid*

⁹⁶⁸ See the discussion in Chapter 2 on Antarctic marine sovereignty for the debate as to whether Antarctic claimants have sovereignty over marine areas.

⁹⁶⁹ Charney, J.I. *Supra*, fn 993, 542

⁹⁷⁰ *Ibid*

Furthermore, the consequences of non-acceptance of principles to combat overfishing would be extremely grave. If states continue to ignore such principles then there is a danger that the overfishing problem will worsen and threaten the world's marine ecosystems, including the Antarctic ecosystem, and species like krill that inhabit those ecosystems. These dire consequences should provide support for the adoption of universally applicable laws for the prevention of overfishing. Likely increases in demand for krill products and greater returns from harvesting make the introduction of strong legally binding measures essential. A krill harvesting ban will only be successful if all parties are bound by it and such a ban is crucial because of krill's vital role in the ecosystem and the uncertainty surrounding its interactions with other species.

VI. General Assembly Resolutions

The outcomes of the World Summit for Sustainable Development have received support in the General Assembly of the United Nations.⁹⁷¹ A resolution supporting the Johannesburg Declaration and the Plan of Implementation has been adopted by the General Assembly.⁹⁷² "Endorsing" these instruments gives added support to them, but it still falls short of "requiring" states to adopt them. Further backing for the actual implementation of these instruments is also given in the main body of the resolution.⁹⁷³ The resolution gives greater weight to the need for governments and organisations to actually implement the commitments of the World Summit and the Plan of Implementation, particularly those commitments relating to the marine environment and alleviation of the overfishing problem. However, merely "urging" and "calling" for such action is not sufficient to ensure that states adopt the provisions of the Plan of Implementation to protect against the overexploitation of species such as krill.

⁹⁷¹ Political Resolution 1 of the Summit recommended that the UN General Assembly endorse the Johannesburg Declaration. Article 2 of Resolution 2 also recommended the endorsement of the Plan of Implementation by the General Assembly (*Report of the World Summit on Sustainable Development 2002*, Document A/CONF. 199/20).

⁹⁷² Article 1 of this resolution "takes note with satisfaction" the report of the World Summit giving some support to this report, although it is not couched in terms of a binding obligation. The resolution also "endorses" the Johannesburg Declaration and the Plan of Implementation (Article 2, *World Summit on Sustainable Development*, General Assembly Resolution A/RES/57/253, 2002).

⁹⁷³ Article 4 "urges governments and all relevant international and regional organisations...to take timely actions to ensure the effective follow-up and implementation" of the Declaration and Plan of Implementation. Article 6 also "calls for the implementation of the commitments, programmes and timebound targets adopted at the World Summit" and "for the fulfillment of the provisions of the means of implementation" in the Plan of Implementation.

The General Assembly, at the same time as it adopted its resolution on the World Summit, adopted a number of other resolutions that also support the Summit. The first of these resolutions relates to the *Oceans and the Law of the Sea*.⁹⁷⁴ This resolution welcomes the outcome of the World Summit.⁹⁷⁵ Although these provisions certainly give the added support of the General Assembly to the Plan of Implementation's oceanic commitments, simply "welcoming" the Plan probably will not be a sufficient incentive for states to adopt it in a timely fashion. Couching the resolution's support for the Plan in language that suggested an obligation would provide a greater impetus for its implementation. This resolution also contains provisions relating to the adoption of the Law of the Sea Convention and the Fish Stocks Agreement that suffer from the same generalised and non-binding language.⁹⁷⁶ Although the provisions give added weight to these agreements, a more binding type of language is vital to emphasise the need for states to adopt these instruments. As will be discussed below, the UN General Assembly has advocated the strengthening of international fisheries management agreements in order to combat IUU fishing.

Another resolution passed at this time giving support to the World Summit relates to the adoption of the Fish Stocks Agreement. This resolution, in its preamble, "welcomes" the outcomes of the World Summit and "reaffirms" those outcomes and the particular outcomes that are relevant to the conservation and management of straddling and highly migratory stocks.⁹⁷⁷ As discussed, the Plan of Implementation "requires" ratification or accession to relevant instruments including the Fish Stocks Agreement, so these provisions are, in effect, reaffirming this requirement to ratify or accede to the Fish Stocks Agreement. Such a requirement provides krill with further protection from the provisions of the Fish Stocks Agreement which, as discussed, strengthen the conservation provisions of the Law of the Sea Convention and provide more detailed protection for straddling and highly migratory stocks.⁹⁷⁸ If the Fish Stocks Agreement is binding on a greater number of states it will provide much greater legal protection of krill and will give legal support for the enforcement of conservation measures, such as a complete krill fishing ban, on the high seas.

⁹⁷⁴ *Oceans and the Law of the Sea*, General Assembly Resolution A/RES/57/141, 2002

⁹⁷⁵ The preamble welcomes the outcome of the World Summit. Article 7 also expands on this support and "welcomes" the Plan of Implementation and the specific provisions it contains relating to the sustainable development of the oceans and Agenda 21. Article 8 also "welcomes" the specific commitments and the attainment of certain objectives that will ensure sustainable fisheries and the promotion of the conservation and management of the oceans.

⁹⁷⁶ The resolution "reaffirms" the Convention (Article 2) and "calls upon" states to adopt it (Article 1) and introduce legislation that implements its provisions (Article 3). The resolution also "welcomes" the Fish Stocks Agreement's entry into force and "calls upon" states to become parties to it (Article 5).

⁹⁷⁷ Article 4, *World Summit on Sustainable Development*, General Assembly Resolution A/RES/57/253, 2002

⁹⁷⁸ As discussed in Chapter 2, krill may not be covered by the Fish Stocks Agreement as a highly migratory species.

This particular resolution also provides more direct support for the Fish Stocks Agreement that is independent of its support for the World Summit and the Plan of Implementation. However, many of its provisions provide merely generalised statements of support for the Agreement.⁹⁷⁹ They do not add any extra protection and do not require states to undertake any specific actions. The resolution also “calls upon” states to ratify or accede to the Fish Stocks Agreement and “consider” applying it provisionally and “emphasises” the importance of its effective implementation. These provisions, although giving more specific support for the Agreement’s adoption, are still couched in general terms rather than in the binding language necessary to give states a greater incentive to adopt the Agreement.⁹⁸⁰ If krill are classed as highly migratory, then cooperation in the Southern Ocean will be necessary for their conservation so that consistent and universal protective measures can be adopted on the high seas. However, merely “urging” such cooperation on the high seas is unlikely to achieve it. The resolution also gives more specific support to regional fisheries management organisations to achieve the Fish Stock Agreement’s objectives.⁹⁸¹ These provisions endorse regional organisations such as CCAMLR. Greater backing for CCAMLR’s conservation measures can allow such measures to provide more effective protection for krill and other Antarctic species.

The General Assembly also passed a resolution at this time on unauthorised fishing in national jurisdictions and on the high seas and on illegal, unreported and unregulated fishing (IUU fishing). The preamble of this resolution supports, in generalised terms, the outcomes of the World Summit on Sustainable Development.⁹⁸² The preamble also recognises the problem of IUU fishing and “welcomes” and “notes” the role of the International Plan of Action on IUU fishing in eliminating the practice. The main body of the resolution gives greater weight to the generalised statements of support present in the preamble.

⁹⁷⁹ The preamble “welcomes” the Fish Stocks Agreement’s entry into force and “notes” the obligations of states under the instrument to cooperate to conserve and manage straddling and highly migratory stocks. Article 1 also “expresses deep satisfaction” at the instrument’s entry into force.

⁹⁸⁰ This is also the problem with Article 6 which “urges” states to pursue cooperation in relation to highly migratory stocks to ensure effective conservation, management and long-term sustainability of such stocks.

⁹⁸¹ Article 8 “calls upon” all states to ensure that their vessels comply with the conservation measures of regional organisations. Article 11 “invites” states and relevant government organisations to support and strengthen relevant regional fisheries management organisations.

⁹⁸² The outcomes of the Summit are “welcomed”, especially those outcomes that relate to achieving sustainable fisheries. The preamble also “emphasises” the support given in the Plan of Implementation to ratify or accede to the Fish Stocks and Compliance Agreement and “notes” and “recognises” some specific duties of these instruments, such as the duty to exercise effective controls over flag vessels and the application of the ecosystem approach.

The first few provisions of the resolution are a reiteration of principles found in many of the previously discussed international fisheries instruments. Article 1 of the resolution “reaffirms” the importance of long-term conservation and management and sustainable use of marine living resources and “reaffirms” the World Summit’s commitment to restore depleted fish stocks on an urgent basis and where possible not later than 2015. This commitment to restore depleted stocks is “required” by Article 31(a) of the Plan of Implementation. If the resolution “reaffirms” this “requirement” of the World Summit, then, arguably, this “reaffirmation” itself constitutes a “requirement” for states to restore depleted stocks on an urgent basis. If such a formulation holds weight, then this provision would go much further than the other generalised sections used in the resolution. As discussed, the requirement for restoration of depleted stocks under the Plan of Implementation adds weight to a comprehensive krill fishing ban because of the added advantages such protection would provide to the restoration of krill dependent species.

The resolution supports fisheries management concepts like the precautionary and ecosystem approaches.⁹⁸³ As with the other resolutions that support the WSSD, this resolution uses very generalised and non-binding language that is unlikely to significantly advance the adoption of these approaches. The same problem exists with the resolution’s support of other international fisheries agreements that could provide significant protection to krill if they were fully implemented by all states.⁹⁸⁴ For example, it is doubtful that a mere “appeal” for the “promotion” of the Code of Conduct will further its implementation. The Code of Conduct, as discussed, could provide significant protection to krill and other exploited species on the Antarctic high seas. Using stronger legal language in these General Assembly resolutions can prompt more states to adopt the Code’s provisions. This particular resolution’s support for the precautionary approach does give greater weight to a krill fishing moratorium because of the scientific uncertainty surrounding the effect of krill fishing on the Antarctic ecosystem.

⁹⁸³ Article 3 “urges” all states to apply the precautionary approach to highly migratory stocks and Article 4 “encourages” states to apply the ecosystem approach by 2010. The provision also “notes” other international instruments that outline the ecosystem approach such as the Reykjavik Declaration, decisions V/6 and VI/12 of the Conference of Parties to the Biodiversity Convention and the Code of Conduct.

⁹⁸⁴ Article 7 “appeals to states and regional fisheries organisations...to promote the application of the Code of Conduct...within their areas of competence”.

In addition, this particular resolution is also concerned with the problem of IUU fishing. The resolution gives support to some of the specific measures outlined in international agreements that aim to eliminate this problem.⁹⁸⁵ These provisions add the General Assembly's weight to the Compliance Agreement and the need to combat the IUU problem.⁹⁸⁶ The prevention of vessel reflagging and the effective control by states over their vessels on the high seas is necessary if the IUU problem plaguing many regional organisations like CCAMLR is to be reduced. The IUU Plan of Action provides specific details to prevent and deter IUU fishing. This resolution "urges" states to develop and implement national plans of action to put the IUU Plan into effect and to coordinate activities and cooperate directly and through relevant regional fisheries management organisations to implement the Plan.⁹⁸⁷

The current problems with combating IUU fishing are also recognised in the resolution which "affirms" the need to strengthen the legal framework for cooperation in the battle against IUU fishing. However, the resolution fails to outline how the framework is to be strengthened. Decreasing the IUU problem in the Southern Ocean is necessary to alleviate the overfishing problem. Reducing IUU fishing would also enhance the effectiveness of CCAMLR's conservation measures and increase the accuracy of the data used to formulate their catch limits. However, as with the other resolutions, the generalised language which "urges" and "calls upon" states to act is unlikely to prompt timely action, especially from recalcitrant fishing nations. Given the likely increase in demand for krill products, IUU fishing must be prevented for a comprehensive krill fishing ban to be successful. This can only be done if international conservation instruments contain strong legally binding language aimed at preventing IUU fishing.

⁹⁸⁵ Article 9 "calls upon states and other entities...that have not deposited instruments of acceptance" of the Compliance Agreement to do so, as a matter of priority. Article 10 also gives its support to the concepts of effective control of states over flag vessels and the need for authorisation before such vessels can fish on the high seas that have been advocated in the Compliance and Fish Stocks Agreements. Furthermore, the resolution "calls upon" states to take "effective" action to deter reflagging of their vessels (Article 11).

⁹⁸⁶ The Compliance Agreement and the problems of vessel reflagging and IUU fishing will be discussed in greater detail in Chapter 4.

⁹⁸⁷ Articles 14 and 15, *Large-scale pelagic drift-net fishing, unauthorized fishing in zones of national jurisdiction and on the high seas/illegal, unreported and unregulated fishing, fisheries by-catch and discards, and other developments* A/RES/57/142, 2002

The final resolution supporting the WSSD that was adopted by the General Assembly at this time is focussed on the Biodiversity Convention.⁹⁸⁸ The resolution backs the outcomes on biological diversity that arose as a result of the World Summit.⁹⁸⁹ As discussed, krill's unique position and role in the ecosystem makes it vital for conserving the biological diversity of species in Antarctica's ecosystem. If separate populations of krill do exist then, even if a comprehensive ban is not introduced, a localised krill harvesting ban will be required to maintain genetic biodiversity within the species.⁹⁹⁰

As discussed, the Biodiversity Convention does need to be more efficiently implemented if it is to be useful in conserving krill, particularly if loss of biodiversity is to be "significantly" reduced by 2010.⁹⁹¹ Greater financial and technical commitments could help to achieve these goals in a timelier manner. The resolution fails to outline how the Biodiversity Convention is to be implemented more efficiently and simply "recalls" the World Summit's commitments to greater efficiency and "emphasises" the need for greater financial and technical resources, rather than requiring them.⁹⁹² As previously discussed, states should concentrate on giving further guidance on how the Biodiversity Convention is to be implemented so that its provisions can be given full effect in protecting biodiversity in regions such as the Antarctic.

⁹⁸⁸ *Convention on Biological Diversity*, General Assembly Resolution A/RES/57/260, 2002

⁹⁸⁹ The preamble of the resolution gives some support for the World Summit by "taking into account" the Johannesburg Declaration and the Plan of Implementation and "noting with interest" the partnership initiatives announced by some governments at the Summit. Article 7 "recalls" the World Summit's commitments to "pursue a more efficient and coherent implementation" of the objectives of the Biodiversity Convention and the "achievement by 2010 of a significant reduction in the current rate of loss of biological diversity" including the provision of technical and financial resources to developing countries to achieve these goals. There is also an "emphasis" on the need for a substantial increase in such financial and technical resources to implement the Biodiversity Convention (Article 13).

⁹⁹⁰ This proposition has been discussed in greater detail in Chapter 2.

⁹⁹¹ This is one of the goals of this General Assembly resolution.

⁹⁹² The resolution also offers extremely generalised support for the Biodiversity Convention simply "reaffirming" it as the key international instrument for the conservation and sustainable use of biological resources and "urging" states to become parties to it (The Preamble and Article 4, *Convention on Biological Diversity*, General Assembly Resolution A/RES/57/260, 2002).

Subsequent General Assembly Resolutions

Subsequently to these General Assembly resolutions which were passed just after the World Summit in support of its objectives, several other resolutions were passed in late 2003 and late 2004. The first of these related to *Sustainable Fisheries* and was passed on 24 November 2003.⁹⁹³ This resolution “reaffirms” the importance of the Plan of Implementation and the Law of the Sea Convention and also “urges” states to adopt the precautionary approach to fisheries management.⁹⁹⁴ Accordingly, this resolution provides greater support for the introduction of a krill fishing moratorium due to the uncertainty surrounding krill. The fact that the resolution was adopted without a vote (i.e. there were no dissenting states) provides some support for the possibility previously discussed in this thesis that some form of precautionary approach may have become part of customary international law.

This General Assembly resolution also established an assistance fund to help developing states implement the provisions of the Law of the Sea Convention.⁹⁹⁵ The resolution also “recognised” the need for stronger port state controls to prevent IUU fishing⁹⁹⁶ and “called upon” states not to permit their flag vessels to engage in fishing on the high seas or areas of national jurisdiction unless authorised and unless they have effective control over the activities of such vessels.⁹⁹⁷ The resolution also “urges” states to develop national and regional plans to put the IPOA for IUU fishing into effect and to compile records of vessels in order to combat IUU fishing.⁹⁹⁸

⁹⁹³ *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments* A/RES/58/14, 2003

⁹⁹⁴ Articles 1-4, *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments* A/RES/58/14, 2003

⁹⁹⁵ Article 12, *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments* A/RES/58/14, 2003

⁹⁹⁶ Article 29, *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments* A/RES/58/14, 2003

⁹⁹⁷ Article 19, *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments* A/RES/58/14, 2003

⁹⁹⁸ Articles 25 and 26, *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments* A/RES/58/14, 2003

This General Assembly resolution is a vast improvement on soft law instruments of the past in respect of usefulness to prevent overfishing. This General Assembly resolution, like the 2005 Rome Declaration, sets out specific measures that need to be taken to combat IUU fishing. As such, it provides political force to the enforcement measures that need to be implemented on a wide scale to protect Antarctic species.

A subsequent resolution on *Sustainable Fisheries* was adopted on 17 November 2004.⁹⁹⁹ The resolution “reaffirms” the importance the UN attaches to the long-term management and sustainable use of the world’s marine living resources.¹⁰⁰⁰ The resolution was also “concerned” that IUU fishing threatened to seriously deplete fish populations and significantly damage ecosystems and food security. There was a reaffirmation of the types of enforcement measures outlined in the previous resolution including calls upon port and flag states to take all measures consistent with international law necessary to prevent IUU fishing.¹⁰⁰¹ The resolution also recognises the Plan of Implementation’s commitments for states to put in place measures to implement the IPOA IUU.¹⁰⁰² Similarly, the resolution once again “reaffirms” the importance of the Plan of Implementation and “urges” all states to apply the precautionary and ecosystem approaches to the management of fish stocks.¹⁰⁰³ This gives greater support to the adoption of a precautionary approach to krill management which would justify the introduction of krill fishing moratorium because of the current scientific uncertainty concerning krill and the effect of krill fishing on the Antarctic ecosystem.

⁹⁹⁹ *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments A/RES/59/25, 2004*

¹⁰⁰⁰ Article 1, *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments A/RES/59/25, 2004*

¹⁰⁰¹ Article 31, *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments A/RES/59/25, 2004*

¹⁰⁰² Article 33, *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments A/RES/59/25, 2004*

¹⁰⁰³ Articles 3 and 4, *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments A/RES/59/25, 2004*

The 2004 *Sustainable Fisheries* resolution also provides support for other international agreements concerning the marine environment. The resolution also “calls upon” states to ratify or accede to the Law of the Sea Convention.¹⁰⁰⁴ As discussed, such calls should also be extended to regional management regimes such as CCAMLR (even though CCAMLR is not a UN instrument). In a similar vein, the resolution once again emphasises the General Assembly’s concern over IUU fishing and “affirms” the need to strengthen the international legal framework for intergovernmental cooperation in the management of fish stocks and in combating IUU fishing in a manner consistent with international law.¹⁰⁰⁵ This thesis has highlighted several weaknesses with the current legal and regulatory regime governing the world’s marine environment. As emphasised throughout this Chapter, by adopting an objective of strengthening the international legal framework for managing fish stocks, the UN General Assembly can provide an impetus for improvements in the current regime. The General Assembly could also be used as an organ to pressure some states into adopting a policy of compliance with the conservation measures of regional management organisations such as CCAMLR.

Another resolution on *Oceans and the Law of the Sea* was adopted on 23 December 2003.¹⁰⁰⁶ The resolution “recalls” the recommendations of the WSSD to establish by 2004 a regular process under the UN for the global reporting and assessment of the marine environment.¹⁰⁰⁷ The establishment of such a process was also supported by a subsequent resolution on *Oceans and the Law of the Sea* that was adopted on 17 November 2004.¹⁰⁰⁸ Such a process will give the world community as a whole a better understanding of the status of the marine environment and is a good way of drawing attention to the problems of IUU fishing.

Both of these resolutions also called upon states to become parties to the Law of the Sea Convention¹⁰⁰⁹ and also the Fish Stocks Agreement.¹⁰¹⁰ This will place added pressure on states to comply with those agreements. This will be particularly beneficial to krill if it falls under the Fish Stocks Agreement, although there is some doubt in that regard. The 2004 resolution does provide support to a krill fishing moratorium or local krill fishing bans in sensitive areas of

¹⁰⁰⁴ Article 5, *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments* A/RES/59/25, 2004

¹⁰⁰⁵ Articles 26 and 28, *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments* A/RES/59/25, 2004

¹⁰⁰⁶ *Oceans and the law of the sea* A/RES/58/240, 2003

¹⁰⁰⁷ *Oceans and the law of the sea* A/RES/58/240, 2003

¹⁰⁰⁸ *Oceans and the law of the sea* A/RES/59/24, 2004

¹⁰⁰⁹ Article 1, *Oceans and the law of the sea* A/RES/58/240, 2003

¹⁰¹⁰ Articles 1 and 3, *Oceans and the law of the sea* A/RES/59/24, 2004

Antarctica because it “reaffirms” the need for States to continue efforts to develop tools for conserving and managing vulnerable marine ecosystems, including establishment of marine protected areas.¹⁰¹¹

Potential Binding Effect of General Assembly Resolutions

All of the General Assembly resolutions that have been discussed offer at least some support for the outcomes of the World Summit on Sustainable Development and the Plan of Implementation in particular. The question is whether the principles embodied within these resolutions are binding on the world community. The UN Charter gives the General Assembly the power to make “recommendations” on matters that fall within its competence.¹⁰¹² There is some suggestion that this provision prevents such resolutions being binding on states if there is no other legal support for them.¹⁰¹³ Article 38(1) of the Statute of the International Court of Justice also lists the main sources of international law which include treaties, international custom and general principles of law recognised by civilised nations. Arguably, because General Assembly resolutions are not specifically recognised as a source of international law, they cannot constitute such a source and place binding obligations on states. It has been argued that General Assembly resolutions fit within one of the recognised forms of international law in Article 38(1) of the Statute of the International Court of Justice.¹⁰¹⁴ However, it is unlikely that General Assembly resolutions would fit easily into any of the listed categories, with the possible exception of customary law.¹⁰¹⁵ One alternative argument is that Article 38(1) is not a closed list of the sources of international law and new sources could develop, which could include a customary rule that General Assembly resolutions are binding.¹⁰¹⁶

Another argument is that General Assembly resolutions, although they embody aspects of international law, will always remain recommendations that states can accept or ignore as they choose.¹⁰¹⁷ If this contention holds weight, then the protection that the previously discussed resolutions offer krill will be severely reduced. The support in these resolutions for the Plan of

¹⁰¹¹ Article 72, *Oceans and the law of the sea* A/RES/59/24, 2004

¹⁰¹² Article 10, *United Nations Charter*

¹⁰¹³ Ramey, R.A. 2000. Armed Conflict on the Final Frontier: The Law of War in Space. *The Air Force Law Review*, Vol 48: 1-158 at 108

¹⁰¹⁴ Schachter, O. 1994. *Supra*, fn 1002, 3

¹⁰¹⁵ Mendelson, M. The Legal Character of General Assembly Resolutions: Some Considerations of Principle. 95-107 at 98

¹⁰¹⁶ *Ibid*, 104

¹⁰¹⁷ Schwebel, S.M. The Effect of Resolutions of the UN General Assembly on Customary International Law. 301-309 at 302

Implementation and, in particular, its requirements to ratify Conventions such as the Compliance and Fish Stocks Agreements and the Code of Conduct can provide significant protection for krill.

These resolutions also support principles in the Plan of Implementation such as biological diversity and the ecosystem approach, both of which, if followed, can help to protect krill. If these resolutions were binding on all states then those states would be required to adopt and implement these principles and agreements. Universal adoption and implementation of conservation measures in the Southern Ocean is necessary for the management of all Antarctic species. If these resolutions have no binding effect, then their importance will be significantly diminished. Universally binding obligations are fundamental for the successful implementation of any comprehensive krill harvesting ban that is introduced in light of likely expansions in krill industry. A complete ban is justified under the precautionary approach by krill's pivotal role in the ecosystem and the uncertainty surrounding krill population and its interactions with other dependent species.

There is a strong argument for the non-binding status of General Assembly resolutions and there are. If General Assembly resolutions have gained general acceptance or are accepted as the international standard for long periods they may have greater authority.¹⁰¹⁸ General acceptance by a large proportion of states can, therefore, give such resolutions a much greater status and possibly even binding effect. One argument that has been raised is that General Assembly resolutions are binding if all of the major powers accept them.¹⁰¹⁹ This argument holds little weight because of the principle that states are equal under international law.¹⁰²⁰ General Assembly resolutions that have been supported by a massive majority of the Assembly and have not been opposed by a large number of states can show that the international community intends to follow the principles of the resolutions despite the fact that they may not be legally binding.¹⁰²¹ Such resolutions are an indication of the intention of the states that have passed them.¹⁰²²

¹⁰¹⁸ Ramey, R.A. *Supra*, fn 1059, 114

¹⁰¹⁹ D'Amato, A. 1995. Human Rights as Part of Customary International Law: A Plea for Change of Paradigms. *Georgia Journal of International and Comparative Law*, Vol 25: 47-98 at 62

¹⁰²⁰ *Ibid*

¹⁰²¹ Ong, D.M. 1999. Joint Development of Common Offshore Oil and Gas Deposits: "Mere" State Practice or Customary International Law? *The American Journal of International Law*, Vol 93: 771-804 at 780

¹⁰²² *Ibid*

Three of the recent resolutions that support the World Summit were adopted without a vote by consensus.¹⁰²³ One of the resolutions, on *Oceans and the Law of the Sea*, was adopted by a vote of 132 in favour with one dissenting vote by Turkey and 2 abstentions by Columbia and Venezuela.¹⁰²⁴ Both of the 2003 and 2004 resolutions on *Sustainable Fisheries* were adopted without a vote by consensus. The 2003 and 2004 resolutions on *Oceans and the Law of the Sea* were also passed with only a couple of dissenters. Such overwhelming support, arguably, indicates that the states that passed these resolutions have an intention to comply with the requirements of the Plan of Implementation and the other principles outlined in the resolutions. By indicating their intentions in the resolutions, states may have generated other legal consequences. The adoption by consensus of several of these resolutions has created reasonable expectations in other states that they will abide by them.¹⁰²⁵ This implies a general consensus for the principles of these resolutions that, arguably, creates a new principle of international law.¹⁰²⁶ If adoption of these resolutions does create reasonable expectations in other states that they will fulfill the requirements of the Plan of Implementation then there will be a legal obligation to implement agreements such as the Code of Conduct that would benefit krill on the high seas. Universally binding conservation obligations are fundamental for the successful implementation of a comprehensive krill fishing ban.

General Assembly resolutions that are unanimously adopted can also be seen as establishing a form of estoppel that binds states that voted for the resolutions.¹⁰²⁷ Such an estoppel would, in general terms, prevent States from denying representations that they have made and that other states rely on, although the nature of estoppel in international law is still unclear.¹⁰²⁸ States that adopted the resolutions by consensus are, arguably, estopped from acting contrary to those resolutions and, for example, acting inconsistently with the Plan of Implementation.

¹⁰²³ General Assembly Press Release, GA/10122, 10 December 2002

¹⁰²⁴ General Assembly Press Release, GA/10122, 10 December 2002

¹⁰²⁵ Schwebel, S.M. *Supra*, fn 1063, 303

¹⁰²⁶ *Ibid*

¹⁰²⁷ Mendelson, M. *Supra*, fn 1061, 96

¹⁰²⁸ *Ibid*

One potential criticism is that the extremely general language used in these resolutions prevents other states from arguing that any clear and unequivocal representations exist. In the 2003 and 2004 resolutions, however, greater detail is provided such as the need to implement port state controls. It is also difficult to have an estoppel that is based on a representation in a resolution about intention or what the law is (rather than a representation as to existing facts).¹⁰²⁹ The resolutions in the current situation are mainly aimed at declaring what states should do, rather than at outlining the existence of particular facts. Reliance is also likely to be absent if the only possible reliance is that other states have relied on the resolution's binding effect.¹⁰³⁰ The fact that several of these resolutions were adopted without a vote by consensus (rather than by actually taking a vote and being adopted unanimously) can prevent states from being bound by an estoppel because of the absence of a positive vote for the resolutions.

Apart from potential estoppel, an alternative argument is that the resolutions are binding in their own right. In the *Nicaragua* case¹⁰³¹ the International Court of Justice went much further in giving more status to General Assembly resolutions than merely soft law instruments.¹⁰³² The International Court of Justice has sometimes, in cases such as the *Western Sahara* case¹⁰³³ and the *South-West Africa* case,¹⁰³⁴ acknowledged the legal force of some UN declarations.¹⁰³⁵ Resolutions will bind states, if the *Nicaragua* decision is strictly followed, if those states did not object to a consensus resolution.¹⁰³⁶ The *Nicaragua* case appears to support the notion that, if a resolution is allowed to pass by consensus without a state recording an express negative vote, the state is bound by the resolution.¹⁰³⁷ Acquiescence to a resolution could, therefore, make it binding on a state.¹⁰³⁸ Several of the discussed resolutions were adopted by consensus. Arguably, because no state recorded an express negative vote then they are bound by some of the resolutions discussed above. Such an outcome would provide an enormous boost to the protection of krill and other species in Antarctica.

¹⁰²⁹ *Ibid*

¹⁰³⁰ *Ibid*, 97

¹⁰³¹ *Military and Paramilitary Activities in and against Nicaragua Case (Nicaragua v USA) (Merits)* ICJ Rep 1986 14

¹⁰³² Morrison, F.L. 1987. Appraisals of the ICJ's Decision: *Nicaragua v United States (Merits)*. *The American Journal of International Law*, Vol 81: 160-166 at 161

¹⁰³³ *Advisory Opinions on Western Sahara*, 1975 ICJ REP. 12 (Oct. 16)

¹⁰³⁴ *Legal Consequences for States of the Continued Presence of South Africa in Namibia (South-West Africa) notwithstanding Security Council resolution 276 (1970)*, 1971 ICJ REP. 16 (June 21)

¹⁰³⁵ Schachter, O. 1994. *Supra*, fn 1002, 3

¹⁰³⁶ Morrison, F.L. *Supra*, fn 1078, 161

¹⁰³⁷ *Ibid*, 162

¹⁰³⁸ *Ibid*

As discussed, one of the resolutions “reaffirms” the “requirement” in the Plan of Implementation to ratify or accede to relevant UN and associated fisheries agreements. If CCAMLR is included within this provision, then a binding obligation placed on all states to ratify or accede to CCAMLR would help to alleviate the problem of non-compliance with CCAMLR’s conservation measures. Krill and other Antarctic species would benefit enormously if more states acted consistently with the CCAMLR measures. The Fish Stocks and Compliance agreements are specifically mentioned in this resolution and implementation of the Code of Conduct is also required. Greater high seas protection for Antarctic species could be a likely outcome if this resolution placed a binding obligation on States to adopt and implement such agreements. Universally binding obligations are crucial for the effective implementation of a comprehensive krill fishing ban.

The adoption by consent of these resolutions does not necessarily mean that they have binding effect. A General Assembly resolution that is passed unanimously can still have a reduced legal effect if the specific states that are affected by it do not observe its principles.¹⁰³⁹ States whose vessels currently fish on the high seas and who do not observe the principles of these resolutions and do not take measures to implement the approaches advocated by the Plan of Implementation will cause the resolutions to have a diminished legal effect. Additionally, even unanimously adopted resolutions or resolutions adopted by “consensus” are not necessarily binding because often states do not meaningfully support a resolution’s principles.¹⁰⁴⁰ States can go along with a consensus resolution, even if they have major reservations, for political reasons because voting against it is unpopular.¹⁰⁴¹ Voting against a resolution aimed at preventing overfishing in the world’s oceans would be likely to receive an unpopular reception. So it is likely that there are states that did not expressly vote against the resolutions that were adopted without a vote by consensus, despite reservations concerning them. States can also fail to consider that their actions in the General Assembly will alter international law or place a binding obligation on them.¹⁰⁴² This is even more likely to be the case because of the type of language used in the resolutions. Most of the sections of these resolutions are framed in extremely general language that does not imply a legally binding obligation. The resolutions are unlikely to impose binding obligations if they are not couched in binding terms.

¹⁰³⁹ Schachter, O. 1994. *Supra*, fn 1002, 3

¹⁰⁴⁰ Schwebel, S.M. *Supra*, fn 1063, 302

¹⁰⁴¹ *Ibid*

¹⁰⁴² *Ibid*

General Assembly resolutions are not necessarily binding, however, they are at a minimum secondary sources of international law.¹⁰⁴³ Resolutions that are drafted in a manner suggesting that nations have an obligation to comply with them are, in particular, viewed as a source of international law.¹⁰⁴⁴ The resolutions discussed are, for the most part, drafted in language that does not suggest an obligation to comply and so they have less weight. Resolutions adopted unanimously or by consensus, at a minimum, have moral or political weight.¹⁰⁴⁵ Political pressure can be applied on parties who have supported the discussed resolutions but fail to comply with the principles outlined within, such as the Plan of Implementation of the World Summit. Even if they are not binding, General Assembly resolutions are still an indication of the views of the international community.¹⁰⁴⁶ The expression of such views can lead to the development of new customary law.

General Assembly resolutions can potentially play a role in the creation of new customary international law.¹⁰⁴⁷ There is some suggestion that statements made by governments in the UN, and resolutions of UN organs, may constitute evidence of state practice and *opinio juris*.¹⁰⁴⁸ There may be support for this view in the *Nicaragua Case*.¹⁰⁴⁹ The court in that case supported the role of a number of General Assembly resolutions in the creation of new customary law.¹⁰⁵⁰ However, there is not universal support for this proposition.¹⁰⁵¹ Such a situation would not be in accordance with the traditional requirement that the behaviour of states provides evidence of state practice.¹⁰⁵² Resolutions adopted unanimously or by consensus can indicate *opinio juris*.¹⁰⁵³ The adoption by consensus of the previously discussed resolutions is arguably evidence of *opinio juris* of a new customary law embodying the principles of these resolutions, particularly the principles supporting the Plan of Implementation of the World Summit. The fact that the Plan of Implementation was also adopted by consensus at the Summit gives further support to this proposition.

¹⁰⁴³ Ong, D.M. *Supra*, fn 1067, 780

¹⁰⁴⁴ Charlesworth, H. 1994. The Declaration on the Elimination of All Forms of Violence Against Women. *The American Society of International Law Newsletter*, June Edition.

¹⁰⁴⁵ Schwebel, S.M. *Supra*, fn 1063, 305

¹⁰⁴⁶ Charlesworth, H. *Supra*, fn 1090

¹⁰⁴⁷ *Ibid*

¹⁰⁴⁸ Schachter, O. 1994. *Supra*, fn 1002, 3

¹⁰⁴⁹ *Military and Paramilitary Activities in and against Nicaragua Case (Nicaragua v USA)* ICJ Rep 1984

392 Ong, D.M. *Supra*, fn 1067, 780

¹⁰⁵⁰ *Ibid*

¹⁰⁵¹ *Ibid*

¹⁰⁵² Schachter, O. 1994. *Supra*, fn 1002, 3

¹⁰⁵³ Schwebel, S.M. *Supra*, fn 1063, 305

State practice is also required for new customs to be created. As discussed, traditionally state behaviour is required as evidence of state practice. General Assembly resolutions alone are, arguably, insufficient evidence of state practice to create customary law.¹⁰⁵⁴ However, as discussed previously, methods of creating customary law have changed and General Assembly resolutions may now be indicative of state practice.¹⁰⁵⁵ There is also an argument that the repetition of principles in a series of resolutions may show evidence of a practice that states have acknowledged as law.¹⁰⁵⁶ Some of the principles acknowledged by these resolutions have already been adopted as state practice. The principles of the Code of Conduct (as discussed), for example, have been included in the legislation of several States.

Support for the Code and other conservation principles such as the ecosystem approach is also found in many international instruments pre-dating these resolutions. The continual adoption of such principles in a series of international agreements culminating in these resolutions will give greater weight to the emergence of new customary law. The inclusion of the Code's and other instrument's conservation and sustainable use principles in customary law would make such principles binding on all states. As discussed, the problem of IUU fishing and non-compliance with CCAMLR measures by non-parties can be alleviated if all states are required to abide by these measures. All states must be bound by management measures for the successful introduction of a comprehensive krill fishing ban to ensure greater security for the Southern Ocean ecosystem.

