AUSTRALIAN MARINE PROTECTED AREA POLICY:

TOWARDS A NATIONAL SYSTEM OF

MARINE BIOSPHERE RESERVES

by

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STATEMENT

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university and to the best of the author's knowledge and belief the thesis contains no copy or paraphrase of material previously published or written by other persons except when due reference is made in the text of the thesis.

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ABSTRACT

International support for national systems of representative marine protected areas have been set in place by the World Conservation Strategy (WCS) and the National Conservation Strategy of Australia (NCSA). Australia has adopted the International Union for Conservation of Nature and Natural Resources (IUCN) objectives for marine protected areas through the Commonwealth and State intergovernmental Council of Nature Conservation Ministers (CONCOM). The thesis examines international marine protected area developments and then proceeds to an assessment of existing Commonwealth and State legislative and institutional arrangements for Australian marine protected areas. It argues that existing Commonwealth and State legislative and institutional arrangements for marine protected areas are incapable of meeting WCS/NCSA objectives.

The thesis examines how the inherent difficulties of Australian federalism in relation to offshore jurisdictional disputes have influenced marine protected area legislation and have shaped institutional arrangements for meeting these international objectives. An *open system of conservation* is distinguished from a *closed system of conservation* by the way it explicitly recognizes that outside activities may compromise the ecological integrity of the marine protected area. Australia's Great Barrier Reef Marine Park in Queensland is taken as a case study to illustrate the evolution of Commonwealth and State intergovernmental legislative and

institutional arrangements, and as a potential model for an *open system of conservation* meeting WCS/NCSA objectives for marine protected areas.

Three options are canvassed for the future operation of an Australian marine protected area system: (1) the *status quo;* (2) incremental change of existing Commonwealth and State legislative and institutional arrangments; and (3) the introduction of cooperative Commonwealth and State legislative and institutional arrangements in accordance with the United Nations Environment, Scientific, and Cultural Organization's (UNESCO) Man and The Biosphere (MAB) biosphere reserve programs. Cooperative intergovernmental Commonwealth and State legislative and institutional reform, based on the ecological principles of protected area planning and management of MAB, is advocated as an appropriate framework for a representative Australian system of marine protected areas. A legislative and institutional framework supporting an Australian marine biosphere reserve system is outlined and implications discussed, as are constraints in realizing such a system.

DEDICATION

Dr Richard Jones, founding Director of the Centre for Environmental Studies, University of Tasmania, and my supervisor, died on 19 March 1986 following an accident. As a supervisor, colleague, and friend Dick was inspirational; this thesis is dedicated in his memory.

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My sincere thanks to all those who have assisted me in the preparation of this thesis. In particular, I wish to express my appreciation to Dr Peter R. Hay of the Centre for Environmental Studies, University of Tasmania for the task of assuming supervisory responsibilities.

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Chapter 1

Promoting an Australian System of Representative Marine Protected Areas

1.1 Aims, Objectives, and Scope of the Thesis

The inhabitants of the island continent of Australia have a long and intimate association with the marine and coastal environment. Aboriginal peoples lived and hunted on the coast for centuries, European and Asian explorers sailed the surrounding Indian, Southern, and South Pacific Oceans, and in the last 200 years settlers have populated the narrow fringe of the coastal zone. From these earliest times to the present, the Australian marine and coastal environment has been exploited by humans. The late twentieth-century has, however, been marked by an accelerated rate of human impact on this environment and the recognition of a limited ability to mitigate such activities.

The diversity and size of Australia's marine and coastal environment is exceptional (Dakin, 1987). As an island continent with seven external territories (one of which is the Australian Antarctic Territory) Australia has a 37,235 kilometre (km) coastline; some individual States have longer coastlines than most of the world's coastal nations. Western Australia, with one-third of Australia's coastline, is the longest at 12,500 km, followed by Queensland at 7,400 km. Coastlines of the other States and

Territories range from 6,200 km to 35 km (Australia, 1985 b:10) (Table 1.1). The coastal zone in Australia has been defined as a 3 km wide strip extending landwards from the mid-tide mark totalling approximately 125,000 square km (Galloway et *al., 1984*) (the marine environment is defined as seaward of the mid-tide mark). If the coastal zone of offshore islands is included the total area becomes approximately 150,000 square km, or nearly 2 percent of the area of Australia. Coastlines of six External Territories - Norfolk Island, Heard Island and McDonald Islands, Cocos (Keeling) Islands, Christmas Island, Coral Sea Islands - represent approximately 500 km, while the coastline of the Australian Antarctic Territory is 5,200 km. This makes the Australian coastline the third longest in the world, after the Soviet Union and Indonesia (Couper, 1983).

In the 1970s, Australia, in line with the majority of maritime states has, through a system of ocean enclosure, declared a 200 nautical mile (320 km) Australian Fishing Zone (commonly referred to as the 200 mile AFZ).[1] Australia's offshore marine responsibility has thereby come to exceed the terrestrial area of this, the seventh largest continent (Figure 1.1). Definitive data on the size of the marine area in the AFZ are severely lacking. The *Yearbook Australia 1985* (Australia, 1985 b), a compendium of information on Australia, does not define, or map, the AFZ surrounding the continent or the External Territories. The *Times Atlas of the Oceans* (Couper, 1983) estimates the AFZ at 7.7 million square km, larger than the continent of Australia and, after the United States of America, the second largest exclusive economic zone in the world. From very cursory planimeter data provided by the Australian

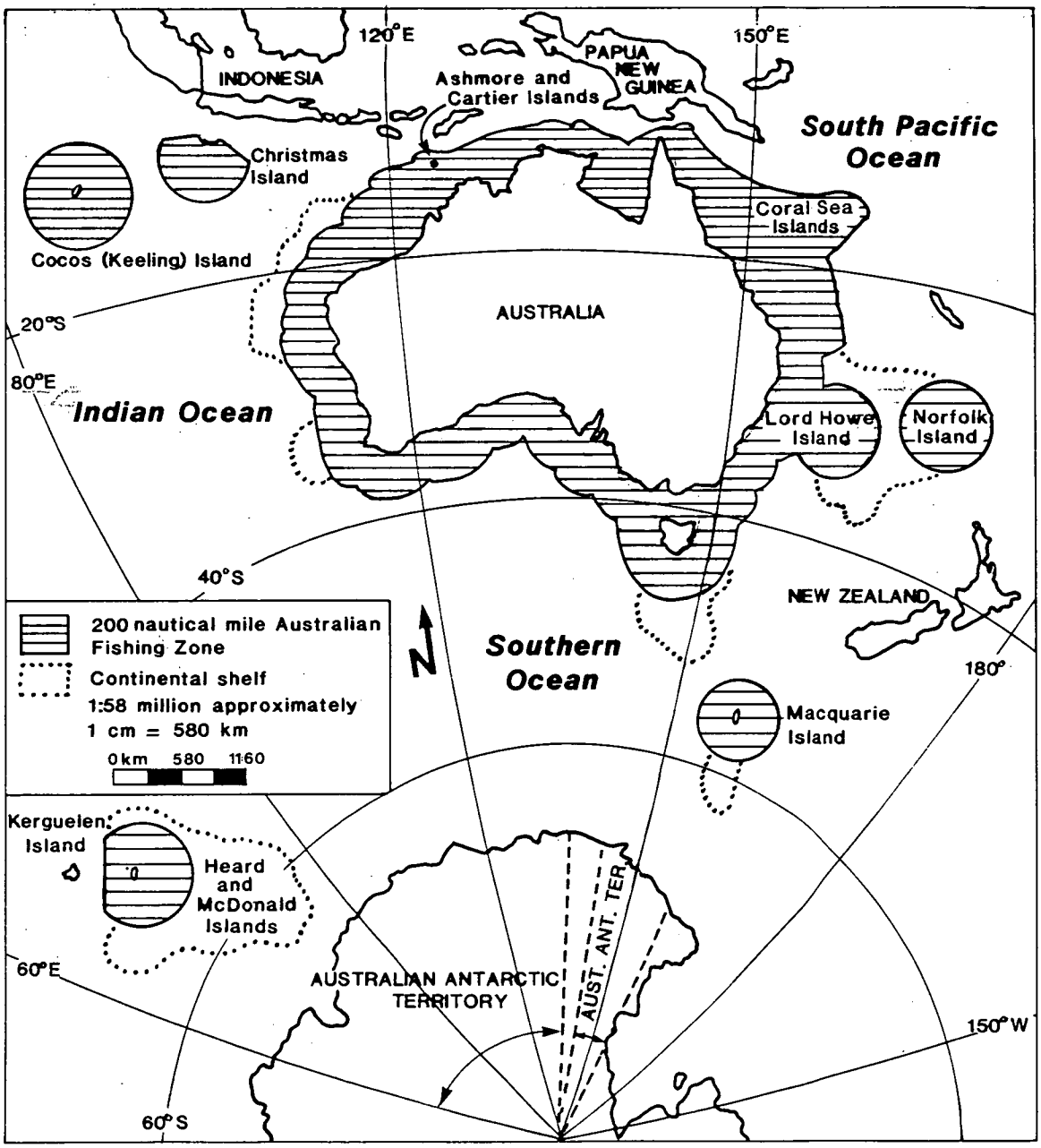
[1] Appendix I lists abbreviations and acronyms used in the thesis.

Table 1.1 Australian Terrestrial and Marine Responsibilities (1990)

	Population (a)	Terrestrial area (sq km) (a)	Terrestrial nature conservation (sq km) (b)	Percentage terrestrial nature conservation (b)	Length of coastline (km) (a)	Area of marine protected areas (sq km) (c)	Number of marine protected areas (c)	Percentage marine protected areas (c) (d)
A.C.T.	236,600	2,473	1,118	46.60	35	8	1	<0.01
E.T.	3,798	310	3,157	<0.01	500	17,875	4	4.8
N.S.W.	5,362,200	801,635	34,389	4.30	1,900	38	17	<0.01
N.T.	133,900	1,346,200	37,792	2.81	6,200	2,671	5	0.7
Queensland	2,471,600	1,727,200	34,920	2.02	7,400	348,727	78	93 (g)
S.A.	1,341,500	984,000	67,109	6.82	3,700	213	53	0.06
Tasmania	432,600	67,923	9,477	13.95	3,200	487	15	0.13
Victoria	4,037,000	227,600	14,011	6.16	1,800	50	16	<0.01
W.A.	1,364,500	2,525,000	146,487	5.80	12,500	5,059	11	1.3
Australia	15,383,698	7,682,341(e)	348,460	4.49	37,235	375,128 (f)	205	100

State and Territory abbreviations: Australian Capital Territory (ACT); External Territories (E.T.); New South Wales (N.S.W.); Northern Territory (N.T.); South Australia (S.A.), Western Australia (W.A.).
(a) Populations, terrestrial areas, and length of coastline from Australia (1985 b).
(b) Terrestrial nature conservation and percentage terrestrial nature conservation from Mobbs (1987).
(c) Area, number, and percentage of marine protected areas from Ivanovici (1984, 1987).
(d) This figure represents the State percentage of the total area of marine protected areas in Australia. It does not represent a percentage of the State three nautical mile territorial sea or the Australian Fishing Zone.
(e) Excluding the area of the External Territories.
(f) The three nautical mile territorial sea of each State has not been measured because the baselines have not been agreed upon.
(g) This figure includes the Great Barrier Reef Marine Park (344,480 sq. km; 8 marine protected areas) and Queensland (4,247 sq. km; 70 marine protected areas).

Figure 1.1 Australian Offshore Responsibilities



Department of Mapping (Vassil, 1986) the area of the AFZ adjacent to mainland Australia, Tasmania, Lord Howe Island, and the Coral Sea Islands is approximately 6.8 million square km while External Territories account for an additional 2.1 million square km. This inflates the area of the AFZ from 7.7 to approximately 8.9 million square km. In addition, Australia's three nautical mile territorial sea has not been measured (Vassil, 1986; Boyes, 1989) because coastal baselines have not been delineated. Basic accurate data, which should be considered a prerequisite to any serious study of Australian marine protected area policy are thus in urgent need of compilation.

Nevertheless, marine and coastal responsibilities of Australia include management of a maritime zone with one of the greatest diversities of flora and fauna in the world. The biogeographical diversity of the Australian marine and coastal environment is one of the most exceptional of any coastal state in the world and includes a range of representative and unique species, habitats, and ecosystems from sub-Antarctic and cold temperate, to temperate, warm temperate, sub-tropical, and tropical. Marine flora and fauna are of international, national, State, and local significance and an integral part of the natural heritage of Australia (Figure 1.2).

The thesis adopts the concept of levels of ecological organization[2] for

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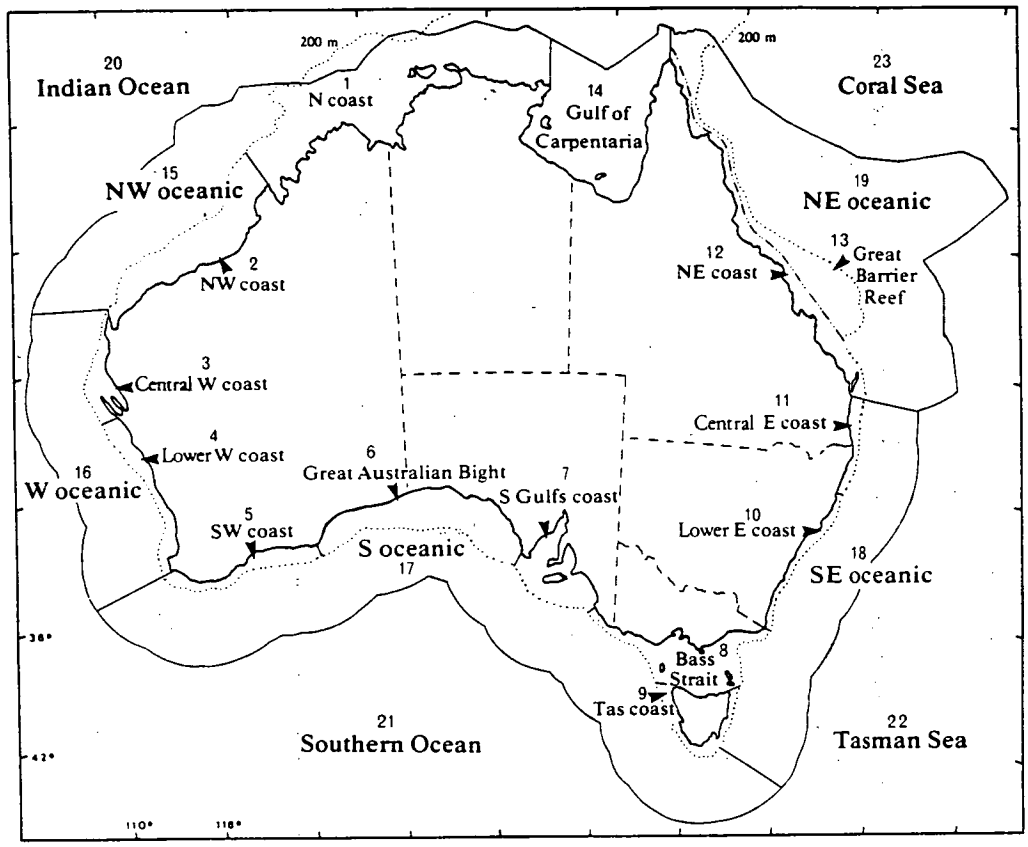
[2] Closely related to the concept of levels of ecological organization is the principle of integrative levels, or the principle of hierarchical control. As Odum (1975:5) describes it: "[a]s components combine to produce larger functional wholes in a hierarchical series, new properties emerge. Thus, as we move from organismic systems to population systems to ecosystems, new characteristics develop that were not present or not evident at the next level below."

Figure 1.2 Marine Biogeographical Regions of Australia



Source: CONCOM, 1985:3.

the marine and coastal flora and fauna of Australia. Odum (1975:4) describes the concept as a spectrum "in which biological units interacting with the physical environment (energy and matter) successively combine to produce a series of living systems (biosystems). The word *system* is used in the primary (dictionary) sense as "a regularly interacting or interdependent group of items forming a unified whole". Utilizing this methodology, populations and communities represent lower units on the spectrum, whilst habitats, ecosystems and biomes represent higher units. A *population is* described as "all individuals of one or more species within a prescribed area" (Lincoln *et al.*, 1983:199). The populations of plants and animals living and interacting in a given locality are a *community* and each organism in such a community has a *habitat,* the place in which it lives (Miller, 1979:41-43). Odum (1971) defines "any area of nature that includes living organisms and nonliving substances interacting to produce an exchange of materials between the living and nonliving parts [as] an ecological system or *ecosystem*". All of the ecosystems, along with their interactions, make up the the planetary ecosystem, or *biosphere.* The Biosphere (with capitalization of "The" (sic) immediately preceding it) is defined as: "[t]he integrated living and life-supporting system comprising the peripheral envelope of Planet Earth together with its surrounding atmosphere so far down, and up, as any form of life exists naturally" (Polunin, 1984:198). This includes the atmosphere (air), the hydrosphere (water), and the lithosphere (soil and rock). Biomes are a "[b]iological subdivision of the Earth's surface [and the marine environment] that reflects the ecological and physiognomic character of the vegetation. Biomes are the largest geographical biotic communities that it is convenient to recognize" and "are equivalent to

the concept of major plant formations in plant ecology, but are defined in terms of all living organisms and of their interactions with the environment. Typically, distinctive biomes are recognized for all the major climatic regions of the world, emphasizing the adaptation of living organisms to their environment" (Allaby, 1985:78).

International support for the protection and conservation[3] of populations and communities, representing lower ecological units on the spectrum, and habitats, ecosystems and biomes, representing higher ecological units, is found in the World Conservation Strategy (WCS). The WCS was launched by the International Union for Conservation of Nature and Natural Resources (IUCN) in 1980, in cooperation with the World Wide Fund for Nature (WWF, formerly the World Wildlife Fund) and the United Nations Environment Program (UNEP), to enhance and coordinate global, regional, and national efforts in conservation. The WCS states that "habitats of threatened and unique species, unique ecosystems, and representative[4] samples of ecosystem types must be promoted as a matter of priority. Whenever feasible each protected area

[3] The terms *conservation* and *preservation* are not used interchangeably. "Conservation" in the WCS is defined as the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations (IUCN, 1980 a). The definition emphasizes the saving of natural resources, such as fisheries, for later consumption. Preservation, in contrast, involves the saving from destruction or damage, rather than saving for later consumption (Passmore, 1974:73).

[4] The terms "unique" and "representative" are important ecological criteria for marine protected areas. "A unique area is one that is rare, whereas areas which are representative fit well into the [biogeographical] classification scheme, i.e., they are typical of biome or habitat types as they may exemplify processes, transition zones, ecotones, or subclimax situations of either undisturbed nature or of interactions between man (*sic*) and nature such that some comparability between example areas is evident" (Ray, 1976:35).

should safeguard all the critical habitats (the feeding, breeding, nursery, and resting areas) of the species concerned" (IUCN, 1980 a). The main aims of the Strategy are:

(1) to maintain essential ecological processes and life-support systems (such as soil regeneration and protection, the recycling of nutrients, and the cleansing of waters) on which human survival and development depend;
(2) to preserve genetic diversity (the range of genetic material found in the world's organisms), on which depend the functioning of many of the above processes and life support systems; the breeding programs necessary for the protection and improvement of cultivated plants, domesticated animals, and microorganisms; much scientific and medical advance and technical innovation; and the security of many industries that use living resources; and
(3) to ensure the sustainable utilization of species and ecosystems (notably fish and other wildlife, forests, and grazing lands), which support millions of rural communities as well as major industries (IUCN, 1980 a).

Of particular importance for marine conservation are two priorities outlining international action in the marine environment. Priority 18, *The Global Commons,* called for the endorsement of the conservation of open ocean species and critical ecosystems. The establishment of marine sanctuaries was specifically included as an effective measure to protect marine mammals. Priority 19, *Regional Strategies for International River Basins and Seas,* called for new or improved bilateral and multilateral management arrangements to ensure that marine pollution would be controlled and marine living resources exploited in a sustainable manner.

To attain these aims the WCS endorsed the preparation and implementation of national and subnational strategies. The purpose of these strategies was to focus and coordinate attention on relevant priorities for conservation and to stimulate appropriate action in each country. In June 1983 a *National Conservation Strategy for Australia: Living Resource Conservation for Sustainable Development* was proposed by a conference held in Canberra, ACT (Australia, 1983). The *Priority National Requirements* of the National Conservation Strategy of Australia (NCSA) identified the major goals of the Strategy, and ways and means of its implementation. The NCSA stated that "the establishment of marine parks is a valuable means of conserving the coastal environment and marine habitats important for the maintenance of marine plant and animal life" and listed two national requirements among the major goals that relate to the marine environment. These are to:

> (1) manage the impact of development on the coastline, on aquatic resources, on the quality of coastal waters and on critical habitats such as wetlands, estuaries, bays and reefs so that their ability to meet conservation and development objectives is not diminished, and
> (2) ensure that the increasing use of the aquatic environment is managed so that its ecological integrity is retained and its utility and productive capacity are sustained (Australia, 1983: 8-9).

Specific support for protected area management (reserves and habitat protection) was also included in the NCSA, namely to:

(1) assess and, where necesssary, expand the conservation reserve system to ensure the comprehensive representation of ecosystems, species, and genetic diversity of species and the protection of a range of reserves serving recreation, heritage and amenity needs including wilderness areas;
(2) retain and manage representative samples of natural landscapes and habitats in developed areas;
(3) ensure the parks and reserves are large enough for species of flora and fauna under adverse conditions and in the longer term; and
(4) identify and manage habitats of economically and culturally important species (Australia, 1983:19).

Australia, like other nation states around the world, has thus agreed, in accordance with the principles of the WCS, to select areas for national protection in order to create a representative system (or network) of marine protected areas. In promoting such a national marine protected area system Australia has adopted the following ten IUCN objectives for marine protected areas:

(1) to preserve and manage representative samples of marine habitats and ecosystems;
(2) to protect endangered species and habitats;
(3) to preserve and manage important breeding areas for commercially important species;
(4) to preserve aesthetic values for present and future generations;
(5) to protect valuable archaelogical, historical and cultural sites;
(6) to establish sites for the interpretation of marine areas for the purposes of tourism, recreation and education of the public;
(7) to establish sites for the education and training of marine reserve officers;
(8) to encourage research and establish sites for the installation of research stations in which to study marine ecosystem processes;

(9) to establish sites for monitoring the environmental effects of human development and its various perturbations; and
(10) to provide a broad spectrum of recreational opportunities within an aquatic setting (IUCN, 1976:93).[5]

Through synthesis of WCS, NCSA, and IUCN objectives, marine protected areas have been therefore largely justified in accordance with six categories: (l) maintaining ecological processes and life support systems; (2) preserving genetic diversity; (3) sustainable use; (4) maintaining natural areas for education, research, and aesthetic interest; (5) social, recreational and economic benefits (Ray, 1976; Rooney *et al.*, 1978; Pollard, 1980; Salm and Clark, 1984); and (6) *in absentia* benefits (Pearsall, 1984:9).[6]

National support for the IUCN objectives emanates from the Commonwealth[7] and State intergovernmental Council of Nature Conservation Ministers (CONCOM) which "provides a forum for developing coordinated policies for nature conservation, especially the reservation and management of adequate areas of land [and sea]" and "the conservation and management of Australia's wildlife" (Australia, 1982:iii). Policies for the selection and management of Australian marine protected areas have now been identified by CONCOM, based on IUCN objectives (CONCOM, 1985:2). In addition, CONCOM and the

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[5] Kelleher and Kenchington (1990) are currently preparing an updated version of the 1976 IUCN objectives for marine protected areas.

[6] *In absentia* benefits include those that do not accrue to the user in the protected area.

[7] *Commonwealth* refers to the Commonwealth of Australia, the Federal government based in Canberra, Australian Capital Territory, Australia. Throughout this thesis "States" of Australia include the Northern Territory.

Commonwealth Australian National Parks and Wildlife Service have defined marine and estuarine protected areas (MEPAs) in Australia, largely from IUCN objectives, as:

> any area of intertidal or subtidal terrain, together with its superjacent waters and associated flora and fauna, which has been reserved by legislation to protect part or all of the enclosed environment for conservational, scientific, educational and/or recreational purposes (Ivanovici, 1984:1).[8]

The central argument of the thesis is that existing Commonwealth and State legislative and institutional arrangements for marine protected areas are incapable of meeting international objectives (WCS), and national objectives (NCSA), for a national system of representative marine protected areas. The present legislative and institutional arrangements for marine protected areas promote a *closed system of conservation,* found in the IUCN/CONCOM objectives for marine protected areas, whereby they are isolated from other marine policy and land-use decisions. For example, marine protected areas do not generally extend upstream to regulate marine pollution activities, or landwards to control pesticide runoff or sewage outfalls. The planning and management of marine protected areas does not therefore generally

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[8] A *marine park* is a MEPA which excludes certain types of activity, enables the management of acceptable activities, and is generally zoned for multiple use, whereas a *marine reserve* is a MEPA that excludes deleterious activities, is smaller in area, and includes more strict protective measures than a marine park (Ray, 1976; Pollard 1977; Salvat, 1977; Rooney *et al.*, 1978). Marine parks and reserves have a number of sub-categories: marine or aquatic reserves; national parks; marine and intertidal components of national parks, wilderness areas, conservation areas, state and coastal parks or reserves and historic sites; fisheries habitat reserves and fisheries management or closure areas; and intertidal wetlands (Ivanovici, 1984:1). The terms MEPA and marine protected areas are used interchangeably in this thesis.

extend to include the wider geographical area wherein consequences of the marine protected area policy decisions are relevant. As a result, marine protected areas are often treated in isolation, not conforming to the ecological realities of the marine environment.[9] There is no capacity to control outside impacts that may compromise the ecological integrity of the protected area. This protectionist-type of approach derives from terrestrial park concepts that have been inappropriately transferred to the marine environment. These terrestrially-based park concepts have often promoted marine protected areas as *islands of management in a sea of mismanagement* or, as Rooney *et al.* (1978:32) have described it, *a closed cell of naturalness within a matrix of impact*. Moreover, the existing objectives do not explicitly include the recognition of humans in, and adjacent to, marine protected areas, or the WCS tenet of sustainable utilization of species and ecosystems.

In contrast to the IUCN principles adopted by CONCOM, is the UNESCO Man[10] and The Biosphere (MAB) Program for marine biosphere reserves that explicitly embraces the concept of an *open system of conservation* by looking out towards management problems surrounding the protected area and incorporating concerns of the local community. The MAB concept protects core areas of undisturbed natural ecosystems by surrounding the areas with buffer zones that allow sympathetic and compatible activities. These buffer zones can contain human-modified ecosystems, degraded areas or restored ecosystems. Marine protected area planning techniques look outward to manage incompatible activities

[9] Ray (1976:21-23) has identified important differences between terrestrial and marine ecosystems: size and mobility; predominance of water current among environmental factors; ecotones and transition zones; boundaries; dimensionality and the living hydrosphere; physiological continuity; inverted pyramid of biomass, the sink, downstream effect, and short-circuits; eutrophy; and dynamism.

[10] *Man* in Man *(sic)* and The Biosphere refers to humans or humankind.

outside the protected area (the buffer zone) that could compromise the ecological integrity of the protected area (the core zone). This combination provides an effective conservation unit for marine protected areas. *The present thesis advocates MAB marine biosphere reserve planning and management as a basis for an Australian national system of marine protected areas, meeting the tenets of the World Conservation Strategy and the National Conservation Strategy of Australia.* The thesis proposes that the promotion of conservation as an open system incorporating interactions with outside activities, and the use of biosphere reserves as a basis for protected areas, are both desirable characteristics for an Australian system of marine protected areas.

In addition to the problems of a closed system of conservation discussed above, Australian federalism makes the provision of a national system of marine protected areas extremely difficult. Australia's three maritime zones commence from the baseline of the territorial sea, which is measured from the low water mark along the coast.[11] Internal waters, which are under State control, are any waters of the sea on the landward side of the low water mark (baseline of the territorial sea), and usually include any bay, gulf, estuary, river, creek, inlet, port or harbour. The 3 nautical mile territorial sea, also under State jurisdiction, extends from the baseline seaward, while the 200 mile AFZ, under Commonwealth jurisdiction, extends seaward from the edge of the territorial sea.[12,13]

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[11] The baseline follows the sinuousities of the coast and is used to derive the breadth of the territorial sea.

[12] Also included is the airspace over the territorial sea and its bed and subsoil. The Governor-General was given the power to declare, not inconsistently with the provision of the *Convention on the Territorial Sea and the Contiguous Zone* (reproduced as Schedule 1 to the *Seas and Submerged Lands Act 1973 [Commonwealth])*, the landward and seaward limits of the territorial sea (ss. 6-7). The three nautical mile territorial sea is commonly referred to as the 3 mile territorial sea.

[13] The Australian Fishing Zone, declared 1 November 1979, is a 200 nautical mile

The continental margin, consisting of the shelf, slope, and the deep sea bed, is usually defined as the 200 metre isobath. When the margin is wider than 200 miles Australia usually claims 60 nautical miles from the foot of the slope (Prescott, 1985). The division of offshore responsibility between Commonwealth and the States is provided in the 1979 Offshore Constitutional Settlement (OCS) and constitutes an artificial legal division of ocean space, largely concerned with sharing revenue producing activities, not the adequate provision of a national system of representative marine protected areas meeting international standards[14] (Figure 1.3).

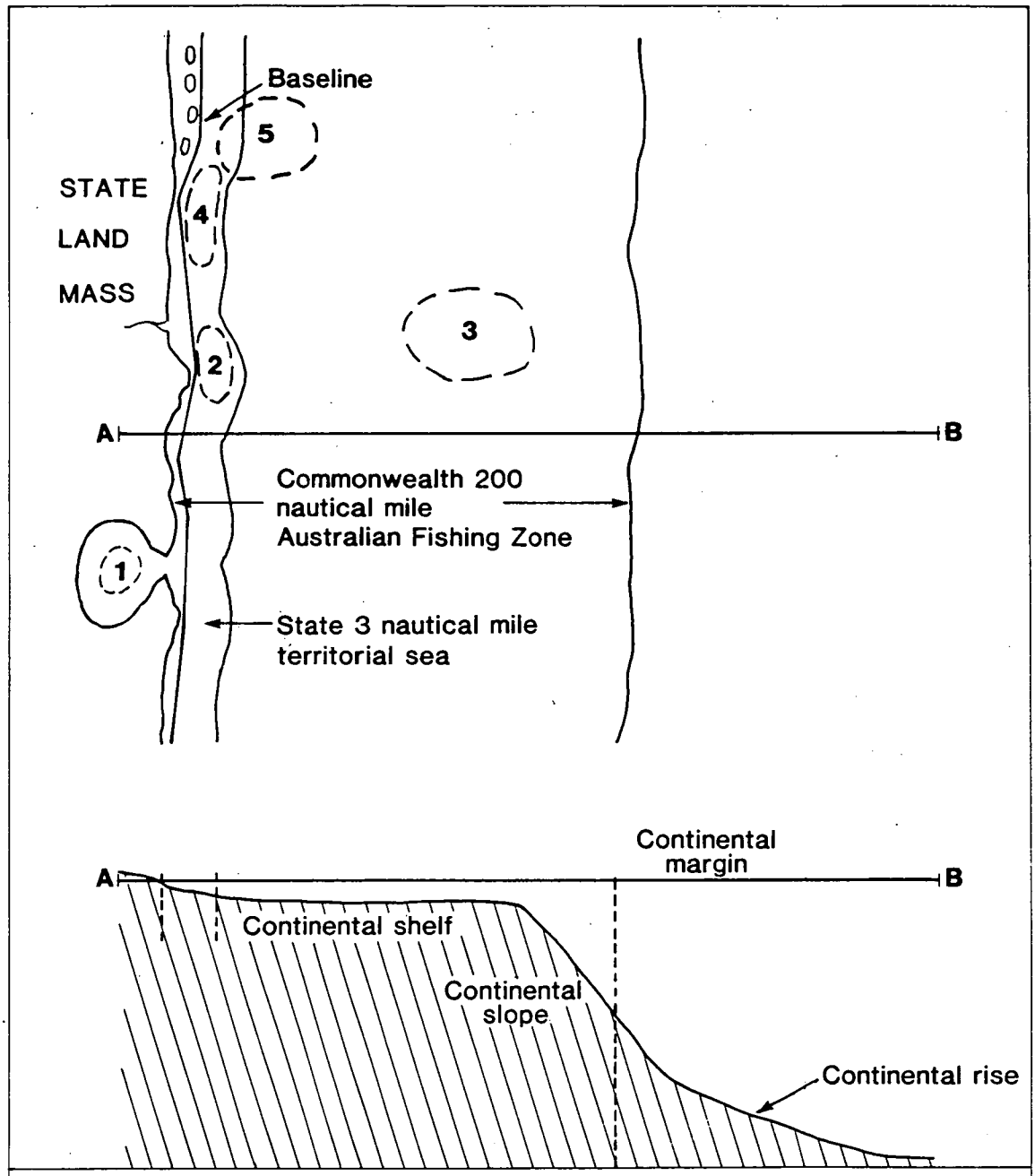
If the policy goal is an Australian system of representative marine protected areas supporting international WCS objectives (as adopted by NCSA) then the objectives of this thesis are to:

(1) assess international developments in legislative and institutional arrangements for marine protected areas and suggest relevant lessons for an Australian system of representative marine protected areas;
(2) determine if extant Australian Commonwealth and State marine protected area legislation and institutional arrangements for marine protected areas meet internationally accepted objectives supported by WCS and adopted by NCSA;

Commonwealth area of ocean space adjacent to the Australian continent and its External Territories, excluding the Australian Antarctic Territory.