¹⁰⁵⁴ *Ibid*, 302

¹⁰⁵⁵ Ong, D.M. *Supra*, fn 1067, 780

¹⁰⁵⁶ Schwebel, S.M. *Supra*, fn 1063, 304

Conclusion

This Chapter has examined international “soft” law and the role it can play in the introduction of a comprehensive krill harvesting ban or the maintenance of current precautionary catch limits. Although this type of law is non-binding, it is still important for a krill fishing moratorium, or even a less extensive form of protection, because of its role in shaping expected standards of behaviour. At the very least, soft law can provide political pressure on states to comply with international conservation measures such as an Antarctic krill fishing moratorium. Some soft law instruments, if it can be argued they have hardened into customary law, could be used as a legal justification for states to enforce conservation measures against third party state vessels on the high seas in regions such as the Southern Ocean. However, this thesis concludes that the current “soft” law regime cannot adequately ensure the security of the Antarctic krill and their dependent species, particularly if a fishing moratorium is introduced.

The Stockholm and Rio Declarations both support conservation but focus on human needs and sustainable development, which is not fully consistent with a krill fishing moratorium. The instruments are also general in nature and are non-binding, however, there is some scope for the conservation principles embodied these agreements to become binding customary law if they are accepted by a significant proportion of nations.

The Rio Conference also gave rise to Agenda 21 which contains specific provisions aimed at sustainable use of the world’s oceans and at placing greater control over flag state vessels, but its arguably non-binding status detracts from its strengths. The Agenda will fail to provide effective protection if it is non-binding and does not harden into customary international law. The UN Fish Stocks Agreement can provide greater binding force on the high seas however its application to krill is not completely certain. Binding obligations on the high seas are vital to prevent the risk of IUU fishing from likely increases in demand for krill products if a ban is introduced.

The Code of Conduct for Responsible Fisheries could provide effective protection for krill because of its universally applicable conservation principles. However, the concepts of optimum utilisation and maximum sustainable yield embodied in the Code *prima facie* appear to be at odds with complete krill protection. This thesis submits that support in the Code for the preservation of ecosystem biodiversity and depleted stock numbers justifies a total fishing krill ban because of krill’s vital role in the ecosystem. This hypothesis is given further support because of the Code’s recognition of the precautionary approach which arguably justifies a krill fishing moratorium in light of the uncertainty surrounding the effect of krill fishing on the

Antarctic ecosystem. Furthermore, because of krill's vital role in the ecosystem, a krill fishing moratorium would allow greater annual recruitment of other species in the Antarctic ecosystem and would facilitate the long-term conservation and sustainable use of other species in accordance with the Code's objectives.

The Code's generality and voluntary status reduce its effectiveness. However, support for the Code's conservation principles is found in subsequent instruments such as the Rome, Kyoto and Reyjavik Declarations which could aid in those principles becoming part of binding customary international law. Furthermore, the 2005 Rome Declaration highlights real actions that need to be taken to combat IUU fishing, which gives states guidance as to steps they must take in this respect.

The World Summit on Sustainable Development in late 2002 saw the consolidation of many environmental principles aimed at protection of the world's oceans. In particular, the Johannesburg Declaration and Plan of Implementation give support to conservation principles contained in the Law of the Sea Convention, Agenda 21 and the Biodiversity Convention. Furthermore, the Plan, arguably, also requires specific ratification of certain agreements such as CCAMLR and the Fish Stocks Agreement. The mandatory ratification of such instruments would provide significant protection to krill because of their enhanced conservation requirements. There are, however, doubts as to the binding nature of the Plan of Implementation. The Plan's principles could enter into customary international law, although whether the requisite *opinio juris* exists is questionable. Only with laws that bind all states can a comprehensive krill fishing ban be successful.

The principles arising from the World Summit have received subsequent support in a number of General Assembly resolutions aimed at protection of the world's oceans. These resolutions also support the adoption of other agreements such as the Law of the Sea Convention and the Fish Stocks Agreement, however, the non-binding nature of the language used reduces the impact of these resolutions. The binding nature of General Assembly resolutions is uncertain but they will have more legal force if they are adopted unanimously or by consensus. However, even with unanimous backing they may still only be secondary sources of international law, although this can still lead to the formation of new customary law. If the General Assembly resolutions do constitute customary international law then, as discussed above, their real force will lie in the political pressure that they will place on states to comply with conservation measures on the high seas and the legal justification they provide for other states to enforce such measures. In a recent 2004 resolution, the General Assembly also highlighted the need to strengthen the current international legal framework in respect of fisheries management in order to combat IUU fishing.

This call by the General Assembly may provide the impetus for states to work towards strengthening the current legal framework. Such a move is necessary to combat the problems of non-parties to regional fish management agreements flouting conservation measures.

The Plan of Implementation also focuses on IUU fishing which is the one of the major problems facing krill under current conservation regimes. Soft international law could aid krill because it may induce an expected standard of behaviour for conservation of marine species. However, its non-binding nature reduces its effectiveness in combating IUU fishing. The next chapter of this will look at IUU fishing and other practical implementation problems that could hamper the introduction of an effective krill fishing ban.

CHAPTER 5 – APPROACHES TO FISHERIES MANAGEMENT AND ENFORCEMENT MECHANISMS TO COMBAT IUU FISHING

Introduction

An effective legal regime governing Antarctic fisheries is necessary to guard against the overfishing problem that has plagued marine ecosystems in other regions. Permitting krill harvesting could be detrimental to dependent species, particularly because of the uncertainty concerning krill population and interactions with these dependent species.

Part I of the chapter will focus on the ecosystem approach to fisheries management. In particular, CCAMLR's approach will be examined to determine its potential effectiveness in protecting krill stocks. Furthermore, the meaning and standing of the ecosystem approach in international law will be analysed to determine whether it is possible to uniformly and practically implement the concept.

A comprehensive ban on krill harvesting is necessary because of krill's vital role in the ecosystem. As discussed in Chapter 2 of this thesis, the precautionary approach justifies introducing a krill fishing moratorium even though there is scientific uncertainty concerning the effect of krill fishing on the Antarctic ecosystem. For such a ban to provide effective protection, a strong regulatory regime must be in place to combat illegal, unregulated and unreported fishing (IUU). IUU fishing has, in the past, threatened the effectiveness of many international instruments. The likely increase in krill harvesting levels because of greater demand and reduced costs, combined with the rise of the aquaculture industry, means that strong mechanisms are required to reduce the threat to krill from IUU fishing, especially if a total ban were enacted. Part II of this Chapter will focus on current international instruments aimed at curbing IUU fishing and the use of flags of convenience to evade these measures. An effective ban on krill fishing could not be enforced in the face of likely increases in krill harvesting if stakeholders find ways to avoid having to abide by such instruments. CCAMLR's Catch Documentation Scheme ("CDS") is one such measure aimed at curbing IUU fishing. The CDS is currently focussed on Patagonian Toothfish but if the CDS is effective, it could also be used to reduce any IUU fishing resulting from the introduction of a krill fishing moratorium.

Part III of this chapter will discuss the effectiveness of mechanisms used to secure compliance of national fishing vessels such as logbooks, observers, inspection systems, patrol vessels, and vessel monitoring systems. Strong mechanisms are necessary if krill protection or conservation measures are to be effective. A comprehensive ban on krill fishing would, in particular, require

strong compliance measures if it were to be maintained in the face of IUU fishing. In particular, the need for an effective system of detention and punishment of IUU vessels will be outlined.

I. The Ecosystem Approach to Fisheries Management

CCAMLR uses an ecosystem approach that focuses on the whole ecosystem, rather than single species. A single species regime was not seen as viable in the Southern Ocean because of small numbers of species and high interdependence between species.¹⁰⁵⁷ CCAMLR's approach distinguishes it from other fisheries instruments which focus on one species.¹⁰⁵⁸ The "Antarctic marine ecosystem" is defined as the complex of relationships of Antarctic marine living resources with each other and with their physical environment.¹⁰⁵⁹

The ecosystem approach utilises a technique called feedback management. CCAMLR has a target population value for each species. Deviation from this target allows the system's control mechanisms to be changed to achieve the target. The practical application of such a procedure is quite difficult because, if the population size declines below the target, the adult population may not be able to maintain recruitment.¹⁰⁶⁰ Other factors besides living organisms also need to be considered in the adoption of an ecosystem approach. Factors such as nutrient levels; currents; temperature; quantity of light; and the time of year can affect the ecosystem.¹⁰⁶¹ Considering these factors can also make the practical application of an ecosystem approach quite complicated.

¹⁰⁵⁷ Overholt, D.H. *Supra*, fn 392, 239

¹⁰⁵⁸ Baird, R. *Supra*, fn 25, 167

¹⁰⁵⁹ Article I(3), *CCAMLR*

¹⁰⁶⁰ Nicol, S. and De la Mare, W. *Supra*, fn 80, 45

¹⁰⁶¹ Howard, M. *Supra*, fn 35, 115

The Convention itself advocates harvesting at a level of maximum sustainable yield.¹⁰⁶² The Working Group on Fish Stock Assessment (WG-FSA) has recognised that maximum sustainable yield models for krill management are likely to be unacceptable for taking into account ecosystem considerations and interactions.¹⁰⁶³ Maximum sustainable yield models assume that systems are stable; that the exploited stock comes from only one species; and that there is a predictable relationship between population size and growth and harvesting levels.¹⁰⁶⁴ For species such as krill which are found at a low level in the food chain these assumptions usually do not apply because they ignore the more important role that organisms at a lower level have on other species and it is not appropriate to look at them on a single species basis.¹⁰⁶⁵ The assumptions are also inapplicable to krill because they form swarms that often do not mix with other swarms and so, as discussed, there can be problems with localised harvesting.¹⁰⁶⁶ The difficulties with maximum sustainable yield have led to CCAMLR taking a broader ecosystem approach to krill management. Such an approach is necessary because of the complex interactions of krill with other species. If krill were to be harvested at maximum sustainable yield then, arguably, other species would be detrimentally affected. The harvesting of krill at these levels would actually prevent other species being harvested to maximum effect. A comprehensive ban on krill harvesting would facilitate the exploitation of other, more economical species at maximum sustainable yield because of krill's vital role in the food chain.

The CAMLR Commission introduced the Ecosystem Monitoring program (CEMP) in 1985 to monitor the effects of fishing on harvested and dependent species and to detect changes in the ecosystem.¹⁰⁶⁷ CEMP was set up because of the uncertainty surrounding interactions within the Antarctic ecosystem, the lack of data on population trends of exploited species and the problems with predicting the effect of harvesting on the ecosystem.¹⁰⁶⁸ Predator numbers and breeding success are measured at particular locations and CEMP tries to relate changes in these numbers to fluctuations in krill abundance. CEMP also attempts to identify natural variability in populations.¹⁰⁶⁹ This data is used in mathematical models to predict future changes and to formulate catch limits.¹⁰⁷⁰

¹⁰⁶² The problems with such an approach have already been highlighted.

¹⁰⁶³ Miller, D.G.M. 2002. *Supra*, fn 247, 176

¹⁰⁶⁴ *Ibid*

¹⁰⁶⁵ *Ibid*

¹⁰⁶⁶ *Ibid*, 177

¹⁰⁶⁷ CCAMLR website, <http://www.ccamlr.org>

¹⁰⁶⁸ *Ibid*, 177

¹⁰⁶⁹ Nicol, S. and Endo, Y. *Supra*, fn 77, 109

¹⁰⁷⁰ Krill Yield Model has been discussed previously.

Models concerning interactions between species in the ecosystem are also required. For example, predators that have several prey animals often feed more on a particular species when there is a shortage of another prey species.¹⁰⁷¹ However, there is currently insufficient data on such interactions to formulate an accurate model.¹⁰⁷² Information on ecosystems is not easy to obtain and statistical information and estimates can be disputed.¹⁰⁷³ Natural variability of populations of Antarctic species is also uncertain.¹⁰⁷⁴ Uncertainty will prevail without the large amount of data necessary to implement the ecosystem approach.¹⁰⁷⁵ However, as discussed above, the precautionary approach advocates taking action even when there is great uncertainty. The problem is also one of strengthening the current regime to ensure that any management measures taken are effective.

The CAMLR Commission is required to recommend conservation measures based on the best scientific evidence available and analyse the effectiveness of such measures.¹⁰⁷⁶ Conservation measures can include the designation of protected species and catch limits for harvested species.¹⁰⁷⁷ The Commission faces problems with a lack of data and the inherent uncertainty surrounding estimates. This makes it difficult to base decisions on the best scientific evidence. Insufficient or inconclusive data can result in members doing nothing and the convention becoming unenforceable.¹⁰⁷⁸ Alternatively, some fishing nations will attempt to delay the introduction of measures because of insufficient data.¹⁰⁷⁹ As discussed, the precautionary approach advocates the maintenance of comprehensive management measures despite uncertainty. Krill's vital role in the ecosystem means that strong management must be maintained, especially because of likely increases in harvesting levels.

A lack of data impedes the implementation of adequate management measures, creating problems with the adoption of an ecosystem approach. Insufficient or inaccurate knowledge about species interrelationships creates difficulties in assessing the impact of a krill fisheries industry on dependent species. Different time spans for population life cycles of predators also makes it hard to assess the impact of krill harvesting on the whole ecosystem. In some cases the effect is not ascertainable for several years.¹⁰⁸⁰

¹⁰⁷¹ Nicol, S. and De la Mare, W. *Supra*, fn 80, 47

¹⁰⁷² *Ibid*, 47

¹⁰⁷³ Puissochet, J. *Supra*, fn 48, 74

¹⁰⁷⁴ Basson, M. and Beddington, J.R. *Supra*, fn 138, 65

¹⁰⁷⁵ Baird, R. *Supra*, fn 25, 169

¹⁰⁷⁶ Article IX(1)(e) and (f), *CCAMLR*

¹⁰⁷⁷ Article IX(2), *CCAMLR*

¹⁰⁷⁸ Baird, R. *Supra*, fn 25, 170

¹⁰⁷⁹ Gulland, J.A. *Supra*, fn 7, 235

¹⁰⁸⁰ Basson, M. and Beddington, J.R. *Supra*, fn 138, 60

It is also likely that stocks of particular species will not recover if adult stock is reduced to low levels. Depleted adult populations can result in some fish species producing extremely small numbers of offspring.¹⁰⁸¹ This poses a significant threat for exploited fish species. Even if the impact of krill fisheries on the ecosystem is monitored extensively, irreparable damage can occur before detection is possible. A complete ban on krill harvesting would eliminate the problems with inadequate data concerning interactions between krill and other species. This would reduce the scope for detrimental change to populations of dependent species. Such an approach is in accordance with the Madrid Protocol's ecosystem conservation objectives.

CCAMLR is currently investigating a potential new approach to managing krill through the use of predator estimates.¹⁰⁸² This new procedure could eliminate the problems with insufficient information that currently plague the ecosystem approach. However, current predator information is, arguably still too uncertain to introduce a predator based system.¹⁰⁸³ There is also a danger that significant changes in predator numbers would only be detected after the damage has been done. CCAMLR's precautionary approach to management can overcome such difficulties and allow the implementation of a predator based system provided that strong enforcement mechanisms are in place to ensure compliance.

The meaning of an "ecosystem approach"

Difficulties arise in defining exactly what constitutes an ecosystem approach and how it is to be implemented. The parties to the Biodiversity Convention have provided some practical guidance on the implementation of the ecosystem approach.¹⁰⁸⁴ Decision V/6 recognises that, for the Biodiversity Convention, the ecosystem approach seeks to balance conservation; sustainable use; and the fair and equitable sharing of genetic resources. If the purpose of the ecosystem approach is to achieve a balance between sustainable use and conservation, then the approach, arguably, would not justify a comprehensive krill harvesting ban. Arguably, a total ban would not reach an appropriate balance because sustainable use of krill is ignored.

¹⁰⁸¹ *Ibid*, 61

¹⁰⁸² CCAMLR should investigate such alternatives because of the difficulty in gaining accurate information concerning krill population.

¹⁰⁸³ As previously discussed, it is also difficult to gain accurate data concerning the interactions between predators and other species in the Antarctic ecosystem.

¹⁰⁸⁴ Decision VI/12 of the Conference of Parties to the Convention on Biological Diversity provides practical guidance on the implementation of an ecosystem approach. The Decision suggests that governments and organisations submit case studies on the implementation of the ecosystem approach. Entities relating their own experiences on implementing an ecosystem approach may provide useful information that enables other parties to overcome the difficulties associated with practical implementation.

However, Decision V/6 also states that the ecosystem approach can integrate other approaches such as having protected areas and the way in which the approach is implemented will depend on local conditions. A comprehensive harvesting ban could therefore be justified under an ecosystem approach because other approaches such as a total ban can be integrated into the ecosystem approach. The unique local conditions in Antarctica also support complete protection. The extreme importance of krill to the Antarctic ecosystem and the short Antarctic food chain are local conditions that should alter the way in which the ecosystem approach is adopted in Antarctica. Even if a comprehensive ban is not adopted, as previously discussed, seasonal or regional bans can be adopted to protect areas where krill harvesting poses significant danger or where fishing is highly concentrated.

Decision V/6 also supports CCAMLR's feedback management system.¹⁰⁸⁵ This is an appropriate method of managing krill, however, the effect of time lags can be detrimental. If CCAMLR adopts a particular catch limit, then the effects on the ecosystem of that limit take time to ascertain. When new data comes to light CCAMLR can adjust its precautionary limits under the feedback management system. But if detrimental harm has already occurred, changing the limits after the event will only prevent further harm from occurring. Consequently, a feedback management system is not able provide total security to krill and its dependent species.

Decision V/6 also contains a number of principles concerning the ecosystem approach.¹⁰⁸⁶ In particular, several of these principles focus on the need to consider economic factors when adopting the approach.¹⁰⁸⁷ If this principle is a fundamental part of the ecosystem approach, then a total krill harvesting ban is, arguably, unjustified under that approach. If krill need to be managed in an economic context then their economic benefits must be taken into account.

¹⁰⁸⁵ The Decision stresses that management must be adaptive to respond to uncertainties arising from time lags in ecosystem processes and the absence of complete knowledge on the ecosystem. This would seem to support CCAMLR's feedback management method of adjusting precautionary catch limits when new data comes to light.

¹⁰⁸⁶ Principle 3 states that ecosystem managers should consider the actual or potential effects of their activities on other ecosystems. This principle suggests that CCAMLR should consider the effects of its management activities on mainland Antarctica and other world ecosystems. CCAMLR does take an approach that considers the effects of krill fishing on land based predator populations.

¹⁰⁸⁷ Principle 4 says that the ecosystem needs to be managed in an economic context. To further this goal, management systems need to align incentives to promote biodiversity conservation and sustainable use and to internalise costs and benefits in the given ecosystem to the extent feasible. Principle 10 also gives further support to the inclusion of economic objectives in the ecosystem approach by stating that it involves a balance between conservation and use of biodiversity.

Under principle 11, the ecosystem approach should involve all relevant sectors of society. Presumably this would include fisherman and others involved in potential markets for krill, including usage in aquaculture and pharmaceuticals. Operational Guideline 5 of Decision V/6 also requires the integration of the ecosystem approach into fisheries and intersectoral cooperation in implementing the approach. If the views of these different sectors were taken into account then, under an ecosystem approach, sustainable use of krill would be preferable to complete conservation.

Operational Guideline 2 of Decision V/6 states that one objective of the ecosystem approach is to maintain or restore the benefits derived from the ecosystem. Furthermore, it emphasises that the ecosystem's functions should benefit stakeholders responsible for their production and management. Consequently, it would appear that the ecosystem approach embodies an economic element that seeks to utilise the resources of the ecosystem. A comprehensive harvesting ban would not permit the utilisation of such economic benefits and so CCAMLR's objective of allowing sustainable use of krill resources is, arguably, more appropriate under an ecosystem approach. However, this thesis submits that managing krill in an economic context still permits a total harvesting ban because such a ban would facilitate sustainable exploitation of other krill dependent species. Furthermore, it is submitted that a comprehensive ban still accords with the principles set out in Decision V/6 because conserving krill would protect the functioning of the whole ecosystem.¹⁰⁸⁸

As discussed, the time lags that can occur before the effects of particular activities on the ecosystem are known can result in detrimental harm. The setting of long term krill conservation objectives advocated by Decision V/6 supports a total ban on krill fishing.¹⁰⁸⁹ Because of the danger that krill fishing poses to dependent species, a comprehensive ban is justified because of the time lags before damage from fishing will become apparent. At such a time the harm will have already occurred, which makes it more prudent to enact conservation measures before the damage actually takes place. For a harvesting ban to be effective, the current legal regime must be strengthened. Enforcement problems mean that illegal, unregulated and unreported fishing (IUU) will create difficulties in maintaining an effective ban, especially in light of likely improvements in economic returns from krill fishing and greater demand for krill products.

¹⁰⁸⁸ Principle 5 of Decision V/6 also states that the conservation of ecosystem structure and functioning should be a priority target of the ecosystem approach. As krill are found at the base of the ecosystem, they are essential for the functioning of the ecosystem. If the functioning of the ecosystem is a priority target of the ecosystem approach then, under such an approach, it may be possible to disregard krill's economic value because of the priority of protecting krill in order to conserve the functioning of the ecosystem. Principle 6 also requires management to look at environmental conditions that limit the natural productivity and functioning of the ecosystem. As discussed, the extent of Antarctic sea ice may be one of the major factors that limit krill productivity. Under an ecosystem approach, it may be necessary to accord greater protection to krill in order to avoid the uncertainty associated with krill recruitment and sea ice cover.

¹⁰⁸⁹ Principle 8 of Decision V/6 requires management to set long term objectives because of the time lags that are present in ecosystem processes.

II. Illegal, Unregulated and Unreported Fishing in the Southern Ocean

A total ban on krill fishing would require effective measures to prevent IUU fishing, especially if a significant demand for krill arose because of new products and decreased fishing costs.

Accordingly, a strong legal regime is required to ensure that the level of IUU fishing is kept low.

CCAMLR and other regional fisheries management organisations have been plagued by illegal¹⁰⁹⁰, unregulated¹⁰⁹¹ and unreported¹⁰⁹² (IUU) fishing. The UN FAO has produced estimates that suggest that in some fisheries the proportion of total catches coming from IUU fishing is as great as 30%.¹⁰⁹³ Finfish have been one of the major targets of IUU fishers.¹⁰⁹⁴ As previously discussed, it is now likely that krill harvesting levels will increase.¹⁰⁹⁵ There are now a wider range of uses for krill and some markets, such as aquaculture, have the potential for rapid growth. Krill harvesting technology is also improving and, with a decrease in costs, there will be better economic returns from krill fishing. IUU fishing could therefore pose a threat to krill in the same way as it has harmed the Patagonian toothfish. Accordingly strong legal mechanisms are required to restrict the level of IUU fishing, especially in light of likely increases in harvesting and greater demand for krill products.

¹⁰⁹⁰ Illegal fishing involves fishing by vessels within a state's jurisdiction in contravention of its laws or fishing by flag vessels in contravention of the conservation measures of regional management organisations of which the flag state is a member (Article 3.1, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*).

¹⁰⁹¹ Unregulated fishing refers to the misreporting, or the failure to report, fishing activities occurring within the zone of control of a particular regional management organisation (Article 3.2, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*).

¹⁰⁹² Unregulated fishing refers to harvesting activities carried out by vessels from flag states that are not members of the relevant regional management organisation (Article 3.3, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*).

¹⁰⁹³ UN FAO website

¹⁰⁹⁴ The Patagonian toothfish in particular has been a major focus of IUU fishing. Conservative estimates have reported IUU catches as constituting at least half of all toothfish harvested. IUU fishing in one particular year around Crozet island decimated 25% of the population in that area (Popick, I.J. 2001. Are There Really Plenty of Fish in the Sea? The World Trade Organization's Presence is Effectively Frustrating the International Community's Attempts to Conserve the Chilean Sea Bass. *Emory Law Journal*, Vol 50: 939-985 at 943). NZ has come up with figures of US\$300 million for the value of the illegal industry. AFMA believes that the legal catch around Macquarie Island only has a value of AUD\$5 million for 1000 tonnes of fish (Baird, R. *Supra*, fn 25, 179).

¹⁰⁹⁵ See Chapter 1 for a detailed discussion on this topic.

There have been several international instruments introduced to stem the problem of IUU fishing. The *Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas* (“the Compliance Agreement”) was adopted in November 1993 by the Twenty-seventh Session of the FAO Conference in resolution 15/93.¹⁰⁹⁶ The Compliance Agreement is aimed at giving nations effective means to deter vessel reflagging by nationals.¹⁰⁹⁷ The legally binding nature of the Compliance Agreement makes it a useful means of combating IUU fishing. As it applies to all fishing vessels on the high seas,¹⁰⁹⁸ it has a wide scope that can help to protect against IUU fishing in the Antarctic. As previously discussed, although there are large concentrations of krill near some sub-Antarctic islands, there are also large concentrations in high seas areas. The Compliance Agreement also contains provisions that try to ensure the compliance of non-parties.¹⁰⁹⁹ These provisions are necessary that the deterrent and enforcement mechanisms are implemented by the maximum number of states to curtail IUU fishing. Such mechanisms are clearly relevant to any imposition of a krill fishing moratorium or seasonal/localised fishing bans.

The FAO Code of Conduct for Responsible Fisheries mirrors large parts of the Compliance Agreement.¹¹⁰⁰ Other provisions of the Compliance Agreement have also been included within the International Plan of Action for IUU fishing (IPOA). The IPOAs are voluntary instruments that were formulated within the Code framework.¹¹⁰¹ The Code and the IPOA can help to create a standard practice for dealing with IUU fishing that could pressure other states to comply with their provisions. The Code of Conduct and the Compliance Agreement are, in any case, a move towards more effective protection of fisheries and the marine ecosystem.¹¹⁰² Strong international instruments and mechanisms that reduce IUU fishing are necessary to ensure the effectiveness of any form of krill harvesting ban.

¹⁰⁹⁶ Doulman, D.J. 1998. *Supra*, fn 864

¹⁰⁹⁷ *Ibid*

¹⁰⁹⁸ Article 2

¹⁰⁹⁹ Article VIII of the Agreement outlines how it applies to non-parties. Parties are required to encourage non-parties to act consistently with the Agreement and also to cooperate consistently with international law so that flag vessels of non-parties do not undermine the Agreement.

¹¹⁰⁰ Bratspies, R. *Supra*, fn 599, 234. The Code, in Article 1.1, specifically acknowledges that FAO Conference resolution 15/93 states that the Compliance Agreement forms an “integral” part of the Code.

¹¹⁰¹ The IPOA for IUU fishing was approved by the FAO Committee on Fisheries at its 24th session in 2001 (UN FAO website, <http://www.fao.org>).

¹¹⁰² Song, Y. *Supra*, fn 879, 863

Both the Code and the IPOA require states to exercise control over their nationals so that they do not engage in IUU fishing.¹¹⁰³ States are required to discourage nationals from flagging vessels under a state not meeting its responsibilities.¹¹⁰⁴ States are also required to exercise such control in an effective manner so that nationals do not undermine regional conservation and management measures.¹¹⁰⁵ Placing this requirement on states makes it more likely that regional conservation measures will be observed. States are in the best position to control and punish their own nationals. Requiring them to prevent nationals undermining regional conservation measures may mean that more effective controls are implemented to ensure compliance with regimes such as CCAMLR. However, the Code and IPOA are merely voluntary and they may not result in states actually implementing effective controls over nationals. A recent survey by the FAO has indicated that, of those members that responded, only 24% (15 states) indicated that they were currently formulating a national plan of action to put the IPOA-IUU into place.¹¹⁰⁶ Effective controls are vital if a krill harvesting ban is to be introduced. Even if a regional or seasonal ban were introduced to protect the more sensitive areas, robust controls are still necessary to prevent IUU fishing particularly because of likely increases in economic returns and demand for krill products. As discussed in a previous Chapter, the FAO itself has highlighted the need to improve effective implementation of these instruments.

The IPOA requires states to prevent flag vessels from resupplying IUU vessels or transshipping fish to or from those vessels.¹¹⁰⁷ Prior authorisation from the flag state is also required before flag vessels transship at sea.¹¹⁰⁸ Transshipping fish is a technique to avoid regulation by transferring IUU catches between vessels. Strong mechanisms are required to prevent transshipment because it is used as a means to facilitate IUU fishing. However, it still occurs at present.¹¹⁰⁹ Likely increases in economic returns from krill harvesting and demand for krill products makes it an absolute necessity to wipe out transshipment and other techniques of avoiding regulation. Efforts that are being made by CCAMLR to stamp out such practices will be discussed later in this Chapter.

¹¹⁰³ Article 18, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*, Article 6.11, *FAO Code of Conduct for Responsible Fisheries* 1995

¹¹⁰⁴ Article 19, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹¹⁰⁵ Article 6.11, *FAO Code of Conduct for Responsible Fisheries* 1995

¹¹⁰⁶ Paragraph 68, Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent, Deter and Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2004, *Action Taken by FAO Members to Implement the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU)*

¹¹⁰⁷ Article 48, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹¹⁰⁸ Article 49, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹¹⁰⁹ Carr, C.J. and Scheiber, H.N. *Supra*, fn 837, 62

The Code makes flag states responsible for enforcement but it provides few actual methods to stop non-parties from flouting it.¹¹¹⁰ Requiring flag state control is an appropriate method of reducing IUU fishing by flag state vessels, however, it depends on how vigorously states exert control over their vessels. Many fishing vessels are privately owned, making it unlikely that they will faithfully represent the interests of their flag states.¹¹¹¹ Conflict is therefore likely between flag states and their vessels.¹¹¹² States that actively enforce measures also put themselves at a disadvantage to other nations that have less strict flag controls.¹¹¹³ This leads to some states publicly advocating flag state control whilst implementing weak controls over their vessels. A recent survey by the FAO did, however, report that 59% (23 members) of member states that responded had taken appropriate action (eg observers, inspections, satellite monitoring) to ensure that their flag vessels do not undermine high seas conservation and management measures.¹¹¹⁴ It is difficult to effectively enforce controls over flag vessels, particularly in the Southern Ocean, because vessel owners are motivated by private interests. Competition from vessels under weaker controls can force some flag state vessels to engage in IUU fishing so that they remain economically viable. Effective flag state control is vital to ensure the effectiveness of a comprehensive or limited krill harvesting ban. Greater economic returns from krill harvesting will make it vital to have a strong regime to prevent IUU fishing and this cannot be achieved if flag states do not control their own vessels. Even with stricter controls, there is still a risk that vessels will make greater use of flags of convenience.¹¹¹⁵

¹¹¹⁰ Bratspies, R. *Supra*, fn 599, 235. Article III(1)(a) of the Compliance Agreement also requires states to take such measures “as may be necessary” to ensure that their flag vessels do not undermine the effectiveness of international conservation and management measures.

¹¹¹¹ Silk, R.J. 2001. Non-binding Dispute Resolution Processes in Fisheries Conflicts: Fish Out of Water? *Ohio State Journal on Dispute Resolution*, Vol 16: 791

¹¹¹² *Ibid*

¹¹¹³ Popick, I.J. *Supra*, fn 1140, 964

¹¹¹⁴ Paragraphs 74 and 76, Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent, Deter and Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2004, *Action Taken by FAO Members to Implement the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU)*

¹¹¹⁵ *Ibid*

CCAMLR also contains provisions that advocate flag state control. Article XXI of CCAMLR requires Contracting Parties to take measures within their competence to ensure compliance with CCAMLR. Article XXI is intentionally ambiguous by making “within its competence” part of the provision. This allows claimant and non-claimant states to interpret the provision differently.¹¹¹⁶ Claimants can argue that the provision gives them jurisdiction over citizens of all nations entering the claimed area.¹¹¹⁷ Non-exercise of jurisdiction does not affect their claim because of Article IV of CCAMLR.¹¹¹⁸ Non-claimants can argue that the provision simply allows flag State enforcement and flag state prosecution for breaches.¹¹¹⁹ Krill and other Antarctic marine species would receive greater protection if claimants had jurisdiction over all nationals entering the claimed area. If claimants had such jurisdiction then they would be likely to exercise effective control over all IUU fishers in this zone to bolster their claims. This would give greater protection against IUU fishing in these areas, particularly since large krill concentrations are found off the Antarctic mainland and other claimed sub-Antarctic islands. Permitting merely flag state enforcement makes it difficult to protect against IUU fishing of non-flag state vessels. A comprehensive or seasonal/regional ban on krill harvesting would be more effective if enforcement mechanisms were strengthened.

Enforcement of CCAMLR is therefore quite difficult because flag vessels of non-members can ignore the Convention’s conservation measures. This creates an obstacle to implementing and enforcing any effective ban on krill fishing because non-members of CCAMLR could simply ignore the ban. Illegal fishing boats can, however, be seized if they trespass into the Exclusive Economic Zone of any country.¹¹²⁰ Australia has, detained illegal fishing boats with Patagonian Toothfish in its declared EEZ around Heard and MacDonald Islands. In early 2002 an Australian navy patrol boat detained two Russian vessels, the *Lena* and *Volga* that were engaged in illegal harvesting of Toothfish within these EEZs.¹¹²¹ Under the 1982 Convention Article 62, vessels fishing in an EEZ are required to comply with conservation measures of the sovereign state and that can include measures relating to catch quotas or determining which species may be caught. So, as previously discussed, a krill fishing moratorium could be introduced by coastal states in their EEZs around sub-Antarctic islands. Even a regional krill ban in sensitive areas would provide some benefit to krill and their dependent species.

¹¹¹⁶ Howard, M. *Supra*, fn 35, 139

¹¹¹⁷ *Ibid*

¹¹¹⁸ *Ibid*, 140

¹¹¹⁹ *Ibid*

¹¹²⁰ Baird, R. *Supra*, fn 25, 169

¹¹²¹ CCAMLR *Report of Member’s Activities in the Convention Area 2001-02 – Australia*. France has also taken control of illegal boats in its EEZ around Crozet and Kerguelen Islands (Baird, R. *Supra*, fn 25, 169)

The greater capacity, and perhaps a greater willingness, of coastal states to exercise control over foreign vessels operating in their EEZs, arguably, makes it easier to achieve a reduction in IUU fishing in these zones. The high concentration of krill around some sub-Antarctic islands (as previously discussed) means that, if a total ban were introduced, krill in these EEZs could receive a high level of protection from any IUU fishing. Some coastal states, such as Argentina, Canada, Chile, Iceland, New Zealand, Norway, Peru, and Indonesia, have sought greater control over conservation and management of marine resources outside their 200 mile EEZs on the high seas.¹¹²² If states were given some measure of control outside their EEZs then it would be easier to control IUU fishing because states would not be able to evade conservation measures simply by fishing outside the EEZ.

CCAMLR has also recently introduced measures applying to non-Contracting Parties to attempt to garner their compliance with CCAMLR conservation requirements. At each of its annual meetings, the Commission will identify non-Contracting parties whose vessels have been engaged in IUU activities in contravention of the Convention.¹¹²³ In addition, CCAMLR now makes a presumption that *all* non-Contracting Party vessels sighted fishing in the Convention area are undermining the effectiveness of CCAMLR conservation measures. Accordingly, any such vessel entering a port of a Contracting Party is not permitted to offload its catch unless the vessel establishes that the fish were caught in compliance with all CCAMLR conservation requirements. Port state control and inspection measures are discussed in more detail below.