[14] At the Premiers Conference on June 1979, the Commonwealth and State governments embarked upon a settlement of offshore jurisdiction. Known as the OCS, the agreement extended the legislative powers of the States in, and in relation to, the coastal waters within the 3 mile territorial sea. Powers were extended to the States in Agreed Arrangements which included, *inter alia*, offshore petroleum, mining, fisheries, historic shipwrecks, the Great Barrier Reef Marine Park and other marine parks. The Commonwealth retained legal control over the 200 nautical mile AFZ, the rest of the continental shelf and the sea and air space above, excluding the 3 mile territorial sea.

Figure 1.3 Australian Maritime Zones and Responsibility for Marine Protected Areas



1 State responsibility - internal waters
2 State responsibilty - 3 nautical mile territorial sea
3 Commonwealth responsibility - 200 nautical mile Australian Fishing Zone
4 Joint Commonwealth and State responsibility - area of international significance
5 Joint Commonwealth and State responsibility

(3) examine how Australian federalism and offshore jurisdictional disputes have influenced marine protected area legislation and institutional arrangements in meeting these international objectives;

(4) assess current planning and management of the Great Barrier Reef Marine Park, Queensland, and suggest legislative and institutional recommendations for an Australian system of marine protected areas; and

(5) outline a framework for legislative and institutional reform supporting an Australian system of representative marine protected areas based on internationally accepted objectives for such a system.

Despite the policy initiatives noted above, practical steps for implementation have met with mixed success although there is growing support for marine protected area legislative and institutional reform. The Commonwealth Government in its 1984 platform has "undertaken to promote conservation objectives in the marine environment by: *taking action to conserve all species of marine animals and all other marine resources throughout the Australian economic zone, and to introduce Marine Park legislation and develop a national system of marine and estuarine protected areas*" (ACIUCN, 1986:24; emphasis added). Further support has been championed by two nongovernmental organizations. Firstly, the Fund for Animals Ltd. (Suter, 1983) has produced draft legislation for Australian marine protected areas. Secondly, the Australian Committee of the International Union for Conservation of Nature and Natural Resources (ACIUCN), through a marine reserves sub-committee, has produced a policy document on Australian marine protected areas, including management plan

guidelines, options and future directions for legislation (ACIUCN, 1986). These and other options for legislative and institutional reform will be canvassed in the present thesis.

Given the offshore jurisdictional complexities in Australian federalism, the role of both Commonwealth and State governments in providing a national system of marine protected areas and the establishment of broad national standards for these marine protected areas, needs to be examined. Debate has contrasted a centralist approach of blanket legislation and standardized management, with a decentralist approach that accepts the realities of Australian federalism and makes State variations most likely. *Despite the problems posed by federalism, however, it is possible that "cooperative federalism" can be used to promote an Australian system of representative marine protected areas.*

1.2 Approach and Methodology

The complexity and nature of marine protected area policy means that any satisfactory analysis cannot take place exclusively within a single discipline. Environmental study by its very nature forms an interdisciplinary (O'Sullivan, 1986) and integrative (Hay *et al.*, 1987) focus of study. Marine protected area policy is thus considered within such an interdisciplinary framework. The variety of disciplines providing utility in analyzing marine protected area policy include, *inter alia*,: international and maritime law, public policy, resource management, conservation biology, environmental planning, marine ecology, fisheries management, and coastal zone and ocean management. It is a new field of government endeavour and academic inquiry drawing on a variety of disciplines and utilising many theories and methodologies. Issak (1981)

describes four categories of possible analysis: (1) scientific activity which describes and accounts for observations and experience of the empirical world; (2) analytic activity which involves the analysis of concepts and arguments to determine consistency with a given pattern or standard; (3) normative activity which expresses moral, ethical or value judgements; and (4) instrumental or applied value judgement, also known as means-end analysis which involves the recommendation of an ultimate end or value, followed by the description of means for its achievement, without necessarily attempting to justify the end itself.

The means-ends analysis was supported by the 1972 Stockholm Conference, endorsed by United Nations Environment Program (UNEP) and the World Conservation Strategy. The thesis adopts a means-ends approach, whilst acknowledging that marine policy studies should be normatively based. Although the thesis primarily utilizes the means-ends format, principles of normative analysis have thus been incorporated. Structured as a series of means and ends, the thesis considers the problem of promoting the shift from the conservation and preservation of individual species, towards the conservation and preservation of higher biological levels (from populations and communities towards habitats, ecosystems, and biomes) utilizing marine protected areas. The successful Australian incorporation of internationally recognized marine protected area objectives (WCS/NCSA) is the end; means must be identified in which a credible legislative and institutional framework for marine protected areas can achieve those international standards. The actual drafting of model legislation is beyond the scope of the present thesis and considered best left to parliamentary counsel or others involved in the legislative process who are reviewing, revising, or creating marine protected area legislation.

The research was conducted from late 1985 to early 1989, with field work conducted throughout the entire period. Initial investigation involved correspondence with Commonwealth and State agencies responsible for marine protected areas, a survey of applicable legislation and institutional arrangements, and attendance at the marine protected area workshop at the 1985 Australian and New Zealand Association for the Advancement of Science Conference. This allowed the identification of key individuals and sources of information in marine protected areas. Both open interviews were conducted, and correspondence was undertaken, with individuals within Commonwealth and State agencies responsible for marine protected areas. On the basis of discussions and reading, the decision was taken to use the Great Barrier Reef Marine Park as a case study.

Field work was conducted in association with the Great Barrier Reef Marine Park Authority (financial support was received through their Augmentative Research Grants scheme) in 1986, 1987, and 1988. Extensive interviews were conducted with the Planning, Research and Monitoring, Park Management, and Education and Information Sections. In addition, interviews were conducted with the Queensland National Parks and Wildlife Service on their day-to-day management responsibilities, and visits to field areas undertaken with their management staff who assisted in interpretation.

The Australian National Parks and Wildlife Service made available reports presented at the CONCOM marine protected area workshops, which were an invaluable source of unpublished information. Further information was gathered from government files and publications,

minutes of meetings, newspapers, periodicals, conference reports, published and unpublished papers from international and national contacts, and from international and national nongovernmental organizations.

1.3 Importance and Significance of the Thesis

The importance of the thesis can be indicated by comparing the area of marine versus terrestrial protected areas in Australia (Table 1.1).[15] Commonwealth and State governments have declared 205 marine protected areas since 1938, representing approximately 375,128 square km. From 1979 Australia has been responsible for approximately 8.9 million square km of ocean space, but only 4.2 percent of this ocean space has been accorded marine protected area status. Moreover, if the Great Barrier Reef Marine Park is subtracted from this total area (it represents approximately 93 percent of marine protected areas declared in Australia) then the ocean space that has been accorded marine protected area status decreases to only *0.06 percent* of Australia's marine responsibility. Expressed as a percentage of the total declared area, Australia's marine protected areas in External Territories represent 4.8 percent, the Northern Territory less than 1 percent, and the remaining five States in the Commonwealth less than 2 percent (Ivanovici, 1984:11). Clearly, the diversity of ecosystems and biomes within Australia's maritime boundaries (with the exception of the Great Barrier Reef) are not adequately represented, protected, or conserved.

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[15] Nation states with 10 percent designated as protected area are considered to be "particularly well covered" (Miller, 1984 b:23), although this figure may not always adequately represent the diversity of biogeographical regions.

In contrast, Commonwealth and State governments have declared over 2,799 terrestrial nature conservation reserves since 1872, representing 348,460 square km.[16] Australia, excluding the External Territories, has an area of 7.7 million square km, roughly equal to Australia's area of maritime responsibilty. However, 4.49 *percent* of the terrestrial area has been reserved for nature protection (Mobbs, 1987:3).[17] Although a number of individual case studies of Australian marine protected areas have been published, there are still some deficiencies in the literature:

(1) there has been little attempt to collate material and undertake comparative assessment or analyze general lessons of experience from overseas;

(2) little has been written on the interdisciplinary or integrative nature of marine protected area policy which synthesizes marine ecology and marine policy as one subject area;

(3) the importance of Australian federalism and potential offshore jurisdictional disputes have not been recognized in the designation of marine protected areas;

(4) little has been written on legislation and institutional developments for Australian marine protected areas;

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[16] A nature reserve is predominantly a terrestrial area, shoreward from the low water mark, managed for nature conservation, including some areas such as historical reserves and recreational areas.

[17] The use of the term *national park* in Australia refers to parks under the control of the Commonwealth and State governments which have different legislative and institutional arrangements. State park agencies are often refered to as *National Parks and Wildlife Services*, yet have no legislative jurisdiction beyond State boundaries and are not responsible for *national* parks in the Commonwealth sense. This is in contrast to *national parks* in nation states where the term refers to Federal parks in states, provinces, or territories under the control the Federal government.

(5) an intergovernmental analysis of Commonwealth and State agencies involved in marine protected areas has not been undertaken; and

(6) an assessment of the internationally recognized MAB Program for marine biosphere reserves has not been undertaken in Australia.

Most of the available literature focuses on either marine ecology (broadly speaking) or marine policy: this thesis adds to the limited corpus of Australian literature dealing with marine protected area policy. Nevertheless, there remains a paucity of literature on legislative and institutional initiatives incorporating ecological concepts of protected area planning and management and conservation of higher biological units within an Australian system of representative marine protected areas. The author is not aware of any published work that adequately addresses these important issues.

1.4 Organization of the Thesis

Apart from Chapter 1, the thesis is organized into five substantive chapters: a survey of extant overseas legislative and institutional arrangements highlighting the emerging international support for marine protected areas; Australian arrangements for legal and institutional marine protected areas; a case study of Australian intergovernmental relations in developing marine protected areas; options for marine protected area legislative and institutional reform, including the MAB Program for marine biosphere reserves; and recommendations for future Australian marine protected area reform.

Chapter 2, entitled *An International Perspective on Marine Protected Areas,* examines the issues influencing the genesis of marine protected areas. The Chapter will examine the international trend of nation states to embrace sovereign rights over ocean space and the way in which this essentially economically-motivated trend has influenced the size and extent of designated marine protected areas. Although new marine protected area concepts and initiatives from international organizations have been developed, the transfer of these conceptual ideas to operational, legislative, and institutional action has been slow. Important trends and key issues for Australia are detailed in an assessment of three overseas responses to providing marine protected areas.

The limitations of existing Australian marine protected area arrangements are discussed in Chapter 3, *The Legislative and Institutional Basis for Australian Marine Protected Areas.* The chapter examines existing Commonwealth and State marine protected area legislative and institutional arrangements to determine to what extent marine protected areas meet WCS/NCSA objectives. An analysis of Commonwealth and State cooperation and initiatives from nongovernment organizations is undertaken.

The Great Barrier Reef Marine Park (GBRMP), Queensland, is discussed in Chapter 4, *Great Barrier Reef Marine Park Intergovernmental Relations.* This case study was chosen because of its representativeness *and* the unique features it encompasses. The GBRMP is representative of the likely problems that would be encountered in Australian federalism in an attempt to promote a system of marine biosphere reserves. The case study

is unique in terms of the solutions adopted to overcome these problems and the precedents set for marine protected area planning and management. Although a number of limitations are identified, the GBRMP legislative and institutional arrangements are the best example in Australia of promoting the transition towards the conservation and preservation of higher biological levels and addressing issues of open conservation. Moreover, because the zoning methodology adopted for the GBRMP is similar to that adopted by the MAB Program for biosphere reserves, it provides for a useful comparative analysis.

Chapter 5, *Future Options for Australian Marine Protected Areas,* is divided into three sections each canvassing an option for marine protected area legislative and institutional initiatives. The first option examines maintenance of the *status quo.* The second option examines incremental change of existing Commonwealth and State legislative and institutional arrangements. The third option examines the utility of introducing new legislation that embraces the ecological principles of protected area planning and management based on the MAB Program for marine biosphere reserves. The Chapter examines the hierarchy of responsibility, legislation, and institutional support necessary for the planning and management of a national system of representative marine protected areas based on the marine biosphere reserve protected area category.

Chapter *6, Conclusions and an Evaluation of an Australian System of Marine Biosphere Reserves,* argues for the adoption of a cooperative Commonwealth and State intergovernmental agreement and institutional arrangements based on marine biosphere reserves. Marine biosphere reserves support an open system of conservation and as such

can offer an appropriate framework to provide an Australian system of representative marine protected areas. Attributes of an Australian marine biosphere reserve system are discussed, as are the limitations to realizing such a system. A demonstrative intergovernmental agreement on marine biosphere reserves is advocated in the Solitary Islands, NSW to illustrate how the concept can be applied to the marine environment and how it could function as a working model for intergovernmental consultation and cooperation.

Chapter 2

An International Perspective on Marine Protected Areas

2.1 Introduction

This Chapter begins by examining the international issues that have influenced the size and extent of marine protected areas, in particular the impact of ocean enclosure - the legal division of the offshore marine environment into territorial and contiguous seas, and exclusive economic zones in federal states. An analysis is then undertaken of IUCN and United Nations (UN) organizations which have supported the move towards the protection of higher biological units, and the ecological principles adopted in marine protected areas supporting open conservation. A discussion of overseas examples is undertaken to illustrate various legislative responses to marine protected areas and to illustrate the constraints in promoting an open system of conservation. From this international perspective, the Chapter concludes by identifying important trends and key issues in national marine protected area systems, and details general lessons and experience that will be important to Australia.

2.2 Ocean Management and Marine Protected Areas

Nation states have embraced contemporary ocean enclosure to claim sovereign rights over valuable natural resources. This has resulted in a large increase in the responsibility for ocean space. The marine environment has been divided into territorial seas, contiguous seas, and exclusive economic zones for the purposes of economic rationality, but this has not necessarily meant a concomitant increase in marine protected areas nor an adoption of ecological principles that embrace an open system of conservation. The artificial division of the marine environment for economic reasons has emphasized the conservation and preservation of lower biological units (populations and communities), not higher biological units (habitats, ecosystems, biomes).

Traditionally ocean management has been based on a doctrine of freedom of the seas, where oceans have been treated as international commons and resources as common property. Common property resources belong to all *(res communis)*, or to no one *(res nullis)*. Grotius expounded these principles in *Mare Liberum* for the Dutch East India Company in the 17th Century (Grotius, 1633). The freedom of the seas doctrine had the following assumptions:

(1) oceans were infinite and therefore not appropriable;
(2) ocean resources were inexhaustible and there was thus no problem of scarcity; and
(3) oceans were perpetually pure and human activities could not degrade them to the point of irreversibility (Friedheim, 1979 b:30).

Initially the extraction of goods and services from the oceans was relatively uncomplicated. Limited to navigation and fishing, human activities were minimal in impact and could not drastically pollute the ocean or deplete the fisheries resource. As oceans were considered infinite and inexhaustible they were not thought of in terms of protection, and marine conservation was therefore not an issue. However, by 1960 freedom of the seas also "encompassed freedom of access, freedom of innocent passage, freedom of exploitation and use - and freedom of abuse - of the oceans and the seabed ... " (Wenk, 1972:252). The three tenets upon which freedom of the seas was based are now largely invalid. Oceans are not infinite and have increasingly been appropriated since the Hague Codification Conference (1930), and the First (1958), Second (1960), and Third (1973-1982) Law of the Sea Conferences. With the declaration of 200 mile exclusive econonic zones (EEZ) more than 75 percent of the 120 plus coastal nations of the world have resource claims to minerals, hydrocarbons, fish, and other resources, with the result that approximately 33 percent of the ocean is economically enclosed (Eckert, 1979:97). Australia has joined these ranks, claiming approximately 8.9 million square km of ocean space in the AFZ, the second largest in the world after the United States of America (USA).

Ocean resources are not inexhaustible. The world's fisheries have come under severe pressure from overexploitation. There has been evidence of overfishing in the North Sea trawl, Pacific halibut, northeast Atlantic herring and mackerel stocks, most demersal stocks, and yellowfin tuna in the eastern tropical Pacific (Cushing, 1975). The Australian Marine Sciences Association estimates that fisheries in Australia worth more

than $100 million annually are threatened by the destruction of estuarine and wetland habitats which serve as nurseries and critical feeding areas (Lawrence, 1985:10).