Flags of Convenience

The introduction of strong control measures by flag states to regulate their vessels could actually lead to an increase in IUU fishing. Strong enforcement measures taken by states against their nationals often result in the reflagging of vessels to fly “flags of convenience”.¹¹²⁴ Fishing vessels often change their flag registration to states who have little regulation or who are not parties to regional fisheries organisations.¹¹²⁵ This allows them to avoid stricter regulatory controls and monitoring. One example is the huge number of tuna vessels that changed registration from the US to other countries to avoid being subject to strict dolphin protection

¹¹²² Joyner, C.C. 1998. Compliance and Enforcement in New International Fisheries Law. *Temple International and Comparative Law Journal*, Vol 12: 271-300 at 272

¹¹²³ CCAMLR Conservation Measure 10-07 (2003)

¹¹²⁴ Carr, C.J. and Scheiber, H.N. *Supra*, fn 837, 60

¹¹²⁵ Warner-Kramer, D.M. and Canty, K. 2000. Stateless Fishing Vessels: The Current International Regime and a New Approach. *Ocean and Coastal Law Journal*, Vol 5: 227-243 at 232

legislation.¹¹²⁶ Fishing boats of members of CCAMLR occasionally fly under the flags of non-member states in order to circumvent the Convention.¹¹²⁷ This problem creates extreme difficulties in maintaining any krill harvesting ban. Even if flag vessels vigorously enforced a ban against their own vessels, reflagging the ships provides a mechanism to avoid the ban.

Flag state implementation of agreements is usually poor, so some international instruments have looked at means of deterring reflagging.¹¹²⁸ Uniform standards are one such method.¹¹²⁹ If all states adopt the same level of control over flag vessels, then vessels will have less reason to reflag. If the controls of all states are strict, then vessels cannot reflag to a state with less regulation. However, it will be difficult for all states to impose uniform standards, particularly for developing states who may not have the resources to introduce and monitor significant regulatory requirements. As discussed above, this has been one of the impediments to effective fisheries management that has been highlighted by the FAO. The UN General Assembly has also established an Assistance Fund to aid developing countries in this respect. States are required to also take all “practicable” steps to prevent “flag hopping” of vessels.¹¹³⁰ These steps should include denying a vessel the right to reflag and an authorisation to fish.¹¹³¹ If states with less stringent controls or less capacity to control their flag vessels do prevent IUU vessels reflagging to their nationality, decreased usage of flags of convenience will be the result. Reflagging must be prevented if a comprehensive ban is to be effective. Vessels cannot be allowed to avoid a krill harvesting ban by simply changing their flag allegiance.

However, the IPOA and the Compliance Agreement will, arguably, have little real impact on the use of flags of convenience. The FAO has looked at reflagging in the wake of the Compliance Agreement to gauge its impact on the practice.¹¹³² Only a small proportion of all reflaggings (around 15%) were motivated by a desire to use a flag of convenience.¹¹³³ However, the proportion of vessels flagged under “flag of convenience” countries was still around 5% of the total world fleet after the Compliance Agreement was originally implemented.¹¹³⁴

¹¹²⁶ Carr, C.J. and Scheiber, H.N. *Supra*, fn 837, 61

¹¹²⁷ Baird, R. *Supra*, fn 25, 169

¹¹²⁸ The Rome Declaration supports the adoption of the IPOA as a means of effectively dealing with IUU fishing and “flags of convenience” (Article 12(j), *The Rome Declaration on the Implementation of the Code of Conduct for Responsible Fisheries* 1999).

¹¹²⁹ The IPOA requires states to deter their flag vessels from reflagging to avoid compliance with conservation and management measures (Article 38, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*). Flag states are also required to adopt uniform standards so that there are no incentives to reflag (Article 38).

¹¹³⁰ Article 39, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹¹³¹ *Ibid*

¹¹³² Doulman, D.J. 1998. *Supra*, fn 864

¹¹³³ *Ibid*

¹¹³⁴ *Ibid*

A recent survey by the FAO reported that over half of those that responded had inadequate financial resources to develop a national plan of action to combat IUU fishing and there were also reports of lack of funds hampering efforts to actively enforce fisheries management measures.¹¹³⁵ This implies that the Compliance Agreement and IPOA originally had little impact on the use of flags of convenience. If these agreements are not going to decrease the use of flags of convenience, a total ban on krill fishing will be extremely difficult to implement. With likely increases in returns from harvesting and greater demand from krill products, reflagging must be prevented if a ban is to prove effective. If vessels simply use flags of convenience they can evade any ban and continue to harvest krill as IUU vessels. However, the Compliance Agreement and IPOA have not had time to adequately deal with the problem. International agreements take time to implement and states could simply need more time (and have international pressure placed on them) to effectively implement these instruments.

Stateless Vessels

Greater control over vessel reflagging has resulted in an increase in the number of vessels now fishing without being registered to any particular nationality.¹¹³⁶ The 1982 Convention prohibits states changing flags during a voyage¹¹³⁷ and prevents states sailing under two or more flags as a means of convenience.¹¹³⁸ Such vessels can be classed as stateless ships.¹¹³⁹ Use of flags of convenience has also meant that states are now deregistering many vessels under pressure from the international community.¹¹⁴⁰ The IPOA requires states to take measures consistent with international law in relation to stateless vessels engaged in IUU fishing on the high seas.¹¹⁴¹

¹¹³⁵ Paragraphs 74 and 76, Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent, Deter and Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2004, *Action Taken by FAO Members to Implement the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU)*

¹¹³⁶ Warner-Kramer, D.M. and Canty, K. 2000. *Supra*, fn 1171, 227

¹¹³⁷ Article 92(1), *United Nations Convention on the Law of the Sea* 1982

¹¹³⁸ Article 92(2), *United Nations Convention on the Law of the Sea* 1982

¹¹³⁹ *Ibid*

¹¹⁴⁰ Warner-Kramer, D.M. and Canty, K. 2000. *Supra*, fn 1171, 227

¹¹⁴¹ Article 20, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

Jurisdiction can be exercised over stateless vessels by any state because they do not come under national or international law.¹¹⁴² Because any state can assert jurisdiction over stateless vessels,¹¹⁴³ freedom of the high seas and non-membership of regional management organisations will not provide barriers to enforcement against such vessels. If political pressure forces more states to deregister vessels flying flags of convenience then it will be easier to enforce conservation measures on the high seas against stateless vessels. More ships are likely to be made stateless by the application of the Compliance Agreement if it is effectively implemented.¹¹⁴⁴ This would give other states greater power to reduce IUU fishing conducted by stateless vessels previously flying under flags of convenience. Because krill are found in large tracts of the high seas in the Southern Ocean, effective enforcement of CCAMLR measures against stateless vessels on the high seas would be a necessity if a total ban on krill harvesting were introduced.

Port State Measures

The IPOA, Compliance Agreement and Fish Stocks Agreement contain measures to prevent IUU fishing that are aimed at port states. Vessels need to seek permission to enter ports and provide a copy of their authorisation to fish and details of their catch quantities and their fishing trip.¹¹⁴⁵ This places a control mechanism on fishing vessels trying to unload IUU catches. Although, the details of catch quantities and fish trip are open to fraud.

Port states with evidence that a vessel has been IUU fishing must prevent it landing or transshipping fish and must notify its flag state.¹¹⁴⁶ Information on catch and transshipped catch

¹¹⁴² Anderson, H.E. 1996. The Nationality of Ships and Flags of Convenience: Economics, Politics, and Alternatives. *The Maritime Lawyer*, Vol 21: 139-170 at 141

¹¹⁴³ The case of *Molvan v A.G. for Palestine* 81 L.I.L. Rep. 277 (1948) held that stateless vessels are not protected by any state, suggesting that jurisdiction can be asserted over these vessels by any state (Warner-Kramer, D.M. and Canty, K. 2000. *Supra*, fn 1171, 230). This has also been upheld in *United States v. Victoria*, 876 F.2d 1009 (1st Cir. 1989) by US Courts which found that the US had jurisdiction over a vessel captured on the high seas because it was stateless. Such findings may make it easier to limit IUU fishing.

¹¹⁴⁴ Warner-Kramer, D.M. and Canty, K. 2000. *Supra*, fn 1171, 233

¹¹⁴⁵ Article 55, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹¹⁴⁶ Article 56, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*. Article V(2) of the Compliance Agreement also requires a port state to notify a flag state where it has reasonable grounds for believing a vessel in that port has undermined the effectiveness of international conservation

must also be given to relevant regional management organisations.¹¹⁴⁷ These measures allow flag states to maintain some control over their flag vessels. If port states comply with the requirements and inform the flag state of any IUU fishing, flag states can enforce sanctions against their vessels. A recent survey by the FAO reported that 81% (35 states) of countries that responded had measures in place to prohibit landings and transshipments from vessels in port where those vessels are found to have engaged in or supported IUU fishing after a port inspection.¹¹⁴⁸ A vast majority of states surveyed attempted to verify information concerning the vessel's identity and origins of the catch during port inspections.¹¹⁴⁹

This information also allows flag states to scrutinize reported vessels in the future or to consider deregistering such vessels if repeated violations occur. More effective control of flag states over their registered vessels may reduce instances of IUU fishing and could help to increase the effectiveness of CCAMLR conservation measures. The requirement to report IUU fishing and other catch and transshipment data to relevant regional organisations will hopefully improve conservation measures.

Precautionary catch limits can be made more effective when more accurate data is available. If more accurate data on IUU fishing and other catches is made available to CCAMLR then it will be able to implement more appropriate precautionary catch limits for krill and other species based on its statistical models. To this end, CCAMLR has recently introduced measures to require all Contracting Parties to prohibit all fishing in the Convention zone without a licence.¹¹⁵⁰ Licences can only be issued where the particular party is satisfied of its ability to require vessels to:

- give it timely notification of entry/exit from the Convention zone and from any ports;
- provide CCAMLR with sufficient catch data; and
- maintain an onboard Vessel Monitoring System ("VMS") (see discussion below).

and management measures. Port states that have "reasonable grounds to suspect" that a vessel has been IUU fishing must report this to the flag state and relevant regional management organisations (Article 59, IPOA). The port state may also take other action with the consent of the flag state. The Code, in Article 8.3.2, also requires port states to assist flag states regarding non-compliance with regional conservation and management measures where a fishing vessel is voluntary in a port of the port state.

¹¹⁴⁷ Article 58, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹¹⁴⁸ Paragraphs 74 and 76, Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent, Deter and Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2004, *Action Taken by FAO Members to Implement the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU)*

¹¹⁴⁹ Paragraph 58, Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent, Deter and Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2004, *Action Taken by FAO Members to Implement the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU)*

¹¹⁵⁰ CCAMLR Conservation Measure 10-02 (2004)

From 1 August 2005, Flag States are required to provide the CCAMLR Secretariat with detailed data within 7 days of issuing a licence, including data in respect of the vessel itself (eg name, registration number, photos of the vessel, name of operators, vessel power etc); authorised time period for fishing; target species; type of fishing gear used; and area of fishing.¹¹⁵¹

All Contracting Parties are required to verify compliance with the licence to fish in the Convention zone by inspecting vessels at that Party's departure and arrival ports. Any non-compliance requires the Party to apply sanctions under its national legislation.¹¹⁵² The introduction of these measures has the potential to provide a much more effective means of combating IUU fishing in the Southern Ocean. This type of port state control and inspection combined with the licensing requirements, should be utilised as part of the implementation of a krill fishing moratorium. Such measures increase the chance that IUU catches landed in the ports of CCAMLR parties will be detected and can be prevented from being sold or transshipped to the countries of non-parties to CCAMLR. The increased difficulty in selling IUU catch is likely to provide a disincentive to some IUU fishers or at the very least will increase the chances of such fishers eventually being detected.

Port states can also presume that vessels of flag states that have fished in an area of a regional management organisation (that are not members of that organisation and have not agreed to cooperate with those organisations) have been IUU fishing.¹¹⁵³

As discussed above, CCAMLR also now makes this presumption that *all* non-Contracting Party vessels sighted fishing in the Convention area are undermining the effectiveness of CCAMLR conservation measures. Accordingly, any such vessel entering a port of a Contracting Party is not permitted to offload its catch unless the vessel establishes that the fish were caught in compliance with all CCAMLR conservation requirements.¹¹⁵⁴ Port state control and inspection measures are discussed in more detail below.

¹¹⁵¹ *Ibid*

¹¹⁵² *Ibid*

¹¹⁵³ Article 63, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹¹⁵⁴ *CCAMLR Conservation Measure 10-07 (2003)*

Under the IPOA-IUU, the port states can prohibit the landing and transshipment of catch if the vessel does not establish that the catch was taken in accordance with the conservation measures of the relevant organisation.¹¹⁵⁵ Such a measure could provide more effective protection against IUU fishing. Placing the burden of proof on the fishing vessel rather than the port state makes it more difficult for a fishing vessel to cover up its IUU fishing activities because the vessel will need to provide evidence concerning its catch and fishing activities. This will make it harder for IUU vessels to unload their catch in port states. The fact that CCAMLR has adopted this presumption would also aid in the effective implementation of a krill fishing moratorium, especially if only localised fishing bans were introduced. The presumption would allow port states to detain all Antarctic krill caught in the Convention zone.

Such port state controls and inspections can be used to deter the use of flags of convenience.¹¹⁵⁶ Inspections can be aimed at breaches of regional conservation measures and other international treaties. Port state controls and inspections can deter vessels owners from permitting IUU fishing through the detention of vessels or the prevention of vessels entering the port, measures which would lead to loss of profits.¹¹⁵⁷ Owners are less likely to engage in IUU fishing if they cannot unload their catch anywhere or if there is a risk that a port state will detain their vessel if an IUU catch is discovered. The idea of port state inspections and controls has been around for some time.¹¹⁵⁸ In 1991, a much greater percentage of flags of convenience states' vessels were being detained.¹¹⁵⁹ Greater controls imposed by flag states will reduce the incentive to reflag and will restrict IUU fishing in some respects. More effective controls on IUU fishing will give greater protection to exploited Antarctic species.

¹¹⁵⁵ Article 63, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹¹⁵⁶ Anderson, H.E. *Supra*, fn 1188, 167

¹¹⁵⁷ *Ibid*

¹¹⁵⁸ The Paris Memorandum of Understanding 1982 (*Memorandum of Understanding on Port State Control in Implementing Agreements on Maritime Safety and Protection of the Marine Environment*, 1982, 21 I.L.M. 1.) was signed by 17 European countries and Canada. This Memorandum requires signature states to inspect 25% of vessels (Anderson, H.E. *Supra*, fn 1188, 167).

¹¹⁵⁹ *Ibid*

CCAMLR has instituted its own system of port state controls known as the Catch Documentation Scheme ("CDS") to curtail IUU fishing of Patagonian Toothfish.¹¹⁶⁰ The CDS prevents imports of fish into member countries without the appropriate documentation.¹¹⁶¹ CCAMLR members will not accept imports unless documentation is provided that specifies the route of the fish from harvest to transshipment to land and what will happen to it after it is landed.¹¹⁶² The scheme relates to all fishing areas and applies outside the Treaty zone.¹¹⁶³ Furthermore, the scheme is open to non-contracting parties who can also bind themselves to CCAMLR. This new system gives better catch estimates and provides verification of data.¹¹⁶⁴ The focus on the origin and destination of the catch provides similar port state controls to the other systems outlined above and will limit the ability of fishing vessels to engage in IUU fishing by restricting their ability to land and sell their catch. The extension of the system to Antarctic krill would provide greater restrictions on krill fishing in light of a likely expansion of krill industry. The adoption of the CDS for krill would be extremely important if a comprehensive ban were not introduced. The scheme could also be used to monitor and enforce a total ban.

Up until the introduction of the CDS, CCAMLR's measures to protect the Patagonian Toothfish were relatively ineffective.¹¹⁶⁵ The Commission believes that the CDS has been extremely successful in dealing with enforcement problems for the Patagonian Toothfish.¹¹⁶⁶ A deterrence element may account for a decline in visible illegal vessels.¹¹⁶⁷ Depletion of stock or better subterfuge by illegal vessels could also be a reason for this decline.¹¹⁶⁸ The Antarctic and Southern Ocean Coalition (ASOC) in its ECO 5 report in 1999 did not believe that a CDS could end IUU fishing.¹¹⁶⁹ ASOC was in favour of greater trade restrictions, better enforcement mechanisms, and CCAMLR observers on every licensed fishing vessel.¹¹⁷⁰ Stronger and more effective measures must be put in place because of a likely expansion of krill industry, particularly if a comprehensive harvesting ban is introduced.

¹¹⁶⁰ CCAMLR website, <http://www.ccamlr.org>

¹¹⁶¹ Popick, I.J. *Supra*, fn 1140, 940

¹¹⁶² *Ibid*, 942

¹¹⁶³ Its application outside the Treaty zone gives more weight to CCAMLR's conservation measures.

¹¹⁶⁴ More accurate data is needed on catch numbers if CCAMLR is to formulate appropriate catch limits.

¹¹⁶⁵ Baldwin, M., Davis, E.C. and Witham, B.D. 2000. A Review of Developments in Ocean and Coastal Law. *Ocean and Coastal Law Journal*, Vol 5: 367-397 at 390

¹¹⁶⁶ Effective enforcement mechanisms are vital if the problem of IUU fishing is to be curtailed.

¹¹⁶⁷ The CDS may make it more difficult for illegal fishers to offload and sell their catch.

¹¹⁶⁸ The CDS will only be effective if it actually deters illegal fishing, rather than simply encouraging illegal vessels to become more adept at avoiding detection.

¹¹⁶⁹ Popick, I.J. *Supra*, fn 1140, 972

¹¹⁷⁰ *Ibid*

ASOC has supported the CDS' role in data gathering.¹¹⁷¹ However, it criticised the CDS' lack of enforcement mechanisms if a violation was detected and the lack of means to verify the data on the catch documents.¹¹⁷² The CDS will also be less effective if it is not adopted by all port states. If a significant number of port states do not adopt it, they can provide a means to offload and sell IUU catches. The main ports for landing Toothfish that are caught by IUU fishers are located in countries that are not parties to CCAMLR.¹¹⁷³ China, for example, originally decided not to participate in the CDS and gave fisherman a port where they could sell illegal catches of Patagonian toothfish¹¹⁷⁴ (although it is now part of the system). If, however, a large number of states do embrace and rigorously enforce the CDS, it will be a very effective system. Ensuring that a total ban on krill fishing or precautionary catch limits for krill are observed will be difficult because of the inadequacies of current enforcement mechanisms. The CDS system can provide a means to enforce a total krill fishing ban, especially with likely increases in demand for krill and greater profitability from harvesting.

CCAMLR has recently (2004) made improvements to its CDS by requiring all Contracting Parties to attempt to identify the origins of Toothfish imported or exported from their territories and whether it was caught in accordance with CCAMLR requirements.¹¹⁷⁵ Each Flag vessel Master is required to complete a Toothfish catch document *each* time a shipment is landed or transhipped and, in addition, Toothfish can only be landed or transhipped from the ports of a Contracting Party when accompanied by a valid catch document.¹¹⁷⁶ Non-contracting parties are also permitted to issue such catch documents in accordance with the requirements laid down by CCAMLR.¹¹⁷⁷ Data contained in the catch documents can be verified using satellite linked VMS data.¹¹⁷⁸ These types of verification measures will enhance the effectiveness of the CDS in combating IUU fishing. Even if CCAMLR sticks with current precautionary catch limits for the Antarctic krill and does not introduce any form of ban, this thesis submits that the CDS should still be extended to Antarctic krill.

¹¹⁷¹ *Ibid*

¹¹⁷² *Ibid*

¹¹⁷³ Illegal Fishing in the Southern Ocean: the problem, practices and perpetrators. 2003. *Australian Antarctic Magazine*, Vol 5: 16-18 at 18

¹¹⁷⁴ Floren, D.W. 2001. Antarctic Mining Regimes: An Appreciation of the Attainable. *Journal of Environmental Law and Litigation*, Vol 16: 467-513 at 487

¹¹⁷⁵ CCAMLR Conservation Measure 10-05 (2004)

¹¹⁷⁶ *Ibid*

¹¹⁷⁷ *Ibid*

¹¹⁷⁸ For example, see CCAMLR Resolution 17/XX.

CCAMLR Conservation Measure 10-05 (2004) also sets out guidelines for the use of a CDS Fund to help improve the effectiveness of the CDS. Any proceeds from the sale of seized Toothfish can be transferred to this Fund by a Contracting Party. Such a move may help to provide CCAMLR member states with more funds to improve the effectiveness of the CDS.

National Compliance

National compliance with fishing measures has often involved states either putting limitations on fishing vessels, seasons and areas or putting catch limits in place.¹¹⁷⁹

The Compliance Agreement gives state governments the main enforcement role.¹¹⁸⁰

Governments usually prosecute offenders who breach international fishing instruments in accordance with their local law.¹¹⁸¹ The IPOA requires coastal states to effectively monitor and control fishing activities in their EEZs.¹¹⁸² States are likely to abide by this condition because they will want to protect their sovereignty. Sanctions of sufficient severity are required for IUU fishing by vessels and nationals under a state's jurisdiction to deter such activities and to prevent offenders from reaping the rewards of IUU fishing.¹¹⁸³ Civil sanctions can be adopted but all sanctions should be applied consistently.¹¹⁸⁴ Such national legislation must address all aspects of IUU fishing in an effective way.¹¹⁸⁵ National legislation, with appropriate sanctions for violations, is required for fisheries resource conservation and management.¹¹⁸⁶ Both the Code and Compliance Agreement have almost identical provisions concerning the implementation of sanctions by flag states. As with the IPOA, sanctions are required to be of sufficient severity to secure compliance and deter violations, depriving offenders of any benefits of their activities.¹¹⁸⁷ These sanctions can include the refusal, withdrawal or suspension of fishing authorisation if there are serious violations.¹¹⁸⁸ Serious sanctions are a way of deterring IUU krill fishing, especially in light of likely increases in demand for krill products and greater profitability from harvesting.

¹¹⁷⁹ Joyner, C.C. 1998. *Supra*, fn 1168, 286

¹¹⁸⁰ *Ibid*

¹¹⁸¹ *Ibid*, 287

¹¹⁸² Article 51.1, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹¹⁸³ Article 21, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹¹⁸⁴ *Ibid*

¹¹⁸⁵ Article 16, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹¹⁸⁶ Article 7.7.1 and 7.7.2, *FAO Code of Conduct for Responsible Fisheries* 1995

¹¹⁸⁷ Article 8.2.7, *FAO Code of Conduct for Responsible Fisheries* 1995 and Article 8, *Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas* 1993

¹¹⁸⁸ Article 8.2.7, *FAO Code of Conduct for Responsible Fisheries* 1995 and Article 8, *Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas* 1993

The sanction requirements in these international instruments are necessary to reduce the instances of IUU fishing. Simply receiving a token punishment will not deter IUU fishing. Civil sanctions are insufficient, even if they constitute a large fine. Criminal sanctions against both the fishers and their sponsors are necessary if there is to be any effective deterrence against IUU fishing. Withdrawing the authorisation to fish will not prevent IUU fishing but at least it can attempt to prevent IUU fishers hiding under the guise of legality as an authorised fishing vessel of a flag state. A recent survey by the FAO reported that only one in four of member states that responded had taken appropriate action to legislate against conducting business with those engaged in or supporting IUU fishing.¹¹⁸⁹ National sanctions must actually be enforced as well. Simply including sanctions in national legislation will not deter IUU fishing unless they are actively enforced and are enforced to maximum effect. Watering down of sanctions by the judiciary or a lack of active enforcement by the flag state government will prevent sanctions having any meaningful effect on IUU fishing. Strong sanctions that are consistently applied by flag states are needed if a krill fishing ban were to be introduced.

Registration

Registration of a vessel as a national gives it the right to be identified under the flag of that state so long as it abides by the state's laws.¹¹⁹⁰ States can register vessels at their discretion, but that right is tempered by international law.¹¹⁹¹ Many international instruments require states to maintain a registry and record of flag vessels.¹¹⁹² Some states have relatively lax requirements for vessels to become registered as flag vessels.¹¹⁹³ In the past countries such as Liberia and Panama, however, have had open registries with few restrictions needing to be fulfilled for registration.¹¹⁹⁴ Open registries or inadequate restrictions on registration can provide the impetus for flags of convenience. If IUU vessels are able to easily register their vessels in countries with lax requirements concerning international fishing conventions or without the resources to enforce such law, it is easier for such vessels to engage in IUU fishing without attracting significant consequences.

¹¹⁸⁹ Paragraphs 74 and 76, Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent, Deter and Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy; 24-29 June 2004, *Action Taken by FAO Members to Implement the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU)*

¹¹⁹⁰ Anderson, H.E. *Supra*, fn 1188, 143

¹¹⁹¹ *Ibid*, 150

¹¹⁹² The IPOA requires states to maintain records of registered vessels and ensure before it registers a vessel that it can exercise responsibility to ensure the vessel does not engage in IUU fishing (Articles 24.2 and 35, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*). The Compliance Agreement, in Articles III and IV, and the Code in Article 8.2.1 also require states to maintain a registry and record of flag vessels.

¹¹⁹³ Anderson, H.E. *Supra*, fn 1188, 140

¹¹⁹⁴ *Ibid*, 155

The 1982 Convention also requires a “genuine link” to exist between a state and a ship for it to register with that state.¹¹⁹⁵ A greater level of implementation of this requirement and the potential entry of this principle into customary international law will make it increasingly difficult for vessels to reflag.¹¹⁹⁶ If vessels need to establish a genuine link with a state before they can be classed as a flag vessel, it will be more difficult for vessels to reflag and use flags of convenience. However, the effectiveness of this requirement will depend on the willingness of states to withhold registration for those vessels not displaying a genuine link. The *UN Convention on the Conditions for Registration of Ships* was the first attempt at defining a “genuine link”.¹¹⁹⁷ The Convention maintained the need to have an economic link between the vessel, its owners and the registering state.¹¹⁹⁸ Strict requirements for registration are necessary to prevent flags of convenience being used.

The requirement for registered vessels to have an authorisation to fish is an important concept related to registration. The IPOA has several provisions regarding the authorisation to fish of vessels. Authorisation is required for flag vessels fishing outside the areas of the flag state’s sovereignty.¹¹⁹⁹ States must ensure that vessels will not undermine international conservation measures before an authorisation is given and must give information on cancelled authorisations to relevant organisations.¹²⁰⁰ States are also required to base that authorisation on fishing in a manner consistent with international law on high seas fishing including the 1982 Convention.¹²⁰¹ Making it necessary for states to evaluate the potential for vessels to breach international conservation measures before an authorisation to fish is given will go some way towards reducing the instances of IUU fishing because states are required to scrutinize vessels, their crew and owners in much greater detail. Furthermore, requiring states to relay information concerning cancelled authorisations to relevant organisations will allow such organisations to be more vigilant. If an organisation like CCAMLR knows which vessels and vessel owners have had

¹¹⁹⁵ Article 91(1), *United Nations Convention on the Law of the Sea* 1982

¹¹⁹⁶ Warner-Kramer, D.M. and Canty, K. 2000. *Supra*, fn 1171, 233

¹¹⁹⁷ Anderson, H.E. *Supra*, fn 1188, 150

¹¹⁹⁸ This also requires a certain number of the crew and officers to be nationals or permanent residents or domiciles of the flag state. The US, for example, has strict registration requirements such as requiring the owner to be a US citizen or by entities controlled by US citizens or by companies incorporated in the US and also with citizenship requirements for the controllers (Anderson, H.E. *Supra*, fn 1188, 150 and 152 discussing the *Vessel Documentation Act* 1980).

¹¹⁹⁹ Article 45, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*. The Code, in Article 8.2.2, also requires states to ensure that flag vessels on the high seas and in other states’ jurisdiction have been authorised to fish and have a Certificate of Registry. Similarly, the Compliance agreement, Article III(2) and Fish Stocks Agreement, Article 22, oblige states to introduce authorisation of flag vessels fishing on the high seas.

¹²⁰⁰ Articles 24.1 and 29, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*, Article III(5), *Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas* 1993.

¹²⁰¹ Article 44, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

their authorisations to fish cancelled in the past, then it gives the organisation an idea as to which vessels are likely to engage in IUU fishing in the future. Information on suspected IUU vessels could be used to monitor any vessels that would be likely to flout any krill fishing moratorium that was introduced.

IUU Vessel List

CCAMLR has recently established an “IUU Vessel List” containing details of any vessels of Contracting States that have been engaged in IUU fishing.¹²⁰² Contracting Parties who acquire information concerning the IUU fishing activities of Flag vessels of other Contracting Parties are required to submit a report outlining evidence of that activity to CCAMLR. Imports of Toothfish from vessels on the IUU Vessel List are prohibited.¹²⁰³ In a recent 2005 UN report, it was also proposed that the UN General Assembly pass a resolution calling on States to establish lists of vessels that had engaged in IUU fishing.¹²⁰⁴ Such a list enables problem vessels to be identified so that port states can ban these vessels and prohibit any catch from them being landed. This will also provide flag states with information on repeat offenders so that these vessels can have their licences to fish in the Convention zone removed. A more extreme measure would be to deregister these vessels, although it is likely that they would reflag in another state. The seizure and destruction or forced sale of persistent IUU fishing vessels under national legislation would eliminate this risk. An IUU Vessel List would also place pressure on Flag States that are not parties to CCAMLR to curb the IUU fishing activities of these repeat offending vessels.

¹²⁰² CCAMLR Conservation Measure 10-06 (2004)

¹²⁰³ *Ibid*

¹²⁰⁴ Report on the work of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea at its sixth meeting, A/60/99, 2005

III. Compliance with International Instruments

International pressure has resulted in states becoming parties to an international fishing agreement so that they are not seen as “flags of convenience” states.¹²⁰⁵ However, domestic pressure can result in such treaties not being fully implemented.¹²⁰⁶ Some flag states simply disregard breaches of international law or even sanction them.¹²⁰⁷ Compliance problems by states also occur for less sinister reasons. Lack of funds¹²⁰⁸ or poor regulatory mechanisms prevent countries from fully implementing fishing instruments.¹²⁰⁹ Similarly, provisions in the agreements themselves reduce compliance. For example, the requirement for a flag state to investigate a breach of the Fish Stocks Agreement allows it to cover up such a breach.¹²¹⁰ However, the need to inform the inspecting state can prevent flag states from using such improper practices.¹²¹¹ Effective measures to prevent IUU fishing are essential for a comprehensive krill harvesting banning to be successful. If states merely pay lip service to such agreements, it is unlikely that they will have any effect on IUU fishing. As discussed in a previous Chapter, the FAO has recently informed the UN of its concerns about the effective implementation of international fisheries management agreements, including the lack of technical and financial resources to do this.

There are usually no strong centrally controlled procedures to enforce international fisheries agreements and so diplomatic pressure is one of the main mechanisms of enforcing compliance.¹²¹² International pressure can help to ensure that instruments aimed at preventing IUU fishing are fully implemented.¹²¹³ Flag states are, however, sometimes constrained in implementing such agreements by domestic pressures.¹²¹⁴ Giving financial or other benefits to states that comply with fishing agreements can induce conformity with such instruments.¹²¹⁵ Developing states in particular could be swayed by financial incentives. To its credit, the UN General Assembly has recently set up an Assistance Fund for this very purpose which, hopefully, will allow developing states to fulfil their obligations under fisheries management agreements. The support of *all* states in monitoring and enforcing international conservation instruments is

¹²⁰⁵ Carr, C.J. and Scheiber, H.N. *Supra*, fn 837, 60

¹²⁰⁶ Joyner, C.C. 1998. *Supra*, fn 1168, 277

¹²⁰⁷ Christopherson, M. *Supra*, fn 603, 378

¹²⁰⁸ Joyner, C.C. 1998. *Supra*, fn 1168, 277

¹²⁰⁹ Warner-Kramer, D.M. and Canty, K. 2000. *Supra*, fn 1171, 232

¹²¹⁰ Vigneron, G. *Supra*, fn 907, 611

¹²¹¹ *Ibid*

¹²¹² Joyner, C.C. 1998. *Supra*, fn 1168, 287

¹²¹³ Silk, R.J. *Supra*, fn 1157

¹²¹⁴ *Ibid*

¹²¹⁵ Vigneron, G. *Supra*, fn 907, 613

necessary for the effective implementation of fisheries conservation measures, including comprehensive or seasonal/regional ban on krill harvesting.

Non-Government Organisations (“NGOs”) can also help in ensuring compliance with treaties.¹²¹⁶ NGOs can provide information on breaches or on the accuracy of reported data by States and fishing vessels.¹²¹⁷ NGOs may also influence States into complying with fisheries obligations.¹²¹⁸ NGOs are able to institute public campaigns in the media that can put pressure on governments or they can pressure governments directly.¹²¹⁹ Some NGO environmental organisations have been extremely active in promoting the enforcement of international fisheries instruments.¹²²⁰ This support would be useful in publicising and supporting a krill fishing moratorium.

Compliance through Data Reporting

There are many enforcement mechanisms used by states to ensure compliance with international fishing agreements. States can, for example, make the granting of an authorisation to fish conditional on vessels reporting data concerning catch levels and fishing patterns.¹²²¹ The Code of Conduct and the Compliance Agreement oblige states to ensure that flag vessels collect and report such data.¹²²² Accurate fishing data can help regional organisations to formulate appropriate precautionary catch levels. Data from vessels and states concerning krill harvesting, for example, would be used to model the CCAMLR precautionary catch limit for krill. CCAMLR introduced a specific data reporting system for krill fisheries during 2002.¹²²³ However, there has been some indication by CCAMLR organs that more detailed “haul-by-haul” data on krill fishing is required before adequate management decisions can be made.¹²²⁴

¹²¹⁶ *Ibid*, 617

¹²¹⁷ *Ibid*

¹²¹⁸ *Ibid*, 618

¹²¹⁹ Joyner, C.C. 1998. *Supra*, fn 1168, 282

¹²²⁰ *Ibid*. Some examples of NGOs include the World Wildlife Federation, Greenpeace, the Cousteau Society and the American Fisheries Society.

¹²²¹ Article 47, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹²²² Article III(7), *Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas* 1993, Article 6.11, *FAO Code of Conduct for Responsible Fisheries* 1995

¹²²³ *Management of the Antarctic Krill: Ensuring the Conservation of the Antarctic Marine Ecosystem*. October 2004. A submission presented by the Antarctic and Southern Ocean Coalition (ASOC) to the CCAMLR Commission and Scientific Committee at 11

¹²²⁴ *Ibid*

In general, reporting requirements can be based on vessels keeping fishing logbooks.¹²²⁵ The authorisation to fish can be made conditional, under the IPOA, on maintaining such records.¹²²⁶ Coastal states should also ensure that vessels in their jurisdiction keep logbooks.¹²²⁷ Logbooks are a cost efficient means of recording data concerning catch and fishing activities. However, there are a number of problems with logbooks that prevent them from being an effective monitoring tool. The reliability of data that fishers enter into logbooks is one of the greatest concerns. Fishers can be inclined to underestimate catch data or they can simply make mistakes when recording.¹²²⁸ Logbooks can also be deliberately falsified or vessels may even keep one accurate logbook and an alternative one that can be given to officials.¹²²⁹ Inaccurate data on fishing patterns will lessen the effectiveness of precautionary catch measures for Antarctic krill. Inaccurate data will also make it extremely difficult to gauge the effectiveness of any krill harvesting ban that is implemented. However, as discussed above, data can, in some respects, now be corroborated using Vessel Monitoring Systems

Inaccurate data reporting can be curtailed somewhat by the use of appropriate monitoring systems. For example, the IPOA and Code of Conduct require states to implement observer programmes including requiring flag vessels to carry observers.¹²³⁰ Observers on vessels can improve the quality of reported data.¹²³¹ However, placing observers on vessels is expensive and fishing behaviour can be biased because of the presence of observers.¹²³² Furthermore, the effectiveness of observers is constrained because they are only able to cover a small number of vessels at one time.¹²³³ Consequently, the use of observers cannot be extremely effective at ensuring high data quality.

¹²²⁵ Articles 47.5 and 51.5, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹²²⁶ Article 47.5, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹²²⁷ Article 51.5, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹²²⁸ Vigneron, G. *Supra*, fn 907, 606

¹²²⁹ Carr, C.J. and Scheiber, H.N. *Supra*, fn 837, 62

¹²³⁰ Article 24.4, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*, Article 8.4.3, *FAO Code of Conduct for Responsible Fisheries* 1995

¹²³¹ McElderry, H. 2002. *Aligning Data Needs with Program Objectives* paper prepared for the Biannual International Fishers Forum, November 22nd 2002, Hawaii

¹²³² *Ibid*

¹²³³ *Ibid*

Data reliability can also be enhanced through the use of patrol vessels and at sea inspections. France and the UK have, for example, used patrol vessels in the past to prevent IUU fishing.¹²³⁴ Both the IPOA and Code of Conduct require states to implement inspection programmes.¹²³⁵ CCAMLR also has its own system of inspection for the Convention zone. Inspectors are entitled to board fishing or research vessels in the Convention zone.¹²³⁶ Vessels are required to stop and allow inspectors to transfer to them as soon as requested.¹²³⁷ Inspectors are also allowed to inspect all catch and all records concerning that catch.¹²³⁸ These wide inspection powers can help to enhance data reliability, although the CCAMLR inspection system may not be *seen* as fully independent (even if it is fully independent) because inspectors are to be members of the flag state appointing them.¹²³⁹ Furthermore, the vast expanse of the Southern Ocean means that a more complicated inspection system would need large numbers of ships to implement and this would be expensive for CCAMLR members.¹²⁴⁰ ASOC has recently recommended to CCAMLR that each krill fishing vessel should carry a scientific observer.¹²⁴¹ An inspection and observer system will help to enforce a comprehensive ban on krill fishing, however, additional mechanisms are still required to ensure that such a ban is effective.

¹²³⁴ Baird, R. *Supra*, fn 25, 180

¹²³⁵ Article 24.10, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*, Article 8.4.3, *FAO Code of Conduct for Responsible Fisheries* 1995

¹²³⁶ *Text of the CCAMLR System of Inspection*. CCAMLR VII, paragraph 124.

¹²³⁷ *Ibid*

¹²³⁸ *Ibid*

¹²³⁹ *Ibid*

¹²⁴⁰ Puissochet, J. *Supra*, fn 48, 76

¹²⁴¹ *Management of the Antarctic Krill: Ensuring the Conservation of the Antarctic Marine Ecosystem*. October 2004. A submission presented by the Antarctic and Southern Ocean Coalition (ASOC) to the CCAMLR Commission and Scientific Committee at 14

The problems with monitoring such a large area as the Southern Ocean may be reduced by the use of vessel monitoring systems. CCAMLR now requires all registered vessels of member states to have VMS equipment for certain fisheries.¹²⁴² VMS is used mainly to track vessels by fitting a global positioning satellite transponder to the vessel.¹²⁴³ The transponder can then use a satellite system to transmit the real-time location of the vessel, its course and speed, the depth of the ocean, and whether fishing equipment is being used.¹²⁴⁴ Aerial monitoring can then be used to identify unregistered vessels fishing illegally, although effective aerial monitoring in the Southern Ocean may be a near impossibility.¹²⁴⁵ However, New Zealand has in the past used surveillance planes over the Ross Sea.¹²⁴⁶ Even with only limited aerial surveillance, requiring VMS to be used may reduce the level of IUU fishing. A recent survey by the FAO reported that 40% of the member states that responded were implementing a VMS or expanding the use of current VMS technology.¹²⁴⁷ Even though VMS technology is expensive, developing countries have made greater use of it as the price has declined.¹²⁴⁸ Funding needs to be provided to developing countries to fully implement such systems.

Because VMS monitoring is in real-time, states are better able to monitor vessel fishing activities and confirm the reliability of vessel records concerning areas of fishing. The use of VMS may also be an effective deterrent against non-compliant behaviour.¹²⁴⁹ VMS could be used by CCAMLR to close off certain areas of the Southern Ocean and ensure that flag vessels of CCAMLR member states did not fish in those protected zones.¹²⁵⁰ This would be extremely beneficial for krill, especially if a total ban were imposed. CCAMLR could potentially close off areas of high krill concentration to fishing and use VMS to ensure that no fishing vessels entered those zones.

¹²⁴² CCAMLR Conservation Measure 148/XVII. Similarly, the IPOA, in Article 24.3, also obliges states, where appropriate, to require flag ships and other vessels under their jurisdiction to carry an on board vessel monitoring system

¹²⁴³ Davies, C., Hoban, S. and Penhoet, B. 1999. Moving Pictures: How Satellites, the Internet, and International Environmental Law can Help Promote Sustainable Development. *Stetson Law Review*, Vol 28: 1091-1153 at 1130

¹²⁴⁴ Popick, I.J. *Supra*, fn 1140, 974

¹²⁴⁵ Davies, C., et al. *Supra*, fn 1201, 1131

¹²⁴⁶ Baird, R. *Supra*, fn 25, 180

¹²⁴⁷ Paragraph 27, Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent, Deter and Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2004, *Action Taken by FAO Members to Implement the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU)*

¹²⁴⁸ Louka, E. 1996. Cutting the Gordian Knot: Why International Environmental Law is Not Only About the Protection of the Environment. *Temple International and Comparative Law Journal*, Vol 10: 79-121 at 109

¹²⁴⁹ Davies, C., et al. *Supra*, fn 1201, 1131

¹²⁵⁰ *Ibid*, 1132

Only CCAMLR member flag vessels would be required to have VMS and so such a system would not be fully effective for the introduction of krill conservation zones. A stronger legal regime is necessary to ensure that *all* vessels are required to use VMS.

One variation of the VMS is a new electronic monitoring system that can be used for both catch determination and to monitor time and area restrictions placed on fishing vessels.¹²⁵¹ This system captures data on catch and vessel position (captured using a camera, radio frequency identification and GPS receiver). Such an electronic system can capture data more accurately and more cost effectively than placing observers on vessels.¹²⁵² The device is tamper proof and contains an array of vessel sensors, video cameras and an operating system.¹²⁵³ A computer operating system is used to continuously gather data on the vessel's operations including the setting of fishing gear.¹²⁵⁴ The system has been tested in Canada for monitoring of halibut fisheries with some success detailed in an April 2003 report for the Pacific Halibut Management Association and the Pacific Scientist Advice Review Committee of Fisheries and Oceans Canada, suggesting that it can provide a viable cost effective alternative to current data collection and monitoring systems.¹²⁵⁵ The Canadian study found that the system could distinguish, based on video images, thirteen species and was accurate to within 10%.¹²⁵⁶ If the system is accurate enough or can be modified for use in krill fishing industry, then it would provide a cost effective means of enforcing a comprehensive or regional krill ban or enforcing precautionary catch limits for krill.

As of last year (2004), CCAMLR now requires *all* vessels licenced by Contracting Parties to fish in the Convention Area to carry a satellite linked VMS allowing for the continuous reporting of a vessel's position in that Area.¹²⁵⁷ The VMS must communicate certain data, including the vessel's position and speed and course, every four hours to a land-based monitoring centre. States are also required to ensure that the VMS is tamper-proof (eg located in a sealed unit). However, the requirement to carry a VMS does *not* apply to vessels participating in a krill fishery only.

¹²⁵¹ McElderry H., Schrader J. and Illingworth J. of Archipelago Marine Research Ltd. *The Efficacy of Video-Based Electronic Monitoring Technology for At-Sea Monitoring of the Halibut Longline Fishery.*

¹²⁵² *Ibid*

¹²⁵³ *Ibid*

¹²⁵⁴ *Ibid*

¹²⁵⁵ *Ibid*

¹²⁵⁶ *Ibid*

¹²⁵⁷ CCAMLR Conservation Measure 10-04 (2004)

ASOC has recently recommended to CCAMLR that this requirement be extended to those vessels engaged in krill fishing.¹²⁵⁸ ASOC's recommendation should be immediately adopted by CCAMLR. Such a system will help to effectively monitor krill fishing in the Southern Ocean and can be used to verify information provided by vessels in their logbooks or on catch documents needed in order to land fish in ports of CCAMLR members and supporters. There is no apparent reason why the system should not be adopted in respect of krill, particularly because of the scientific uncertainty surrounding the effect of krill fishing on the Antarctic ecosystem. Requiring krill fishing vessels to carry a VMS would also help to identify whether and how often fishing was being carried out in areas adjacent to sensitive land based predator colonies.

Pursuit and Detention of IUU Vessels

VMS may allow patrol boats to more effectively identify vessels engaged in IUU fishing, however, in order to enforce conservation measures states must be able to catch and detain boats and impose sanctions. Article 111 of the 1982 Convention gives coastal states a right of hot pursuit where a vessel has violated laws within the EEZ. Hot pursuit cannot be continued within the seas of another state. The right of hot pursuit can only be exercised by military ships or aircraft or other ships clearly in government service. One recent Australian example involved hot pursuit by an Australian ship of a Uruguayan vessel, *Viarsa I*, that had illegally been harvesting Patagonian Toothfish near Heard island in the CAAMLR zone.¹²⁵⁹ The vessel was successfully detained and its crew were prosecuted under the Australian *Fisheries Management Act 1991*. If a total ban on krill were imposed, hot pursuit would allow states to pursue vessels that were fishing in the EEZs of sub-Antarctic islands. Ordinarily, non-CCAMLR member vessels could not be detained on the high seas for fishing in contravention of the Convention, however, hot pursuit allows states to pursue IUU fishers out of the EEZ and detain them on the high seas. This is an extremely important right because high concentrations of krill do exist within some EEZs surrounding sub-Antarctic islands and sovereign states must have the power to pursue any vessels flouting a krill harvesting ban.

¹²⁵⁸ *Management of the Antarctic Krill: Ensuring the Conservation of the Antarctic Marine Ecosystem*. October 2004. A submission presented by the Antarctic and Southern Ocean Coalition (ASOC) to the CCAMLR Commission and Scientific Committee at 12.

¹²⁵⁹ Australian Antarctic Division website, <http://www.aad.gov.au>

In addition to catching IUU fishers, states must also have the power to detain and sanction them. The 1982 Convention, in Article 73, allows coastal states to board and arrest vessels within their EEZs. However, the arrested vessels and crew must be promptly released on the posting of a reasonable bond or other security. Any penalties for violations within the EEZ cannot include imprisonment. Article 292 of the 1982 Convention also obliges states to promptly release detained vessels and crew on the posting of a reasonable bond or other security. Arguably, because of the threat posed by IUU fishing to krill and other Antarctic species, imprisonment should be permitted both as a deterrent and as a punishment. Mere civil penalties are not sufficient to deter IUU fishing. Furthermore, the confiscation of vessels could reduce the instances of IUU fishing. Allowing IUU vessels and their crew to be released on posting of a "reasonable" bond is not a sufficient sanction. Even when governments do attempt to sufficiently punish by requiring a large bond to be posted, their efforts may be frustrated. In one case before the Law of the Sea Tribunal (the *Camouco* case) France seized a vessel with 7,600kg of Patagonian toothfish in its EEZ around Crozet Island.¹²⁶⁰ The Law of the Sea Tribunal did not regard the bond proposed by the French government as reasonable.¹²⁶¹ The French also seized a vessel carrying toothfish in its EEZ around the Kerguelen islands in the *Monte Confurco* case.¹²⁶² The Law of the Sea Tribunal held that the proposed bond was unreasonable in this case too.¹²⁶³ If states are unable to even impose significant fines on vessels, then it is unlikely that they will be deterred from IUU fishing. If a total ban were imposed on krill fishing, then states will find it difficult to enforce it in their EEZs given the likely increase in demand for krill products combined with better economic returns. As mentioned earlier, the UN General Assembly has recently supported the strengthening of the international legal framework in order to combat IUU fishing.

States are able to board and detain non-CCAMLR members while they are IUU fishing within an EEZ, but this power does not exist on the high seas. As discussed in previous chapters, high concentrations of krill are present around some sub-Antarctic islands where claimed EEZs exist. However, concentrations of krill that do not fall within an EEZ would not be protected against non-CCAMLR members. There is no power under CCAMLR to board the vessels of such states. As previously discussed, the Fish Stocks Agreement in Article 21 does give states that are members of regional fishing organisations the power to board and inspect flag vessels of parties to the agreement who are not members of the particular fishing organisation and they can detain vessels in port for this purpose.

¹²⁶⁰ Franckx, E. 2002. "Reasonable Bond" in the Practice of the International Tribunal for the Law of the Sea. *California Western International Law Journal*, Vol 32: 303-342 at 312

¹²⁶¹ *Ibid*, 314

¹²⁶² *Ibid*, 315

¹²⁶³ *Ibid*, 319

The Fish Stocks Agreement therefore contains an inducement for states to become members of regional fishing organisations.¹²⁶⁴ Having the power to board non-CCAMLR members on the high seas would give CCAMLR member states an enhanced means of dealing with IUU fishing outside their EEZs. Although, the boarding articles present in the Fish Stocks Agreement are copies of existing allegedly ineffective models, so they may not have a major impact on IUU fishing in the CCAMLR zone.¹²⁶⁵ To its credit, Australia has stepped up its efforts to combat IUU fishing in Antarctica. On 17 December 2003, the Prime Minister announced that Australia would increase surveillance and enforcement mechanisms in the Antarctic to protect the marine ecosystem.¹²⁶⁶ Australia announced that a heavily armed vessel would be stationed in the Antarctic year-round for the specific purpose of targeting illegal fishing vessels. Legal Australian fishers have been able to aid efforts by alerting Australian authorities to IUU fishers spotted in the CCAMLR zone.¹²⁶⁷

More effective control of IUU fishing could, arguably, be achieved if CCAMLR members were allowed to detain *all* IUU fishing vessels in Antarctica regardless of whether they were fishing in an EEZ. Any total ban on krill may be more successful if such a power existed. Canada has already experimented with this kind of approach. Because of the collapse of Canadian cod stocks, the Canadian government introduced legislation giving it the power to detain foreign vessels outside its EEZ.¹²⁶⁸ In 1995, a Spanish vessel that was suspected of overfishing in a high seas area was detained in a Canadian port and the captain and crew were arrested.¹²⁶⁹ This is arguably a breach of the provisions of the 1982 Convention relating to the freedom of fishing on the high seas. It also goes further than the Fish Stocks Agreement and allows detention of vessels of flag states that are not party to any specific international instrument. Although such a regime can provide better protection for krill, their conservation should not be achieved by breaching international law.

¹²⁶⁴ Ardia, D.S. 1998. Does the Emperor Have No Clothes? Enforcement of International Laws Protecting the Marine Environment. *Michigan Journal of International Law*, Vol 19: 497-543 at 542

¹²⁶⁵ Christopherson, M. *Supra*, fn 603, 377

¹²⁶⁶ Australian Antarctic Division website, <http://www.aad.gov.au>

¹²⁶⁷ *Ibid*

¹²⁶⁸ Grzybowski, D.M. *Supra*, fn 773, 69

¹²⁶⁹ Christopherson, M. *Supra*, fn 603, 363

States could argue the doctrine of necessity as a justification for precluding their responsibility for a wrongful act not in accordance with international obligations. If the act of detention was the only means of safeguarding an essential interest of the state against grave and imminent peril, the doctrine of necessity could be invoked.¹²⁷⁰ Arguably, detention of IUU fishing vessels is justified because it is the only way of stopping a grave and imminent threat to the world's oceanic ecosystems which will affect states with interests in those ecosystems.¹²⁷¹

¹²⁷⁰ Article 33(1)(a), *International Law Commission Draft Articles on State Responsibility* 1980

¹²⁷¹ Although it may not be possible to invoke the doctrine for a wrongful act stemming from an international obligation arising out of a peremptory norm – Article 33(2)(a), *International Law Commission Draft Articles on State Responsibility* 1980

Conclusion

This chapter has discussed the practical investigation, management and enforcement measures that are necessary to ensure conservation of krill and the Antarctic ecosystem. The many international conservation instruments that exist will only provide effective protection to krill if they apply universally to all vessels and if strong enforcement and deterrent mechanisms exist to ensure compliance. Accordingly, this chapter concludes that a stronger system of universally binding enforcement must be implemented to ensure the success of a krill fishing moratorium.

Krill are extremely important to dependent species and their protection is vital to ensure that no detrimental harm occurs to them. A krill fishing moratorium can facilitate this objective and is justified under a strong form of the precautionary approach because of the uncertainty surrounding krill population and its interactions with other species. The mathematical models used by CCAMLR to formulate its precautionary catch limits for krill under its ecosystem approach do attempt to take this uncertainty into account, however, they will still prove ineffective because of the legal deficiencies of the current regime. The flaws contained within the CCAMLR instrument, including its inability to bind non-party vessels, must be resolved if these catch limits, or a total fishing ban, are to prove effective.

CCAMLR utilises an ecosystem approach to fisheries management. Such an approach is appropriate because of the interactions between species in the Antarctic and the consequences that exploiting one species can have on all other species. However, the concepts of maximum sustainable yield and optimum utilisation that are present in the Convention do not sit comfortably with an ecosystem approach. The ecosystem approach is also difficult to implement because of the lack of data concerning species interactions and the uncertainty of data that does exist. Although CCAMLR's precautionary catch models do take such uncertainty into account, a comprehensive harvesting ban should be introduced because of the detrimental harm that could occur to dependent species, particularly in light of a likely expansion of krill industry. The ecosystem approach is also difficult to implement because of uncertainty as to what it actually means. Even instruments that do go into some detail as to its meaning focus on economic factors, rather than environmental conservation, in its implementation.

IUU fishing is a major threat to many international conservation instruments, including CCAMLR. A likely expansion of krill industry because of greater demand and higher economic returns means that IUU fishing will be a danger to the effective implementation of a comprehensive krill harvesting ban. There are some international instruments that currently focus on the reduction of IUU fishing in the world's oceans. The UN General Assembly has advocated the need to strengthen the international legal framework in respect of fisheries management to combat IUU fishing. Similarly, the FAO has criticised current efforts to effectively implement international fisheries agreements. Accordingly, this is likely to provide the impetus for states to re-examine the current regulatory regime and this may result in reforms that will provide greater legal strength to current instruments.

Even if universally binding obligations are implemented, they will only be effective if strong compliance and deterrence mechanisms are introduced. Some of the current enforcement methods such as logbooks, observers, and inspection systems can improve compliance with international instruments, however, they are still not fully effective and can be circumvented. Patrol vessels would prove useful in policing a fishing ban within coastal state EEZs or on the high seas, however, such measures are too costly to implement on any massive scale. Electronic vessel monitoring systems will prove a much more cost effective mechanism, particularly if they are made compulsory on all fishing vessels in the Southern Ocean. A strong system of detention and punishment must be introduced so that vessels are deterred from flouting a total fishing ban. The wider use of these mechanisms and, in particular, the application of the CDS and VMS to krill fisheries would go a long way towards protecting krill from IUU fishing. Similarly, if a krill fishing moratorium were not introduced, implementing a system of scientific observers on krill fishing vessels would give CCAMLR greater knowledge about krill fishing industry and help to protect against krill fishing in sensitive local areas in Antarctica (eg opposite local predator colonies).

A comprehensive krill fishing ban is vital because, as highlighted in Chapters 1 and 2 of this thesis, and in the section of this Chapter dealing with the ecosystem approach, krill plays a pivotal role in the Antarctic ecosystem and harvesting poses a danger to dependent species. This chapter has examined some of the mechanisms that can be used to enforce krill conservation measures in the Antarctic and elsewhere in the world when krill are shipped for sale. This is vital because of the threat of IUU fishing, particularly in light of a likely expansion of krill industry caused by greater demand for krill products and higher economic returns from krill fishing. The next chapter of this thesis will examine in greater detail one of the specific compliance mechanisms that has been utilised in the past for environmental protection. In

particular, the chapter will focus on the use of trade related measures to conserve krill and other species and the status of such measures under the World Trade Organization system.

CHAPTER 6: TRADE RESTRICTIONS FOR ANTARCTIC CONSERVATION UNDER THE FREE TRADE PRINCIPLES OF THE WTO SYSTEM

Introduction

A potential means of curbing the IUU fishing problem is through the introduction of restrictive trade measures. The purpose of this Chapter is to examine the types of trade related restrictions that could be introduced in order to combat IUU fishing and protect Antarctic species such as krill. The legality of such environmental trade measures will be examined in light of World Trade Organization (“WTO”) free trade principles and the interaction of such principles with the provisions of multilateral environmental agreements (“MEAs”). Part I of this Chapter will begin by broadly outlining the general free trade principles with which WTO Members must comply and which could be violated by the introduction of any trade restrictions aimed at protecting Antarctic species. Part II of this Chapter will then examine certain “environmental” exceptions to these trade principles that are outlined in the General Agreement on Tariffs and Trade 1994 (“GATT”).¹²⁷² These exceptions permit a departure from the general WTO free trade principles in certain circumstances provided that there is otherwise no unjustifiable or arbitrary discrimination. In particular, there will be an examination of how these provisions may apply to any trade restrictions introduced to protect Antarctic species. This examination will also focus on the WTO Panel’s restrictive interpretation of the exceptions.

This Chapter will then analyse the current status of environmental protection issues within the WTO system in light of the WTO Panel’s restrictive approach to the abovementioned environmental exceptions. It is also important for this thesis to consider the WTO’s attitude towards States taking unilateral action in respect of high seas fisheries. Such action can be an effective means of enforcing environmental measures in respect of high seas fisheries in an area like the Southern Ocean, however, the WTO does not appear to support such measures. The ineffectiveness of the WTO’s Committee on Trade and Environment (“CTE”) will be highlighted in Part III, together with the need for real change to the WTO system if it is to act as a mechanism for world environmental protection.

Furthermore, there is a potential for MEAs to conflict with WTO principles. Part III continues by analysing how that conflict can and should be resolved in light of international legal principles. The Chapter will also look at the specific application of WTO principles to conservation under the Convention on International Trade in Endangered Species of Wild Fauna

¹²⁷² This agreement forms part of the legal texts of the WTO system and is binding on WTO Members.

and Flora (“CITES”) and also to CCAMLR’s Catch Documentation Scheme (“CDS”). In this respect, it is also appropriate for this Chapter to consider the interaction between WTO principles and environmental protection under customary international legal principles.

As discussed previously, trade related measures could provide an effective means to regulate a comprehensive krill ban or localised krill protection. It is also necessary to determine whether, in the absence of the environmental exceptions to GATT, particular *types* of trade measures relating to krill would breach the WTO’s general trade principles. Part IV looks at a range of different trade measures that could be used in managing krill fisheries and the legitimacy of such measures under GATT. This is particularly important in light of the WTO Panel’s reluctance to accept the precautionary approach to resource management. This Chapter will also discuss the need for the WTO to accept the precautionary approach so that environmental conservation is not hampered by free trade concerns.

The potential for conflict between the WTO and MEAs gives rise to a potential need to amend the WTO principles. Part V of this Chapter concludes by examining some alternatives that *may* give greater recognition to environmental issues within the WTO system. Finally, it considers whether the WTO system is an appropriate institution to manage environmental concerns and whether Antarctic species would receive greater protection if trade disputes relating to the environment were governed by another international body.

I. Background to the WTO

After World War II, the international community formulated a set of trade related principles known as the General Agreement on Trade and Tariffs (“GATT”). The GATT, which came into force on 1 January 1948, contains a series of principles that govern international trade. The GATT is simply an agreement and was never an institution in itself, although a dispute settlement body was later established to resolve disputes between parties to GATT. The establishment of an institutional world trade body occurred when the World Trade Organization (“WTO”) was created. The WTO is a true international institution with its own institutional structure, including a legal Panel to resolve trade disputes. The WTO was founded under the *Marrakesh Agreement Establishing the World Trade Organization*, which was signed in April 1994.

The GATT, although no longer applicable as an agreement in its own right, became part of the *Marrakesh Agreement* and consequently its principles still apply to WTO Members. Several other trade-related agreements have been negotiated and also form part of the *Marrakesh Agreement*.¹²⁷³ The WTO’s primary function is to ensure the “implementation, administration, and operation as well as to further the objectives” of these agreements.¹²⁷⁴ Accordingly, the WTO has control over the operation of these agreements such as the GATT and acts as a dispute resolution mechanism between member states in respect of world trade disputes concerning these agreements. The WTO performs other functions including providing a means of negotiating future trade agreements and current trade issues and to facilitate this dispute resolution mechanism.¹²⁷⁵

The WTO’s structure is made of two main oversight bodies which are known as the Ministerial Conference and the General Council. The Ministerial Conference is the primary arm of the WTO system of government and is made up of a group drawn from all member States. The General Council looks after the Dispute Settlement Body and another review body of the WTO and is subordinate to the Ministerial Conference.¹²⁷⁶ The General Council also oversees a series of Councils and Committees, such as the Trade and Environment Committee, which will be discussed in greater detail below.

¹²⁷³ For example, the *Agreement on Technical Barriers to Trade*

¹²⁷⁴ Article III, *Marrakesh Agreement Establishing the World Trade Organization*

¹²⁷⁵ *Ibid*

¹²⁷⁶ Matsushita, M., Schoenbaum, T. and Mavroidis, P. *The World Trade Organization: Law, Practice and Policy*. 2003. Oxford University Press, Oxford at 9-10

As with all international agreements, only States that are contracting parties to the WTO Agreement or who have subsequently become members of the WTO and consented to be bound by the agreement, must observe the WTO trade principles. These trade principles are embodied in the individual agreements that form part of the WTO Agreement.

Dispute Settlement

As discussed above, one of the WTO's functions is to resolve trade disputes that arise between member States in respect of the specific WTO trade agreements. The dispute settlement process is governed by a specific WTO agreement known as the *Uruguay Round Understanding on Rules and Procedures Governing the Settlement of Disputes*. This agreement, in effect, draws on some of the existing dispute settlement principles that were present in GATT, such as the need for dispute resolution mechanisms where parties were not carrying out their obligations under GATT or were applying trade related measures that conflicting with GATT.¹²⁷⁷ The WTO system expands on GATT by introducing a specific Dispute Settlement Body which is an institution that administers the dispute settlement process and sets up specific "panels" which make decisions on trade disputes between members and can recommend sanctions for breaching the WTO agreements (the Dispute Settlement Body actually administers and authorises these decisions and recommendations).¹²⁷⁸

Under the WTO system an "Appellate Body" also exists which members can appeal to for a review of a specific decision made by a WTO dispute resolution panel. This gives members an appeal mechanism similar to those existing in domestic judicial systems. The ability of the Dispute Settlement to authorise trade sanctions against another State provides a mechanism to coerce parties to accept decisions of WTO panels. This is enhanced by the self-interest factor that States may have in accepting adverse WTO panel decisions because they may in the future want to rely on a decision of a WTO panel that is in their favour.

¹²⁷⁷ See, for example, Article XXII of GATT

¹²⁷⁸ Matsushita, M., Schoenbaum, T. and Mavroidis, P. *Supra*, fn 1322, 22-23

GATT

The GATT provisions prevent WTO Members from engaging in certain practices that could restrict world trade. The economic theory of comparative advantage provides a rationale for the free trade principles embodied in GATT. This theory suggests that, if countries specialise when producing goods, their economies will function more efficiently.¹²⁷⁹ Accordingly, the theory of comparative advantage suggests that the promotion of free trade will stimulate world economic growth by making economies more efficient. The GATT outlines a number of basic principles that are intended to prevent restrictive trade practices between States and thus promote economic growth. Some of these principles are outlined below and will subsequently be examined in respect of environmental conservation.

Guiding Principles

Most Favoured Nation Principle

The most favoured nation principle requires that the best tariff and non-tariff conditions allowed to any WTO contracting party need to be given to all other contracting parties.¹²⁸⁰ This principle is aimed at preventing WTO Members from discriminating between other Members. It requires states to give similar treatment to “like products” of different Members.

The principle is intended to increase international economic efficiency. It allows commercial organisations to sell products in foreign markets without having any uncompetitive disadvantages placed on them by foreign governments and also allows organisations to gain access to low-cost foreign supplies.¹²⁸¹ Non-discrimination is aimed at allowing free access to markets, providing consumer choice and preventing misuse of market power by large market players.¹²⁸²

Binding of Tariffs

Tariff levels, under this principle, must be fixed by States at certain agreed levels and cannot be subsequently raised.

¹²⁷⁹ Popick, I.J. *Supra*, fn 1140, 945

¹²⁸⁰ Paragraph 58, Sutherland, P. et al. *The Future of the WTO. 2004. Report by the Consultative Board to the Director-General Supachai Panitchpakdi*. This principle is outlined in Article 1 of GATT.

¹²⁸¹ *The Multilateral System: 50 Years of Achievements*, *WTO website*, <http://www.wto.org>

¹²⁸² *Trade and the Environment Document* produced by the WTO Secretariat, *WTO website*, <http://www.wto.org>

National Treatment

Article III of GATT requires States to apply domestic taxes and charges in a similar manner to both the products of domestic producers and to imported foreign products. In effect, this prevents discrimination between domestic and foreign products. The Article requires States to ensure “equality of competitive conditions for imported products in relation to domestic products.”¹²⁸³

Article III(4) also requires that imported products be accorded no less favourable treatment than national products in respect of all laws and regulations affecting their internal sale.

¹²⁸³ *Japan – Taxes on Alcoholic Beverages*, Report of the Appellate Body 1996

II. Trade and the Environment at the WTO

Current Status

Trade restrictions can be used as a mechanism to facilitate conservation or protection of species. CCAMLR's Catch Documentation Scheme is an example of this usage, and this particular scheme will be discussed in further detail below. The GATT contains several exceptions to the mandatory trade practices outlined above that allow States to impose restrictive trade measures in certain circumstances. These exceptions are potentially available in respect of restrictions such as a total ban upon imports of Antarctic krill (and related products) or restrictions on trade in krill caught through IUU fishing. The exceptions could be used to justify these trade restrictions *if* they infringed GATT principles. The following discussion is based on the assumption that trade restrictions of this type would infringe the trade requirements of GATT (although this would not necessarily be the case).

The discussion that follows will examine the range of trade measures that could be introduced in respect of krill and whether such measures would infringe WTO principles. The inter-relationship between MEAs, customary international law and GATT will also be examined. However, it is first necessary to analyse the applicability of the GATT exceptions to any trade restrictions that would be introduced in respect of the Antarctic krill and other Antarctic species.

In particular, Article XX outlines a number of general exceptions to GATT which are relevant to the introduction of restrictive trade measures to protect the environment. The relevant exceptions are outlined as follows:

“Subject to the requirement that such measures are not applied in a manner which would constitute a means of *arbitrary or unjustifiable discrimination between countries* where the same conditions prevail, or a *disguised restriction* on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures:

(b) necessary to protect human, animal or plant life or health;

(g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption.”

As an exhaustible natural resource, trade measures introduced to protect krill would *prima facie* appear to fall within the Article XX(g) exception. However, it is necessary to examine the WTO Panel's interpretation of these clauses to determine exactly how they would apply to any trade restrictions in respect of krill related products (or in respect of trade restrictions on other Antarctic species).

Article XX(b)

In the *Tuna-Dolphin* cases the WTO Panel examined the legality of certain import restrictions enacted by the US in light of the Article XX exceptions to GATT. Broadly, the relevant trade measures restricted tuna imports where that tuna had been caught using processes that were unfriendly to dolphins. In particular, there were restrictions on the import of tuna that had been harvested with particular types of nets that were harmful to dolphins. Imports of tuna caught with such nets were banned unless the country from which they were imported had a particular regime in place regulating tuna harvesting techniques that conformed to certain criteria set out by the US government. In the *Tuna-Dolphin* cases¹²⁸⁴ the WTO Panel recognised that Article XX(b) could be relied upon to protect dolphin life and health. Article XX(b) permits trade restrictions that are “necessary to protect human, animal, or plant life or health.”

Article XX(b) is therefore an exception that could be used to justify trade measures introduced to protect Antarctic krill such as a total ban on krill imports or measures used to protect against IUU krill fishing in Antarctica.

A trade measure will only be “necessary” where there is no alternative measure available that could be reasonably expected to be employed rather than the relevant trade restrictions. (*Thailand-Cigarettes* case¹²⁸⁵). In the *EC-Asbestos* case¹²⁸⁶ it was held that “the more vital or important the common interests or values”, then it would be more likely that the relevant measures were “necessary”. It would be difficult to rely on this exception in respect of krill because, arguably, there are alternative measures available such as vessel monitoring in Antarctica. However, there is an equally strong argument that trade restrictions *are* necessary for krill because of the problems with monitoring vessels in the vast expanse of the Southern Ocean. Accordingly, there may be no other alternative measure that could prevent a total ban on krill from being enforced other than trade restrictions.

¹²⁸⁴ 30 ILM 1594 (1991) and 33 ILM 839 (1993)

¹²⁸⁵ *Thailand – Restrictions on Importation of and Internal Taxes on Cigarettes* DS10/R – 37S/200 (1990)

¹²⁸⁶ *European Communities – Measures Affecting Asbestos and Asbestos Containing Products* WT/DS135/AB/R (2001)

Furthermore, krill is vital to the common interests of the global community because of the essential part krill plays in maintaining the health of the Antarctic ecosystem. There may be practical difficulties involved with this approach in that it is unlikely to be accepted by the WTO Panel. As outlined below, the WTO appears to be reluctant to accept the precautionary approach discussed in previous Chapters and the WTO Panel also seems to be reluctant to allow any States to rely on this environmental exception.

Article XX(g)

As discussed above, Article XX(g) outlines an exception to GATT principles where there are trade restrictions “relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption.”

In the *Gasoline Standards* case the WTO Panel held that where Article XX(g) requires that there be trade measures “relating to” conservation, the provision means that those measures have to be “primarily aimed at” conservation.¹²⁸⁷ This standard would not be satisfied if there were trade measures that attempted to make other States adopt different environmental policies. The *US-Gasoline* case held that a “substantial relationship” would be more likely to show that a particular trade measure related to the conservation of natural resources rather than trade measures that were only incidentally or inadvertently aimed at conservation.

Prima facie, trade restrictions that prevented any trade whatsoever in krill or krill products (i.e. a total ban on krill fishing and trade in krill products) or restrictions aimed at IUU fishing would appear to be “primarily aimed at” conservation. Such measures would be aimed squarely at conserving not only the Antarctic krill itself but also other Antarctic species that rely directly or indirectly on krill as a food source. The WTO Panel also interpreted the following phrase in Article XX(g):

“if such measures are made effective in conjunction with restrictions on domestic production or consumption of natural resources”

as meaning that the relevant trade restrictions had to be placed on both imported and domestic products.¹²⁸⁸ A total trade ban on all krill products would ostensibly satisfy this requirement, although a ban on krill products caught through IUU fishing may not. The reason for this being that, if the relevant CCAMLR member country were to restrict importation of krill caught by

¹²⁸⁷ *US – Standards for Reformulated and Conventional Gasoline* 35 ILM (1996)

¹²⁸⁸ *Ibid*

vessels of non-CCAMLR members, then this would still allow krill products caught/processed by domestic fishers to be sold. This would fall foul of the WTO's interpretation of the Article XX(g) exception as outlined above.

Introductory Paragraph to Article XX

The introductory paragraph to Article XX requires that any trade restrictions adopted comply with specific standards. These standards require that the trade restrictions do not constitute arbitrary discrimination; unjustifiable discrimination; or a disguised restriction on international trade. According to the WTO Appellate Body, the introductory paragraph to Article XX was a means of qualifying the GATT exceptions and of ensuring that rights given by these clauses were exercised reasonably.¹²⁸⁹ The introductory paragraph of Article XX suggests that “*nothing*” will prevent the exceptions from applying where the relevant measures conform to the objectives of the introductory paragraph.¹²⁹⁰ The language of Article XX does not appear to exclude even trade measures that significantly restrict free trade so long as they are in accordance with the objectives.¹²⁹¹ Accordingly, provided that there is no arbitrary or unjustifiable discrimination or a disguised trade restriction, then *any* trade measures should be permissible. This would appear to provide a legal justification if States acted to ban all imports of krill products because such a trade restriction would not discriminate, it would apply to *all* imports.

In the *US-Gasoline*¹²⁹² case it was held that trade measures can, under the introductory paragraph to Article XX, discriminate so long as such discrimination does not have an arbitrary or unjustifiable basis. This provides weight to any argument that the Article XX(g) exception can also apply to import restrictions that are specifically targeted at krill products derived from krill that were caught through IUU fishing. If particular States (eg CCAMLR members) adopted such restrictions they would, *prima facie*, be doing so solely for the conservation of krill and other Antarctic species that rely on them. Arguably then, there would be no “arbitrary” or “unjustifiable” discrimination. On the contrary, there would be a strong conservation motive to justify such discrimination. However, the strict approach taken by the WTO Panel when interpreting the introductory paragraph of Article XX makes it highly likely that the Panel would not adopt a similar interpretation.