Oceans are not perpetually pure and human activities seriously and directly reduce the quality of the marine environment. The semi-enclosed Mediterranean, Baltic, Black, and North Seas are seriously polluted (Johnston and Enomoto, 1981). Marine environments adjacent to industrial sites, large populations and river estuaries, such as the eastern seaboard of the USA, the Great Lakes, and the Japanese inshore are now subject to a combination of industrial chemicals, urban sewage, oil, mine tailings, pulp waste, eutrophication, and plastic litter.

Australia is not immune to these pressures. Inshore pollution is particularly evident in Australia as the population is concentrated along this narrow interface of land and sea. Approximately 75 percent of Australians live within 40 km of the coast, while 25 percent live within three km (Suter, 1983:4). Australian marine, coastal, and estuarine environments are increasingly becoming contaminated or reduced in total area: Port Philip Bay, Victoria (Port Philip Bay Authority, 1977); the Sydney beaches (Rubin, 1987) and Botany Bay, New South Wales (New South Wales, 1978); St. Vincents Gulf, South Australia (Ottaway *et al.*, 1980:12); Peel Harbour, Western Australia (Western Australia, 1984); and the Derwent River, Tasmania (Bloom, 1975).

The most influential plea to change the freedom of the seas doctrine came in 1967 when Dr Arvid Pardo addressed the United Nations General Assembly (Friedheim, 1979 a). Pardo proposed a new regime called the

common heritage of mankind to replace the freedom of the seas doctrine. Pardo's view of the common heritage of mankind had five assumptions:

(1) the common heritage of mankind should not be appropriated;
(2) it requires a system of management in which all users have a right to share;
(3) it implies an active sharing of benefits, not only financial but also benefits derived from shared management and transfer of technology;
(4) the concept of common heritage implies reservation for peaceful purposes; and
(5) it implies reservation for future generations, and thus has environmental implications (Pardo, 1979:141).

This regime would have, theoretically, been the optimal solution for the management of ocean resources (Friedheim, 1979 b:36) and would have greatly facilitated the establishment of marine protected areas. The underlying philosophy was that oceans should be treated as an interdependent ecosystem providing nations with long-term benefits. The provision of marine protected areas would have been enhanced because the regime was conceptually linked with the idea of functional sovereignty, as opposed to the traditional concept of terrritorial sovereignty. Functional sovereignty allows jurisdiction over determined uses as opposed to the sovereignty of geographic space (Pardo, 1979:141). For instance, transboundary commercial fisheries stocks would be managed with respect to fisheries habitat (feeding, breeding, nursery, and resting areas), not according to artificial nation state boundaries. Marine protected areas in this context would have promoted a flexible coordination of national and international control within the same geographic space, and could thus have coordinated approximate exclusive and inclusive uses of the sea according to marine ecological principles.

At the Third Law of the Sea Conference (Caracas in 1982) the majority of coastal states supported a 200 mile EEZ with sovereign rights exercised over economic resources. The Pardo proposal was not taken seriously. An "attempt to extend the common heritage to all ocean space beyond national jurisdiction was decisively defeated at Caracas by the irremoveable opposition of the major maritime powers, which intimated that they would consider abandoning the conference if this idea were pushed" (Pardo, 1979:143). The powerful coastal nations were not willing to accept a new and comprehensive world system which did not explicitly recognize the appropriation of ocean space because they were interested in the perceived economic benefits of ocean enclosure *via* the attainment of sovereign rights over associated marine resources.

Australia was among the majority of nations that predictably chose the alternative that would provide short term benefits through national or decentralized ocean enclosure. By treating the 200 mile ocean space as an essentially economic zone, the law of the coastal state could control exploration and exploitation of the resources of that zone. This economic rationale was early recognized by the marine protected area movement when, at the Second World Conference on National Parks (1972), Black argued that:

> At the present time the sea is still looked at only from an economic point of view and each nation stakes its claim on the ownership of what is treated as a common exploitable resource. It is time that ideas about this were changed, that we should keep in mind that marine species also may disappear, and that certain areas of the ocean should be reserved and protected for scientific research as well as recreation (Black, 1974:259).

Maritime states thus began to extend national jurisdictions seaward to include the seabed, ocean, and air space. Ocean enclosure was a simple legal and economic response to the management of what is a highly complex interdependent marine ecosystem with multiple uses that geographically overlap. Given this interdependence, principles of ecosystem protection should have been at the forefront of ocean enclosure. But marine protected areas simply did not weigh prominently in the balance during the movement to ocean space enclosure. For this reason "most ocean theoreticians have characterized enclosure as a set of *second-best* solutions, or a simple politically based solution to a thoroughly multifaceted set of problems" (Friedheim, 1979 b:26-27).

As maritime states have embraced ocean enclosure intergovernmental[1] and interagency conflict has become increasingly apparent. Sectoral, functional, and hierarchical differentiation has resulted in government specialization in this policy area (Sorensen *et al.*, 1984:81-103). Sectoral differentiation refers to the large number of policy areas (fisheries, ports and harbors, waste disposal, and tourism) in the coastal zone. Functional differentiation refers to forms of governmental intervention including: research and education; levying charges and taxes; funding; and long-range policy-setting and planning. Hierarchical differentiation commonly refers to the division between the tiers of government, and is particularly pronounced in a federal political system where there are three such tiers - national, state, and local (Sorensen *et al.*, 1984:88). Horizontal intergovernmental conflict (Mathews 1976:5) occurs between the central government and the states, and vertical intergovernmental conflict, where one geographical jurisdiction defends its powers against the threat

[1] Chapter 3.3 and 3.4 discuss Australian offshore federalism and intergovernmental arrangements for marine protected areas.

of another, is also a notable feature of federal systems.

As a result the "inherent problem of integrated coastal resources management is the large number of sectoral divisions - and corresponding number of government bureaucracies - that directly or indirectly affect coastal uses, resources, and environments" (Sorensen *et al.*, 1984:83). The responsibility for marine protected areas thus often falls under a multiplicity of Federal, State, and/or local government agencies. For this reason the identification of policy linkages becomes of paramount importance and the terms "integrated marine policy", "coastal zone management", and "coastal area management and planning" have been developed. An Australian system of marine protected areas, representing a network of ecosytems and biogeographic types, must be evaluated from an overall perspective rather than that of an individual actor or sector, with decisions referring to an aggregrate evaluation of the marine conservation policy consequences.

2.3 International Initiatives Relevant to Marine Protected Areas

While nations were primarily concerned with essentially economic questions of ocean enclosure there were parallel international initiatives supporting marine protected areas. It is not suprising therefore that the seminal concepts of marine protected area planning and management have not emanated from individual nation states, but rather have been developed and promoted by international nongovernmental organizations. The earliest registration of international support for marine protected areas (in 1962), is inextricably linked to what Curry-Lindahl (1978:163) calls the "internationalization of conservation

activities through appropriate organizations". In just under three decades new and important marine protected area concepts have been largely initiated, and subsequently supported, by international organizations such as IUCN and various UN organizations, such as UNESCO and UNEP. Nation states have, however, generally been slow in adopting recommendations from national and international meetings and conferences on marine protected areas.

Promotion and development of marine protected areas world-wide is closely associated with an independent international nongovernmental organization, IUCN, which was originally created in 1948 as the International Union for Protection of Nature (Munro, 1978). It promotes and carries out scientifically-based action for conservation throughout the world. Consisting of states, government agencies, national, and international nongovernmental organizations, IUCN is non-political and has its headquarters in Gland, Switzerland. With representation from 114 nations, IUCN has conducted conservation activities in over 140 countries (Talbot, 1983). In 1961 IUCN supported the establishment of the World Wide Fund for Nature as its primary fund-raising arm. There is also a large network of United Nations organizations with direct involvement in marine protected areas (e.g., UNESCO's MAB and UNEP's Regional Seas Program) or indirect involvement in the conservation of marine resources (e.g., International Oceanographic Commission under UNESCO, International Whaling Commission, International Council for the Exploration of the Sea, Intergovernmental Maritime Consultative Organization; see Curry-Lindahl, 1978:166). From Table 2.1 it is possible to see both the biogeographical diversity of these IUCN and UN marine protected area initiatives and the increasing

international cooperation that is involved.

The first international forum supporting marine protected areas was the First World Conference on National Parks held in Seattle, USA in 1962.[2] Organized by IUCN, this conference, for the first time, asked governments and agencies to examine the possibility of creating marine parks and reserves. Resolution 15 stated:

> The First World Conference on National Parks invites the governments of all those countries having marine frontiers, and other appropriate agencies, to examine as a matter of urgency the possibility of creating marine parks or reserves to defend underwater areas of special significance from all forms of human interference, and further recommends the extension of existing national parks and equivalent reserves with shorelines, into the water to the ten fathom depth of the territorial limit or some other appropriate offshore boundary (Adams, 1964).

This resolution tended to reinforce a closed system of conservation protecting isolated features, flora, or fauna, regardless of their habitat or ecosystem. Conservation effort was directed primarily towards the preservation of threatened species, especially conspicious large vertebrates. The maintenance of viable animal populations remains the major goal of many conservation organizations and still dominates legislation in most countries. The *Endangered Species Act* of the USA and the Convention of International Trade in Endangered Species (CITES) exemplify this traditional aspect of conservation (Ricklefs *et al.*, 1984:6).

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[2] It is beyond the scope of the present thesis to address traditional conservation methods and marine protected areas (see Johannes, 1984).

Table 2.1 International Initiatives Relevant to Marine Protected Areas (1962-1989) (+ IUCN; * United Nations)

- First World Conference on National Parks, Seattle, USA (1962) *
- Agreed Measures for the Conservation of Antarctic Flora and Fauna (1964)
- Eleventh Pacific Science Congress, Japan (1966)
- Biosphere Conference, MAB Program (1968) *
- Tenth General Assembly of IUCN, New Delhi, India (1969) +
- Regional Symposium on Conservation of Nature (Reefs and Lagoons), Noumea, New Caledonia (1971)
- Twelfth Pacific Science Congress, Australia (1971)
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention), Ramsar, Iran (1971)
- Second World Conference on National Parks, Yellowstone and Grand Teton National Parks, USA (1972) +
- United Nations Conference on the Human Environment, Stockholm, Sweden (1972) *
- Eleventh General Assembly on IUCN, Banff, Canada (1972) +
- Convention for the Conservation of Antarctic Seals (1972)
- World Heritage Convention (Convention for the Protection of the World Cultural and National Heritage) (1972)
- Third United Nations Law of the Sea Conference (1973-1982) *
- International Congress on Marine Parks in the Mediterranean, Castellabate, Italy (1973)
- Central American Meeting on Management of Natural and Cultural Resources, Costa Rica (1974)
- Regional Meeting on a Co-ordinated System of National Parks and Reserves in Eastern Africa, Tanzania (1974)
- International Conference on Marine Parks and Reserves, Tokyo, Japan (1975) *
- South Pacific Conference on National Parks and Reserves, New Zealand (1975)
- Regional Meeting on Promotion and the Establishment of Marine Parks and Reserves in the Northern Indian Ocean, including the Red Sea and the Persian Gulf, Teheran, Iran (1975)
- Second Regional Symposium on Conservation of Nature in the South Pacific, Samoa (1976)

Table 2.1 International Initiatives Relevant to Marine Protected Areas (1962-1989) (+ IUCN; * United Nations) (continued)

- Expert Consultation on Mediterranean Marine Parks and Wetlands, UNEP, Tunis (1977) *
- Group of Experts on Protected Zones in the Littoral and Marine Environment, Council of Europe, La Marsiliana, Italy (1978)
- Convention of the Conservation of Migratory Species of Wild Animals (1979)
- World Conservation Strategy (1980) +
- Convention for the Conservation of Marine Living Resources (CCAMLR) (1980)
- International Union for Conservation of Nature, Commission on National Parks and Protected Areas, 19th Working Session, Christchurch, New Zealand (1981) +
- World Congress on National Parks (Managing Coastal and Protected Areas), Bali, Indonesia (1982) +
- Regional Seas Program (Protocol Concerning Mediterranean Specially Protected Areas) (1982) *
- First International Biosphere Reserve Congress, Minsk, Byelorussia/USSR (1983) *
- Third South Pacific National Parks and Reserves Conference, Apia, Western Samoa (1985)
- Symposium on Endangered Marine Animals and Marine Parks, Cochin, India (1985)
- Coastal Zone '85, Fourth Symposium on Coastal and Ocean Management, Baltimore, USA (1985)
- International Marine Protected Area Management Seminar, Miami and San Francisco, USA (1986)
- International Union for Conservation of Nature, Commission on National Parks and Protected Areas, Antarctic Realm, 29th Working Session, Taupo, New Zealand (1987) +
- Coastal Zone '87, Fifth Symposium on Coastal and Ocean Management, Seattle, Washington, USA (1987)
- IUCN 17th General Assembly, Costa Rica (1988) +
- UNESCO/IUCN Workshop on The Application of the Biosphere Reserve Concept to Coastal Areas, San Francisco, USA (1989) +

In the marine environment this effort was directed towards the preservation of threatened marine species - the campaign against commercial whaling is the best known instance of this. Other efforts were based on taxonomic categories of largely economic fisheries species "with only minimal focus on communities, on processes, and on proper integration of the data into environmental models ... " (Polunin and Eidsvik, 1979:22). Regional organizations for the conservation of fisheries species, such as tuna, halibut, and salmon, exemplify these early fisheries conservation efforts. Moreover, the recommendation for the "extension of existing national parks and equivalent reserves with shorelines, into the water" was supported largely by amending terrestrially-oriented protected area legislation, and *not* by introducing specific legislation for the marine environment.

However, these early conservation efforts were an important catalyst because they gave international encouragement of, and sanction for, marine protected area planning and management. Moreover, these efforts stimulated national interest in conducting marine and coastal surveys, identifying potential sites, and establishing marine protected areas.

As the marine protected area movement steadily reevaluated its goals and basic premises as knowledge of marine ecology increased "it became clear that efforts to save species were futile, without preserving suitable habitats for their populations. In general, habitat conservation, which has become the major thrust of the conservation movement, is still directed toward saving space for wildlife, often toward setting aside reserves for particular threatened species" (Ricklefs *et al.*, 1984:6). The levels of

ecological organization for marine flora and fauna became increasingly recognized:

> First, species or species' populations or areas of special interest were designated and protected by various mechanisms. As sophistication grew, the importance of habitat was increasingly recognized: species required habitat, and habitats were judged rich by the diversity of their species. Even later, as ecology flowered, the ecosystem was recognized as the proper emphasis for management, and ecological processes received attention. The ecosystem emphasis caused the recognition, also, that most protected areas are too small to maintain species diversity (Ray and McCormick-Ray, 1989:73).

It became recognized that the national park concept had many shortcomings. As McNeely argues:

> in a period of increasing human populations, economic uncertainty and social instability, many governments are finding that the traditional national park approach is no longer sufficient to meet their needs for recreation, education, genetic resource management, watershed protection, and the many other goods and services produced by protected area conservation (McNeely, 1984:1).

Recognizing these constraints McNeely (1984:1) has suggested that "[n]ational parks must be as carefully protected as ever, but they must be supplemented by a range of other categories of protected areas in order to meet the social and economic development needs of modern society".

An example of the reevaluation of the traditional national park concept is seen in the introduction and subsequent refinement of the "biosphere

reserve" concept, formally launched in 1971 as part of the UNESCO MAB Program (marine biosphere reserves are discussed in detail in Chapter 5). Theme number eight of its fourteen point program detailed "Conservation of natural areas and of the genetic material they contain" and supported a coordinated worldwide network of protected areas, and specifically biosphere reserves. Biosphere reserves have allowed:

> an emphasis on ecological process [and] mandated the inclusion of human processes into the equation of conservation. Indeed, protected areas must now consider not merely species biology and ecosystems ecology, which is difficult enough, but human economics as well! *This leads inescapably to the concept of the biosphere reserve* (Ray and McCormick-Ray, 1989:73).

Biosphere reserves, which support an open system of conservation, are protected areas of land and coastal environments which include significant examples of the world's biomes. They are linked globally by the exchange of personnel, information, and necessary scientific and infrastructural support to the projects.

A year after the MAB biosphere reserve program commenced two developments assisted in the move towards conservation of higher biological levels.[3] The first was the support given to protected area systems based on biogeographical principles and to marine protected areas at the Second World Conference on National Parks in Yellowstone and Grand Teton National Parks (1972), assisted by IUCN. The Conference:

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[3] National park systems consisting of a network of representative ecosystems in each country was first emphasized by the African Convention on the Conservation of Nature and Natural Resources in 1968.