¹²⁸⁹ *US – Import Prohibition of Certain Shrimp and Shrimp Products*, Reports of the Panel and Appellate Bodies (1998)

¹²⁹⁰ Howse, R. 2002. The Appellate Body Rulings in the Shrimp/Turtle Case: A New Legal Baseline for the Trade and Environment Debate. *Columbia Journal of Environmental Law*: Vol 27: 491-521 at 493

¹²⁹¹ *Ibid*

¹²⁹² *US – Standards for Reformulated and Conventional Gasoline* 35 ILM (1996)

The *US Shrimp-Turtle* case¹²⁹³ highlights the strict interpretation that the WTO Panel has taken in respect of “arbitrary and unjustifiable discrimination” for the purposes of the Article XX(g) exception. This case involved the protection of endangered and threatened sea turtle species. These turtle species were in danger from direct fisheries exploitation. They were also in danger because they were being caught inadvertently in the nets of fishers who were targeting other species. A large number of turtles were being captured by fishing vessels engaged in other fishing activities. The US implemented a ban prohibiting the harvesting of certain sea turtle species in US waters and on the high seas. The US prohibited the importation of any shrimp which were harvested in a manner that could adversely affect sea turtles, unless specific requirements were met by the harvesting flag State.

In the *US Shrimp-Turtle* case it was held that the particular trade restrictions were “unjustifiable discrimination” because the US had made no attempt to negotiate internationally with other countries in order to solve the problem of sea turtle exploitation.¹²⁹⁴ The WTO believed that there was an alternative course of action open to the US government in that particular case. To avoid breaching the “unjustifiable discrimination” requirement, there must have been a serious effort to negotiate with affected countries and the relevant trade measure adopted must be flexible.¹²⁹⁵

In the *Tuna-Dolphin* cases, the WTO Panel adopted a similar stance in its reasoning. The Panel stated that trade restrictions could not be justified merely on the basis that a country had a different environmental policy to that of the State imposing the restrictions:

“...the provisions of the [GATT] impose few constraints on a contracting party’s implementation of domestic environmental policies. The Panel recalled...that under these provisions, a contracting party is free to tax or regulate imported products and like domestic products as long as its taxes or regulations do not discriminate against imported products or afford protection to domestic producers, and a contracting party is also free to tax or regulate domestic production for environmental purposes. As a corollary to these rights, a contracting party may not restrict imports of a product merely because it originates in a country with environmental policies different from its own.”¹²⁹⁶

¹²⁹³ *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, adopted on 6 November 1998

¹²⁹⁴ *US – Import Prohibition of Certain Shrimp and Shrimp Products*, Reports of the Panel and Appellate Bodies (1998)

¹²⁹⁵ As discussed, these views were espoused in the *Shrimp-Turtle* case.

¹²⁹⁶ *United States – Restrictions in Imports of Tuna (Tuna-Dolphins I)* 30 ILM 1594 (1991) at 6.2

“It seemed evident to the Panel that, if the Contracting Parties were to permit import restrictions in response to differences in environmental policies under the general agreement, they would need to impose limits on the range of policy differences justifying such responses and to develop criteria so as to prevent abuse. If the Contracting Parties were to decide to permit trade measures of this type in particular circumstances it would therefore be preferable for them to do so not by interpreting Article XX, but by amending or supplementing the provisions of the general agreement or waiving obligations thereunder.”¹²⁹⁷

The reasoning adopted in the *US Shrimp-Turtle* case therefore appears to place a severe restriction on the ability of States to rely on Article XX(g) in the context of krill protection. Where a State simply imposed a ban on any products made from krill caught by non-CCAMLR members, such a ban may not be justifiable under Article XX(g). In such a case, the relevant State would not have made a serious attempt to negotiate and so there would likely be “unjustifiable discrimination” in accordance with the *US Shrimp-Turtle* case.

However, the WTO Panel’s reasoning does not necessarily mean that a State could not impose a comprehensive trade ban on all krill products. As discussed above, it is difficult to see how such trade restrictions could discriminate in any fashion where they applied to all States. Accordingly, Article XX(g) seems to be available in such a situation. Although, given the WTO Panel’s reluctance to permit trade restrictions on environmental grounds, this would not necessarily be the view adopted by the WTO.

Subsequent to the *US Shrimp-Turtle* case, an action was brought against the US relating to the implementation of the finding in that case.¹²⁹⁸ The case involved a consideration of whether the US was required to completely lift the shrimp importation ban to comply with the WTO finding. It was held that, because the US had made “good faith” efforts to negotiate an international agreement relating to sea turtle protection, the US had complied with the WTO finding.

¹²⁹⁷ *United States – Restrictions in Imports of Tuna (Tuna-Dolphins I)* 30 ILM 1594 (1991) at 6.3

¹²⁹⁸ *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, adopted on 21 November 2001

In this respect, the WTO Appellate Body said:

Para 185 “In reaching these conclusions, we wish to underscore what we have *not* decided in this appeal. We have *not* decided that the protection and preservation of the environment is of no significance to the Members of the WTO. Clearly, it is. We have *not* decided that the sovereign nations that are Members of the WTO cannot adopt effective measures to protect endangered species, such as sea turtles. Clearly, they can and should. And we have *not* decided that sovereign states should not act together bilaterally, plurilaterally or multilaterally, either within the WTO or in other international fora, to protect endangered species or to otherwise protect the environment. Clearly, they should and do.”

Para 186: “What we *have* decided in this appeal is simply this: although the measure of the United States in dispute in this appeal serves an environmental objective that is recognised as legitimate under paragraph (g) of Article XX of the GATT 1994, this measure has been applied by the United States in a manner which constitutes arbitrary and unjustifiable discrimination between Members of the WTO, contrary to the requirements of the chapeau of Article XX. For all of the specific reasons outlined in this Report, this measure does not qualify for the exemption that Article XX of the GATT 1994 affords to measures which serve certain recognised, legitimate environmental purposes but which, at the same time, are not applied in a manner that constitutes a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail or a disguised restriction on international trade. As we emphasised in *United States – Gasoline* [adopted 20 May 1996, WT/DS2/AB/R, p.30], WTO Members are free to adopt their own policies aimed at protecting the environment as long as in doing so, they fulfill their obligations and respect the rights of other Members under the *WTO Agreement*.”

This narrow interpretation of the Article XX exceptions in an environmental context makes it difficult for a state to utilise these exceptions unless the state can also rely on a multilateral environmental Treaty that exists with the other party to the dispute.¹²⁹⁹ There is, implicit in these decisions, an attempt to prevent states from using environmental measures as an excuse for implementing trade restrictions.

¹²⁹⁹ Dixon, M. and McCorquodale, R. *Supra*, fn 801, 713

Arguably, in the *US Shrimp-Turtle* case there was some recognition of environmental protection by the WTO because the Panel held that the particular ban on shrimp was “related to” the preservation of sea turtles.¹³⁰⁰ The reasoning in the above extracts from the *US Shrimp-Turtle* case also evidence that there is some basis in GATT for the implementation of trade measures where multilateral environmental agreements exist to justify those measures.¹³⁰¹

Accordingly, krill trade restrictions that were agreed upon by CCAMLR members would prima facie be justifiable even if they did discriminate. CCAMLR is the type of multilateral action/agreement that appears to be sanctioned by the WTO Panel’s reasoning above. The interaction of multilateral environmental agreements (“MEAs”) with the WTO system is discussed further below.

In order for CCAMLR member States to place krill trade restrictions on non-members, the WTO Panel ruling appears to firstly require some serious negotiation with *all* non-members in an attempt to reach an international agreement concerning krill protection. This would clearly be a time consuming exercise which would require a high level of resources and would not necessarily be practicable.

A further illustration of the WTO Panel’s consideration of environmental measures can be found in the *US-Canadian Tuna* case.¹³⁰² In that case, the US imposed an import ban on Canadian Tuna in retaliation for Canada’s seizure of US fishing vessels which were fishing in an area Canada asserted jurisdiction over. The US did not recognise Canada’s jurisdiction over this area. Canada contended that the US was disregarding its obligations under GATT by using trade restrictions as a means of exerting pressure on Canada. The US argued that its actions were justified under Article XX(g) of GATT. The US was of the view that the measures were implemented in conjunction with measures aimed at restricting domestic production or consumption of tuna. Accordingly, the US argued that the import ban related to the conservation of tuna because its aim was to avoid and deter threats to the international management approach which the US believed was necessary for conservation of tuna stocks. The US believed that seizure of US vessels by Canada impaired this management approach and such unilateral measures would discourage international cooperation in respect of preventing overfishing. The US also argued that the requirement in Article XX(g) that there are trade restrictions “relating” to conservation of exhaustible resources did not mean that conservation had to be the *exclusive*

¹³⁰⁰ *US – Import Prohibition of Certain Shrimp and Shrimp Products*, Reports of the Panel and Appellate Bodies (1998)

¹³⁰¹ Birnie, P. and Boyle, A. *Supra*, fn 233, 713

¹³⁰² *United States – Prohibition of Imports of Tuna and Tuna Products from Canada*, adopted on 22 February 1982

motivation for the trade measures. The case held that the US import restriction breached Article XI(1) of GATT and reliance could not be placed on Article XI(2) and Article XX(g) to justify this breach.

The WTO's decision was partly based on the fact that the US had only imposed domestic fishing restrictions on some species of tuna during the period when the Canadian ban had effect. The Canadian ban, however, was placed on *all* tuna species.¹³⁰³ The WTO Panel therefore held that the US could not rely on Article XX(g) because the ban had not been made effective in conjunction with restrictions on US domestic production or consumption of all tuna and tuna products.¹³⁰⁴ Although the case did not uphold the US restrictions, arguably, these restrictions were not a genuine environmental protection measure but were a retaliatory measure against Canadian actions concerning US fishing vessels. A similar practical problem exists in respect of any trade restrictions relating to Antarctic krill. As discussed, in the *US-Canadian Tuna* case the WTO Panel showed a reluctance to allow environmental trade restrictions, particularly where the manner in which the restrictions operated on domestic products was not exactly the same as for imported products. In particular, trade restrictions in respect of krill related products could face legal difficulties under the WTO system. This would be the case where CCAMLR members imposed import bans on krill products sourced from WTO Member States engaged in IUU fishing, but did not place restrictions on krill products that were produced domestically or were produced from krill caught by domestic fishing vessels.

Trade Restrictions Based on Product Processing

The *Tuna-Dolphin* cases held that a State cannot impose trade restrictions that ban products based on the process/means used to produce that product. This prohibition is based on Article III of GATT because this type of trade restriction involves discrimination between the same types of product.

The prohibition was raised in the *Tuna-Dolphin* cases despite the fact that the particular trade restrictions in that case were imposed on all countries. In those cases, the relevant trade restrictions were related to *how* tuna were caught (i.e. using techniques harmful to dolphins) rather than banning the *products* themselves (i.e. the tuna). Accordingly, it was held that the trade restrictions could not be justified under Article III of GATT.

¹³⁰³ Paragraph 4.6

¹³⁰⁴ Paragraph 4.12

The abovementioned cases raise the issue of whether any trade restrictions in respect of the Antarctic krill would be viewed as a ban on the process or means used to produce that product, rather than a ban on the product itself. If trade restrictions were placed on all Antarctic krill because of the introduction of a comprehensive krill fishing ban, then these restrictions would clearly be placed on the product itself. Accordingly, such trade measures would not be a restriction as to process and would not fall foul of the principle outlined in the *Tuna Dolphin* cases. However, a different situation may arise if partial trade restrictions were imposed on Antarctic krill products from krill that had been caught by IUU fishers (who were residents of WTO Member states). There is an argument that such restrictions would not fall within the Article XX(g) exception. Arguably, such trade restrictions would not relate to the product (i.e. krill) but rather the process by which it had been produced. This would be the case if IUU fishing could be viewed as a process to produce krill. This author does not hold the view that the simple fact that a fishing activity is IUU in nature could be viewed as a production process. The *Tuna Dolphin* cases seem to be aimed at actual production processes, such as particular fishing techniques. Trade restrictions aimed only at krill products sourced from IUU fishing activities should not be seen as a process restriction. However, given the apparent reluctance of the WTO Panel to uphold environmentally based trade restrictions this will not necessarily be a view shared by the WTO. There is an argument that products should not be considered “like products” in any event in respect of GATT’s non-discrimination Article where they are produced or harvested using different methods. Implementing such a view would likely require an amendment to the GATT.¹³⁰⁵

Extraterritorial Application of Trade Restrictions

Assuming that the Article XX(g) exception could be relied upon to permit trade restrictions on krill related products, there is an issue as to how far the exception extends. In particular, whether trade restrictions could be applied against imports from all foreign nationals where the products in question were harvested extraterritorially.

The first *Tuna-Dolphin* case decided that Article XX(g) only has a domestic application to exhaustible resources within the territory of the contracting party. The second *Tuna-Dolphin* case held that Article XX(g) could apply extra-territorially *but* that trade restrictions based on this provision could only be enforced against nationals of the particular State and flag vessels of that State. The second *Tuna-Dolphin* case seems to conclude that Article XX(g) can have

¹³⁰⁵ Birnie, P. and Boyle, A. *Supra*, fn 233, 722

extraterritorial effect because a State has the right to control its subjects. However, the Article does not have extra-*jurisdictional* effect.¹³⁰⁶

The Appellate Body in the *Shrimp-Turtle* case restricted, but did not entirely dismiss, the possibility of States imposing unilateral trade measures with application beyond State borders.¹³⁰⁷ Arguably, in the *Shrimp-Turtle* case there was some recognition of environmental protection by the WTO because the case held that the relevant ban on shrimp was “related to” the preservation of sea turtles.¹³⁰⁸

However, the findings in the *Tuna-Dolphin* cases narrow the application of Article XX(g) to trade restrictions on Antarctic species. Applying the reasoning in the second *Tuna Dolphin* case, a State could apply trade restrictions against its own nationals outside of its own territory. However, the Article XX(g) restriction could not be used to justify a State imposing trade restrictions on krill related products outside the State’s jurisdiction. In particular, States could not impose trade restrictions outside their territorial waters by relying on Article XX(g) as a legal justification. This would make it difficult for a State to apply trade restrictions on krill products in a high seas area if that State wanted to utilise the Article XX(g) exception in GATT.

Furthermore, Article III(4) of GATT requires that imported products be accorded no less favourable treatment than national products in respect of all laws and regulations affecting their internal sale. The *Tuna-Dolphin* cases¹³⁰⁹ illustrate that there is a difference between regulations which are part of domestic laws and import prohibitions. There is a difficulty in differentiating between the two situations. Internal regulations are permissible if *all* states are bound by them in accordance with Article III, but Article XI prohibits import restrictions (except in certain limited circumstances).¹³¹⁰ Accordingly, for the enforcement of a comprehensive krill ban, from a legal perspective it would be better if any trade restrictions on krill related products were in the form of domestic regulations on internal sale rather than a ban on importations per se.

¹³⁰⁶ *Ibid*, 709

¹³⁰⁷ *Ibid*, 712

¹³⁰⁸ *US – Import Prohibition of Certain Shrimp and Shrimp Products*, Reports of the Panel and Appellate Bodies (1998)

¹³⁰⁹ 30 ILM 1594 (1991) and 33 ILM 839 (1993)

¹³¹⁰ Dixon, M. and McCorquodale, R. *Supra*, fn 801, 533

III. Effectiveness of the WTO CTE

GATT currently does give some recognition to environmental protection matters through the exceptions in Article XX. However, the WTO cases discussed above indicate that the WTO Panel is quite reluctant to permit restrictive trade measures on environmental grounds. This signals that some conflict exists between environmental protection and trade principles under the WTO system. In light of such potential conflicts, the WTO's Committee on Trade and Environment ("CTE") was setup in 1994 under the Marrakesh Ministerial Decision on Trade and Environment. The CTE's mandate includes the task of looking at interactions between trade measures and the environment in order to promote sustainable development.¹³¹¹ Indeed, the Marrakesh Decision succinctly concludes that no policy contradiction exists in promoting both of these objectives within the WTO system:

"Considering that there should not be, nor need be, any policy contradiction between upholding and safeguarding an open, non-discriminatory and equitable multilateral trading system on the one hand, and acting for the protection of the environment, and the promotion of sustainable development on the other".¹³¹²

In theory, there may be no policy contradiction between these objectives. For example, CCAMLR is aimed at *sustainable* development in respect of Antarctica's marine living resources. Catch limits are imposed on Antarctic krill and other marine species, however, free trade in these Antarctic species is still permitted up to those catch limits. Prima facie, the environmental protection policy does not conflict with WTO principles because free trade *is* promoted up to the catch limits. Accordingly, it would appear that environmental matters could be protected within the WTO system without causing a conflict with the WTO's free trade principles. However, in practice the WTO's primary role is as an institution aimed at promoting free trade and this can be evidenced by the WTO Panel's seeming reluctance to allow countries to impose trade restrictions in order to protect the environment. From a practical perspective it is therefore difficult for the WTO system to play a significant role in environmental conservation.

¹³¹¹ Trade and the Environment Document produced by the WTO Secretariat, WTO website, <http://www.wto.org> at 5

¹³¹² Ministerial Decision on Trade and Environment, 14 April 1994

The potential for policy conflicts to arise becomes even more apparent when more complex scenarios arise. Throughout this thesis, the introduction of a comprehensive ban on all krill fishing in the Southern Ocean has been advocated. The policy rationale being that the Antarctic krill provide a vital link in the extremely short and fragile Antarctic food chain. Conserving the Antarctic krill will give greater protection to species higher up the food chain from the threat of overfishing and other dangers. Higher species in the food chain have a greater economic value than the Antarctic krill. Accordingly, it would be more beneficial from a trade perspective to allow free trade in such species (subject to catch limits) whilst giving the long term sustainability of such fishing industries a boost by banning exploitation of Antarctic krill. A comprehensive krill ban or localised krill bans in certain sensitive Antarctic areas¹³¹³ may not even infringe the WTO's non-discrimination principles (see discussion below). Policy-wise it would appear to be possible to promote both environmental and trade goals within the WTO system in respect of the Antarctic krill. However, as discussed above, from a practical perspective the current structure of the WTO and GATT makes it unlikely that the WTO would adopt a similar view.

The CTE was set up in order to resolve such problems. The terms of the CTE require it to identify the relationship between trade and environmental measures in order to promote sustainable development. The CTE's mandate also requires it to make recommendations on any modifications to WTO rules that are necessary in respect of environmental conservation measures and also in light of the objectives in Agenda 21 and the Rio Declaration.¹³¹⁴ Both the Doha Ministerial Declaration¹³¹⁵ and the Marrakesh Declaration¹³¹⁶ require the CTE to examine the effect of environmental measures on market access (and in particular on developing countries). Accordingly, the CTE's function is ostensibly to provide policy recommendations to the WTO in order to balance environmental and trade concerns within the WTO system. As discussed above, there is arguably only very limited recognition within the current WTO system of environmental matters and the need for restrictive trade measures in certain circumstances in order to preserve the environment. The CTE's mandate requires it to make recommendations for changes to WTO rules in order to facilitate sustainable development. Furthermore, the WTO Members themselves want an examination of the manner in which environmental measures can be introduced so that they are consistent with WTO rules but still meet the legitimate objectives of importing countries (and developing countries).¹³¹⁷ This evidences a clear need for a re-

¹³¹³ The possibility of introducing localised krill bans has been discussed throughout this thesis.

¹³¹⁴ *Ministerial Decision on Trade and Environment*, 14 April 1994

¹³¹⁵ Paragraph 32(i)

¹³¹⁶ Item 6

¹³¹⁷ Trade and the Environment Document produced by the WTO Secretariat, WTO website, <http://www.wto.org> at 15

examination of the WTO's current environmental policy. The effectiveness of the CTE's role in this respect is discussed further below.

Although any trade restrictions introduced to protect the Antarctic krill would not necessarily infringe WTO principles,¹³¹⁸ modifications to WTO rules could ensure that specific and detailed guidelines are available to apply trade principles in an environmental context. This would provide the WTO Panel with a framework in which to rule on environmentally related trade measures and would give the Panel a specific mandate to recognise environmental protection principles. As discussed above, the WTO Panel's previous decisions in respect of the environment appear to limit the role of environmental principles in determining trade disputes. Consequently, the CTE could recommend changes to the WTO rules to give such detailed recognition to environmental matters. In respect of the Antarctic krill, a greater recognition of environmental principles in the dispute resolution mechanism could allow the introduction of blanket krill import bans by some WTO member States or krill import bans that discriminated based on whether the import was from a known IUU fisher or was from a non-member of CCAMLR. For example, several countries during the negotiation of the General Agreement on Trade in Services proposed that specific exceptions be permitted in respect of services trade relating to the environment and sustainable development, however, no agreement was reached.¹³¹⁹

There has been criticism of the CTE and its first Report adopted at the WTO Ministerial Conference in Singapore in 1996¹³²⁰ because of its lack of action in respect of environmental matters. Criticism has been leveled at the CTE's inability to make any substantive recommendations as to GATT/WTO reform in respect of environmental dispute resolution.¹³²¹ For example, the CTE Cancun Report¹³²² stated that there was a general recognition by the CTE of the "importance of achieving the objective of sustainable development in the fisheries sector". However, the Report does *not* outline *any* practical methods or steps for achieving this objective.

¹³¹⁸ See discussion below including the discussion on CCAMLR's catch documentation scheme.

¹³¹⁹ Trade and the Environment Document produced by the WTO Secretariat, WTO website, <http://www.wto.org> at 30

¹³²⁰ *Report of the WTO Committee on Trade and the Environment*, Nov. 14, 1996

¹³²¹ Winter, R. 2000. Reconciling the GATT and WTO with Multilateral Environmental Agreements: Can We Have Our Cake and Eat It Too? *Colorado Journal of International Environmental Law and Policy*, Vol 11(1): 224-255 at 240

¹³²² *Committee on Trade and Environment: Report to the 5th Session of the WTO Ministerial Conference in Cancun*, 11 July 2003 at 5

Similarly, in the *Report of the Chairperson of the CTE Special Session to the Trade Negotiations Committee*, 15 July 2003, the CTE reiterated a number of outstanding issues concerning the relationship between MEAs and the WTO rules but failed to actually reach any conclusion nor to outline any practical actions that were going to take place to further define this relationship. Finally, in the *Doha Work Programme: Decision adopted by the General Council on 1 August 2004*, the WTO General Council took note of the CTE's special sessions and reaffirmed WTO Members' commitment to the environment negotiations but did little else to indicate positive action on the issue of trade and the environment.

All of the examples above illustrate that there has been little real action by the CTE to draft recommendations for substantive changes to WTO rules in order to better facilitate environmental protection principles. Given the growing importance of the WTO system, it is vital that environmental protection measures receive recognition whether within or outside that system. At present, the environment does not receive sufficient practical recognition within the WTO system and given the CTE's past record this is unlikely to change in the near future.¹³²³ Any trade measures introduced to protect Antarctic species (even perhaps those relating to CCAMLR's Catch Documentation Scheme¹³²⁴) are under a cloud of uncertainty because of this lack of recognition.

The current status of environmental protection within the WTO system also raises the issue of whether a system aimed primarily at promoting free trade is an appropriate forum for enforcing environmental protection measures. The WTO itself has previously recognised that it is not an institution that is aimed at protecting the environment and any environmental concerns it focuses on are limited to those relating to trade restrictions. The WTO has stated that its function is to ensure that trade is open; that environmental policies do not prevent open trade; and that trade requirements do not prevent domestic environmental policies from providing adequate protection.¹³²⁵ One commentator has argued that there is an "inherent conflict of interest" concerning the WTO's adjudication of environmental-related trade disputes and that the WTO will permit environmental protection only so far as such protection does not conflict with free trade.¹³²⁶

¹³²³ In 2005, the CTE did outline some general principles in respect of multilateral environmental agreements and the WTO which are discussed later in this Chapter.

¹³²⁴ See discussion below.

¹³²⁵ Trade and the Environment Document produced by the WTO Secretariat, WTO website, <http://www.wto.org> at 6

¹³²⁶ Cavros, G. 2003. The Hidden Cost of Free Trade: The Impact of United States World Trade Organization Obligations on United States Environmental Law Sovereignty. *ILSA Journal of International and Comparative Law*, Vol 9: 563-585 at 578-9

Given the WTO's trade mandate, institutions or treaties (i.e. multilateral environmental agreements) that focus exclusively on the environment seem to be the most effective means of providing protection to Antarctic species such as krill. These agreements can then specifically provide for any required environmental protection measures including those relating to trade. However, if trade restrictions are introduced within the specific framework of an MEA an issue then arises as to what happens if such measures conflict with WTO principles. This question will now be considered.

IV. Future Interaction Between WTO and MEAs

During the Doha Ministerial conference, WTO Members agreed to conduct further work in order to clarify the relationship between WTO rules and multilateral environmental agreements (“MEAs”) but *only* in respect of parties to those agreements.¹³²⁷ These negotiations are currently taking place and there have been some suggestions during the course of them that principles must be developed to regulate the relationship between WTO rules and environmental treaties.¹³²⁸ As discussed above, the introduction of trade restrictions in MEAs could in some circumstances conflict with GATT principles. Trade restrictions that were introduced as part of CCAMLR in order to protect Antarctic krill would be subject to this risk. Accordingly, it is important to determine what outcome would be achieved in such a situation.

Dispute resolution

The WTO system has in place a specific mechanism for determining trade disputes between WTO members. Where an MEA conflicts with GATT rules, the parties could elect to bring an action through this WTO dispute settlement procedure. The question then remains as to how the WTO would resolve this inconsistency. This would clearly impact on any specific trade obligations that were introduced into CCAMLR to protect Southern Ocean species (this could potentially include CCAMLR’s Catch Documentation Scheme which is discussed below) which came into conflict with WTO trade principles. Winter argues that GATT and MEAs are based on inconsistent policy objectives that could potentially lead to a future conflict between an MEA’s environmental protection measures and the GATT.¹³²⁹ Winter also contends that, because the WTO is a centralised and powerful institution, it poses a threat to MEAs if they are inconsistent with GATT.¹³³⁰ An examination of the WTO’s previous decisions relating to the environment is warranted to determine the importance placed on MEAs by the WTO.

¹³²⁷ Trade and the Environment Document produced by the WTO Secretariat, WTO website, <http://www.wto.org> at 39

¹³²⁸ Trade and the Environment Document produced by the WTO Secretariat, WTO website, <http://www.wto.org> at 41

¹³²⁹ Winter, R. *Supra*, fn 1367, 224

¹³³⁰ *Ibid*, 232

The unilateral action taken by the US in respect of tuna imports in the *Tuna-Dolphin* cases made it subsequently possible for a multilateral agreement to be concluded that protected dolphins and allowed a lifting of the restrictive trade measures.¹³³¹ Arguably, the *Shrimp-Turtle* case also evidences that there is some justification in GATT for trade measures where MEAs exist.¹³³² One commentator argues that the *US Shrimp-Turtle* case shows that particular MEAs will be held to be WTO consistent. Arguably, if a multilateral approach is taken, then environmental concerns can take precedence over trade concerns within the WTO system. There is also an argument that the *US Shrimp-Turtle* case suggests that unilateral measures could be valid too if there have been prior attempts to negotiate a multilateral solution.¹³³³ Both of these cases show that the WTO will look more favourably on environmentally related trade measures where they relate to an MEA.

In this regard, the WTO's main concern appears to be the imposition of unilateral trade restrictions. One commentator has argued that the *Tuna-Dolphin* and *US Shrimp-Turtle* cases imply that the concept of free trade contains a principle of non-coercion i.e. against using trade measures to coerce compliance with regulation.¹³³⁴ However, where an MEA is in place there is consent to those trade restrictions and no coercion exists. This is all very well for existing contracting parties to an MEA like CCAMLR. As discussed throughout this thesis, one of the biggest threats to CCAMLR's management regime (including the precautionary catch limits that apply to Antarctic krill) is IUU fishing. This is a particular problem in the Southern Ocean because a significant proportion of the area constitutes high seas (Antarctic territorial claims notwithstanding). As discussed in Chapter 1, a major proportion of areas of high Antarctic krill concentration are also located in high seas areas of the Southern Ocean. Arguably, the imposition of unilateral trade restrictions against non-complying countries is necessary to increase the effectiveness of CCAMLR (including the precautionary measures it contains that are aimed at krill fishing), however, this risks infringing any implied "coercion" principle that exists under the WTO regime.

¹³³¹ Birnie, P. and Boyle, A. *Supra*, fn 233, 714

¹³³² *Ibid*, 713

¹³³³ McRae, D. 2003. Trade and the Environment: Competition, Cooperation or Confusion? *Alberta Law Review*, Vol 41: 745-760 at 755

¹³³⁴ Driesen, D. 2001. What is Free Trade?: The Real Issue Lurking Behind the Trade and Environment Debate. *Virginia Journal of International Law*: Vol 42(2): 279-368 at 304

The WTO Secretariat itself has specifically stated that multilateral solutions to environmental problems are preferable to unilateral ones.¹³³⁵ The WTO advocates co-ordination of environmental protection efforts, including trade related measures, rather than unilateral action. The WTO Secretariat believes that unilateral action can lead to discrimination and “disguised protectionism”.¹³³⁶ These views support those espoused in the WTO cases discussed above and show that the WTO has a clear aversion to the use of unilateral trade restrictions as an environmental protection mechanism. Such a position does not fit comfortably with the imposition of any unilateral trade restrictions such as an import ban on Antarctic krill as a disincentive towards IUU fishing in Antarctic waters.

Despite the WTO’s attitudes, unilateral action can be an effective means of enforcing environmental measures in respect of high seas krill fisheries in an area like the Southern Ocean. For example, US unilateral action has, in the past, proved somewhat successful. In one instance, the possibility of US trade sanctions culminated in a multilateral agreement to stop high seas fishing of Atlantic salmon.¹³³⁷ Multilateral treaties imposing trade sanctions may encourage parties to join those agreements.¹³³⁸ Specific trade restrictions introduced as part of CCAMLR provide an incentive for new countries to become parties to that Treaty (see also the discussion on the Catch Documentation Scheme below). However, the alternative view is that unilateral trade measures will not prove to be an effective means of environmental protection. One commentator has argued that if a State imposes trade restrictions in an attempt to change the environmental policies of another State, then that other state could decide to maintain its existing policies and suffer the consequences of reduced exports.¹³³⁹

¹³³⁵ Trade and the Environment Document produced by the WTO Secretariat, WTO website, <http://www.wto.org> at 35

¹³³⁶ Trade and the Environment Document produced by the WTO Secretariat, WTO website, <http://www.wto.org> at 8

¹³³⁷ Lundsgaard, D. and Spracker, S. 1993. Dolphins and Tuna: Renewed Attention on the Future of Free Trade and Protection of the Environment. *Columbia Journal of Environmental Law*: Vol 18: 385-418 at 409

¹³³⁸ Driesen, D. *Supra*, fn 1380, 304

¹³³⁹ Howse, R. *Supra*, fn 1336, 492

In a similar vein, Hoffmann argues that trade restrictions may only serve to encourage illegal international trade rather than curb the activities that they are aimed at preventing.¹³⁴⁰ Such an argument holds trade coercion to be an ineffective means of environmental protection and, when applied against non-parties to MEAs, to constitute an infringement of national sovereignty.¹³⁴¹ On the other hand, there is an equally valid alternative view that trade sanctions do not infringe the sovereignty of other States.¹³⁴² There is also a possibility that permitting unilateral action through trade restrictions on environmental grounds would be subject to abuse if those measures were introduced for trade protection purposes.¹³⁴³ Such risks do not outweigh the potential benefits to be gained in protecting the Antarctic krill and should not be used as a justification for allowing unrestricted trade in Antarctic species such as krill by non-members to CCAMLR.

CITES and CCAMLR Catch Documentation Scheme (CDS)

A case in point in respect of trade restrictions is the Convention on International Trade in Endangered Species of Wild Fauna and Flora ("CITES"). CITES is a Treaty aimed at protecting endangered species. CITES prohibits trade in certain endangered species and also regulates trade in other species. CITES uses trade restrictions on the import or export of particular threatened or endangered species for this purpose.¹³⁴⁴ One commentator has argued that CITES has achieved some success because it is directly aimed at using trade restrictions as a means of environmental protection, as opposed to environmental protection agreements that do not focus specifically on using trade restrictions.¹³⁴⁵ Accordingly, the introduction of specific provisions directly focusing on trade restrictions into the CCAMLR document itself and the inclusion of such restrictions as part of the CCAMLR management system, would be likely to achieve some success in restricting IUU fishing.

¹³⁴⁰ Hoffmann, U. 2003. Specific Trade Obligations in Multilateral Environmental Agreements and their Relationship with the Rules of the Multilateral Trading System – A Developing Country Perspective. *United Nations Trade and Environment Review*: 1-32 at 13

¹³⁴¹ Oxley, A. 2003. Commentaries on Article 1: The Relationship Between MEAs and WTO Rules. *United Nations Trade and Environment Review*: 93-96 at 93,95

¹³⁴² Lundsgaard, D. and Spracker, S. *Supra*, fn 1383, 410

¹³⁴³ *Ibid*, 412

¹³⁴⁴ Winter, R. *Supra*, fn 1367, 230

¹³⁴⁵ Driesen, D. *Supra*, fn 1380, 306

As discussed in Chapters 1 and 2, the vital role that krill plays in the Antarctic ecosystem justifies using measures to protect it against future growth of krill fishing industry. As CCAMLR is the current mechanism for regulating krill fishery, any general trade provisions included within the CCAMLR instrument could be applied to krill. Practically, this could be done as part of CCAMLR's current management system by using its existing system of "conservation measures" (these are specific documents that CCAMLR releases outlining measures that CCAMLR has taken in respect of particular fisheries). There is, however, an argument that CITES trade bans that are used to ensure compliance with CITES could conflict with the WTO system.¹³⁴⁶ The outcome of such a situation is discussed below.

CCAMLR's Catch Documentation Scheme ("CDS") currently utilises one particular form of trade restriction by attempting to prevent IUU fishers from offloading their catch. The CDS is aimed at stopping those fishers from finding a market for their product. The UN Food and Agriculture Organisation's *International Plan of Action on Illegal, Unreported and Unregulated Fishing* ("IUU-IPOA") suggests the implementation of national legislation by States to prevent trade in IUU catches¹³⁴⁷ (including stock specific trade measures).¹³⁴⁸ Therefore, the IPOA-IUU does provide some support for trade related measures. Furthermore, trade restrictions under the CDS could be used as a means to enforce a comprehensive krill ban. However, instruments such as the FAO Code of Conduct on Responsible Fisheries require States to maintain practices in accordance with WTO principles so that those practices do not form obstacles to trade.¹³⁴⁹ The CDS could breach WTO rules¹³⁵⁰, although there is an alternative view that the CDS does not really restrict trade and so the kind of trade measures used by the CDS are, arguably, permissible under WTO rules.¹³⁵¹ If there were a conflict between the CDS and WTO principles, then there is an issue as to, legally, which rules should prevail. This question is considered in more detail below. The CDS is aimed at preventing fisheries catches being offloaded, but the introduction of more direct trade restrictions could also boost the effectiveness of the system. Such direct trade restrictions could be aimed at preventing the importation of Antarctic species or products derived from those species (such as Antarctic krill concentrate used in the aquaculture industry), although direct trade restrictions would be more likely to conflict with WTO/GATT principles.

¹³⁴⁶ Hoffmann, U. *Supra*, fn 1292, 15

¹³⁴⁷ Article 74, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹³⁴⁸ Articles 69 and 70, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹³⁴⁹ Article 6.14, *FAO Code of Conduct on Responsible Fisheries* 1995; Articles 65 and 66, *International Plan of Action on Illegal, Unreported and Unregulated Fishing*

¹³⁵⁰ Popick, I.J. *Supra*, fn 1140, 940

¹³⁵¹ *Ibid*, 979

The WTO contends that “the GATT/WTO agreements already provide significant scope for countries to pursue national environmental policies, provided the policies do not discriminate.”¹³⁵² However, violation of the WTO discrimination principle could still arise in respect of environmental issues, despite the fact that the specific provisions of an MEA may require a State to introduce the relevant trade restrictions. The WTO Secretariat itself acknowledges that there may be conflict between MEAs and the GATT non-discrimination principle where, for example, an MEA permits contracting states to trade in a particular product but prohibits trade in that product with non-contracting states.¹³⁵³ There is a possibility that disputes concerning MEAs would be brought within the WTO dispute settlement procedure.¹³⁵⁴ A significant risk exists that the WTO Panel/Appellate Body would rule in favour of WTO rules in this situation, particularly in light of past environmentally-related decisions that have come before the WTO Panel. An outcome of this nature would result in trade principles being placed ahead of specific environmental obligations in MEAs. Such a situation is far from ideal because it would relegate environmental matters to an area of low priority within the WTO system. This would impact upon the efficacy of any trade related measures introduced through CCAMLR and those relating to Antarctic krill in particular.