> *Calls upon* all governments to widen coverage of their protected areas so as to ensure that adequate and representative samples of natural biomes and ecosystems throughout the world are conserved in a coordinated system of national parks and related protected areas, and that the selection and setting aside of such areas should be considered as an essential element in regional and natural land-use planning ...
>
> *Urges* all governments concerned to set aside appropriate marine areas as national parks and reserves and to take action to extend the boundaries of existing terrestrial national parks and reserves to include representative marine ecosystems (Eliot, 1974:442-443).

The second development was the 1972 United Nations Conference on the Human Environment (commonly refered to as the Stockholm Conference), held in Stockholm, Sweden (Batisse, 1982 a). The Conference adopted a Declaration setting forth 26 principles for the preservation and enhancement of the human environment, and an Action Plan consisting of 109 recommendations for environmental action at the international level (Johnston, 1981:47). Marine conservation was promoted in Principle Number 2 (United Nations, 1979). Recommendation 80 further urged that:

> regional and global networks of existing and, where necessary, new research stations, research centres, and biological reserves be designated or established within the framework of the Man and The Biosphere Program in all ecological regions, to facilitate intensive analysis of the structure and functioning of ecosystems under natural or managed conditions (Johnston, 1981:316).

UNEP was created as a result of the Stockholm Conference recommendations. Under UNEP, regional strategies concerning marine pollution identified and concentrated on specific marine regions that were environmentally vulnerable. The Regional Seas Program in 1973 adopted the use of regional action plans, and these have been developed for ten designated marine regions[4] (Bliss-Guest and Keckes, 1982; Hulm, 1983:3). In each region the UNEP action plan included scientific research, cooperation, assessment and management, and a legally binding convention for regional control. Although UNEP may provide financial and institutional support in the early stages of a program, eventually governments concerned oversee the implementation of the action plan (Hayward, 1984:117-118).

This represented a critical time in the development of marine protected areas (Wallis, 1971). Support for marine conservation at higher biological levels - habitats, ecosystems, and biomes - was in evidence for the first time. It became clear that in order to conserve marine species there had to be conservation of geographically large marine areas. A number of protected areas were created to conserve underwater areas of special significance (e.g., critical habitats) and to represent marine habitats for conservation. Explicit recognition of the importance of the Man and The Biosphere Program (and biosphere reserves) was acknowledged by the Stockholm Conference as a worthy attempt to provide a network of areas representing examples of the world's biomes.

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[4] They are: Mediterranean (1975), Red Sea and Gulf of Aden (1976), Arabian-Persian Gulf (the Kuwait Region Action Plan) (1978), West and Central Africa (1981), wider Caribbean (1981), and East Asian Sea (1981). Four more regions are being added to the program: Southwest Pacific, Southeast Pacific, Southwest Atlantic, and East Africa.

IUCN's involvement in marine protected areas was stepped up when it co-organized the International Conference on Marine Parks and Reserves in Tokyo, Japan in 1975 (Tamura, 1977). The Tokyo Conference attracted 109 participants from 32 countries and was the first time an international conference was convened with the sole aim of addressing the wide range of issues concerned with marine protected areas. Widely regarded as a great success, the Conference provided an arena for countries to review progress in the creation of marine protected areas and to determine if the plea for marine protected area designations (made in 1962), and habitats and ecosystems (in 1975), had been suitably met.

A cursory evaluation of early efforts in establishing marine protected areas suggests that many countries had acknowledged the plea made thirteen years earlier at the First World Conference on National Parks. Gare (1977:142) stated that more than 80 areas had been established since 1962 and considered this *reasonably good* at the Tokyo Conference (1975). This estimation, based on Bjorklund (1974), revealed that marine parks and reserves had been declared in North America, the Caribbean, South America, the Indo-Pacific (including Australia) Africa, the Mediterranean, and Northern Europe.

A closer examination of the designated protected areas and legislation enacted in the thirteen year period suggests, however, that reaction to the plea had not been *reasonably good.* The numbers and sizes of marine protected areas were extremely small considering the vast ocean space involved. The 1972 recommendation for the increased representation of habitats and ecosytems had only been minimally met. Legislation enacted for marine protected areas was usually formulated as an extension to

terrestrial activities, or countries relied on legislation with no specific provision for the marine environment.

No marine parks had been designated in the Southern Ocean which surrounds Antarctica, or in the Arctic Ocean. There were 52 variations of the term *marine park,* underscoring the problem of establishing a consistent nomenclature. A number of the marine parks listed were, in fact, *not* marine parks, since coastal parks that did not include any portion of the marine environment were freely listed as marine parks. For instance, the marine protected areas in Canada that Bjorklund (1974:207) details are terrestrial federal parks located adjacent to the ocean. They have no jurisdiction over marine conservation and should not be considered marine protected areas. In the 13 year period from 1962 to 1975 Canada did not declare one marine park and did not (and still does not) have special legislation for marine protected areas. Australia had only declared one marine park before 1975 (adjoining the Bouddi State Park, New South Wales). No marine protected area legislation had been promulgated in Australia. Japan had only declared 23 national parks, each included some shoreline and approximately one square km of sea. The extent of the international support for marine protected areas was thus greatly exaggerated at the 1975 Tokyo Conference.

The next significant initiative was the World Congress on National Parks held in Bali, Indonesia in 1982 (known as the Bali Congress, it was attended by over 500 participants from 60 nations) at which the IUCN Commission for National Parks and Protected Areas (CNPPA) held a workshop.[5] This workshop addressed topics central to identifying,

[5] Every 10 years IUCN promotes a World Congress on Protected Areas which brings together the world's professionals, government agencies, researchers, and citizen groups

promoting, establishing, and managing coastal and marine protected areas. Workshop sessions were collated into a source book on marine conservation entitled *Marine and Coastal Protected Areas: A Guide for Planners and Managers* (Salm and Clark, 1984) and recommendations from the Congress included specific recognition of the importance of marine and coastal protected areas (Appendix II). This Congress made, arguably, the single most important contribution to the planning and management of marine protected areas. The importance of a biogeographical classification system was highlighted when the Congress identified a need to "develop as soon as possible an appropriate marine biogeographical classification scheme on global, regional, and national levels as a basis for ensuring adequate representation of different marine ecosystems in a wide range of protected areas" (McNeely and Miller, 1983).

IUCN's own CNPPA has proved to be an invaluable source of support for marine protected areas. Established in 1960, the CNPPA had a 1983 network of 258 members from 89 countries (McNeely and Miller, 1983:13; Harrison *et al.*, 1984:26; Miller, 1984 b) which increased to over 300 members in 119 countries in 1987 (IUCN, 1987:2).[6] "CNPPA is the world's main centre for professional protected area managers and park

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to assess progress, to review priorities, and to elaborate the agenda for the coming decade. The next Congress is in Panama in 1992.

[6] The world's protected areas cover 425 million ha, or almost 3 percent of the earth's land surface, with 124 countries having established protected areas. IUCN's Protected Area Program has the overall objective to "ensure that representative samples of the world's natural habitats are effectively managed for the sustainable benefit of both humans and nature" (IUCN, 1987:2). Information and monitoring for the CNPPA is undertaken at the Conservation Monitoring Centre (CMC) by the Protected Area Data Unit (PADU) in Cambridge, United Kingdom. PADU also manages the documentation on natural World Heritage Areas and information submitted on sites listed under the Ramsar Convention (IUCN, 1975).

experts. CNPPA sets the standards, monitors status and trends, provides training, key publications, and technical assistance" (IUCN, 1987:1). It produced important administrative and management material concerned with categories, objectives, and criteria for protected areas and is responsible for the United Nations List of National Parks and Equivalent Reserves (IUCN, 1980 b).[7] In 1978 the CNPPA synthesised ten categories and conservation objectives focussed on terrestrial protected areas. The *category* was the name of the protected area and described a three-dimensional space; the *conservation objective* was the purpose and described the use of the space. This terrestrial classification was subsequently modified to incorporate marine conservation areas (Salm and Clark, 1984:236).

Terrestrial-oriented categories, definitions, objectives, and criteria for protected areas were adapted to reflect the requirements of the marine environment (Table 2.2). Revision of the categories to include both terrestrial and marine environments was thus the culmination of four years of discussion, incorporating the results of the Bali Congress.

Although the agreement on marine protected areas constituted explicit international recognition of marine protected area nomenclature, this scheme was not unanimously adopted by countries attending the Bali Congress. The 52 variations of the term *marine park* used in 1972 are still in international use. The problem of nomenclature is not restricted

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[7] The first UN List was published in 1967 and revised in 1971 to include over 1,200 natural, anthropological, historical, or archeological areas. The 1980 List includes national parks, nature reserves, biosphere reserves, and World Heritage sites. Closely associated is the IUCN World Directory of National Parks and Other Protected Areas (Lausche, 1980:18-19).

Table 2.2 IUCN Categories and Conservation Objectives for Marine Protected Areas

Category I - Scientific Reserve/Strict Nature Reserve/Strict Marine Reserve:
to protect nature and maintain natural processes in an undisturbed state in order to have ecologically representative examples of the natural environment available for scientific study, environmental monitoring, and education, and for the maintenance of genetic resources in a dynamic and evolutionary state.

Category II - National Park/Marine National Park:
to protect natural and scenic areas of national or international significance for scientific, educational, and recreational uses.

Category III - Natural Monument/Natural Landmark:
to protect and preserve nationally significant natural features because of their special interest or unique characteristics, and to provide opportunities for interpretation, education, and public appreciation.

Category IV - Nature Conservation Reserve/Managed Nature Reserve/Wildlife Sanctuary/Marine Sanctuary:
to assure the natural conditions necessary to protect nationally significant species, groups of species, biotic communities, or physical features of the environment, where these require specific human manipulation for their perpetuation.

Category V - Protected Landscape or Seascape:
to maintain nationally significant natural seascapes which show the harmonious interaction of humans with island, coast, and sea while providing opportunities for public enjoyment through recreation and tourism within the normal life styles and economic patterns of these areas.

Category VI - Resource Reserve:
to protect the natural resources of the area for future use, and prevent or contain development activities that could affect the resource.

Category VII - Natural Biotic Area/Anthropological Reserve:
to allow the way of life of societies living in harmony with the environment to continue undisturbed by modern technology.

Category VIII - Multiple Use Management Area/Managed Resource Area:
to provide for the sustained production of water, timber, wildlife, pasture, or marine products and outdoor recreation, with the conservation of nature primarily oriented to the support of the economic activities (although zones may also be designated within these areas to achieve specific conservation objectives).

Category IX - Biosphere Reserve:
to conserve, for present and future use, the diversity and integrity of biotic communities within natural ecosystems and the genetic resources on which their continuing evolution depends.

Category X - World Heritage Site (Natural):
to protect the natural features for which the area was considered to be of World Heritage quality, to provide information for worldwide public enlightenment, and to provide research and environmental monitoring.

Source: Salm and Clark, 1984:236-241.

to marine parks: "[a] review of protected area classifications and the associated terminologies used in different countries reveals little consistency and no standardization" (Lausche, 1980:25). This underscores the problem of developing a consistent nomenclature for marine and terrestrial protected areas, however, the CNPPA conservation categories and objectives should at least assist in easing the confusion over nomenclature that has plagued the development of marine protected areas.

The IUCN Marine Program Office and the UNEP Ocean and Coastal Areas Program are now collaborating with a Marine Mammal Action Plan in establishing regional conservation data bases, and providing assistance to regional protected areas and species. As shown in Table 2.1 attention was focused on marine biosphere reserves late in 1989. A joint UNESCO/IUCN sponsored workshop was be held in San Francisco, USA to examine the application of the biosphere reserve concept to marine and coastal areas. One of the results of the workshop was a publication by Agardy and Vernhes (1991) entitled "Guidelines on the Application of the Biosphere Reserve Concept to Coastal Areas". The paper was prepared on the basis of presentations from biosphere experts and case studies presented at the workshop and included, *inter alia*, a proposed protocol for planning coastal biosphere reserves, the process of implementation, and research orientation.

2.4 An Ecological Approach to Planning Marine Protected Areas

Problems with the standardization of categories, objectives, and criteria for marine protected areas are therefore of significance. A further major issue, the size at which marine protected areas should be proclaimed, has also not been adequately resolved (Goeden, 1979; Polunin, N.V.C., 1983; Salm, 1984). The size of proposed protected areas has a major influence, as different marine environments require various areas to be effective in the preservation of marine populations, communities, habitats, ecosystems, and biomes. Early conservation efforts attempted to link the size of a reserve either to the structural diversity and the range of habitats required for its component plants and animals or to the relationship between the number of species on islands of different area but similar habitat (Rooney *et al.*, 1978). With respect to the minimum size of biosphere reserves Soule (1984:255) has argued that the biological debate between the relative value of a single large versus several small refuges (the so called SLOSS debate) is "no longer an issue with regard to species diversity at the time of founding of reserves", rather attention should be focussed on the "study of those factors that determine the minimum viable population". These studies, however, focussed on terrestrial rather than marine ecosystems.

Coral marine environments have tended to be the most studied of marine ecosystems though little attempt at delineating the scale of marine protected areas has been made (Kenchington and Hudson, 1984). Bradbury and Reichelt (1981:219) have concluded that ecological theory is "robust enough to suggest an adaptive strategy for the conservation of coral reefs ... and is compatible with the central theme of the WCS -

sustainable development". Goeden (1979) has promoted links between the theories of terrestrial island biogeography and the functioning of the closely-spaced archipelagos of *underwater islands* that make up reefal areas such as the Great Barrier Reef of Australia. Modelling reef fish species on small coral reefs, it was found that an area of 3,470 ha was necessary to establish a minimum size of reserve to sustain marine species. In the Chagos Archipelago Salm determined that at least 300 ha was necessary for each reef type (Salm and Clark, 1984:115).

However, studies of coral reef ecosystems have limited application in the estimation of size for protected areas in other marine environments. Salm and Clark (1984:93-191) show that different marine environments require various approaches to protected areas. For example, lagoon and estuarine protected areas should include the watersheds that impact these areas to a distance of 10 km offshore (Salm and Clark, 1984:132). Protected areas in open seas (waters seaward of the continental shelf) are very difficult to delineate spatially because the biogeographic zones are very large and imprecise. Open seas have the added problem of migratory animals circulating between seas and hemispheres. An example of protecting open seas and the problems of scale has been raised by Angel (1982) in the conservation of ocean trenches where the average depth of ocean trenches is .85 km. Similarly, little research has been undertaken estimating the size of protected areas for polar seas given the limited knowledge of the interdependence of marine and terrestrial environments (Kriwoken and Keage, 1989 b).

Some researchers have preferred to focus on the conservation objectives for protected areas. Ray (1970, 1974, 1976, 1977, 1985, 1986) has been the earliest, and strongest, proponent of an ecosystem approach to marine

protected areas, arguing that such areas should not end on the shoreline, but should incorporate adjacent land areas either within their boundaries or in their management plans. Ray (1976:22) uses the term *ecotone* to denote the transition zone or interface between systems such as the coastal and marine environments (ecotones exist at all scales, depending on the parameter of interest and the scale of system interaction). Rooney *et al.* (1978:64) argue that because the question of marine protected areas has not been resolved "we should not attempt arbitrarily to set limits or boundaries to such reserves but rather should intelligently manage and monitor all coastal development". A similar concern has been raised with respect to the Great Barrier Reef Marine Park by Isbell (1983:85) who states that "the most likely effects on coral ecosystems are those due to excess freshwater inflow, sediment load, and deleterious effects due to fertilizers and pesticide residues ... " As coastal development rapidly increases a wide range of activities will have increasingly deleterious effects on the marine environment, including impacts on existing or potential protected areas.

In order to mitigate the effects of unsympathetic developments on marine protected areas the concept of core and buffer designs has been extensively used for marine protected area planning. Core and buffer design has been adopted for instance in the Great Barrier Reef Marine Park, Queensland, and for the MAB Program for biosphere reserves, and has wide ranging support in the marine protected area literature (Ray, 1976:27; Lausche, 1980:40; Batisse, 1982 b; UNESCO-UNEP, 1984; Salm, 1984; Salm and Clark, 1984:250-253). Core areas ideally encompass entire ecological units (habitats and communities), including terrestrial areas, where use is strictly controlled. Buffer zones encompass upstream effects and

contiguous ocean water, large enough to incorporate geomorphological changes which alter shore boundaries, and can include research and educational uses, public recreation, and fishing, according to the carrying capacity of the area (the core/buffer design will be discussed in Chapters 4 and 5). Rooney *et al.* (1978:64) maintain that "if one is forced to delineate zones for preservation, one must make them as large as possible and allow for adequate protection by means of a *buffer zone* surrounding the *core*".

Finally, there are important developments in marine biogeographical classification systems that have implications for protected areas (Ray, 1975). Hayden *et al.* (1984) have suggested a two-dimensional biogeographical classification system of the global marine environment with four biomes - open oceans, coastal margins, marginal seas, and marginal archipelagos. Until the Hayden *et al.* (1984) classification, global marine biogeographical classifications either drew boundaries by terrestrial criteria according to vegetation (Udvardy, 1975, 1984) or by coastal classification using physical landforms and physical processes (Dolan *et al.*, 1972). The classification system does, however, require further refinement if it is to form the basis from which to establish a national system of representative marine protected areas. In its present global-focused scale it fails to provide the amount of detail on regional and subregional marine areas needed by marine park planners. The classification would benefit from a complementary matrix analysis whereby marine protected area representation would include the complete range of marine environments in each biome. In the future it would also be useful to include a third, vertical, dimension in the biogeographical classification system.

Nevertheless, there has been a move towards adopting ecological principles in marine protected area planning and management and the conservation of higher biological units (e.g., biomes), and a shift away from traditional concepts of national parks and reserves (e.g., isolated highly protected areas) as a sole mechanism for conservation (Eidsvik, 1980). Polunin and Eidsvik argue that:

> [t]he central role of ecology in park planning is now so widely recognized that it is practically unthinkable that any nature reserve, let alone a major park, should be established without due regard being paid to ecological principles (Polunin and Eidsvik, 1979:21).

For instance, evidence of the importance of maintaining essential ecological processes as a conservation goal (the first aim of the WCS) has been shown by Ricklefs *et al.* (1984). The implications for protected area planners and managers are critical because they "must carefully reassess the objectives of future conservation action against a range of alternative means for achieving such action" (Eidsvik, 1980:188). The use of the national park as a tool for marine conservation has now changed:

> No longer can the *setting aside* of marine areas for their amenities alone, as *parks* imply, be our isolated purpose, for the ecological health of such encompassed areas cannot be guaranteed by this means alone. We must also learn to think in terms of the health of the system within which reserves are located. No longer can we delude ourselves by calling park establishment *ecosystem protection* (Ray, 1976:18).

Ultimately larger multiple use management areas and biosphere reserves may be more appropriate in conserving marine ecosystems and processes than the traditional park or reserve concept.

Although the marine protected area movement may be broadening its goals, it is critical to determine the extent that nation states have followed suit. The Chapter now turns to an analysis of three representative overseas marine protected areas systems and the extent to which legislative and institutional arrangements have promoted these new ecological initiatives to support an open system of conservation.

2.5 International Examples of Marine Protected Area Programs

2.5.1 Introduction

For these new ecological initiatives to be effective they must be incorporated within protected area legislative and institutional arrangements set in place by nation states. However, nation states have most often relied upon legislation that reinforces the traditional terrestrial national park concept of reserving small areas and restricting use (e.g., a closed conservation system), even though evidence now suggests that small designated marine protected areas may be unable to protect or conserve representative and unique habitats, ecosystems, and biomes. Institutional responses are often dominated by economic interests, multiple overlapping jurisdiction, and simple politically-based non-ecological solutions. As a result, marine protected area programs are usually incapable of meeting WCS objectives for national protected areas systems.

The next section of the Chapter will examine the legislative and institutional responses of three overseas nations to marine protected area arrangements and make suggestions that may be applicable to the Australian situation. An evaluation of the nation's marine park system

will be undertaken from both stated national objectives and with reference to the World Conservation Strategy objectives discussed above. The following examples do not represent an exhaustive study of marine protected area systems (see for example Bjorklund, 1974; Rooney *et al.*, 1978; Silva and Desilvestre, 1986). They have been chosen to illustrate the three types of legislative responses to marine protected areas outlined by du Saussay (1980:14-15; 1983) - specifically, legislation applicable to both the terrestrial and marine environments (Japan), no specific legislative provision (Canada), and nations which have introduced special legislation for marine protected areas (USA).

2.5.2 Japan

The Japanese terrestrial national parks system, established in 1931 with the *National Parks Law* and amended in 1957, provides an understanding of the traditional role of protected areas. National parks were first designated to fulfill four objectives: (1) protect spectacular natural landscapes; (2) make the landscape accessible for recreation; (3) attract foreign tourists (and foreign currency); and (4) increase the development of communities adjacent to the park (Oi, 1974:97-100). However, Japan was one of the first countries to address the resolutions put forward at the First World National Parks Conference in 1962 with respect to marine protected areas.[8] As such their pioneering effort is commendable. In 1964 the Nature Conservation Society of Japan (NCSJ) created a Preparatory Committee for the establishment of marine parks.

[8] Japan's population of 120 million is concentrated within 372,300 square km. This is one of the highest population densities in the world and presents associated problems of urban and industrial wastes in the marine inshore. Consisting of 3,900 islands, Japan is 3,000 km long and includes sub-Arctic to tropical waters. The country has a 4,842 nautical mile coastline, a continental shelf of 178,000 square km, and a 200 nautical mile EEZ of 3,861,100 square km.

By 1965 a list of potential marine parks was made public, and in 1966 the Eleventh Pacific Science Congress held in Tokyo had a special symposium on marine parks (Tamura, 1966). An independent foundation was organized in 1967, called the Marine Parks Centre of Japan, which had approval from the Ministry of Health and Welfare and the financial support of various industrial companies.

The momentum for a legislative basis for marine parks grew steadily, culminating in 1970 when the Act promoting terrestrial national parks for scenery protection and recreation was amended to distinguish *special marine parks* and *marine park areas*. Initially, ten marine parks were created in 1970, followed by 12 more areas in 1971. By the time Japan hosted the International Conference on Marine Parks and Reserves in 1975 (Tamura, 1977; n.d.) it had the greatest number of marine protected areas in the world (Marsh, 1985:34).

The Japanese example is illustrative of the issues arising from modifying terrestrial protected area legislation, instead of introducing a separate legislative basis for marine protected areas. This response reinforced the traditional terrestrial national park concept of reserving small, discrete areas, restricting use, and supporting a closed system of conservation. This was further evident in the selection of sites for marine parks with the prime aim of *preserving beautiful underseascapes*. Japan's marine parks are established on the following selection criteria:

(1) both land and sea areas, surrounding the Marine Park Area, are designated as a National or Quasi-National Park, and nature conservation on land can be fully ensured;

(2) a topography of seabed is characteristic and also undersea fauna and flora are abundant (*sic*);
(3) seawater is transparent and least likely to be made dirty or to be polluted;
(4) depth of water is twenty metres at the deepest;
(5) current is not so rapid whereas waves are not so violent (*sic*);
(6) there should be enough space in near land to construct connected land facilities such as landing pier, resthouse, visitor centre, parking lot, etc. (*sic*);
(7) coordination with fishery should be possible, especially cooperation with local fishery concerning Marine Park Area, could be obtained (*sic*);
(8) besides above, least risk of destroying underseascapes by every kind of industrial exploitations should be incurred (*sic*) (Tamura, 1977).

There are presently 23 marine parks adjacent to 10 national parks and 13 quasi-national parks incorporating 57 marine parks totaling 24 square km in keeping with the above criteria (Marsh, 1985:34-36).[9] The 57 marine park areas, which are the core of the 23 marine parks, average only .42 square km in size, with 17 areas under .10 square km (Marsh, 1985:36) and are usually a 1 km band of sea along several km of coastline or a 1 km area off the coast. Marsh (1985:43) argues that "[g]iven the mode of selecting Japan's parks, their small size, the emphasis on recreation, and the low key approach to management, it is not clear that they play a significant role in representing marine natural regions, in conserving species or in saving endangered species". Moreover, there is no mention of biophysical representation and no suggestion as to the total number of areas required to complete a system (Marsh, 1985:35).

[9] The term *quasi-national park* is used in Japanese legislation.

Marine parks in Japan accommodate marine recreation, tourism, and fisheries rather than ensuring the protection of ecologically vulnerable areas. They are areas of low turbulence, clear water, interesting topography, and colourful marine life meant to attract humans and are managed as commercial enterprises. Marsh (1985:39) maintains that in "some parks, the facilities seem to dominate the scene and create a very commercial atmosphere". Approximately 500,000 people visited Kurshimoto Marine Park in 1975 (Hunnam, 1977:276), while estimates of the annual visits for all Japanese marine parks was approximately 18 million (Marsh, 1985:39). This level of use is unsurpassed in any country and, as Oi argues, it "must be admitted that the greatest shortcomings of the national park system of Japan are the institutional weakness ... and the excessive proliferation of commercial facilities unintentionally fostered by such a weak system" (Oi, 1974:100).

Institutional arrangements for these areas predictably support tourism operators and encourage visitors to shop, dine, and take excursions on glass bottomed boats or into underwater observation towers. The Environment Agency staff is small so day-to-day management involves other government agencies, tourism operators, scientists, and volunteers (Marsh, 1985:37). Economic interests such as commercial fisheries are not usually restricted in marine parks. Fishing can only be restricted if there is an agreement between the commercial operator and park authorities, and in areas where fisheries are important the marine park is usually modified to accommodate those interests. The establishment of Japanese marine parks pre-empts any serious conflict between the establishment of marine parks and the fishing industry by always acceding to fisheries interests.

Measured against WCS objectives, the Japanese marine protected area system must be considered inadequate. Japanese marine protected areas are often successful in providing sites for the interpretation of marine areas for the purposes of tourism, recreation, and education of the public, and probably assist in the commercial fishing industry, but there is no specific call to maintain essential ecological processes and life-support systems, preserve genetic diversity or ensure sustainable utilization of species and ecosystems. Though Japanese marine protected areas cater for the preservation of aesthetic values, and for research and research stations, it is doubtful whether the system preserves and manages representative samples of marine habitats and ecosystems, let alone the representation of biomes supported by MAB. It is also unlikely that the marine protected area system sufficiently protects endangered species and habitats.

There are a few lessons to be drawn from this example. Early involvement in the marine protected area movement does not necessarily guarantee an adequate national system of representative marine protected areas. Terrestrially-oriented legislation, modified for marine protected areas, tends to promote small, discrete, marine areas and reinforces a closed system of conservation. A largely *economic-use* basis for marine protected areas will be successful in attracting humans (e.g., tourism, recreation, fisheries) but will not necessarily fulfill accepted international conservation objectives for marine protected area systems.

2.5.3 Canada

Canada represents the second of du Saussay's (1980) categories, wherein no specific legislation has been introduced for marine protected areas.[10] Canada does, however, have an internationally renowned terrestrial national park system which includes four federal national parks containing littoral habitats.[11] The primary reason for examining a Canadian case study is the extensive marine parks policy developed by the federal government. Canada is one of very few countries to have developed a national policy on marine parks, yet has failed to introduce legislation implementing this policy. As a result, the marine parks system is virtually non-existent.[12]

The first serious consideration of a Canadian marine parks policy commenced in 1970 with a study to review marine park developments. In 1971 a Task Force comprised of representatives from federal agencies (Parks, Fisheries, and Energy, Mines and Resources) was established (Mondor, 1985:10-11). A 1975 survey identified outstanding representative examples of various natural maritime regions in Canada. Work on a draft policy for national marine protected areas was initiated by the then Parks Canada (Ministry of Environment) in 1979, after

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[10] Canada has a terrestrial area of 9,976,100 square km and a small population of 25 million. It has an 11,129 nautical mile coastline and a 4,697,700 square km EEZ, the fourth largest EEZ in the world (Couper, 1983:227), representing polar, sub-polar, and temperate marine environments. Although the population of Canada is small, it is concentrated on the east and west coasts and the Great Lakes and the pressures of urban and industrial wastes are consequently evident in marine inshore environments.

[11] They are: Pacific Rim, British Columbia; Kouchibouguac, New Brunswick; Forillon, Quebec; and Auyuittuq, Northwest Territories.

[12] The Ontario provincial government has established Fathom Five Provincial Park, Canada's first *underwater park*. British Columbia has published a discussion paper on marine protected areas (British Columbia, 1980) and is examining the feasibility of new areas.

extensive consultation with the public and with other federal agencies including Fisheries and Oceans, Transport, Energy, Mines and Resources, and Indian and Northern Affairs. The federal and provincial governments combined in 1982 to undertake a pilot study to develop the concept of a federal national marine protected area in the West Isles in the Bay of Fundy, New Brunswick (MacKay, 1976; Kriwoken, 1984, 1985). The major concern over this pilot study was that a marine protected area policy had not been finalized and public opposition to such a development subsequently grew from local residents involved in commercial fisheries.

In 1983 Parks Canada released the *National Marine Parks Draft Policy* (Canada, 1983). By this time a large cross-section of the community had become involved in marine protected area issues. In 1985 they were considered at a marine protected area workshop, and the subsequent publication (Lien and Graham, 1985) brought together contributions from the most significant experts and played a part in the revision of the draft policy to produce the 1986 version of the *National Marine Parks Policy* (Canada, 1986), which was given governmental approval. Whilst admitting that Canada was "playing catch-up in this vital area of public policy" (Canada, 1986) in accepting the draft policy, the actual proclamation of marine protected areas has not occurred. The chief objective for national marine protected areas, stated in the new policy, was "to protect and conserve for all time representative marine areas in a system of national marine parks, and to encourage public understanding, appreciation and enjoyment of Canada's marine heritage" (Canada, 1983). To this end, Canada's marine area has been subdivided into 28 regions approximating the global classification of marine provinces adopted by

IUCN (Hayden *et al.*, 1984). As a result, biogeographical classification schemes have been an important development in marine protected area policy in Canada (Canada, 1983). These regions have been used as the basis for identification of representative marine areas of Canadian significance and for the selection of potential national marine protected areas. Identification of such areas relied upon a consensus of marine scientists from a wide range of disciplines (Canada, 1983). The marine park concept in Canada, therefore, provides a fully developed natural region framework for the long-term planning of a marine protected area system (Mondor, 1985:11).

Although many developments were promised by the Canadian initiatives, measured against WCS objectives the Canadian achievement is extremely limited. Although a flurry of activity has taken place in developing a Canadian marine protected area policy, no national legislation has been passed specifically promoting marine protected areas. Only one marine national park has been established and this was nominated under the *World Heritage Convention* (South Morseby World Heritage Area in British Columbia was declared August 1987 and although it includes a portion of the marine environment it was not specifically designated for such). The single marine protected area cannot obviously preserve and manage representative samples of the marine habitat and ecosystems of Canada's biogeographical regions, nor can it protect endangered species or habitats. In fact it is unlikely that any of the WCS objectives can be adequately met with the present marine protected area system. The four existing federal national parks containing littoral environments do provide interpretation and education of the coastal

ecosystem. The excellent policy statement and theoretical basis to marine protected areas has not been translated into actual practice. It is somewhat ironic, given the extensive work on the marine protected area policy, that internationally Canada has one of the least impressive records for declaring marine protected areas.

The Canadian experience provides several lessons for Australia. A biogeographical classification scheme is useful for a marine protected area system (Canada, 1983; McNeely and Miller, 1984) because it can provide a theoretical framework for the preservation of representative marine habitats. Although needing further refinement for regional and subregional application, biogeographical principles are an important requirement for a national system and should be included in Australian legislation. Moreover, a consolidated theory or policy for marine protected areas is only a first step in promoting a national system and is not sufficient in itself to create new marine protected areas. A national system of representative marine protected areas requires a legislative and administrative basis to implement the policy effectively.

2.5.4 United States of America

The third group of du Saussay's (1980) categories is represented by the USA which has introduced special legislation for marine protected areas.[13] Like Japan, the USA had an early involvement in the designation of marine protected areas. Florida's Fort Jefferson National

[13] The United States has a land area of 9,372,000 square km and a population of 260,000 million. Its 11,650 nautical mile coastline includes marine habitats ranging from the polar (Alaska) to tropical (southern Florida and Hawaii) and it claims a 7,825,000 square km EEZ, the largest in the world (Couper, 1983:227). The population of contiguous United States is concentrated on the eastern and western coasts and the Great Lakes and there are serious problems with high levels of domestic sewage and industrial waste entering the inshore marine environment.

Monument, established in 1935, is generally considered the world's first marine park. The USA example serves to illustrate the problem of introducing specific national legislation for marine protected areas and the problem of institutional coordination in the development of marine protected areas.

Since the ruling of the USA Supreme Court in 1935 that the high tide was the boundary between seaward state ownership and landward ownership by private owners, boundaries in the coastal and marine environment have been debated. During the late 1940s the Supreme Court ruled that coastal state boundaries ended at the low water mark. In 1953 states lobbied for the *Submerged Lands Act* which granted state title to the beds of the marginal seas, and overlying waters extending three miles. This was followed by the *Convention of the Territorial Sea and the Contiguous Zone 1958* (First United Nations Law of the Sea Conference), which established in law that the three mile territorial sea was subject to the sovereign control of the states.