The preamble to the WTO Agreement does make mention of sustainable development, although it does not appear to clarify the relationship between MEAs and the GATT/WTO.¹³⁵⁵ Accordingly, there is currently no specific provision within the legal instruments governing the WTO that provides for MEAs to prevail over WTO rules to the extent of any inconsistency. There was, however, a proposal at the WSSD in Johannesburg for the WTO to be able to override international environmental agreements but this proposal was defeated.¹³⁵⁶

¹³⁵² WTO website, <http://www.wto.org>

¹³⁵³ Trade and the Environment Document produced by the WTO Secretariat, WTO website, <http://www.wto.org> at 36

¹³⁵⁴ *Ibid*

¹³⁵⁵ Winter, R. *Supra*, fn 1367, 236

¹³⁵⁶ Eichenberg, T. and Shapson, M. 2004. The Promise of Johannesburg: Fisheries and the World Summit on Sustainable Development. *Golden Gate University Law Review*, Vol 34: 587-643 at 622

The CTE has recently considered the interaction of MEAs and WTO principles. During the 11th meeting of the CTE in February 2005, the CTE raised some general principles in respect of how future MEAs are to be negotiated:¹³⁵⁷

- MEAs need to be open for all countries to become signatories;
- MEAs need to reflect broad based support;
- MEA trade measures need to be drafted with precision;
- MEAs need to treat non-parties on the same basis as parties if the non-parties comply with their provisions; and
- MEAs have to explicitly consider WTO principles.

These general principles, particularly the requirement for future MEAs to explicitly consider WTO principles, imply that the CTE believes that WTO principles are paramount. Ostensibly, there are situations where WTO principles should not take priority over MEAs because of specific environmental issues such as the need to protect Antarctic species.

Putting aside the WTO dispute settlement mechanism, it is necessary to consider the relationship between conflicting WTO and MEA provisions under general international law principles. The *Vienna Convention* governs the interpretation and application of international treaties. The legal instruments governing the WTO constitute an international agreement and consequently should be interpreted in accordance with the *Vienna Convention*.

Article 30 of the *Vienna Convention* requires parties that are legally bound by conflicting treaties to apply the Treaty concluded later in time in preference to the earlier one to the extent of the conflict. Accordingly, any MEAs that were concluded after the 1994 *Marrakesh Declaration* came into force should take priority over any inconsistencies with the GATT and the trade principles it contains. However, in respect of Antarctic species, CCAMLR was concluded well before the *Marrakesh Declaration* came into force and so it would not currently be possible to rely on Article 30 to resolve any inconsistencies between those two treaties in favour of CCAMLR.

¹³⁵⁷ Report by the Chairperson of the Special Session of the Committee on Trade and Environment to the Trade Negotiations Committee, 14 March 2005

The international law doctrine of *lex specialis* also provides that specific treaties should take preference over general treaties, suggesting that specific trade provisions in MEAs should override the GATT.¹³⁵⁸ However, CCAMLR does not currently contain specific trade restriction provisions in respect of Antarctic species. As previously discussed, the CCAMLR Commission does use a particular type of trade related measure in the form of the Catch Documentation Scheme. Arguably though, because the CCAMLR instrument itself does not contain specific provisions relating to trade, the general conservation provisions of CCAMLR can be overridden by the specific provisions in GATT concerning trade and the restriction of trade. To give more legal weight to CCAMLR and the CDS, the Convention should be amended to introduce specific provisions relating to trade and the use of trade restrictions for the management of Antarctic species. Such an amendment would have an even greater priority if trade restrictions that were more direct than the CDS (eg import bans) were put in place by CCAMLR members.

As discussed, a more direct form of trade restriction in respect of the Antarctic krill would be likely to conflict with GATT free trade principles. However, CCAMLR could be amended to introduce specific provisions in the Convention in respect of the use of trade restrictions for the management of Antarctic species. These specific provisions could then be used to apply trade restrictions in respect of the Antarctic krill. The amendment of the Convention would, arguably, introduce provisions that, under Article 30 *Vienna Convention*, would take precedence over the earlier GATT provisions. Furthermore, this would create specific provisions in CCAMLR that should take priority over the general trade principles of GATT. This would strengthen the position in international law of any trade restrictions introduced under CCAMLR. A major practical problem with this approach would be the legal view taken by the WTO Panel as to the interaction of the two systems. One would have to question the neutrality of the Panel in any decision involving the legal reconciliation between the WTO treaties and other international agreements. In order to resolve such conflict, an apparently neutral arbiter such as the International Court of Justice would be the appropriate dispute resolution forum.¹³⁵⁹

¹³⁵⁸ Winter, R. *Supra*, fn 1367, 236

¹³⁵⁹ See discussion later in this Chapter on alternative arenas for hearing trade related disputes where there is a conflict with other international agreements.

Despite general international law doctrine, there is also an argument that WTO rules override other international law principles because of a devolution of sovereignty to the WTO. The WTO Panel itself has stated that WTO Members have agreed to exercise sovereignty in accordance with the WTO Agreement:

“The WTO Agreement is a Treaty – the international equivalent of a contract. It is self-evident that in an exercise of their sovereignty, and in pursuit of their own respective national interests, the Members of the WTO have made a bargain. In exchange for the benefits they expect to derive as Members of the WTO, they have agreed to exercise their sovereignty according to the commitments they have made in the WTO Agreement.”¹³⁶⁰

The WTO Committee advocates the “international-level power allocation” to the WTO because of the “co-ordination benefits” that it brings i.e. co-ordination of government efforts is necessary because where each individual State acts independently, damage may be done to all States.¹³⁶¹ This gives weight to the view that States have, at least from the WTO’s perspective, ceded some measure of sovereignty to the WTO. Orford succinctly summaries the situation in that “decision-making over ever larger areas of what was once considered to be central to popular sovereignty and substantive democracy is now treated as legitimately within the province of economists in institutions such as the IMF and the World Bank. The shifting of decision-making authority from governments to international economic institutions affects both popular sovereignty and substantive democracy.”¹³⁶² If the view is taken that WTO Member States have indeed ceded a portion of their sovereignty to the WTO (or in the very least agreed to exercise their sovereignty in accordance with WTO principles) then this has implications for the subsequent exercise of power by those states since becoming parties to the WTO Agreement. The proposition that a state can cede a portion of its sovereignty has greater weight in this context because the WTO is not simply an ordinary international agreement between states. The WTO system, in addition to constituting a series of legal agreements, is also an international institution with many of the mechanisms necessary for creating its own body of jurisprudence (e.g. a judiciary including a dispute resolution mechanism; an executive Committee; and a bureaucracy). Accordingly, the WTO would appear able to exercise in its own right any powers ceded to it by Member States.

¹³⁶⁰ *Japan – Alcoholic Beverages II*, p.16, Dispute Settlement Reports (DSR) 1996: 1, p.97 at 108

¹³⁶¹ Paragraph 129, Sutherland, P. et al. *The Future of the WTO*. 2004. Report by the Consultative Board to the Director-General Supachai Panitchpakdi.

¹³⁶² Orford, A. 1997. Locating the International: Military and Monetary Interventions After the Cold War. *Harvard International Law Journal* 443 at 470

If, at the very least, WTO Member states have agreed to exercise sovereignty according to WTO principles, then states should act in that manner subsequent to joining the WTO system. If this view holds weight, then it follows that those WTO Members should exercise their sovereignty in accordance with WTO principles when entering into new international agreements. Accordingly, there is an argument that WTO Members cannot enter into international agreements subsequent to becoming members of the WTO if such agreements are inconsistent with WTO principles. If this argument had merit, it would mean that a WTO Member could not commit to any amendments to CCAMLR that introduced specific trade provisions if those provisions were inconsistent with GATT. Furthermore, it would *prima facie* be illegal for WTO Members to enter into new environmental agreements which contained trade principles that were inconsistent with GATT.

Customary International Law

In light of the above discussion concerning MEAs, it is appropriate to consider the interaction between the WTO principles and environmental protection under customary international law principles. The WTO Consultative Board has acknowledged the WTO Appellate Body's acceptance of the fact that the WTO is subject to the general customary international law rules of Treaty interpretation as set out in the *Vienna Convention*.¹³⁶³ This adds weight to the possibility that the WTO Panel/Appellate Body would apply Article 30 of the *Vienna Convention* if amendments were made to CCAMLR. Applying Article 30 would mean that specific trade provisions introduced into CCAMLR would take priority over GATT principles. However, the WTO Consultative Body has also stated that "the customary international law rules of interpretation are, themselves, sometimes questionable when applied in the context of very detailed and intricate economic obligations of the WTO."¹³⁶⁴ This creates doubt surrounding the WTO's true position in respect of both the rules of interpretation in the *Vienna Convention*, as well as other principles of customary international law.

¹³⁶³ Paragraph 233, Sutherland, P. et al. *The Future of the WTO*. 2004. Report by the Consultative Board to the Director-General Supachai Panitchpakdi.

¹³⁶⁴ *Ibid*, Paragraph 235

As discussed in Chapter 3, for customary international law to arise there needs to be evidence of both State practice and *opinio juris*. Winter argues that the development of customary international law may, in the long-term, legitimise restrictive trade measures used for environmental protection. However, it is likely that GATT will influence state practice, making it difficult for such customary law to develop.¹³⁶⁵ Accordingly, even if a customary international law principle does exist (or subsequently develops) supporting sustainable development of fisheries in Antarctica, it is unlikely that it extends to the use of trade restrictions for environmental protection. If a majority of states act in accordance with WTO principles, then the state practice required for the development of a customary international law principle permitting trade restrictions for environmental protection will not arise. Customary international law can be a useful source for international institutions, such as the International Court of Justice, to interpret the law when determining disputes. However, it is uncertain whether the WTO Panel/Appellate Body would apply any customary international law principles that were not strictly in accordance with WTO trade principles. Indeed, one commentator argues that the application of customary international laws to specific WTO provisions that conflict with those customary laws may undermine the whole WTO system.¹³⁶⁶ Arguably, the WTO system embodies a code of world trade law and should not be added to by customary international law.¹³⁶⁷ Accordingly, the development of customary international law may not be an appropriate means of dealing with environmental issues within the WTO system. An alternative mechanism of providing for environmental issues within the WTO may be preferred.

¹³⁶⁵ Winter, R. *Supra*, fn 1367, 246

¹³⁶⁶ McGinnis, J. 2003. The Appropriate Hierarchy of Global Multilateralism and Customary International Law: The Example of the WTO. *Virginia Journal of International Law*: Vol 44(1): 229-284 at 264

¹³⁶⁷ *Ibid*, 268

V. Trade related krill protection

As discussed previously, trade related measures could provide an effective means to regulate a comprehensive krill ban or localised krill protection. Earlier in this Chapter, the application of the environmental exceptions in Article XX of GATT to such krill protection measures was examined. However, it is also necessary to determine whether, in the absence of the Article XX exceptions, particular *types* of trade measures relating to krill would breach the broad GATT principles.

It is important to note that the WTO principles only apply to WTO Member States. As discussed in previous Chapters, one of the most prevalent problems with international fisheries is IUU fishing by vessels without a flag State. Combating the use of unflagged vessels is a necessary goal of fisheries regulation. Such vessels claim that they do not fall under the jurisdiction of any individual State and, accordingly, WTO member States are not bound to apply the WTO principles in respect of such vessels. This means that trade restrictions can be vigorously imposed in respect of Antarctic species caught by the fishers of such vessels without any breach of GATT principles.

A related issue is whether trade related protection measures can be imposed against fisheries products of WTO members. In the absence of Article XX, it would be necessary for a WTO Member to comply with GATT principles. Environmental protection policies can be introduced in such a situation provided that there is no discrimination between like products or between WTO Member States.¹³⁶⁸

The Most Favoured Nation principle in Article I of GATT requires that, in respect of customs charges and duties and rules and formalities in connection with importation and exportation, broadly any advantage given to one contracting State should be equally applied to “like products” of any other contracting States. Similar requirements can be found in Article III which is, broadly, aimed at non-discrimination between the domestic products of one State and “like products” of other contracting States. This includes discrimination based on laws and regulations affecting the product’s internal sale or offer for sale and internal taxes and charges.

¹³⁶⁸ Trade and the Environment Document produced by the WTO Secretariat, WTO website, <http://www.wto.org> at 7

The imposition of trade restrictions by a WTO Member on all krill related products produced domestically and also on similar products of other States would not appear to breach the non-discrimination principles because all “like products” would be treated equally. However, if trade restrictions were used by a WTO Member against only a limited class of other nations (eg IUU fishers from Member States or States who were not parties to CCAMLR) then it is likely that the non-discrimination principles described above would be breached. The existence of these non-discrimination principles would make it difficult for CCAMLR parties (who were also WTO members) to introduce selective trade restrictions without breaching GATT principles, unless those parties could rely upon the exceptions in Article XX.

GATT also contains further measures that prevent the use of import restrictions by WTO Members. Article XI(1) requires that there are no prohibitions or restrictions on the importation of any product of the territory of any other contracting state. Article XI(2) also contains several exceptions to this requirement. In particular, Article XI(1) does not apply to import restrictions on any fisheries product imported in any form necessary for the enforcement of governmental measures which operate to restrict the quantities of the like domestic product permitted to be marketed or produced or, if there is no substantial domestic production of the like product, of a domestic product for which the imported product can be directly substituted (Article XI(2)(c)(i)). One further requirement for this exception is that public notice must be given of the total quantity of the product permitted to be imported.

Prima facie, import prohibitions imposed by CCAMLR parties on krill related products would breach Article XI(1) of GATT. The abovementioned exception in respect of import restrictions on fisheries products necessary to enforce domestic regulations would, at first glance, appear to be available. This is provided that a comprehensive ban on all krill related products (irrespective of jurisdiction) was introduced. Article XIII also requires any import prohibitions or restrictions of “like products” to be applied in a non-discriminatory manner between WTO members. Import restrictions on krill related products that were aimed only at non-CCAMLR members or IUU fishers would not appear to conform to these requirements.

As discussed, if comprehensive importation barriers were introduced for krill related products then GATT offers a potential exception to the normal prohibition against import restrictions. The fisheries exception only applies to governmental measures which “operate to restrict the quantities of the like domestic product permitted to be marketed or produced or, *if there is no substantial domestic production of the like product, of a domestic product for which the imported product can be directly substituted.*” There would be legal problems in certain situations if this exception was relied upon in respect of import restrictions on krill products. Although a

particular country may apply restrictions against all krill related products, the GATT fisheries exception appears to be premised on there being substantial production of a domestic product. If there is no such substantial domestic production of a like product, then there must be restrictions on a domestic product for which the imported product can be directly substituted.

There are many countries that do not engage in substantial production of krill related products. Accordingly, to rely on the exception there needs to be government restrictions in respect of substantial domestic production of a direct substitute for krill related products. It is difficult to see what a direct substitute would be for krill related products. Therefore, from a legal perspective, it may not be possible to rely on this exception to justify comprehensive importation restrictions on krill related products (this same reasoning may apply for other Antarctic fisheries as well). This would mean that the Article XX exceptions would need to be used as a legal justification for different types of trade restrictions that could, as discussed above, breach GATT principles.

Precautionary Approach

If comprehensive krill trade restrictions do breach GATT principles then, as discussed above, it would be necessary to rely on the Article XX exceptions to GATT. In respect of Article XX(g), there is an issue as to whether such restrictions could be said to relate to the conservation of exhaustible natural resources if their introduction is premised on the precautionary approach to resource management. This raises the question of how the precautionary principle interacts with GATT trade principles. Arguably, the specific Treaty requirements of the GATT should prevail over the precautionary principle if the two are in conflict (i.e. if the precautionary principle does indeed constitute customary international law).¹³⁶⁹ The European Community has previously contended that the precautionary principle applies in respect of GATT, however, the WTO did not accept this argument.¹³⁷⁰ Some commentators argue that customary international law principles such as the precautionary approach (if it does constitute customary law) should take precedence over multilateral agreements.¹³⁷¹ The converse argument is that a precautionary approach would potentially allow States to impose trade restrictions without scientific justification to clandestinely protect domestic industries.¹³⁷² Furthermore, a general precautionary principle approach in international trade law may also conflict with economic concerns and may not be accepted by developing nations.¹³⁷³

¹³⁶⁹ McGinnis, J. *Supra*, fn 1412, 260-261

¹³⁷⁰ *WTO Appellate Body Report on EC Measures Concerning Meat and Meat Products*, 16 January, 1998

¹³⁷¹ McGinnis, J. *Supra*, fn 1412, 262

¹³⁷² *Ibid*, 271

¹³⁷³ *Ibid*, 274

The WTO's refusal to accept the existence of a precautionary principle is inconsistent with the underlying basis of CCAMLR's fisheries management approach, which is premised on such an approach. Furthermore, as discussed above and in previous Chapters, the precautionary approach provides the justification for krill trade protection measures and a comprehensive ban on krill related products. The precautionary approach should find a place within the WTO framework so that trade restrictions can be used for conservation purposes in the absence of certainty concerning scientific information. There is an issue, therefore, as to how the precautionary approach interacts with WTO principles when those principles conflict with specific MEAs.

A case in point in this respect is the conflict between the WTO *Agreement on the Application of Sanitary and Phytosanitary Measures* ("the SPS Agreement") and the *Cartagena Protocol on Biosafety*. The *Cartagena Protocol on Biosafety* ("the Cartagena Protocol") is aimed at protecting biodiversity and human health from organisms that have been genetically modified.¹³⁷⁴ The Cartagena Protocol, in Article 10.6, recognises a form of the precautionary principle. In this respect, the SPS Agreement also gives recognition to a particular form of the precautionary principle. However, the SPS form of the precautionary principle requires that particular actions taken in reliance on that principle be founded on scientific principles. The SPS Agreement also requires that there be scientific information to justify those actions. The two agreements are in conflict in respect of the precautionary approach because of the requirement in the SPS Agreement for "sufficient" scientific evidence before action can be taken.

In this regard, the *Japan – Apples* case¹³⁷⁵ held that a form of precautionary principle "has not been written into the SPS Agreement as a ground for justifying SPS measures that are otherwise inconsistent with the obligations of [WTO] Members". Furthermore, trade restrictions are not warranted if any of the requirements in the SPS Agreement are not met. These requirements include the need for sufficient scientific information before action can be taken. As the precautionary principle relied upon under management regimes such as CCAMLR is based upon taking action where scientific data is lacking, the WTO has apparently rejected the use of this stronger form of the precautionary principle.

¹³⁷⁴ Valley, P. 2004. Tension between the Cartagena Protocol and the WTO: The Significance of Recent WTO Developments in an Ongoing Debate. *Chicago Journal of International Law*, Vol 5: 369-378 at 370

¹³⁷⁵ *Japan – Measures Affecting the Importation of Apples*, Report of the WTO Appellate Body, 26 November 2003

As krill protection, and many other environmental conservation efforts, are based on the precautionary principle it is difficult to see how trade restrictions in respect of such efforts would be justified under GATT if the WTO does not recognise a strong form of the precautionary principle. As discussed above, the WTO system in general does not place a strong emphasis on environmental protection where that protection involves trade restrictions that conflict with GATT requirements. In light of this and the inaction of the WTO CTE, there is a clear need to either:

- Change the current WTO system so that there is greater recognition of environmental principles; or
- Use other fora to determine environmental disputes where they are trade related.

VI. Changing the WTO System

There are several alternative means that could be used to change the WTO system. One way of providing greater recognition for MEAs and the environment is through the use of Article IX of GATT. This Article allows the WTO to waive GATT obligations in particular circumstances. The Article could be used to waive GATT obligations in respect of trade restrictions that were introduced pursuant to MEAs.¹³⁷⁶ Although CCAMLR does not contain specific provisions relating to trade restrictions, the waiver provision in Article IX of GATT could still be used to legitimise trade restrictions implemented under the CCAMLR management regime. As discussed above, specific management conservation measures could be introduced in respect of the Antarctic krill to impose restrictions in respect of trade in krill. The use of Article IX would help to facilitate the removal of inconsistencies between WTO principles and the use of environmentally based trade restrictions by MEAs, including any restrictions on krill trade that might be introduced under CCAMLR.

It is important to note that the waiver provision does require a 75% majority of WTO Members, which would appear to be a difficult target to achieve. Other WTO Members have also put forward the view that the waiver provision alone will not adequately deal with the problems concerning the interaction between MEAs and the WTO system. This view is based on the contention that the waiver provision is aimed at merely facilitating temporary trade measures where exceptional circumstances exist.¹³⁷⁷ Accordingly, a more long-term solution based on amendment of GATT is preferable. This is particularly preferable in respect of the Antarctic krill because of the current scientific uncertainty concerning the impact of fishing on, not only the Antarctic krill, but species higher up in the food web. A long-term measure that is flexible enough to permit changes in the types of trade restrictions used for krill is needed because of this uncertainty. As more scientific data is gathered or there are changes in the Antarctic environment or to populations of other Antarctic species, it may be necessary to change the manner in which krill trade restrictions are imposed. The use of the waiver mechanism would probably not accommodate these long-term needs.

¹³⁷⁶ *Report (1996) of the Committee on Trade and Environment*, page 4

¹³⁷⁷ *Report (1996) of the Committee on Trade and Environment*, page 5

An amendment to GATT could take a variety of forms. The European Community has previously proposed Article XX of GATT should be amended to include an exception for trade restrictions that are introduced because of a requirement in an MEA.¹³⁷⁸ Accordingly, an additional exception could be introduced for MEA trade restrictions. For such an exception to be applied in a truly objective manner, it is likely that the relevant MEA would need to have a specific provision(s) dealing with trade restrictions. CCAMLR would not qualify for any MEA exception drafted in this manner because there is currently no specific provision in CCAMLR dealing with trade restrictions. Changes to GATT permitting an MEA exception would (depending on how the changes were drafted) likely require the insertion of a specific provision in CCAMLR outlining when and how trade restrictions can be applied in respect of Antarctic species. In order for an MEA exception to be applicable for Antarctic krill, any such specific provision introduced into the text of CCAMLR would need to be wide enough to permit trade restrictions even where a species was not currently threatened or endangered. This would constitute a stronger form of the precautionary approach currently embodied in CCAMLR and would facilitate the use of trade restrictions to conserve the Antarctic krill in the light of uncertainty concerning the effect of krill fishing on krill population and on populations of dependent species.

An alternative proposal to deal with MEAs relates to the WTO dispute settlement mechanism itself. This proposal is linked to the abovementioned idea regarding the need for MEAs to have specific clauses dealing with trade. The WTO CTE has canvassed the possibility of basing WTO dispute settlement in respect of MEAs upon whether the relevant trade measures are specifically provided for in the MEA and whether those trade measures apply to WTO contracting parties or to non-parties to the MEA.¹³⁷⁹ A further alternative amendment could focus WTO dispute settlement processes on the environmental policy behind the particular trade measures. This would require the WTO Panel to examine the legitimacy of the policy itself as well as whether the trade restrictions are necessary to achieve those policy aims.¹³⁸⁰ The practical difficulty with implementing environmental amendments based on a policy examination is that they allow the WTO Panel too much discretion in whether to overturn the relevant trade restrictions.

¹³⁷⁸ *Ibid*

¹³⁷⁹ *Report (1996) of the Committee on Trade and Environment*, page 7

¹³⁸⁰ Birnie, P. and Boyle, A. *Supra*, fn 233, 722

The necessary amendment should focus on providing an exception to GATT principles for MEAs with specific trade related provisions.¹³⁸¹ As discussed above, an amendment to CCAMLR would be required if this proposal were adopted to introduce specific trade provisions into the text of CCAMLR. Provided the specific trade provisions were drafted wide enough to allow trade restrictions even where the relevant species were not endangered or threatened, then such specific trade provisions could be used by WTO member states to introduce trade restrictions in respect of krill fishery without infringing GATT principles. An MEA exception to GATT principles would introduce a greater level of objectivity when applying the exception and would give the WTO Panel less opportunity to overrule trade restrictions in favour of free trade principles where those restrictions are specifically provided for in a MEA.

An overhaul of the WTO system and GATT is clearly overdue in respect of environmental issues, however, an amendment to GATT may be a long way off. Under Article X, amendments can only be passed by a two-thirds majority of WTO Members. This fact makes it likely that political interests would stifle the introduction of an environmentally based amendment in the short-term. As outlined above, the slow progress of the CTE on the trade-environment relationship will also impede the introduction of any changes to the WTO system. There is also an issue as to whether the WTO is even an appropriate forum for environmental dispute resolution. Some quarters within the WTO itself do not support the administration of environmental policy through the WTO system, for example:

“Modern commercial policy theory today also argues persuasively that if there are two objectives, income and the environment, then generally two policies will help governments attain them both to the best advantage. So, the correct policy solution is to fix the environment through an appropriate environmental policy and to maintain open trade to maximise gains from trade and hence economic prosperity.”¹³⁸²

As discussed previously in this Chapter, because the WTO system is primarily focused on trade objectives it may not be the appropriate body to deal with disputes concerning trade restrictions introduced on environmental grounds and also to administer environmental policy. Accordingly, a “carve out” amendment to the WTO dispute settlement process may be appropriate to devolve power to deal with MEA related disputes to another international body.

¹³⁸¹ Although this would require an amendment to CCAMLR if it were to apply to that instrument.

¹³⁸² Paragraph 33, Sutherland, P. et al. *The Future of the WTO*. 2004. Report by the Consultative Board to the Director-General Supachai Panitchpakdi.

Potential alternatives to WTO dispute settlement include dispute settlement through the International Court of Justice; dispute settlement bodies provided for within the MEAs themselves; or dispute settlement under UNCLOS. Arguably, UNCLOS would provide an appropriate forum because it is already involved in international environmental law and has a strong system for resolving disputes.¹³⁸³ However, UNCLOS' dispute settlement body, the International Tribunal for the Law of the Sea ("ITLOS") may be equally reluctant to take into account environmental issues and conservation needs. In the 2002 *Volga* case¹³⁸⁴, ITLOS appears to have given insufficient consideration to conservation issues when considering a case concerning the release of an IUU fishing vessel held by Australia.¹³⁸⁵ A lack of consideration of conservation issues by ITLOS could undermine the conservation measures of regional organisations such as CCAMLR.¹³⁸⁶ Although ITLOS may be just as conservative as the WTO in respect of environmental issues, it may still be appropriate for ITLOS to adjudicate trade disputes with an environmental focus because the WTO's primary role focuses on trade. Accordingly, ITLOS may be more independent when dealing with environmental trade disputes because it is not an institution whose primary purpose is to promote free trade.

Any trade restrictions in respect of krill could be dealt with using the UNCLOS dispute settlement mechanism. This mechanism has an established history of dealing with disputes relating to the marine environment and international law and is specifically aimed at such disputes. Accordingly, it would be the most appropriate means of dealing with trade disputes concerning krill. CCAMLR's dispute settlement mechanism requires contracting parties to refer the dispute to the ICJ or arbitration. As CCAMLR does not have a separate institutional body to deal with disputes, settlement under the UNCLOS system would be preferred. Once again, however, an amendment to GATT to devolve power in respect of environmental disputes from the WTO Panel to ITLOS is unlikely in the near future.

¹³⁸³ Winter, R. *Supra*, fn 1367, 252

¹³⁸⁴ *The Volga (The Russian Federation v The Commonwealth of Australia)*, 23 December 2002

¹³⁸⁵ Oppenheim, A. 2004. The Plight of the Patagonian Toothfish: Lessons from the Volga Case. *Brooklyn Journal of International Law*, Vol 30: 293-328 at 295-297

¹³⁸⁶ *Ibid*

This raises an issue concerning the choice of forum in respect of determining a dispute concerning trade and the environment. The current system operates in such a manner that it is possible for different states to bring actions under both the WTO system and under other international dispute settlement mechanisms. Indeed, this is the very situation that arose in the *Chile-Swordfish* case¹³⁸⁷. The *Chile-Swordfish* case involved a dispute between several European countries and Chile regarding swordfish fisheries in the South Pacific. Chile had introduced legislation to prevent fishing vessels that were harvesting swordfish in a particular region from unloading their catch in Chilean ports. Actions were brought by the different parties to the dispute under both the WTO system and ITLOS. The European countries brought an action before the WTO Panel claiming that Chile had breached Articles V (a provision relating to freedom of transit) and XI (a provision aimed at the elimination of quantitative restrictions on products) of GATT by introducing the abovementioned trade measures. Chile brought proceedings at the ITLOS on the basis that there had been a breach of UNCLOS Articles 64¹³⁸⁸, 116-119¹³⁸⁹, and the section 300 requirement that parties act in good faith. The counter argument was that Chile had itself breached several UNCLOS provisions.¹³⁹⁰ Furthermore, the European countries argued that Chile had violated the freedom of the high seas¹³⁹¹ and the prohibition on States exerting sovereignty over the high seas.¹³⁹²

In respect of this dispute, proceedings in the two different fora were subsequently suspended. The case does, however, highlight the potential conflict between the WTO and other international institutions. If the case were to have been executed to its conclusion in both fora, there could potentially have been conflicting decisions given by the two international bodies. This would raise an interesting legal dilemma for states that were legally bound to follow two conflicting decisions of two separate international bodies. Such a possibility has clear implications for any trade restrictions introduced pursuant to CCAMLR to protect Antarctic species from IUU fishing. A reconciliation of the interaction between WTO principles and environmental issues (including those covered by MEAs) is clearly necessary to ensure that this form of conflict does not arise. One could, for example, envisage a situation of conflict that may arise if trade restrictions were adopted in respect of Antarctic krill by a WTO member state. Another member state that disputed the restrictions may bring an action under the WTO system, which could lead to a counter-action in another forum such as the ICJ or ITLOS on the grounds of a breach of a conservation instrument to which both states were parties. Accordingly, if the

¹³⁸⁷ *Case Concerning the Conservation and Sustainable Exploitation of Swordfish Stocks in the South-Eastern Pacific Ocean*, ITLOS No. 7 (2001)

¹³⁸⁸ This Article is concerned with the conservation of highly migratory species.

¹³⁸⁹ These Articles are concerned with the conservation of living resources on the high seas.

¹³⁹⁰ Chile's alleged breach was of Articles 64, 116-119 and 300.

¹³⁹¹ Article 87 of UNCLOS.

¹³⁹² Article 89 of UNCLOS.

different fora came to different decisions, the efficacy of krill trade restrictions would be diminished because of this unresolved conflict.

The administration of environmental policy and the settlement of environmental disputes concerning trade should be separated from the purely trade objectives of the WTO. This is a realistic objective because, as outlined in further detail above, the WTO itself has had advice provided to the Director-General by a WTO Consultative Board to the effect that environmental matters should be divorced from the trade concerns of the WTO. If the WTO itself is considering this course of action, then it is a very real possibility indeed. As outlined in detail above, the WTO Committee on Trade and the Environment has also recently in 2005 begun a process of consideration concerning the interaction of MEAs and the WTO system. Accordingly, the role that the WTO should play in respect of the environment is clearly a live issue within the WTO itself and there is a very real possibility of change in respect of the WTO's approach to environmentally based trade disputes.

Given the danger posed to Antarctic marine resources by IUU fishing and the difficulties of restricting such fisheries activities, trade restrictions are a necessary defensive tactic to impede these practices. Separating environmental policy from trade interests will allow the imposition of trade restrictions to aid in the conservation and management of Antarctic marine species such as krill. Such a move could also help to provide more objective hearings of trade disputes involving the environment through a completely independent international body. Given the controversy that may surround a localised or blanket krill ban in Antarctica because there is still great uncertainty concerning the effect of krill fishing on the Antarctic ecosystem, there would likely be a challenge to any trade restrictions that were introduced in respect of krill. Accordingly, it would be extremely important that a completely independent international body heard any such dispute, rather than the WTO, which has as its primary objectives the promotion of free trade principles, under the current system.

Conclusion

This thesis has concluded that the current legal regime, management and enforcement of conservation measures for the Antarctic krill are not adequate. Accordingly, it is appropriate to canvass alternative means of protecting the Antarctic krill. This chapter has examined one such alternative in the form of trade restriction that could be used to combat IUU fishing in the Antarctic. This chapter has also considered the legality of such measures under the trade principles of the WTO system.

GATT does contain several exceptions which allow parties to introduce trade restrictions provided that they do not constitute arbitrary or unjustifiable discrimination between countries or a disguised restriction on international trade. These exceptions could potentially be used to justify trade restrictions in respect of Antarctic marine species. The language of the Article XX exceptions appears to permit even trade measures that significantly restrict free trade so long as they are in accordance with the requirements of those exceptions. If trade restrictions were adopted by particular states, such as CCAMLR members, solely for the management and conservation of Antarctic species, then it is difficult to see how there would be “arbitrary” or “unjustifiable” discrimination or a disguised restriction on trade. However, the WTO Panel and Appellate body have taken a very restrictive view of these exceptions in respect of environmental issues. The WTO’s previous rulings on these environmental exceptions also suggest that CCAMLR members must have made serious efforts to negotiate with other countries before placing trade restrictions on the products of those countries.

The WTO, in the *Tuna-Dolphin* cases, also disallowed trade restrictions that were based on a production method where the relevant parties relied on one of the GATT Article XX exceptions. This paper submits that trade restrictions which were based on whether particular products were sourced from IUU fishing activities would not necessarily constitute prohibited “production process” trade measures. The *Tuna-Dolphin* cases do, however, severely restrict the application of the Article XX exceptions in respect of Antarctic species because trade restrictions cannot be applied extra-jurisdictionally. This would make it difficult to apply trade restrictions against foreign nationals in respect of high seas areas of Antarctica.

The strict interpretation by the WTO Panel/Appellate body of the Article XX exceptions shows the potential conflict between environmental issues and trade principles that exists within the WTO system. The WTO’s Committee on Trade and Environment was set up to resolve such conflict, however, to date there has been little substantive progress in that respect.

There is a huge potential for conflict between WTO rules and multilateral environmental agreements. In particular, both CITES and CCAMLR's Catch Documentation Scheme could conflict with WTO trade requirements. In respect of CCAMLR, the provisions of CCAMLR may not legally prevail over those of the WTO agreements. Furthermore, if a dispute were brought before the WTO in respect of a conflicting MEA, the WTO Panel/Appellate Body's strict stance on environmental issues in the past suggests that the dispute would be likely to be resolved in favour of the WTO principles. Furthermore, specific trade restrictions aimed at combating IUU fishing in the Antarctic may not even infringe GATT at all (depending on the type of restriction used).

The abovementioned conflict within the WTO system between environmental and trade concerns must be resolved. This paper submits that the WTO is not the appropriate body to resolve trade disputes concerning the environment because it is essentially an institution aimed at promoting free trade rather than the environment. This paper submits that Article XX of GATT should be amended to include an exception that would permit trade restrictions where they were provided for within the specific trade provisions of an MEA. Furthermore, the power to resolve trade disputes with an environmental focus should be given to another international institution such as UNCLOS. This could be done by amending the GATT, although such an amendment is unlikely in the near future.

The WTO needs to give greater recognition to environmental issues and reform to GATT is the most obvious method of achieving this objective. As discussed above in this Chapter, the WTO itself, including its Committee on Trade and the Environment as well as its governing body, is currently considering the role that the WTO should play in environmental disputes. A WTO consultative report has already raised the desirability of divorcing environmental policy from trade policy objectives, such as those that govern the WTO. Accordingly, change to the WTO's approach to environmental matters and its role in environmentally based trade disputes is very likely to change because of this current focus of the WTO on this issue. Trade restrictions can play an important part in combating IUU fishing in Antarctica and there needs to be certainty that such trade measures will not be prohibited by the WTO. In particular, this thesis concludes that trade restrictions could play a vital role in the effective implementation of an Antarctic krill fishing moratorium.

The next Chapter will also examine the WTO trade principles in the context of fishing subsidies. In particular, the issue of overcapacity in the world's fishing fleet will be discussed, together with the effect of subsidies on overcapacity and the role that the WTO can play in curbing these subsidies. An examination of the overcapacity issue is critical because of the effect that overcapacity has on IUU fishing and therefore the issue is significant to the imposition of a krill fishing moratorium.

CHAPTER 7: FISHING OVERCAPACITY, SUBSIDIES AND THE WTO SYSTEM

Introduction

Illegal, Unreported and Unregulated (“IUU”) fishing is a significant problem hindering the effective implementation of fisheries conservation measures. This phenomenon has caused enormous difficulties for many international fisheries management regimes. Overfishing of the world’s oceans has caused many fishers to turn their attention to previously unexploited species and alternative fishing grounds, such as the Antarctic, including species which have not, in the past, been as heavily exploited, such as the Antarctic krill.

The overcapacity of the world’s fishing fleet has been touted as a primary cause of overfishing, both in terms of the number of vessels and the capacity of those vessels to catch fish. This is particularly alarming for the Southern Ocean region if excess fleet capacity is moved to that area because it will mean a much greater focus by fishers on Antarctic species, such as krill which have not yet been exploited at high levels in relation to other fish species around the world. The purpose of this chapter is to examine the overcapacity problem in the context of IUU fishing in the Antarctic and the impact of overcapacity on Antarctic krill. An examination of the overcapacity issue is critical because of the risk that excess capacity will be used to increase harvests of alternative species such as the Antarctic krill.

Part I of this chapter will briefly look at the overcapacity problem. Firstly, this part will examine what is meant by fishing capacity and the problem that excess capacity can cause. An examination of the links between IUU fishing and overcapacity in the Antarctic region and the Antarctic krill in particular will follow. Finally, this part will look at the current status of the world’s fishing fleet and whether fleet overcapacity is still and will continue to be an issue for marine species in the Antarctic.

Part II of this chapter will then outline several potential means of alleviating fleet overcapacity and whether any of these solutions are likely to have a significant impact. In particular, potential solutions such as restricting access to fisheries resources; restrictions placed on fishing gear and vessels; and vessel buyback schemes will be examined. The impediments to successfully implementing these solutions will also be analysed.

Several international instruments aimed at reducing fleet overcapacity will be highlighted in Part III of this chapter. The efficacy of these instruments in combating the overcapacity problem will be briefly examined together with recent efforts by the UN General Assembly to focus greater attention on the problem.

One of the potential causes of fleet overcapacity is the maintenance of fishing subsidies by national governments. The nature of these fishing subsidies will be examined in Part IV of this chapter together with the problems they may cause in terms of increasing capacity and therefore the potential for harm to the Antarctic krill from such increased capacity. The question of whether any fishing subsidies at all should be permitted will also be addressed.

Finally, this chapter will examine in Part V the status of fishing subsidies under the World Trade Organization (“WTO”) system. In particular, the status of fishing subsidies under the WTO system will be analysed to determine whether the maintenance of such subsidies is permissible. Furthermore, there will also be an examination of the appropriateness of the WTO as an institution regulating fishing subsidies together with the need for additional measures to those currently existing in WTO agreements in order to prevent overcapacity and its corresponding potential effects on krill fishery.

I. Fishing Overcapacity – The problem defined.

Fishing capacity is defined by the UN Food and Agriculture Organisation (“FAO”) as the ability of a fleet to catch fish.¹³⁹³ The actual practical measurement of fleet fishing capacity is difficult because of the whole variety of factors that it depends on. Fishing capacity can be measured by examining the number and size of vessels (i.e. Gross Tonnage), the type of equipment used and the number of days the vessels operate each year.¹³⁹⁴ Other countries have used more complex measures to define fleet fishing capacity which combine measures such as vessel length and tonnage and engine power and the type of fishing gear used.¹³⁹⁵ The problem of fishing fleet overcapacity arises when there is a difference between the maximum possible fisheries output and an optimum level of output.¹³⁹⁶

The question therefore is why overcapacity is a problem at all. According to the FAO, overcapacity of the world’s fishing fleet can lead to overfishing of species that are currently exploited to maximum level. Even more concerning is the potential for fleet overcapacity to lead to IUU fishing. A recent Consultation to the FAO noted that IUU fishing is linked to fishing overcapacity.¹³⁹⁷ This is of particular concern in respect of the Antarctic krill because of the extreme problems of IUU fishing in the Southern Ocean that have been highlighted throughout this thesis. In particular, the lack of a strong legal regime governing Southern Ocean fisheries combined with the difficulties of enforcing conservation measures in the Southern Ocean make IUU fishing a vital issue in respect of Antarctic krill conservation. If fishing overcapacity is a contributing factor to IUU fishing in Antarctica, then this issue needs to be addressed as part of any long-term conservation plan for the Antarctic krill. The specific effect that the overcapacity issue could have in respect of the Antarctic, and in particular the Antarctic krill, will now be considered.

¹³⁹³ UN FAO website, <http://www.fao.org>

¹³⁹⁴ *Ibid*

¹³⁹⁵ Paragraphs 13 and 14, Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent, Deter and Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2004, *Implementation of the International Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review and Main Issues*

¹³⁹⁶ Newby, J., Gooday, P. and Elliston, L. 2004. Structural Adjustment in Australian Fisheries. *Report prepared for the Fisheries Resources Research Fund* at 11

¹³⁹⁷ FAO Fisheries Report No. 752. *Report of the Technical Consultation on the Use of Subsidies in the Fisheries Sector*, Rome, 30 June – 2 July 2004 at 3

The problem of fleet overcapacity is especially concerning in high seas areas such as those in the Southern Ocean. The FAO reports that less than 50% of countries are exerting effective control over flag vessels fishing on the high seas.¹³⁹⁸

Clearly, overcapacity of the world's fishing fleet may result in fishing vessels focusing their attention on more remote, high seas, fishing grounds such as the Southern Ocean. A shift of this overcapacity to the Antarctic is especially worrying because areas where open fisheries take place (i.e. fisheries where there are no restrictions) cause fishing effort to increase until the industry cannot provide any more profit to fishers.¹³⁹⁹ As outlined in Chapter 1 of this thesis, many of the major areas of high krill concentration in the Antarctic are in high seas zones. Accordingly, flag vessels of non-CCAMLR member states have a huge opportunity to utilise their excess fleet capacity in these high seas zones where that capacity can be used to exploit the Antarctic krill with little regulatory barriers.

Although Antarctic fisheries are regulated to some extent under CCAMLR, there are many enforcement difficulties because of the geographic isolation and the lack of a strong legal regime governing the Southern Ocean. Weak regulatory and enforcement mechanisms make the Southern Ocean an attractive alternative fishing ground. Overexploitation of fish stocks has led to a shift in fisheries towards lower quality fish stocks as fish numbers decrease.¹⁴⁰⁰ When existing commercial target species become overexploited, fishers must turn to lower quality fish stocks or species lower down the food chain, such as the Antarctic krill. These species would otherwise receive less interest from fishers because they provide lower economic returns. This is particularly pertinent to the Antarctic krill because, as described in Chapter 1, krill have not previously been exploited at high levels because of the high costs involved in processing and storing krill and the lack of a high demand for krill products. However, Chapter 1 has clearly demonstrated that economic returns from krill are improving, and are likely to improve more in the future, because of improvements in harvesting and processing technology for the Antarctic krill and increased demand for krill products in industries such as aquaculture and pharmaceuticals.

¹³⁹⁸ UN FAO website, <http://www.fao.org>

¹³⁹⁹ Newby, J., Gooday, P. and Elliston, L. *Supra*, fn 1442, 10

¹⁴⁰⁰ Stone, C. 1997. Too Many Fishing Boats, Too Few Fish: Can Trade Laws Trim Subsidies and Restore the Balance in Global Fisheries? *Ecology Law Quarterly*, Vol 24: 505-542 at 508

The greater demand for krill products in aquaculture discussed in Chapter 1, together with increased world demand for aquaculture, makes the overcapacity issue increasingly pertinent to krill in particular because a rise in economic benefits from the krill fishery provides a huge incentive for fishers to turn their excess capacity towards this weakly regulated fishery. Furthermore, the examples cited in Chapter 1 of recent improvements in krill harvesting and processing technology improve the harvesting capacity of krill fishing vessels. Accordingly, this compounds the fishing overcapacity problem specifically in respect of the Antarctic krill. Improving economic returns from krill fishery resulting from greater demand for new krill products and cost reductions due to improved technology provides fishers elsewhere in the world with an incentive to relocate excess fleet capacity to the Southern Ocean to harvest Antarctic krill.

Status of the World's Fishing Fleet

The world's fishing fleet has not increased at the same rapid rate in recent times as it did several decades ago. In Latin America, for example, between the early nineteen seventies and mid nineteen nineties, the capacity of the fishing fleet increased from 165,000 Gross Tonnes to 1.4 million Gross Tonnes.¹⁴⁰¹ However, the number of new vessels being built throughout the world is now down to an average of 300 per year from 2,500 per year in the 1980s.¹⁴⁰² The FAO believes that the size of the world's fishing fleet has stabilised since 1992 and for OECD countries it is actually declining.¹⁴⁰³ However, the FAO believes that overcapacity is still present in many fishing industries around the world.¹⁴⁰⁴

¹⁴⁰¹ Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent, Deter and Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2004, *International Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review of Progress in Latin America and the Caribbean* at 5

¹⁴⁰² UN FAO website, <http://www.fao.org>

¹⁴⁰³ *Ibid*

¹⁴⁰⁴ *Ibid*

Furthermore, a stabilisation in the number of vessels is quite deceptive because greater efficiency including new technology has countered the fishing capacity lost through the reduction in the number of vessels.¹⁴⁰⁵ Use of technology such as Global Positioning Systems, fish detecting equipment, aerial co-ordination etc allow fishing fleets to increase their capacity by reducing inefficiencies through use of fuel and search time.¹⁴⁰⁶ A reduction in vessel numbers is also offset by a replacement of old vessels with new ships with higher harvesting capacity and more modern harvesting technology.¹⁴⁰⁷

According to the OECD, significant funds are being spent on vessel modernisation and the development of new technologies.¹⁴⁰⁸ As discussed in the preceding section, there are clear examples of increased funds being put towards improving krill harvesting and processing technology. Krill fishing capacity will increase as a consequence, which makes the overcapacity problem a particular issue for krill. This is particularly the case because excess capacity in the form of excess vessels, as well as excess capacity deriving from modernised vessels with higher capacity, is likely to be targeted at fisheries which are weakly regulated. Antarctic krill fishing is a prime target because krill have not previously been exploited at high levels and economic returns from the fishery are now likely to be much greater, which provides an incentive to move excess capacity into this fishery which is poorly regulated and, in any event, is difficult to regulate because of the geographical isolation of the Southern Ocean. Accordingly, fishing fleet overcapacity is still very much a problem for world fisheries such as the Antarctic krill. The first issue to consider is the reason why fleet overcapacity arises.

¹⁴⁰⁵ *Ibid*

¹⁴⁰⁶ Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent, Deter and Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2004, *International Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review of Progress in Latin America and the Caribbean* at 11

¹⁴⁰⁷ *Ibid*, 12

¹⁴⁰⁸ Cox, A. 2002. OECD Work on Defining and Measuring Subsidies in Fisheries. *OECD Workshop on Environmentally Harmful Subsidies*, Paris at 12

II. Alleviating the Overcapacity Problem

The overfishing problem that overcapacity is partly responsible for, makes it crucial that world fishing capacity is reduced. In particular, a reduction in fleet capacity would reduce the risk of excess fleet capacity being aimed at the Antarctic krill fishery, particularly in light of the enhanced economic incentives for excess capacity to be used to harvest krill. Moves have already been made by some States, such as Australia, to reduce capacity, however, efforts need to be increased in this respect. The types of measures taken by States will be discussed further below. About a quarter of States that responded to a recent FAO survey said that they had implemented a capacity reduction programme, although about half out of the 80 States that responded to the survey said that intended to do so in the next 5 years.¹⁴⁰⁹ Greater efforts also need to be made to manage existing fleet capacity to ensure that advances in technology do not lead to a recurrence of the capacity problem. In particular, advances in krill processing technology will lead to a greater capacity for individual vessels to harvest krill in the Southern Ocean. If efforts are not made to manage existing fleet capacity, then there is a real risk that excess capacity that currently exists in other regions of the world could be redirected towards new fisheries like krill and add to the extra capacity currently being created in that industry by new krill harvesting technologies. Two thirds of States that responded to a recent FAO survey said that they had implemented or intended to develop a capacity management policy.¹⁴¹⁰ The purpose of this section is to examine some of the methods that states have adopted to reduce capacity.

Restricted Access

One method of reducing fleet capacity is to place restrictions on the number of vessels that can access a particular fish stock. This is in contrast to open fishing (i.e. fisheries where there are no restrictions) which is seen as contributing to overcapacity in the Asian region for example.¹⁴¹¹ Accordingly, restricting access to particular fisheries may address the capacity problem. The FAO believes that the only method by which long-term reductions in overcapacity can be

¹⁴⁰⁹ Paragraph 23, Technical Consultation to Review Progress and Promote the Full Implementation of the IF Deter and Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-25 June 2000, *Implementation of the International Plan of Action for the Management of Fishing Capacity (IPOA-Capacity) Main Issues*.

¹⁴¹⁰ *Ibid*, Paragraph 20

¹⁴¹¹ Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2000, *Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review of Progress in Southeast Asia*.

achieved is by limiting the number of fishers who have access to fish stocks.¹⁴¹² A recent FAO survey has shown that most of the 80 countries that responded have put limits on the number of new vessels entering the fishing industry.¹⁴¹³ At its simplest, restricted access involves limiting the number of vessels accessing fisheries resources through a licensing system. A more complicated form involves allocating a particular catch limit to a target species in a specified fishing area. A global catch limit for a target species may not, however, eliminate overcapacity. Capacity may not be utilised at its maximum potential because fishers will simply be required to stop fishing once the catch limit is reached.¹⁴¹⁴ This effectively causes fishers to “race” to catch as much as possible until the limit is reached. Accordingly, such a system can still result in market inefficiencies and may not create an equitable outcome for fishers.

CCAMLR currently does have such a global system of precautionary catch limits in place in respect of the Antarctic krill in particular CCAMLR “zones”. These are very large areas of the main CCAMLR zone in which certain precautionary catch limits are globally set for a particular fishing season. As discussed above, such a system does not necessarily permit fishing to be utilised to maximum capacity and so it does not reduce the risk of overcapacity in the Southern Ocean. The FAO’s view that overcapacity reductions can be achieved by restricting the number of fishers that have access to particular fisheries in particular areas could be further implemented under CCAMLR in respect of krill. CCAMLR could release conservation measures to licence the number of krill fishing vessels. Such a measure may reduce the risk arising from increased krill fishing capacity through new krill fishing technology e.g. if there are only a certain number of vessels that are permitted to access krill fishery, less funds will be invested in improving krill harvesting technology which has the potential to boost krill fishing capacity. The difficulty with any system of catch limits imposed under CCAMLR is, of course, that the catch limits only apply to flag vessels of CCAMLR member states. Accordingly, the CCAMLR system can never ensure that excess capacity does not damage krill. Excess capacity in localised areas is particularly harmful in respect of krill because, as highlighted in Chapter 1, krill fishing can have a particularly detrimental effect where it is localised because of localised populations of dependent species.

¹⁴¹² UN FAO website, <http://www.fao.org>

¹⁴¹³ *Ibid*

¹⁴¹⁴ Newby, J., Gooday, P. and Elliston, L. *Supra*, fn 1442, 14

A more complicated means of restricting access is to split up the global catch limit into individual transferable quotas ("ITQs") which can be allocated to individual fishers and would give them a right to catch a particular amount of fish. Individual quota systems have been introduced in a number of European Union ("EU") countries such as the UK.¹⁴¹⁵ A system of individual transferable quotas is also being introduced in some Latin American countries.¹⁴¹⁶ For example, Chile has introduced such a system. These ITQs are a form of property right and can be freely transferred between fishers.¹⁴¹⁷ This practice essentially results in an open market for ITQs and supply and demand will determine the price paid by a fisher for an ITQ. Two of the potential benefits of this form of quota are that:

- It can reduce fishing capacity by permitting fishers to sell their fishing rights embodied in the ITQs; and
- It gives fishers an incentive to conserve fish resources because of the long-term economic nature of ITQs.¹⁴¹⁸

ITQs can also benefit the fishing industry by increasing the efficiency of the industry if quotas are transferred from inefficient fishers to more efficient ones.¹⁴¹⁹

One of the criticisms of this type of system is that it gives an incentive to consolidate fishing capacity and reduces the participation of small-scale fishers in the industry.¹⁴²⁰ However, there are also benefits to having a concentrated fishing industry. If the industry is concentrated in the hands of a few major players such as large corporations, this is likely to give rise to greater efficiencies through economies of scope and scale. Accordingly, the decreased costs of fishing for these legitimate large players could make it uneconomical for some IUU fishers to compete in the industry. Consolidation of the fishing industry may also create some efficiencies in regulating the industry because it may be easier to regulate a small number of large scale fishers rather than a multitude of small scale fishers. Although, if the fishing industry became *too*

¹⁴¹⁵ Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2000. *Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review of Progress in Europe* at 1416

¹⁴¹⁶ Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2000. *Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review of Progress in Latin America Caribbean* at 13

¹⁴¹⁷ Gutreuter, J. 1999. Quota Allocation Methods in the Management of International Marine Fisheries: Future Implications. *Tulane Environmental Law Journal*, Vol 12: 479-496 at 486

¹⁴¹⁸ *Ibid*, 487

¹⁴¹⁹ Newby, J., Gooday, P. and Elliston, L. *Supra*, fn 1442, 15

¹⁴²⁰ Gutreuter, J. *Supra*, fn 1463, 487

concentrated there may be issues relating to reduced market competition and the possibility of uncompetitive behaviour such as price fixing.¹⁴²¹

Iceland uses a system of ITQs and has specific mechanisms in place to prevent a small number of entities from controlling the fishing industry through ownership of a large percentage of ITQs. In particular, a company is prohibited from holding more than 12% of the value of the combined quotas for all species with total allowable catch limits.¹⁴²² Furthermore, certain limits have been introduced for each major fish species on the percentage of the total allowable catch that can be held by a company or group of associated companies. These measures try to prevent ownership of ITQs becoming too concentrated, which would reduce competition in the fishing industry.

CCAMLR currently requires member States to licence their vessels fishing in the Convention Area. An aggregate total allowable catch for each fishery is used to manage fish stocks. Each member is required to report catch taken to CCAMLR at designated reporting times. CCAMLR then notifies members of the total aggregate catch taken by members and provides an estimate to members of the date when total allowable catch is likely to be exceeded.¹⁴²³ When total allowable catch is exceeded the fishery is closed for the season. In the North Atlantic, the Northeast Atlantic Fisheries Commission is also setting individual quotas for high seas areas.¹⁴²⁴ There is an issue as to whether individual quotas would be appropriate in high seas areas of the Southern Ocean for the Antarctic krill. One potential problem with ITQs in the Southern Ocean is that a large proportion of ITQs may end up with fishers from a small number of countries. This would reduce the incentive for other countries to finance enforcement efforts in the Southern Ocean if their fishers were receiving no benefit from ITQs. This is particularly crucial for the Antarctic krill because a major proportion of areas of high krill concentration in Antarctica constitute high seas areas.

¹⁴²¹ However, national competition legislation such as the Australian *Trade Practices Act* should be able to curb these problems somewhat. It should also be noted that the argument outlined in this paragraph is merely a hypothesis which would need to be subject to further economic analysis to determine its validity.

¹⁴²² UN FAO website, <http://www.fao.org>

¹⁴²³ CCAMLR *Conservation Measure 23-01 (2004)*

¹⁴²⁴ Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 200. *Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review of Progress in Europe at*

However, there may be an incentive for the countries benefiting from the ITQs to invest more money in enforcement and for their fishers to provide more help to authorities in reporting IUU fishing. If some form of krill fishing ban were not introduced, ITQs could be used as an incentive for states to invest more in mechanisms to protect localised krill populations and for fishers to aid the prevention of IUU fishing in such localised areas. However, there would potentially still be inadequate financial resources made available for enforcement if only a few countries were actively involved. One possible way to resolve this problem would be to issue a set number of ITQs to each country and then permit those particular ITQs to be on sold to flag vessels of that same country. Although this would solve the problem of a small number of countries holding all the ITQs, it would not allow a totally free market for ITQs in the Southern Ocean and would create some market inefficiencies.

No Fish Zones

Another means of restricting capacity is to create zones where no fishing is permitted, such as localised fishing bans in Antarctica. There has been some research suggesting that the establishment of marine reserves can actually benefit fishers by increasing economic returns.¹⁴²⁵ Accordingly, the creation of localised no-fishing zones in the Antarctic could benefit Antarctic species by increasing economic returns to legitimate fishers (although the risk is that IUU fishers would also benefit from increased economic returns).

What are no-fish zones?

As mentioned, no-fish zones are areas where fishing or fishing of certain species is not permitted. No-fish zones are really a sub-set of “marine protected areas” which are areas that are devoted to the protection of biological diversity and of natural resources in general.¹⁴²⁶ Marine protected areas do not just include areas of open ocean and also include other marine habitats such as marsh areas.¹⁴²⁷ Accordingly, in the case of the Antarctic krill, marine protected areas could include areas close to the sea ice where krill breed.

¹⁴²⁵ Newby, J., Gooday, P. and Elliston, L. *Supra*, fn 1442, 13

¹⁴²⁶ See, for example, Australian Department of Environment and Heritage website, <http://www.deh.gov.au/coasts/mpa>

¹⁴²⁷ See, for example, Australian Department of Environment and Heritage website, <http://www.deh.gov.au/coasts/mpa>

There are several varieties of marine protected areas, namely:

- Areas where no resource exploitation is permitted and are inaccessible to humans;
- Areas where no resource exploitation is permitted; and
- Areas which provide a controlled environment for the sustainable use of natural resources.¹⁴²⁸

The World Conservation Union (“IUCN”) further categorises marine protected areas according to their usage as follows:

Marine Protected Areas

Marine Protected Area Category	Usage
Strict nature reserve	Managed primarily for scientific research or environmental monitoring.
Wilderness area	Protected and managed to preserve its unmodified condition.
National park	Protected and managed to preserve its natural condition.
Natural monument	Protected and managed to preserve its natural or cultural features
Habitat/species management area	Managed primarily, including (if necessary) through active intervention, to ensure the maintenance of habitats or to meet the requirements of specific species.
Protected Landscape/seascape	Managed to safeguard the integrity of the traditional interactions between people and nature.
Managed resource protected	Managed to ensure long-term

¹⁴²⁸ This definition is based on the World Conservation Union concepts concerning marine protected areas, Australian Department of Environment and Heritage website, <http://www.deh.gov.au/coasts/mpa>

- Enhance settlement/recruitment

HABITAT 'QUALITY' (secondary medium- to long-term benefits)

- Protect and allows recovery of 'natural' habitat characteristics
 - Increase biodiversity
 - Protect against loss of keystone species, and cascading or indirect effects of fishing on community structure
 - Re-establish 'natural' community composition, trophic structure, food webs, and ecosystem processes
 - Improve amenities and resources for other non-fisheries sectors of society
- species/stocks, or the agencies responsible for managing those stocks/species and regulating those fisheries.

Source: The above is a reproduction of a table in Ward, T., Heinemann, D. and Evans, N. December 2001. *The Role of Marine Reserves as Fisheries Management Tools: A Review of Concepts, Evidence and International Experience*. Report to the Australian Government, Department of Agriculture, Fisheries and Forestry at 23.

In respect of the above, a no-fish zone in particular areas for krill could simply be integrated as part of the traditional CCAMLR control mechanisms for regulating fisheries.¹⁴³¹ Such zones also have the benefit of potentially providing higher fishing profits to individual vessel operators from increased availability and size/quality of fish.¹⁴³² Overfished species are usually the most economically valuable ones.¹⁴³³ In respect of krill, maintenance of the level of krill recruitment by the use of no-fish zones could help to maintain the yields of other marine stocks because of krill's vital role in the food web. Protecting the yields of fish stocks will help to maintain the economic returns for legitimate Southern Ocean fishers in respect of these stocks with a higher economic value.

¹⁴³¹ Ward, T., Heinemann, D. and Evans, N. December 2001. *The Role of Marine Reserves as Fisheries Management Tools: A Review of Concepts, Evidence and International Experience*. Report to the Australian Government, Department of Agriculture, Fisheries and Forestry at 23.

¹⁴³² Ward, T., Heinemann, D. and Evans, N. December 2001. *The Role of Marine Reserves as Fisheries Management Tools: A Review of Concepts, Evidence and International Experience*. Report to the Australian Government, Department of Agriculture, Fisheries and Forestry at 23.

¹⁴³³ Ward, T., Heinemann, D. and Evans, N. December 2001. *The Role of Marine Reserves as Fisheries Management Tools: A Review of Concepts, Evidence and International Experience*. Report to the Australian Government, Department of Agriculture, Fisheries and Forestry at 23.

Marine protected areas may also be able to assist surrounding areas of the ocean which are not protected by allowing emigration of protected species out of the marine protected area.¹⁴³⁴ The following illustrates some of the potential benefits of marine protected areas that occur outside the area itself:

Potential Benefits of Marine Protected Areas – Outside the Areas

SPILOVER (direct medium-term benefits)

- Result in net emigration of juveniles and adults from reserves
- Increase catches of larger, more valuable individuals near reserves
- Increase abundance of trophy-sized fish near reserves

LARVAL EXPORT (direct medium-term benefits)

- Result in net export of eggs and/or larvae to fished areas
- Enhance recruitment to fisheries (i.e. fished stocks) outside reserves

FISHERIES (indirect medium to long-term benefits)

- Increased catches, fisheries yields, profits
- Decreased variability in catches, fisheries yields, profits
- Reduce conflict between fisheries/fishers
- Reduce conflict between different users
- Maintain diversity of fishing opportunities
- Sustain fisheries for vulnerable species
- Increase likelihood that existing fishing effort levels are sustainable
- Increase long-term stability of fisheries

Source: The above is a reproduction of a table in Ward, T., Heinemann, D. and Evans, N. December 2001. *The Role of Marine Reserves as Fisheries Management Tools: A Review of Concepts, Evidence and International Experience*. Report to the Australian Government, Department of Agriculture, Fisheries and Forestry at 26.

¹⁴³⁴ Australian Department of Environment and Heritage website, <http://www.deh.gov.au/coasts/mpa>

In respect of the Antarctic krill, marine protected zones could provide krill to export to non-protected areas and enhance the viability of dependent species.

What evidence is there to support no-fish zones?

Marine protected areas have been implemented in many areas around the world including Australia (eg Great Australian Bight protected area) and New Zealand (eg no-fish zone Long Island-Kokomohua Marine Reserve).¹⁴³⁵ There is a question, however, as to whether such marine protected areas are actually effective conservation mechanisms. If there is no evidence to support their effectiveness, then there may be less weight in respect of arguing for krill no-fish zones in the Southern Ocean.

There is a substantial amount of evidence which shows that marine protected areas can be effective in respect of reef fish populations.¹⁴³⁶ Furthermore, there is evidence to show that there is increased abundance of species at which the marine protected areas are targeted, as well as increases in the abundance of non-target species.¹⁴³⁷ However, there have not been a great number of independent studies conducted before and after the introduction of marine protected areas that are introduced in open water ecosystems.¹⁴³⁸ Accordingly, there is not a great deal of substantive evidence to show that marine protected areas will be highly effective in open ocean areas or non-reef coastal areas. This makes it difficult to categorically state that marine protected areas in respect of the Antarctic krill will definitely benefit krill and dependent species. However, as discussed, there is evidence that marine protected areas have been effective in certain ecosystems where substantial studies have been conducted in that respect. If a substantial body of evidence does not exist in respect of the specific types of ecosystems in question, this should not prevent marine protected areas/no-fish zones being implemented in respect of the Antarctic krill where those areas have been shown to be effective in other ecosystems.

¹⁴³⁵ Australian Department of Environment and Heritage website, <http://www.deh.gov.au/coasts/mpa>

¹⁴³⁶ Ward, T., Heinemann, D. and Evans, N. December 2001. *The Role of Marine Reserves as Fisheries Management Tools: A Review of Concepts, Evidence and International Experience*. Report to the Australian Government, Department of Agriculture, Fisheries and Forestry at 89.

¹⁴³⁷ *Ibid*, 90.

¹⁴³⁸ *Ibid*, 89-92.

Resource fees

The Icelandic government introduced a resource fee in 2004 based on the net profit generated by each fishing vessel. The resource fee is imposed on gross profit, calculated on the basis of earnings before interest, taxes, depreciation and amortisation. In particular, the fee is calculated by reference to the total value of landed catch less labour costs, fuel costs and other operating costs.¹⁴³⁹ The resource fee is aimed at fishing rights allocation. In addition, quota transfer fees are paid when ITQs are traded. The resource fee will increase the cost of fishing and, consequently, is likely to reduce capacity by forcing inefficient vessels out of the industry.¹⁴⁴⁰ In a similar fashion, the Australian government also imposes levies to recover costs of management services in respect of the allocation of fishing rights through ITQs.¹⁴⁴¹ In respect of CCAMLR obligations, CCAMLR members could introduce such resource fees on vessels licenced to fish in the Southern Ocean, thus increasing the costs of these fisheries. In particular, fees imposed specifically on any krill fishery vessels would counter the improved economic returns from the fishery due to increased demand and, accordingly, act as a disincentive for excess fleet capacity to move into the fishery.

Gear restrictions

Another method that has been used to reduce fleet capacity has been through the use of gear restrictions. Effectively, this means that vessels are restricted in the quantity and type of fishing gear that they can carry (eg restrictions on the size of nets that can be used). The aim of these restrictions is to reduce the amount of fish that a particular vessel can catch over a period of time. The EU has implemented a policy of restricting the type and amount of fishing gear used on vessels.¹⁴⁴² Gear reduction programmes have also been used in Australia as a means of reducing overcapacity (eg reducing net length).¹⁴⁴³ However, there have been some criticisms concerning the effectiveness of such measures.¹⁴⁴⁴ One could, however, see the merit in introducing such restrictions in respect of krill fishing vessels. Because improvements in krill harvesting technology will increase harvesting capacity, the use of gear restrictions could be used to ensure

¹⁴³⁹ UN FAO website, <http://www.fao.org>

¹⁴⁴⁰ Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 200. *Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review of Progress in Europe* at

¹⁴⁴¹ Australian Fisheries Management Authority website, <http://www.afma.gov.au>

¹⁴⁴² *Ibid*, 2

¹⁴⁴³ Newby, J., Gooday, P. and Elliston, L. *Supra*, fn 1442, 15

¹⁴⁴⁴ Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 200. *Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review of Progress in Latin America and the Caribbean* at 13

that increased capacity of individual fishing vessels does not result in an increased risk to localised krill populations in which a vessel operates.

Boat replacement policy

The introduction of a national boat replacement policy is another way of trying to reduce fleet capacity. The EU has attempted to reduce fleet capacity by placing restrictions on the characteristics (e.g. size) of replacement vessels.¹⁴⁴⁵ The effectiveness of such measures is not yet known.¹⁴⁴⁶

Vessels buybacks

Another method used to reduce fleet capacity is for a government to buy-back fishing vessels or to make direct payments to fishers to leave the industry.¹⁴⁴⁷ Fishing vessel buy-back schemes to restrict vessel numbers like restrictions on the number of days-at-sea, have been used by several EU countries to address overcapacity.¹⁴⁴⁸ Similarly, China recently outlined a buyback system aimed at reducing its fleet by 7% (or 30,000 ships).¹⁴⁴⁹ Vessel buyback schemes can produce long term economic benefits to fishers if catch limits are in place in respect of the relevant fishery.¹⁴⁵⁰ However, reducing the size of the world fleet may not necessarily cause a reduction in capacity due to better fish finding equipment and more efficient methods of catching fish.¹⁴⁵¹

¹⁴⁴⁵ Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2000. *Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review of Progress in Europe* at

¹⁴⁴⁶ Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2000. *Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review of Progress in Latin America and the Caribbean* at 13

¹⁴⁴⁷ Cox, A. *Supra*, fn 1454, 11

¹⁴⁴⁸ Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2000. *Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review of Progress in Europe* at

¹⁴⁴⁹ UN FAO website, <http://www.fao.org>

¹⁴⁵⁰ Newby, J., Gooday, P. and Elliston, L. *Supra*, fn 1442, 17

¹⁴⁵¹ UN FAO website, <http://www.fao.org>

There is a risk that vessel buy-back systems could result in greater financial investment in existing fishing vessels to improve capacity or money received through such programmes could be used to purchase new vessels.¹⁴⁵² In the past there have also been problems with vessel buy-back schemes permitting the export of decommissioned vessels to third party States.¹⁴⁵³ This simply moved fishing capacity to another region without eliminating it. The EU fishing subsidy programme only permitted exports of decommissioned vessels to third party countries up until December 2004.¹⁴⁵⁴ This problem with fleet capacity being shifted to other regions and the reinvestment of funds into remaining fishing vessels can negate the benefits of a buyback programme. This is of particular concern if decommissioned vessels are redeployed on the high seas as stateless vessels or as flag vessels of States with poor control over their fishing fleets.

Some commentators believe that buyback programmes should be implemented to support a strong fisheries management regime and simply buying back vessels per se may not provide tangible benefits.¹⁴⁵⁵ Accordingly, a vessel buyback system alone may not be an appropriate mechanism for CCAMLR members to reduce any danger that overcapacity poses to fisheries in the CCAMLR zone, particularly in respect of the Antarctic krill. This thesis submits that the problem with IUU fishing in the zone is a greater threat than any fishing overcapacity that CCAMLR members may have in their national fleets and more financial resources should be directed towards increasing the level of enforcement in the Southern Ocean rather than on directing significant funds towards capacity reduction measures.

¹⁴⁵² Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2000. *Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review of Progress in Southeast*

¹⁴⁵³ Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2000. *Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review of Progress in Europe* at

¹⁴⁵⁴ *Ibid*

¹⁴⁵⁵ Newby, J., Gooday, P. and Elliston, L. *Supra*, fn 1442, 20

Free Market Capacity Reduction

An alternative to introducing specific measures to reduce fleet capacity is to simply remove all government subsidies and intervention and allow market forces to determine the optimum level of fleet capacity. Key players in the fishing industry in Latin America, for example, believe that this overcapacity is something that should be rectified by market forces rather than government regulation.¹⁴⁵⁶ However, arguably, the right course of action would not be to leave capacity reduction up to free market forces. Overfishing is a problem affecting world fisheries resources at the current time and there are no guarantees that leaving capacity reduction up to the free market would deliver results in a timely fashion. Such a proposal is particularly concerning to krill because of the potential for market forces to have a significant impact on krill industry. Greater demand for new krill products, and cost reductions through improved technology provide an incentive, in an unregulated market, for excess fishing capacity to be turned towards krill fishing. This is particularly concerning given that new technology is already increasing vessel capacity in the fishery. Simply leaving the world fleet overcapacity problem up to market forces would not provide an adequate solution and would enhance the risk that the Antarctic ecosystem could be adversely affected by excess capacity.

Problems with capacity reduction programmes

There are several impediments to States implementing capacity reduction programmes. For example, the provision of subsidies to fishers can cause those fishers to expect ongoing government funding which can impede the reform of fisheries management.¹⁴⁵⁷ The FAO has also identified the following major problems with capacity reduction efforts in a recent survey dealing with overcapacity:

- Difficulties in finding alternative employment for displaced fishers;
- Pressures from the fishing industry to maintain capacity;
- Problems in effectively monitoring compliance with capacity reduction measures; and

¹⁴⁵⁶ Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2000. *Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review of Progress in Latin America Caribbean* at 11

¹⁴⁵⁷ Cox, A. *Supra*, fn 1454, 14

- Lack of technical capabilities to research, develop and implement capacity management plans.¹⁴⁵⁸

The Australian government has recently announced a massive scheme to buy back Australian fishing licences in respect of overexploited species.¹⁴⁵⁹ Part of this scheme is aimed at minimising the impact from the types of problem outlined above. In particular, money is to be spent on helping fishermen to retrain and seek new jobs; to restructure businesses related to the fishing industry such as fish processors; and to help fishing related businesses obtain professional advice about their options concerning the buy back scheme. These measures are likely to reduce the impact of the buy back scheme on people involved in the fishing industry and such measures should be adopted for buy back schemes introduced by other states.