Federal involvement in the offshore was emphasized when, on 28 September 1945, President Truman unilaterally proclaimed that the USA regarded the natural resources of the subsoil and seabed on the continental shelf contiguous to its coasts as subject to its jurisdiction and control (Burton, 1982:37). Known as the *Truman Proclamation,* it was most significant in the move to secure sovereign rights over offshore resources, especially hydrocarbons. The early impetus for marine territory expansion was thus not a growing concern to protect or conserve the marine environment, but a growing interest in the economic and resource possibilities of the sea and seabed (as discussed earlier in Chapter 2.2).

The confused development of federal-state control over the offshore has meant that there are a number of agencies that have responsibility for marine protected areas. The United States National Parks Service is responsible for national seashores which preserve natural values while providing water-oriented recreation, and has responsibility for small marine parks and reserves (Rooney *et al.*, 1978). The *Coastal Zone Management Act 1972* created a federal and state partnership whereby states were encouraged to exercise full authority over the lands and waters of the coastal zone by developing land and water use programs. The federal government lays down general policy and management guidelines, reviews and approves state programs, and provides funds for planning and administration. The states develop plans and take necessary legislative and other steps to encourage effective implementation. Recent pressures from coastal developers have forced the federal government to allow expanded offshore oil and gas drilling to support large-scale siting of facilities on the coast and to reduce the capacity of states to determine areas of special environmental concern (Hays, 1987).

However, for the purposes of the present thesis the National Marine Sanctuary (NMS) Program illustrates legislation specifically aimed at promoting marine protected areas. Among the conflicts in this legislative response are powerful oil and gas interests working against the establishment of protected areas, and problems of interagency relations. Established in 1972, the same year as the *Coastal Zone Management Act*, Title III of the *Marine Protection, Research and Sanctuaries Act* (amended 1980) primarily established the regulatory program for ocean dumping administered by the Environmental Protection Agency.[14] The

Act authorizes the Secretary of Commerce to designate marine areas of special national significance, as far seaward as the outer edge of the continental shelf, as national marine sanctuaries to promote comprehensive management of their conservational, recreational, ecological, historical, research, educational, or aesthetic values (Foster and Archer, 1988). The Act specifically is concerned with, and provides for, marine protected areas. It is administered by the National Oceanic and Atmospheric Administration (NOAA) through the Office of Ocean and Coastal Resource Management, Sanctuary Programs Division. Any marine sanctuary established under the Act is not a part of the national park system.

The Marine Sanctuaries Program has the primary objective of establishing a *system* of national marine sanctuaries through the identification, declaration, and comprehensive management of special marine areas for the long-term benefit and enjoyment of the public (Foster and Archer, 1988). The marine environment of the USA has been divided into eight biogeographical regions to assist in designating sanctuaries.[15] A dual emphasis on marine resource protection and the importance of human benefit and use of marine sanctuaries is integral to the Program (Green, 1985:47). Sanctuaries are designated to meet the following goals:

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[14] Title I prohibits ocean dumping of radiological, chemical, biological warfare agents, and high-level radioactive waste and authorizes a permit system dumping of materials. Title II authorizes a comprehensive research program on the effects of ocean dumping in coastal, ocean, and Great Lakes waters. Concerns were raised regarding the overlap of responsibilities between Title III and existing statutes. The 1980 amendments clarified Congressional intent regarding program implementation and established procedures for state and Congressional veto of sanctuary designations.

[15] They are: (1) North Atlantic; (2) Great Lakes; (3) South Atlantic; (4) Gulf of Mexico; (5) Caribbean; (6) Eastern Pacific (California, Oregon, Washington); (7) Alaska; and (8) Western Pacific (Hawaii, Guam, American Samoa).

(1) enhance resource protection through the implementation of a comprehensive, long-term management plan;
(2) promote and coordinate research to expand scientific knowledge of significant marine areas and to improve management decision making;
(3) enhance public awareness, understanding and wise use of the marine environment through public interpretive and recreational programs; and
(4) provide for optimum compatible public and private use of special marine areas (Finn, 1982).

By 1985 the NMS Program consisted of seven national marine sanctuaries totaling 8,015 square km.[16] Two of the seven areas represent more than 94 percent of the total area designated. Ray and McCormick-Ray (1989:74) have argued that a "number of US marine sanctuaries now exist, but it is fair to say that none fully meet these requirements [the four sanctuary goals above]. Most are very small and, again, emphasize protection. Resource management plays only a comparatively minor role". Vast areas of the marine environment have no representation; not one sanctuary has been designated in the North Atlantic, Great Lakes, Caribbean, or Alaskan regions. Measuring the success or failure of marine protected area legislation by the size and extent of marine sanctuaries and their ecological representativeness would suggest that it has not been extremely successful; the areas are generally too small, too few, and do not cover the range of marine habitats, ecosystems, and biomes. It is not surprising that Finn (1982:93) comments that "the federal marine

[16] They are: (1) U.S.S. Monitor, North Carolina, 3.5 square km; (2) Gray's Reef, Georgia, 58.7 square km; (3) Key Largo, Florida, 345.0 square km; (4) Looe Key, Florida, 17.3 square km; (5) Point Reyes-Farallon Islands, California, 3,270.6 square km; (6) Channel Islands, California, 4,319.4 square km; and (7) Fagatele Bay, American Samoa, .66 square km. Three sites are being considered: (1) Cordell Bank, California; (2) Flower Garden Banks, Gulf of Mexico; and (3) Humpback Whale Sanctuary, Hawaii.

sanctuaries program has been largely unable to achieve designation and effective special management of valuable marine areas". The pertinent question for the present thesis is what lessons can the *Marine Protection, Research and Sanctuaries Act* provide in assisting Australia in its formulation of a national system of marine protected areas?

One of the important issues arising from an examination of the USA case is the *existing* diversity of environmental legislation and the overlapping and multiple jurisdictions in the offshore. Existing authority granted under the *National Environment Policy Act, Endangered Species Act, Marine Mammal Protection Act, Ocean Dumping Act, Clean Water Act,* and the *Fishery Conservation and Management Act* was considered to afford adequate environmental protection for marine protected areas. Research conducted by the Environment and Natural Resource Policy Division of the Congressional Research Service and the General Accounting Office in 1980-81 concluded that the *Marine Protection, Research and Sanctuaries Act* was *complementary* to existing environmental legislation and acknowledged the importance of a comprehensive level of protection authorized for specific geographic areas.

At an institutional level the Sanctuary Programs Division coordinates and cooperates with existing agencies having jurisdiction over the marine environment, although marine sanctuaries are not part of the national park system. For example, in the Channel Islands National Marine Sanctuary, California, the National Parks Service is responsible for management and administration of the one nautical mile boundary

surrounding the islands, and intrepretation, surveillance, and enforcement activities (Hoagland and Eichenberg, 1988). The California Department of Fish and Game is responsible for the management of living marine resources. The California State Water Resources Control Board is responsible for Areas of Special Biological Signifance around the islands to a distance of one nautical mile or the 90 metre isobath (Dobbin, 1983; Dobbin and Lemay, 1985). Thus responsibility is dispersed and involves an extensive amount of interagency cooperation.

This cooperation is often difficult to sustain when extended interagency antagonism is found between environment and pro-development agencies which have overlapping jurisdiction. This was evident in the nomination of the 1977 Georges Bank Marine Sanctuary in the Gulf of Maine. This sanctuary became a major item of contention in litigation between the State of Massachusetts, the Department of Interior, and several environmental groups over oil and gas leasing arrangements. The possibility for a multiple use marine sanctuary on Georges Bank also created tension between the Department of Commerce, which is responsible for the NMS Program, and the Department of the Interior, which regulates oil and gas development.

Measured against WCS objectives the USA NMS Program achievements for marine protected areas are limited. The seven national marine sanctuaries cannot maintain preserve and manage representative biogeographical samples of marine habitat and ecosystems, nor can they protect the full range of endangered species or habitats. It is not suprising that Ray and McCormick-Ray (1989) have suggested that marine biosphere reserves may be a more appropriate protected area category (the rise of the

marine biosphere reserve program in the USA will be discussed in Chapter 5). It is unlikely that the existing marine sanctuaries can assist the commercial fishing industry and provide adequate sites for monitoring the environmental effects of human development. The *existing* marine sanctuaries are likely to be successful in providing sites for the interpretation of marine areas and for the purposes of tourism, recreation, and education of the public. They may also provide limited opportunities for the preservation of aesthetic values, research and research stations, and for recreation.

There are several lessons that can be drawn from the NMS Program. Even specific legislation for marine protected areas may not necessarily provide an adequate system of representative marine protected areas that meets WCS objectives. In a federal arrangement between national and subnational governments institutional arrangements will often be subject to multiple overlaps, and conflicts over statutory responsibilities may occur with other programs. Therefore, marine protected area management will often be fragmented among several federal, state, and regional agencies. A multiplicity of agencies may foster conflicting management policies and competition rather than coordination. Marine protected area legislation should include a system of open conservation that confronts incompatible uses that may compromise the integrity of the protected area (e.g., energy extraction). These factors provide important lessons for an Australian system of marine protected areas.

2.6 Lessons for Australia

Du Saussay's (1980) tripartite examination of legislative responses provides a useful basis from which to examine a possible framework for an Australian system of representative marine protected areas. This is not to suggest that Australia simply adopts any single overseas legislative or institutional mechanism discussed above; policy making and legislation will always be, to some degree, peculiar to each country. Some countries use precisely worded and detailed laws, some prefer shorter texts limited to essential principles, which are thereafter interpreted through regulations (du Saussay, 1980:14-15). Australia must formulate its own legislative and institutional response drawing on the important lessons provided by the experience of other countries' activites and programs.

The first two political or legislative responses (accepting that doing nothing is a potential response) are not appropriate for Australia. A noble or detailed policy position without appropriate legislation and institutional arrangements for its implementation does not guarantee an adequate national system of marine protected areas meeting WCS objectives. Modifying existing terrestrially-based legislation is a somewhat better response but clearly not sufficient for the particular needs of marine protected areas. This response relies upon the modification of terrestrial protected area legislation, reinforcing the tendency to designate small discrete areas and towards a closed system of conservation.

These two responses are inadequate given the move towards using ecological principles in the formation of marine protected areas, and the shift away from traditional concepts of national parks and reserves towards conservation of higher biological units. In response to this latter development Australia must promote radically new concepts and principles of marine protected areas that promote the conservation of habitats, ecosystems, and biomes. Legislation must become more ecologically-oriented, incorporating an open system of conservation that could extend spatially across federal, state, and local political boundaries. A national system of marine protected areas should involve:

> biological or ecological concepts that will replace eventually the purely spatial concepts of the pre-scientific classicists and will modify the economic concepts of the developmentalists... Balance is the critical concept of ecology. But for environmentalists, balance relates to the preservation of mutually interdependent biological processes, not to the juxtaposition of complementary legal concepts or the moderation of political claims. Legal asymmetry and political immoderation are environmentally dangerous in biological relationships (Johnston, 1972:64).

These ecologically-oriented principles require new legislative and institutional arrangements rather than an accommodation within the existing legal and administrative structure. Existing marine protected area agencies conceived primarily as a regulatory overlay or involving a transfer of jurisdiction from one agency to another are not likely to be effective. Agencies in such arrangements often react negatively to any modification of the system to incorporate marine protected areas.

Problems can arise when the authority emphasizes the regulatory aspects of marine protected areas in order to justify proposed designations. A shift is required from the focus on the regulatory aspects of protected area programs to an increased management function which embraces better coordination between existing regulatory programs. This does not mean a hands-off approach to regulation, because regulatory programs may be required where a gap in existing programs is evident. An increased effort to coordinate the management of marine protected areas should not fall victim to interagency jurisdictional conflict.

In most cases a lead agency that promotes marine protected area interagency coordination is necessary. "Nominating a suitable existing agency to lead an interagency management program can be efficient in terms of time, human resources, and cost. But this agency must have the required human, technical, and financial resources, and it must be nominated to carry out conservation management" (Salm and Clark, 1984:41). Such an agency should have the power, motivation, and resources to carry out the management task, or to ensure that the task is carried out, and it must also be politically supported on a consistent basis over time. The success of a protected area program will hinge upon the success of the agency.

This Chapter has attempted to place an international perspective on marine protected areas by introducing the problems associated with ocean enclosure, ecological developments in marine protected areas, and lessons from overseas. A number of general lessons have been detailed that will

be important to Australia. Chapter 3 will assess the present legislative and institutional basis for Australian marine protected areas.

Chapter 3

The Legislative and Institutional Basis for Australian Marine Protected Areas

3.1 Introduction

This Chapter begins with an analysis of international activities relevant to Australian marine protected areas firstly for their relevance to legislation and policy making, and secondly for their potential importance in promoting a national system of representative protected areas. Australian federalism, more particularly the offshore cooperation between Commonwealth and State governments, is then discussed as background to legislative and institutional arrangements for the declaration of marine protected areas. Australia, in common with a number of federations, has experienced considerable conflict over the division of offshore responsibility between the different tiers of government. The question of jurisdiction over the Australian offshore marine environment has long been a complex and highly contentious constitutional issue. Conflict arose when the Commonwealth and State governments both sought to maximize their legislative competence, and to settle the question of jurisdiction and control over this public sector resource in their own favour. Then, in 1979, the long awaited OCS provided agreed arrangements that were to pioneer a new spirit of *cooperative federalism* in the offshore (Australia, 1980 b:6-16). The agreed arrangements

extended the legislative powers of the States in the territorial sea, with specific reference to the Great Barrier Reef Marine Park and other marine parks.

This Chapter considers Commonwealth and State legislative and institutional frameworks for marine protected areas and intergovernmental cooperation, with particular reference to the activities of the Council of Nature Conservation Ministers. The tripartite classification proposed by du Saussay (1980) (discussed in Chapter 2) is useful in delineating the extensive legislative variation in the existing arrangements for the declaration and management of marine protected areas. Variation is evident both between the Commonwealth and State governments and between individual States. Each has responded in a different manner; in some cases no new legislation has been adopted, often terrestrial laws have been adopted for marine protected areas, but rarely has specific marine protected area legislation has been introduced. Marine protected area planning and management has thus been very complex with extended problems in coordination of policy, zoning, and management plans.

The final section of the Chapter discusses proposals for marine protected areas advanced by nongovernment organizations. The Chapter concludes by detailed consideration of whether existing Commonwealth and State legislative and administrative arrangements support open or closed systems of conservation for marine protected areas.

3.2 International Activities Relevant to Australian Marine Protected Areas

The extent of Australia's international involvement in marine protected areas cannot be assessed solely by examining international Conventions. Australian international marine protected area activities include official development assistance, collaborative research, visits of experts, and activity within other forums for information exchange as well as international marine treaties, Conventions, and Agreements. A range of international activities focussed primarily on marine protected areas will be discussed with a view to assessing their potential roles in providing operational guidelines for an Australian system of representative marine protected areas.

Although not an international marine conservation Convention, the *Convention of the Territorial Sea and the Contiguous Zone 1958* which codified the rules for claiming internal waters, fishing zones, contiguous zones, territorial seas, and continental shelves, has shaped Australia's jurisdictional approach to marine conservation.[1] The Convention supported Australia's proclaimed sovereignty over the continental shelf contiguous to its coast and enlarged the offshore area under its jurisdiction. It also allowed a substantial enlargement of internal waters

[1] In 1953 Australia, by Proclamation, declared its sovereign rights over the continential shelf contiguous to its coast. This jurisdiction was confirmed by the First United Nations Conference on the Law of the Sea in 1958 which drew up the 1958 Convention, to which Australia is a party. In addition there were three other Conventions drawn up in 1958: the *Continental Shelf Convention* (which recognized the rights of sovereignty over adjacent continental shelves and which came into force in Australia in 1964); the *Convention on Fishing and the Conservation of the Living Resources of the High Seas* (fishing conservation measures); and the Convention of the High Seas (which enshrined the principle of the freedom of the high seas) (see Lumb, 1978:4-5).

by the use of straight baselines for measuring the territorial sea adjacent to deeply indented or island-fringed coasts (Brazil, 1981:2). In some cases the external boundary of Australia's territorial sea moved tens of nautical miles seaward (Australia, 1980 b:2). Australia was thus able to assert sovereignty over a greatly expanded marine territory. The 1958 Convention was, however, silent with respect to marine protected areas. The Second United Nations Law of the Sea Conference (in 1960), which failed to settle the extent of fisheries jurisdiction and the question of the width of the territorial sea, was also silent on marine protected areas.