The OECD has identified the export of fishing capacity to third party countries and the high seas as one of the problems with governments introducing capacity reduction programmes.¹⁴⁶⁰ Similarly, the FAO has found in a recent study that there has been a reduction in fishing capacity in some countries due to fishing vessels relocating to foreign countries or taking part in high seas fisheries.¹⁴⁶¹ Clearly, this will not reduce worldwide overcapacity and it poses a risk to Antarctic krill which are mainly concentrated in high seas areas of the Southern Ocean. Even if vessels are not relocated to other countries there can also be problems with higher harvesting capacity being introduced on vessels and also increasing capacity due to advances in technology.¹⁴⁶² As outlined, increasing capacity on krill harvesting vessels due to technology advances is likely to occur in respect of krill fishery. Accordingly, the biggest threat to Antarctic krill and other marine stocks in the Southern Ocean from capacity reduction programmes would be the export of fishing vessels to high seas areas of the Antarctic and the subsequent use of those vessels in krill fishing industry because krill are not currently being exploited at high levels.

¹⁴⁵⁸ Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2000. *of the International Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review and A*

¹⁴⁵⁹ The Australian government has announced a total package of \$220 million in respect of this buy back scheme. *Fisheries crisis plan to hit prices*, the Age newspaper, 24 November 2005. *\$220 to secure Australia's fishing future*, Media Release and attachment by Senator Ian McDonald, Australian Minister for Fisheries, Forestry and Conservation, 23 November 2005.

¹⁴⁶⁰ Cox, A. *Supra*, fn 1454, 12

¹⁴⁶¹ UN FAO website, <http://www.fao.org>

¹⁴⁶² Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2000. *Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review of Progress in Latin Ame Caribbean* at 12

Furthermore, this thesis submits that any new capacity reduction programmes introduced by CCAMLR members that were aimed specifically at protecting Antarctic fisheries would not be appropriate because CCAMLR members are already required to authorise their vessels to fish in the Convention Area and they could reduce capacity in that Area by reducing the number of authorisations. This would, however, be unlikely to put any crimp on increases in krill harvest numbers or ecosystem threats in respect of local krill populations unless the authorisation limits applied specifically in respect of krill fishing.

The FAO supports the view expressed above and believes that the only method by which long-term reductions in overcapacity can be achieved is by limiting the number of fishers who have access to fish stocks.¹⁴⁶³ Similarly, some other commentators are of the view that any government subsidies aimed at reducing fishing capacity need to be supported by a strong management regime with measures specifically aimed at the overcapacity problem. Accordingly, capacity reduction programmes would potentially be appropriate for governments so long as they are aimed at a national fishing fleet as a whole and are part of a comprehensive national fisheries management regime.

¹⁴⁶³ UN FAO website, <http://www.fao.org>

III. Legal Instruments Aimed at Overcapacity

There are several international instruments that have highlighted the problem of fleet overcapacity. These instruments are important because they draw the attention of the international community to the problem. However, several of these instruments are merely what is known as “soft” law and will not bind States to take definitive action on reducing overcapacity. Furthermore, even where States are obliged to take action, the problem will only be addressed if States actually do begin to implement the necessary capacity reduction and management strategies.

One soft law instrument aimed at reducing the overcapacity problem was the *Rome Declaration 1995*. This Declaration called upon States to reduce economic incentives leading to overcapacity (i.e. subsidies). Accordingly, there has been a legal recognition by the world community of the need to eliminate fishing subsidies. The elimination of fishing subsidies will be discussed in greater detail later in this thesis. The Declaration also required States to address fleet overcapacity and ensure that measures aimed at reducing capacity did not result in a redeployment of capacity to other fisheries or areas.¹⁴⁶⁴ As discussed above, this is one of the key risks that capacity reduction programmes pose to high seas fisheries like krill. Accordingly, it is important that States ensure that capacity is not redeployed into high seas areas of the Southern Ocean or to exploit alternative fisheries like krill.

Support for the reduction of world fishing fleet capacity is also found in the *International Plan of Action for the Management of Fishing Capacity* (“IPOA-Capacity”). The IPOA-Capacity recognises the problem of fishing overcapacity and outlines measures that States need to take in order to address the issue. For example, Article 8 of the IPOA-Capacity requires States to take specific actions in respect of fishing capacity, including:

- Making assessments of capacity and means of improving capacity;
- Developing and implementing national plans of action to manage capacity;
- Strengthening regional fisheries management organisations to improve capacity; and
- Taking action in respect of transboundary, straddling, highly migratory and high seas fisheries.

¹⁴⁶⁴ *Rome Declaration 1995*. FAO Ministerial Meeting on Fisheries, 12 March 2005.

Originally, the IPOA-Capacity was intended to be fully implemented by 2003 and no later than 2005.¹⁴⁶⁵ A recent FAO report in June 2004 looked at the progress by FAO member States in implementing the IPOA-Capacity.¹⁴⁶⁶ There has been considerable progress towards implementing the IPOA-Capacity with all major fish producers having at least made preliminary assessments of national fishing capacity. Furthermore, Article 19 of the IPOA-Capacity was aimed at States developing and implementing national plans of action for fishing capacity management. Approximately two thirds of members that responded to a recent FAO survey had developed or intended to develop such a policy.¹⁴⁶⁷ However, there are still some improvements that need to be made to ensure full implementation of the IPOA-Capacity. For example, the 2004 FAO survey mentioned above reported that less than 40% of responding States had adopted a national plan of action to combat fishing fleet overcapacity.¹⁴⁶⁸ Similarly, Article 20 of the IPOA-Capacity was also aimed at requiring States to monitor capacity, but so far only approximately 50%¹⁴⁶⁹ of States that responded to the FAO's survey have done so. There needs to be a greater effort by States in this regard so that the provisions of the IPOA-Capacity are put into action. If fishing capacity is reduced then there will also be fewer vessels searching for new resources to exploit in order to maintain their profitability. Krill fishing is one of the new industries that fishing vessels are likely to exploit with increased vigour as stocks of more profitable species decrease in size and there are greater returns from krill harvesting.

There has been a renewed focus by the UN General Assembly on fishing overcapacity in the two *Sustainable fisheries* resolutions that were previously discussed in Chapter 4 of this thesis. Firstly, the 2003 UN General Assembly resolution called upon States and regional fisheries management organisations to implement the IPOA-Capacity and to take effective measures to reduce the capacity problem.¹⁴⁷⁰ The resolution also requested States, when doing this, to take into account the need to prevent a redeployment of capacity. The 2004 resolution made the same calls of States in respect of implementing the IPOA-Capacity by 2005.¹⁴⁷¹ Greater efforts are needed so that national governments fully implement the IPOA-Capacity and calling attention to

¹⁴⁶⁵ Article 7, *International Plan of Action for the Management of Fishing Capacity*

¹⁴⁶⁶ Technical Consultation to Review Progress and Promote the Full Implementation of the IPOA to Prevent Eliminate IUU Fishing and the IPOA for the Management of Fishing Capacity, Rome, Italy, 24-29 June 2004. *Report of the International Plan of Action for the Management of Fishing Capacity (IPOA-Capacity): Review and Assessment*

¹⁴⁶⁷ *Ibid*, Paragraph 20

¹⁴⁶⁸ *Ibid*

¹⁴⁶⁹ *Ibid*, Paragraph 13

¹⁴⁷⁰ Article 30, *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments* A/RES/58/14, 2003

¹⁴⁷¹ Article 39, *Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments* A/RES/59/25, 2004

IV. Fleet Overcapacity and Subsidies

The World Trade Organization's Committee on Trade and the Environment noted in a recent report that a group of WTO Members believed that fishing overcapacity was caused by government subsidies.¹⁴⁷⁴ Some delegates to a recent FAO Consultation also recognised that over reliance on subsidies can have a detrimental effect on fisheries by increasing overcapacity.¹⁴⁷⁵ In particular, the OECD has estimated that in 1999, there was almost USD\$5.97 billion of total government financial transfers by OECD countries to the marine fisheries industry.¹⁴⁷⁶ Even more alarming is a 1999 World Bank estimate that placed total government fishing subsidies at around USD\$11-20 billion per year.¹⁴⁷⁷ The problem with fishing subsidies is that they enable fishermen to increase their catch beyond levels that would otherwise be possible and consequently if the stock is depleted all other fishermen lose out.¹⁴⁷⁸ Arguably, fishing subsidies cause market distortions by artificially increasing prices or reducing costs.¹⁴⁷⁹ Subsidies therefore create inefficiencies which result in excess investment in fishing capacity beyond what the market would otherwise dictate if there were no subsidies.¹⁴⁸⁰ Accordingly, subsidies lead to distortions of the free market which will be examined in the context of the WTO system later in this Chapter. Subsidies can therefore mean that, once a particular fishery is overfished, the fishing fleet will then turn to uneconomic or previously unexploited alternative fishing resources.¹⁴⁸¹ Accordingly, the use of fisheries subsidies is a danger to species such as krill because they may increase economic returns from krill fishing and become an incentive for more vessels to engage in such fishing. More work would need to be conducted on the actual economics of krill fisheries (including costs and benefits) in order to determine how profitable the industry is and the effect that providing subsidies would have on profitability. There are a wide variety of subsidies given by governments which will now be examined.

¹⁴⁷⁴ *Committee on Trade and Environment: Report to the 5th Session of the WTO Ministerial Conference in Cancun*, 11 July 2003 at 5

¹⁴⁷⁵ FAO Fisheries Report No. 752. *Report of the Technical Consultation on the Use of Subsidies in the Fisheries Sector*, Rome, 30 June – 2 July 2004 at 3

¹⁴⁷⁶ Cox, A. *Supra*, fn 1454

¹⁴⁷⁷ Nelson, N. 1999. *Supra*, fn 949

¹⁴⁷⁸ Mattice, A. 2004. The Fisheries Subsidies Negotiations in the World Trade Organization: A "Win-win-win" for Trade, the Environment and Sustainable Development. *Golden Gate University Law Review*, Vol 34: 573-586 at 582

¹⁴⁷⁹ Nelson, N. 1999. *Supra*, fn 949

¹⁴⁸⁰ Stone, C. *Supra*, fn 1446, 514

¹⁴⁸¹ Mattice, A. *Supra*, fn 1538, 576

Types of Subsidies

There are a whole range of mechanisms which have been used by governments to subsidise the fishing industry. The OECD has identified three categories of subsidies which are broadly as follows:

- Direct payments to fishers;
- Cost reducing measures; and
- General subsidies.¹⁴⁸²

Direct payments to fishers can include such payments as income or price support payments; grants to purchase new vessels; grants for modernising vessels; and compensation for reduced seasons to name a few.¹⁴⁸³ There are also subsidies that involve paying fishers to keep their vessels in port.¹⁴⁸⁴

Subsidies are also provided in the form of cost reducing measures such as fuel tax exemptions; subsidised loans; low cost insurance; funding for the introduction of new fishing gear technology; and subsidised bait.¹⁴⁸⁵ Australia's provision in the past of diesel fuel rebates is one example of a tax-related subsidy.¹⁴⁸⁶ This type of subsidy would be concerning for krill fishery if any government subsidised the development of improvements in harvesting technology that are currently taking place.

The OECD has also identified a general category of subsidies that includes expenditure on such things as research and development and on support to build port facilities for fishers.¹⁴⁸⁷ Another means of subsidising domestic fishers is through price support by the imposition of trade measures such as tariffs.¹⁴⁸⁸

However, some subsidies are aimed at other activities such as acquiring sustainable fishing gear; providing VMS; and improving fisheries management monitoring and data reporting.¹⁴⁸⁹ This thesis submits that subsidies, which artificially distort the free market, should be scrapped.

¹⁴⁸² Cox, A. *Supra*, fn 1454

¹⁴⁸³ *Ibid*, 5

¹⁴⁸⁴ Stone, C. *Supra*, fn 1446, 542

¹⁴⁸⁵ Cox, A. *Supra*, fn 1454, 5

¹⁴⁸⁶ Eichenberg, T. and Shapson, M. *Supra*, fn 1402, 597

¹⁴⁸⁷ Cox, A. *Supra*, fn 1454, 5

¹⁴⁸⁸ *Ibid*, 6

¹⁴⁸⁹ Eichenberg, T. and Shapson, M. *Supra*, fn 1402, 598. Iceland's government, for example, uses fund to support fishing surveillance activities by its government and also funds its Marine Research Institute, UN FAO website, <http://www.fao.org>.

Although this may not alleviate the overcapacity problem in the short-term, it will likely provide less economic incentive for entities to increase fleet capacity in the future. Accordingly, with less incentive to increase fleet capacity, there is less incentive to move capacity to the Southern Ocean and to fish for Antarctic krill, a species which is currently not being fished at high levels, although there has been a very vibrant krill fishery in the past. As discussed above in Chapter 5, developing countries should be given greater financial and technical assistance so that they can effectively implement controls over their vessels such as VMS. This would allow better monitoring of vessels in the Southern Ocean to give effect to a localised or complete krill fishing ban. However, this thesis submits that, in respect of developed countries, the fishers who benefit economically from the industry should be required to at least partially fund mechanisms to manage fisheries and enforce conservation measures. This is particularly the case with subsidies used to reduce vessel capacity because fishers are the primary recipients of any benefits.¹⁴⁹⁰ New Zealand and Australia already recover around 50% and 24% respectively of the cost of fisheries research, management and enforcement from fishers.¹⁴⁹¹

The case for whether there should be zero subsidisation of management and enforcement mechanisms is less clear (i.e. full funding by industry). There are several possible effects of a particular country (eg Australia) placing the full cost of management and enforcement on fishers which:

- This may actually allow an adjustment of the demand-supply curve so that the market is producing the optimum level of goods at the market determined price (i.e. the extra costs involved in producing the fish will simply cause an adjustment in price and consequently demand and supply);
- The resulting cost adjustment may force fishers out of the industry thus reducing vessel capacity;
- There may be an increase in reflagging of vessels to avoid the requirements and hence an increase in IUU fishing, which would be detrimental to Antarctic krill and other Southern Ocean marine species;
- Vessels may maintain their flag but begin or increase their level of IUU fishing to pay for the increased costs;
- Any reductions in fleet capacity of a particular country could provide an opportunity for IUU fishing vessels to take advantage of the reduced fish production in a particular area.

¹⁴⁹⁰ Newby, J., Gooday, P. and Elliston, L. *Supra*, fn 1442, 4

¹⁴⁹¹ Cox, A. *Supra*, fn 1454, 6

These are merely theoretical possibilities and further statistical work would need to be done to determine the exact effects of full funding from the fishing industry. Fishers of a particular country such as Australia are the beneficiaries from enforcement mechanisms (eg a new Antarctic patrol boat) designed to prevent IUU fishing. The Australian Fisheries Management Authority currently takes the general view that costs of surveillance measures should be funded by the fishing industry, and costs of enforcement should continue to be funded by the government. Most of the AFMA's costs associated with CCAMLR are funded by the government, and the remaining costs are recovered from those Australian fishers involved in fishing in the CCAMLR area. Surveillance of Australia's remote fisheries is taxpayer funded.¹⁴⁹² This thesis submits that there should be partial subsidisation of both surveillance and enforcement and management mechanisms for the following reasons:

- Enforcement of conservation measures does not just benefit fishers. It also benefits the public as a whole by protecting the ecosystem for future generations. In an Antarctic context, the enforcement of conservation measures in respect of krill will benefit fishers as a whole because of the pivotal role that krill play in that ecosystem. Accordingly the public should fund part of the cost of protection in the Southern Ocean.
- As the effect of pushing the entire cost onto the fishing industry is unknown, governments should maintain partial subsidisation as a precautionary measure to guard against any potential rise in IUU fishing by placing increased costs on the fishing industry. This is particularly the case in the Southern Ocean because of the difficulties that are already present in regulating IUU fishing in that area.

¹⁴⁹² *Australian Fisheries Management Authority (AFMA) Cost Recovery Impact Statement*, February 2004, Australian Fisheries Management Authority website, <http://www.afma.gov.au>

V. WTO and Fishing Subsidies

There has been an increased focus on using the WTO as a means of reducing or eliminating fishing subsidies.¹⁴⁹³ The elimination of fishing subsidies is likely to reduce excess fleet capacity and, accordingly, reduce the risk that excess capacity will be used to harvest krill. This risk is particularly high for krill because it is primarily located in weakly regulated high seas areas of the Southern Ocean; it is a species that is currently not being exploited at high levels; and the economic returns from krill fishing are improving. The current WTO regime governing subsidies is found primarily in the *Agreement on Subsidies and Countervailing Measures* (“the ASCM”). It will be useful to briefly examine this regime and its applicability to fishing subsidies. Broadly, Article 1 of the ASCM deems a subsidy to exist where:

- There is a “financial contribution” by a government or other public body of a WTO Member or there is any form of price or income support in the sense of Article XVI of GATT; and
- A benefit is conferred because of this financial contribution or support.

Article XVI of GATT also contains a provision in respect of subsidies. Subsection one of the provision only requires States to discuss limiting a subsidy where it directly or indirectly increases product exports or reduces product imports in a manner that causes “serious prejudice” to another WTO Member. Subsection 3 does prohibit subsidies on primary products but only where they result in the relevant State having more than an “equitable share” of world trade export in that product. Furthermore, subsection 4 prohibits subsidies which cause export price to be lower than the domestic price of that product. However, this requirement does not apply to primary products. Accordingly, it can be seen that the GATT provisions are very weak in their application to subsidies relating to primary products, such as fisheries products. Therefore, the focus of this paper will be on the ASCM, which contains much stronger measures relating to subsidies provided by the governments of WTO Members.

¹⁴⁹³ Mattice, A. *Supra*, fn 1538, 577

It is clear from the ACSM definition of “subsidy” that many government/quasi-government benefits provided to the fishing industry would constitute “subsidies”.¹⁴⁹⁴ To be governed by the ACSM, a subsidy must also be a “specific” subsidy, which broadly means that it must be:

- Specific to a particular company or group of companies;
- Specific to a particular industry;
- Specific to a particular geographical region; or
- Within a category of subsidies that are specifically “prohibited” by the ACSM.

Fishing subsidies could clearly be subsidies that fulfil the “specificity” requirements of the ACSM.

Prohibited subsidies are those contingent on export performance or on the use of domestic goods over imported ones. As the name suggests, this type of subsidy is strictly prohibited. Fishing subsidies whose provision was subject to this form of contingency would be prohibited under the ACSM.

A second class of subsidies, known as “actionable subsidies”,¹⁴⁹⁵ is not prohibited per se. However, WTO Members can challenge the subsidies through the WTO dispute settlement system if they have adverse effects on other Members.¹⁴⁹⁶ A subsidy will have an adverse effect where there is:

- Injury to the domestic industry of another Member; or
- Nullification or impairment of benefits accruing to Members under GATT 1994; or
- Serious prejudice¹⁴⁹⁷ to the interests of another Member.

There may be difficulties with these provisions effectively curbing the use of fishing subsidies for several reasons. Firstly, fishing subsidies that fall into the “actionable” category are not prohibited per se. There is a requirement that positive action be taken by another WTO Member first. Furthermore, the subsidies must have an adverse effect on another Member, as defined above. With high seas fisheries, it would be particularly onerous to prove that subsidies provided to vessels of a Member State that fished on the high seas caused adverse effects to other Members.

¹⁴⁹⁴ The ACSM also provides a list of the types of financial contributions by governments.

¹⁴⁹⁵ There was previously a third class of “non-actionable” subsidies.

¹⁴⁹⁶ Article V of the ACSM.

¹⁴⁹⁷ Serious prejudice is defined in greater detail in the ACSM.

Mattice also contends that because exploitation of fish stocks affects all other fishermen, not just those currently engaged in the particular industry, it may be difficult to establish price and market distortion effects from fishing subsidies.¹⁴⁹⁸ The current WTO rules relating to subsidies which focus on market distortions may therefore be difficult to comply with.¹⁴⁹⁹ Brazil believes that fishing subsidies can also cause trade distortions at the level of production of fisheries resources because subsidised and non-subsidised fleets are competing at the same level for these resources.¹⁵⁰⁰

The WTO is currently (during 2005) considering proposals to introduce a specific regime aimed at fishing subsidies. Such a regime is necessary because the current system does not appear to have adequately dealt with the problem of fishing subsidies. Several alternate proposals have been submitted to the WTO for a comprehensive fishing subsidies regime. Argentina, Chile, Ecuador, New Zealand, Philippines and Peru made a submission in November 2004¹⁵⁰¹ that advocated a blanket prohibition on all fishing subsidies, with WTO Members to then negotiate exceptions to the prohibition. These WTO delegates argued that the benefits of a blanket prohibition are that it is simple and easy to enforce; it allows transparency; and it permits flexibility in allowing Members to negotiate specific exceptions from the ban. Other countries such as Japan did not support this approach and advocated an approach whereby particular subsidies would be permitted and particular subsidies prohibited.¹⁵⁰² The US argued that Japan would be able to exempt its own fishing subsidies from any disciplines under the Japanese proposal.¹⁵⁰³ This approach has also been criticised by a number of other WTO Members.¹⁵⁰⁴ The WTO Members are still negotiating the approach to be adopted by the WTO in respect of fishing subsidies during 2005.

As previously discussed, many entities including the UN FAO have touted the provision of fishing subsidies as one of the reasons for fishing fleet overcapacity. The removal of subsidies is likely to have some effect on alleviating that problem. This thesis submits that, due to the potential harm overcapacity can pose if vessels begin to exploit new fisheries such as krill, an

¹⁴⁹⁸ Mattice, A. *Supra*, fn 1538, 583

¹⁴⁹⁹ *Ibid*

¹⁵⁰⁰ *Contribution to the Discussion on the Framework for Disciplines on Fisheries Subsidies*. Paper from Brazil, 31 March 2005. WTO TN/RL/W/176.

¹⁵⁰¹ Communication from Argentina, Chile, Ecuador, New Zealand, Philippines, Peru to the WTO Negotiating Group on Rules, 2 November 2004, TN/RL/W/166

¹⁵⁰² The International Centre for Trade and Sustainable Development (ICTSD) website, WTO Members disagree on subsidy approach, *BRIDGES Trade BioRes*, Volume 5, Number 1, 21 January 2005

¹⁵⁰³ The International Centre for Trade and Sustainable Development (ICTSD) website, *WTO Members scrutinise Japan's Fisheries Proposal*, *BRIDGES Trade BioRes*, Volume 4, Number 18, 8 October 2004

¹⁵⁰⁴ Communication from Argentina, Chile, Ecuador, New Zealand, Philippines, Peru to the WTO Negotiating Group on Rules, 2 November 2004, TN/RL/W/166

immediate blanket ban on fishing subsidies would be appropriate in accordance with the abovementioned proposal.

Overcapacity is a significant problem for krill, in particular, because of the tendency for excess capacity to be used in exploiting new fisheries. Krill is particularly at risk because of the difficulties of regulating the fishery in high seas areas and the added economic incentives for excess capacity to move into the fishery due to new krill fishing technology and greater demand for krill products. Brazil has recently submitted a proposal (31 March 2005) to the WTO in respect of fishing subsidies. Brazil proposes that only fishing subsidies that do not distort production by increasing capacity and causing overexploitation should be non-actionable subsidies under the Agreement for Subsidies and Countervailing Measures.¹⁵⁰⁵ Brazil suggests that such subsidies could include government grants for the purposes of improving conservation/sustainable use; for adopting environmentally friendly gear; for retraining fishers out of the industry; and for capacity reduction.¹⁵⁰⁶

This author agrees that any blanket prohibition on fishing subsidies should contain a number of exceptions aimed at fisheries management and conservation. As discussed above, it is appropriate for there to be some level of government assistance because conservation of the marine environment is also for the public good as well as the economic benefit of fishers. In respect of krill, conservation is necessary to ensure survival of the Antarctic ecosystem as a whole because of the pivotal role that krill plays in that ecosystem. Accordingly, conservation measures aimed at krill are not only for the benefit of krill fishers, they also benefit fishers of dependent species and the public as a whole. Brazil has also proposed that any prohibition on fishing subsidies should take into account the needs of developing countries that may actually lack fishing capacity.¹⁵⁰⁷ This thesis submits that the WTO, as the international institution regulating world trade, is the appropriate body to regulate fishing subsidies and the WTO should take action to prohibit such subsidies during the course of the 2005 negotiations.

¹⁵⁰⁵ *Contribution to the Discussion on the Framework for Disciplines on Fisheries Subsidies*. Paper from Brazil, 31 March 2005. WTO TN/RL/W/176.

¹⁵⁰⁶ *Ibid*

¹⁵⁰⁷ *Ibid*

Conclusion

This Chapter has examined the issue of overcapacity in the world's fishing fleets and concludes that the world community must comprehensively address the issue because of the risk that excess capacity will relocate to new regions and begin harvesting alternative species such as the Antarctic krill. This is a significant issue because of the enforcement difficulties caused by the Southern Ocean's isolation and current legal weaknesses that could threaten the effectiveness of an Antarctic krill fishing moratorium. Furthermore, the WTO must address the issue of government subsidies that contribute to the overcapacity problem through the introduction of a comprehensive regime aimed at fisheries.

Fleet capacity reduction programmes have been implemented by a number of states, however, greater efforts need to be made in this respect. There are also difficulties in determining which type of programme will be most effective. Some programmes focus on restricting access to fishing areas either through the use of licences; through seasonal/geographic fishing bans; or through market based quota systems. Other programmes are aimed at restricting the number of fishing vessels or placing restrictions on fishing gear or vessel characteristics (such as size). Some of these programmes aim to reduce vessel numbers by "buying-back" the vessels. However, reduction programmes generally will not necessarily be effective because of improvements in catch and processing technologies that increase the capacity of existing vessels. Furthermore, the buy-back type of programme also creates a risk that monies paid for existing vessels will be used to improve the efficiency of remaining vessels or to purchase new ones.

One of the major problems with programmes aimed at reducing fishing capacity is that they can cause the relocation of that capacity to other countries and to high seas areas. High seas areas of the Southern Ocean would be one region faced by such a risk. This thesis also submits that any new capacity reduction measures specifically aimed at the Southern Ocean would not be appropriate because CCAMLR can, to some extent, already control Member State capacity in that region through the use of authorisations to fish. Any capacity reduction programmes that were implemented to control world fleet capacity would need to be accompanied by strong regulatory measures.

Strong international and national legal regimes aimed at dealing with the capacity issue are imperative. There are several international instruments that have provisions focussing on the issue, although many such instruments are merely non-binding "soft law", which reduces their legal force. Their real strength stems from the fact that they focus the attention of the international community on the issue and make it more likely that definitive action will be taken.

As outlined by this thesis, one of the most important international instruments in this respect is the IPOA-Capacity. The IPOA-Capacity outlines specific measures that States must adopt in respect of the overcapacity problem. Many states have adopted or are beginning to adopt these measures, however, there are still other states that have not begun to implement the IPOA-Capacity. Accordingly, greater efforts need to be made to ensure that all States fully implement the provisions of this instrument in order to combat the overcapacity problem.

One factor which has potentially contributed to fleet overcapacity is the provision of government subsidies to the fishing industry. Such subsidies, arguably, distort market demand and supply and create excess investment in fishing capacity. Subsidies enable fishing fleets to exploit otherwise uneconomic fisheries resources or to invest in previously unexploited resources. Subsidies could therefore permit more vessels to become engaged in exploiting a species such as the Antarctic krill because they increase the economic returns from fishing. This thesis submits that such distorting subsidies should be removed, however, subsidies should still be permitted where they are aimed at facilitating sustainable fisheries and conservation, such as through the subsidisation of Vessel Monitoring Systems. This thesis also submits that the cost of enforcement and management of fisheries should still be partially borne by governments because of the long term benefit of such activities to oceanic ecosystems and hence the public as a whole.

The provision of subsidies in general is governed by a specific legal regime within the World Trade Organization. Ostensibly, the existence of such a regime should be sufficient to deal with the fishing subsidies problem. However, it may be difficult to establish an action in the WTO against such subsidies, particularly in respect of high seas fisheries. Accordingly, it may be necessary to introduce a specific instrument dealing with fishing subsidies, a possibility which the WTO is currently considering.

This thesis submits that the WTO is the appropriate international body to regulate fishing subsidies, however, a specific regime needs to be introduced to comprehensively deal with the issue. The most appropriate solution would be a total ban on fishing subsidies with certain limited exceptions, such as for subsidies aimed at conservation and fisheries management.

GENERAL CONCLUSION

This thesis has examined the vital role played by the Antarctic krill in the Antarctic ecosystem. Furthermore there is scientific uncertainty concerning the Antarctic krill population and the effect of krill fishing on dependent species. This uncertainty is cause for concern in light of advances in fishing technology and greater demand for new krill products which are likely to result in higher fishing levels. This thesis submits that a strong form of the precautionary approach to resources management would justify the adoption of an Antarctic krill fishing moratorium in light of this uncertainty and krill's pivotal role. At the very least, the precautionary approach would justify localised or seasonal krill bans to minimise harm to vulnerable dependent species.

This thesis concludes that the current system of international "hard" law is not sufficiently strong or wide-reaching to effectively secure the safety of krill and dependent species and to adequately implement a krill fishing moratorium. Compliance by non-parties on the high seas to binding treaties is a particular problem that threatens the effectiveness of Southern Ocean fisheries management measures. International "soft" law does contain a raft of useful conservation principles, however, its ability to play a role in krill conservation is limited because of its non-binding status. Only with strong legal obligations that bind all parties can an Antarctic krill fishing moratorium be successfully implemented. In a recent 2004 resolution, the General Assembly also highlighted the need to strengthen the current international legal framework in respect of fisheries management in order to combat IUU fishing. Similarly, the FAO has criticised current efforts to effectively implement international fisheries agreements. Accordingly, this is likely to provide the impetus for States to re-examine the current regulatory regime and this may result in reforms that will provide greater legal strength to current instruments.

Universally binding legal instruments must be supported by an effective system of investigation, management and enforcement to effectively implement an Antarctic krill fishing moratorium. This is especially the case because of the threat of IUU fishing from a likely increase in demand for krill products and greater economic returns. A stronger detention and punishment system, combined with the application of the CCAMLR Catch Documentation Scheme and VMS to krill fisheries would go a long way towards protecting krill from IUU fishing.

The deficiencies in the current legal regime make it critical to consider alternative means of conserving the Antarctic krill and other Antarctic species. This thesis contends that the use of trade related measures to combat IUU fishing would help to ensure the effective introduction of a

krill fishing moratorium. This thesis contends that the trade exceptions in the World Trade Organization GATT should be amended to resolve potential conflict between trade measures introduced for environmental reasons and the broad free trade principles of the WTO.

Overcapacity of the world's fishing fleet will compound the IUU fishing problem, particularly due to enforcement difficulties in the geographically isolated Southern Ocean. Relocation of excess capacity to the Southern Ocean and to alternative fisheries such as the Antarctic krill is of particular concern. Accordingly, it is important that the world community address the fleet overcapacity issue. In particular, States must address the effect of government fishing subsidies on fleet capacity and the potential for these subsidies to artificially inflate the economic returns from a particular fisheries stock, such as krill. WTO legal provisions which specifically govern fishing subsidies are needed and this is something that the WTO is currently considering. This thesis submits that the most appropriate solution under the WTO system would be a total ban on fishing subsidies with certain limited exceptions, such as for subsidies aimed at conservation and fisheries management.

The Antarctic krill is one of the most pivotal species in the Antarctic ecosystem, channelling vital nutrients to species higher up the food chain. As such, krill must be protected to ensure the continued survival of dependent species and the whole Antarctic ecosystem. The history of natural resource exploitation in Antarctica must lead to the conclusion that this is a true tragedy of the commons. Stocks of all marine living resources have been plundered until there is a severe depletion in numbers and the species is no longer commercially viable. Then the next species is attacked. Based on this history of overexploitation in Antarctica, krill harvesting is likely to have a detrimental effect on krill population and this must not be allowed to occur because of the uncertainty surrounding both krill population itself, and the interaction of krill with other species. Even a small level of krill harvesting has the potential to have a major impact on dependent species that have already been threatened by the Southern Ocean's history of overexploitation.

The pivotal role of krill in the ecosystem and the dependence of so many species on krill make it crucial that krill population is protected through the introduction of a moratorium on Antarctic krill fishing. Particularly because greater demand combined with cost reductions from improved harvesting technologies will lead to increased returns from krill fishing and higher levels of krill fishing. At the very least, localised krill fishing bans should be introduced in sensitive areas in Antarctica where fishing may have the most impact. As discussed above, a strong form of the precautionary approach to resource management justifies the introduction of a krill fishing

moratorium because of the potential harm to the Antarctic ecosystem, even though there is still scientific uncertainty as to the exact effects of krill fishing.

This thesis has shown that any form of Antarctic krill fishing ban will only be successful if it is supported by a strong regulatory system and universally binding legal obligations. Many existing international conservation instruments only bind parties, leaving non-party vessels to flout their objectives on the high seas. This is one of the great difficulties with effectively implementing these agreements. A krill harvesting ban will be threatened by IUU fishing if strong legal controls are not in place to prevent it. Only with a strong legal obligation that binds all parties, even on the high seas, can krill receive the protection they need. This thesis has shown that CCAMLR is the appropriate body to implement and monitor a krill fishing moratorium.

Furthermore, a comprehensive enforcement regime must be in place to ensure compliance with any universally binding conservation measures. Fishers and the owners of vessels that flout the ban or any other marine conservation measures must be subjected to harsh sanctions to deter them from engaging in IUU fishing. Improvements in enforcement mechanisms will help CCAMLR to restrict IUU fishing in the Southern Ocean.

The history of Southern Ocean overexploitation of almost every marine species is a poor track record of our ability to sensibly and sustainably manage legal marine resources. For species higher in the food chain, this has, in many cases, led to commercial extinction or the threat of overexploitation. However, the commercial extinction of Antarctic krill, as the pivotal species for marine life in the Southern Ocean, would threaten the entire Antarctic ecosystem. This must not be allowed to happen. Our ability to conserve the Antarctic marine wilderness, will depend on a krill legal management regime that is commercially, scientifically and economically comprehensive, binding, and enforceable. The UN General Assembly's recent calls for a strengthening of the international legal framework for fisheries management may provide an impetus for the international community to re-examine and strengthen current regulatory arrangements to achieve this aim for the Antarctic krill.

Appendix 1: Table of Acronyms

AFMA	Australian Fisheries Management Authority
ASCM	Agreement on Subsidies and Countervailing Measures
ASOC	Antarctic and Southern Ocean Coalition
CCAMLR	Convention for the Conservation of Antarctic Marine Living Resources
CDS	Catch Documentation Scheme
CEMP	CCAMLR Ecosystem Monitoring Program
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CTE	Committee on Trade and Environment
EEZ	Exclusive Economic Zone
EFZ	Exclusive Fishery Zone
EU	European Union
GATT	General Agreement on Tariffs and Trade
ICJ	International Court of Justice
IPOA	International Plan of Action on Illegal, Unreported and Unregulated Fishing
ITLOS	International Tribunal for the Law of the Sea
IUU fishing	Illegal, unregulated and unreported fishing

MEA	Multilateral environmental agreement
NGO	Non-Government Organisation
OECD	Organization for Economic Co-operation and Development
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Conference on the Law of the Sea
UN FAO	United Nations Food and Agriculture Organization
VMS	Vessel Monitoring System
WG-FSA	Working Group on Fish Stock Assessment
WTO	World Trade Organization

Appendix 2: References

International Conventions, Treaties and Case Law

Agenda 21, Rio Conference 1992

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Kyoto Declaration on the Sustainable Contribution of Fisheries to Food Security 1995

Madrid Protocol on Environmental Protection to the Antarctic Treaty 1991

Marrakesh Agreement Establishing the World Trade Organization, 1994

Ministerial Decision on Trade and Environment, 14 April 1994

Oceans and the law of the sea A/RES/58/240, 2003

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Plan for Management of Fishing Capacity

Plan of Action to Prevent, Deter and Eliminate IUU Fishing

Plan of Implementation of the World Summit on Sustainable Development 2002

Programme for the Further Implementation of Agenda 21, Earth Summit +5

Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem 1995

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