The Third United Nations Law of the Sea Conference, (commonly referred to as UNCLOS III and held between 1973 and 1982) was the most important development in international law which attempted to regulate all ocean activities, including marine conservation. The provisions regarding marine conservation now constitute the basis of international law. Moreover, for Australia, UNCLOS III provides a "legal coat hanger upon which they can rest a claim for Federal involvement through cooperation with the States in the management and protection of our priceless coastal and marine environments" (Suter, 1983:1).

In 1974 a draft *Convention on the Law of the Sea* proposed extending a maritime nation's jurisdiction in a zone extending 200 miles from the coastline. Known as the 200 mile EEZ and consistent with the informal composite negotiating text, Australia established its own 200 mile AFZ on 1 November 1979. The enlarging of offshore responsibility also involved responsibilities for conservation and protection. It set a new precedent in international law because ocean space and resources were for the first

time allocated to a nation state. This was critically important for marine conservation because all fisheries activities then became licensed under Australian law.

Important marine conservation provisions for Australian waters emerge from the *Convention on the Law of the Sea,* especially Part XII, *Protection and Preservation of the Marine Environment,* which contains the following four Articles.[2]

Article 56 *Exclusive Economic Zone*:

> (1) In the exclusive economic zone, the coastal State has:
>
> (a) sovereign rights for the purposes of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, on the sea-bed and subsoil and the superjacent waters, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds; ...

Article 192 *General Obligation*:

> States have the obligation to protect and preserve the marine environment.

Article 193 *Sovereign right of States to exploit their natural resources*:

> States have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment.

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[2] States mentioned in these and other Articles refer, of course, to sovereign states of international law, such as the Commonwealth of Australia.

Article 194 *Measures to prevent, reduce and control pollution of the marine environment*:

(1) States shall take all necessary measures consistent with this Convention to prevent, reduce and control pollution of the marine environment from any source using for this purpose the best practicable means at their disposal and in accordance with their capabilities ...

(5) The measures taken in accordance with this Part shall include those necessary *to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life* (Nordquist and Simmonds, 1981; emphasis added).

Clearly what has emerged as an aspect of the Law of the Sea is a general obligation to protect and conserve the marine environment while acknowledging that resource management and development are also legitimate national goals.

There are two major problems with the *Convention on the Law of the Sea* with respect to Australian marine protected areas. The first is that although Australia has signed the Convention, the Convention itself has not been ratified. Being a signatory therefore only imposes a moral obligation to abide by the spirit of the Convention in the promotion of marine conservation, not a strict obligation to act in accordance with the letter of international marine law. Australia now officially supports the principles and objectives set out in UNCLOS III, but it has no *legal* responsibility to adhere to these initiatives. The second problem regards the hiatus between conceptual framework and operational guidelines. The Convention outlines specific theoretical frameworks in which to

promote marine protected areas. It does not, however, provide practical guidelines, such as legislative and administrative mechanisms, for the application of the principles and objectives it advocates, and although it could be argued that this was beyond the scope of UNCLOS III, the fact remains that specific operational guidelines for Australian marine protected areas do not exist in this document. What is further required is the ratification of the Convention, and amendments to existing Australian Commonwealth and State legislation to support specific theoretical frameworks of the Convention and the provision of practical guidelines for legislative and administrative reform.

During the time that the Third United Nations Law of the Sea Conference was meeting Australia was actively involved in international agreements over the protection of wetlands. It was the first nation to accede to the *Convention on Wetlands of International Importance Especially as Waterfowl Habitat 1971* (Ramsar) thereby demonstrating a strong support for international cooperation in conservation of wetland habitats.[3] The Australian Marine Science Association has subsequently recognized the importance of wetlands and estuarine habitat, and estimates that fisheries worth over $100 million annually are threatened by their destruction (Lawrence, 1985:10). The first meeting of the 29 parties to the Convention was held five years after the Convention came into force. By 1982 only two wetlands of international importance had been nominated by Australia.[4]

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[3] Generally known as *Ramsar*, the name of the Iranian town where it was signed. Ramsar came into force on 21 December 1975.

[4] These are the Cobourg Peninsula Flora and Fauna Reserve and Kakadu National Park both in the Northern Territory.

Nevertheless, by 1986 Australia had nominated 28 wetlands to the List of Wetlands of International Importance established under the Convention (Mobbs, 1987:2).[5] Internationally the Australian record was considered impressive (Lyster, 1985:186). A total of 11,297 square km have been established but despite declaring a substantial area of protected wetlands, the sites are restricted to Victoria, Tasmania, South Australia, and the Northern Territory. The remaining States have not submitted any areas for designation although there are numerous areas in each State that are eligible and should be listed (Australia, 1982:22). Ramsar also has legal limitations as a conservation instrument because it is limited to wetlands, leans towards a policy of wise use rather than strict protection, and does not legally oblige Parties to prohibit activities that will change the ecological nature of the wetland areas (Lyster, 1985). In fact it "is generally recognized that this Convention has not been very influential in environmental conservation" (Australia, 1982:22). The Ramsar Convention is also not particularly suited to supporting a national system of marine protected areas because it is solely concerned with wetlands of international importance.

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[5] They are: Cobourg Peninsula Aboriginal Land and Sanctuary, Kakadu National Park, Northern Territory; Moulting Lagoon, Logan Lagoon Conservation Area, Sea Elephant Conservation Area, Pittwater-Orielton Lagoon, Apsley Marshes, East Coast Cape Barren Island Lagoons, Flood Plain Lower Ringarooma River, Jocks Lagoon, Northwestern Corner of Lake Crescent, Little Waterhouse Lake, Tasmania; Corner Inlet, Barmah Forest, Gunbower Forest, Hattah-Kulkyne Lakes, Kerang Wetland, Port Philip Bay (western shoreline) and Bellarine Peninsula, Western Port, Western District Lakes, Gippsland Lakes, Lake Albacutya, Victoria; Towra Point Nature Reserve, Kooragang Nature Reserve, Macquarie Marshes Nature Reserve, New South Wales; Coongie Lakes, The Coorong and Lakes Alexandrina and Albert, Bool and Hacks Lagoons, South Australia.

Australia is also a signatory to UNESCO's *Convention Concerning the Protection of the World Cultural and Natural Heritage 1975* (commonly known as the *World Heritage Convention*) which aims to ensure international cooperation to protect world cultural and natural heritage of outstanding universal value.[6] A World Heritage List has been established and includes eight Australian sites, of which seven have been declared primarily because of their outstanding natural, as opposed to cultural, value.[7] The *World Heritage Convention* came into force on 17 December 1975 after 20 countries had signed. Australia became the seventh country to sign and by the end of 1987 over 100 countries were party to the Convention, with 70 sites on the World Heritage List. The Commonwealth Department of Arts, Sport, the Environment, Tourism and Territories (DASETT) administers World Heritage matters in consultation with the Australian Heritage Commission, the Australian National Parks and Wildlife Service, the Bureau of Flora and Fauna, and the Commonwealth Scientific and Industrial Research Organization (Burford, 1988).

The Convention has proven to be of great use in helping to protect areas of international importance. Australia's *only marine* World Heritage site was nominated as the entire Great Barrier Reef in 1981. The World

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[6] The World Heritage Committee Secretariat at UNESCO headquarters in Paris is responsible for evaluating nominations, while IUCN's CNPPA, the International Council for Monuments and Sites, and the International Centre for Conservation provide advice and assist in monitoring.

[7] They are: Great Barrier Reef Marine Park, Queensland (1981); Kakadu National Park, North Territory (Stage 1, 1981), (Stage 2, 1987); Willandra Lakes Region, New South Wales (1981); Lord Howe Island Group, New South Wales (1982); Western Tasmanian Wilderness National Parks (1982); Australian East Coast Temperate and Sub-Tropical Rainforest Parks (1986); Uluru National Park (Ayers Rock-Mount Olga), Northern Territory (1987); Tropical Rainforests of North-East Australia (1989).

Heritage Area nomination was defined as the Region in the Schedule of the Commonwealth *Great Barrier Reef Marine Park Act 1975*. The best known nomination in Australia was the Western Tasmania Wilderness National Parks, Tasmania, where the World Heritage nomination, and subsequent declaration, was used to halt a hydro-electricity generating dam (Sornarajah, 1983). The Tasmanian case revealed how the designation of unprotected sites as internationally significant could directly assist in securing their protection.

Because the Convention is concerned with a few select areas of *outstanding universal value* it is of only marginal use to the promotion of a national system of representative marine protected areas in Australia. Natural habitats and ecosystems that are representative or only contain limited flora and fauna will not be listed because the Convention is concerned with neither biogeographical representation nor sustainable use.

However, the Convention is extremely useful in the legislative precedent it has set in Australia with respect to protected areas of outstanding universal value.. *Australia is the only country in the world which has enacted specific legislation to fulfill its responsibilities under the World Heritage Convention*. Although domestic political issues and intergovernmental conflict can explain the introduction of national legislation the fact remains that through the *World Heritage Properties Conservation Act (1983) (Commonwealth)* outstanding areas of international significance have been so designated (Burford, 1988). Australia has thus introduced unique legislation to establish World Heritage Areas as a protected area category. It has undertaken this by

using the Commonwealth External Affairs power (Section 51(xxix)) of the Constitution, which relies, *inter alia,* on the existence and implementation of an international treaty or agreement. The significance of this precedent (legally designating a protected area category) will become apparent in the discussion of marine biosphere reserves in Chapter 5.

In addition to the *World Heritage Convention* Australia participates in UNESCO's MAB Program (initiated in 1971) whereby biosphere reserves are designated in an attempt to establish an international network of protected areas. (The objectives of the Program have been provided in Chapter 2 and will be further discussed in Chapter 5.) Australia's first five biosphere reserves were approved in 1977, three years after the selection criteria and operational guidelines were fully developed at an international level. A total of 12 biosphere reserves have now been established[8] with the primary focus on terrestrial areas, yet there has not been a systematic evaluation of Australia's biogeographical provinces to determine where new reserves should be established (Davis and Drake, 1983). More significantly for the present thesis, Australia has not designated any marine biosphere reserves. The biosphere reserve concept has nevertheless set an important conservation precedent that should influence Australia's approach to marine protected areas. Because the

[8] They are: Uluru (Ayers Rock-Mount Olga) National Park, Northern Territory; Danggali Conservation Park, South Australia; Kosciusko National Park, New South Wales; Unnamed Conservation Park of South Australia, South Australia; Yathong Nature Reserve, New South Wales; Croajingalong National Park, New South Wales; Macquarie Island Nature Reserve, Tasmania; South-West National Park, Tasmania; Hattah-Kulkyne National Park and Murray - Kulkyne Park, Victoria; Prince Regent River Nature Reserves, Western Australia; Fitzgerald River National Park, Western Australia; Wilsons Promontory National Park, Victoria.

Program's broad objectives apply to natural areas (representative and unique) and human-modified areas they could provide an important conceptual and operational framework for Australian marine protected areas. One of the major problems with biosphere reserves in Australia is that they are not well understood and existing conservation agencies have been reticent in their promotion. The potential use of marine and coastal biosphere reserves in promoting an Australian system of marine protected areas will be discussed in Chapter 5.

As discussed in Chapter 1, Australia's marine responsibilities are far ranging and include the AFZ surrounding sub-Antarctic Macquarie, Heard, and McDonald Islands (Figure 1.1). Of particular relevance to marine conservation is the *Convention for the Conservation of Antarctic Marine Living Resources* (CCAMLR) (Australia signed in 1980) which has an objective to conserve Antarctic marine living resources in accordance with the principle of *ecosystem-oriented* conservation, where conservation is so defined as to include rational use. The Convention, under the umbrella of the Antarctic Treaty System (Kriwoken and Keage, 1989 a) aims at multispecies management to maintain ecological relationships between harvested, dependent, and related populations of marine living resources. The area covered by CCAMLR includes the Antarctic marine living resources south of 60° South latitude and the Antarctic marine living resources of the area between that latitude and the Antarctic Convergence.

The AFZ surrounding continental Australia and Macquarie Island is therefore excluded from the Convention. Thus the only marine space included in the Convention over which Australia has jurisdiction is the

AFZ surrounding Heard Island and McDonald Islands (Kriwoken *et al.*, 1989). Owners of islands between the Convergence and 60^{0} South have the right to exclude measures adopted by the CCAMLR if so desired (Lyster, 1985:161) but Australia has not excluded Heard Island and McDonald Islands. Of course the Commonwealth can unilaterally declare marine protected areas surrounding Macquarie Island, but this is unlikely at present.[9]

The use of CCAMLR as a legal tool to designate marine protected areas surrounding Heard Island and McDonald Islands has limitations. CCAMLR has the power to open and close areas, regions or sub-regions for purposes of scientific study or conservation, including special areas for protection and scientific study, but has failed to use this power. There are also problems with the coordination of CCAMLR with other treaties under the umbrella of the Antarctic Treaty System (Kriwoken and Keage, 1989 b). CCAMLR has only imposed fisheries catch limits for certain species and has only designated one relatively small no-fishing zone. Given that the Commission has made little progress towards complying with its obligations of marine conservation, the use of the Convention in the promotion of a system of national Australian marine protected areas seems very limited.

In summary, the United Nations Law of the Sea Conferences (I, II, III), *Ramsar*, and CCAMLR are severely limited as mechanisms that could promote a national system of representative marine protected areas. While the *World Heritage Convention* is also limited, it provides an

[9] This is further complicated because Macquarie Island is under the jurisdiction of the State of Tasmania, which has power to declare a 3 mile territorial sea surrounding the Island.

important precedent whereby a protected area category (one of ten internationally acknowledged by IUCN, see Table 2.2) has been granted specific Commonwealth legislation *via* the External Affairs power. While the UNESCO MAB Program for biosphere reserves has not been fully implemented in Australia, and, in particular, has not yet included any marine biosphere reserves, the concept has potential as a framework for a national system of representative marine protected areas and warrants further exploration. The NCSA, and now the Hawke environment statement, both broadly support a national strategy to ensure all ecosystems are represented in a reserve network. However, the constraints of realizing such a reserve network were outlined by Wilcox (1984), who highlighted the extreme difficulties of trying to develop cooperative Commonwealth and State agreements on conservation measures. This has distinct implications for any national system of representative marine protected areas.

3.3 Australian Offshore Federalism: Background to Marine Protected Area Legislative and Institutional Arrangements

The earliest division of maritime responsibility in Australia was prior to Federation when the Australian colonies were individually responsible for fisheries. After Federation the States remained responsible for fisheries within the territorial sea, and as the Australian Constitution contains no specific reference to either resources or the environment (Fisher, 1980:26; Davis, 1985:2), for most of Australia's history as a Federation the Commonwealth government has not played a major part in either marine resource management or the establishment of marine protected areas (Patience and Scott, 1983).

Not until the late 1940s did Commonwealth involvement become more pronounced. The *Australian Fisheries Act 1952* gave the Commonwealth government partial responsibility for fisheries policy by establishing overlapping management between the two tiers of government. This first involvement in the offshore was motivated by concern over the scarcity of the fisheries resource, but the 1952 Act did not settle the problem over fisheries jurisdiction because the Commonwealth desired a more complete national control of offshore resources (Harrison, 1982:85).

Conflict, arising particularly from questions of overlapping jurisdiction, became evident in the 1960s when responsibility for offshore resources, especially hydrocarbons, became increasingly important to the various Australian governments (Stevenson, 1976; Burton, 1982; Haward, 1986). The *Petroleum (Submerged Lands) Act 1967* was promulgated to regulate exploration for petroleum and construction of pipelines and each State was provided with an area for petroleum mining with no specific reference made to sovereignty.

Federal involvement in the offshore was cemented when the Whitlam Labor Government passed the *Seas and Submerged Lands Act 1973*. Essentially this Act vested control of all coastal and territorial waters (low water mark to the continental shelf) in the hands of the Commonwealth (Suter, 1983:9). Opposition from all State governments resulted in a challenge to the constitutional validity of the Act and in 1975 the Australian High Court upheld the legislation and Commonwealth control of the offshore was thus established.

Opposition to Commonwealth control was continually voiced by the States. The Fraser Liberal Government, elected in 1975 and commited to a States' rights based federalism, did not exercise Commonwealth sovereignty with respect to the territorial sea and at the October 1977 Premiers Conference accepted the States' argument that the territorial sea should become the responsibility of the State.

A cooperative arrangement for offshore jurisdiction was announced at the Premiers Conference on 29 June 1979 as part of the Fraser Government's policy of *new federalism* (Cullen, 1985:62). The OCS was nevertheless a political not a constitutional solution and was primarily aimed at minimizing the intergovernmental tension engendered by the *Seas and Submerged Lands Act 1973* (Haward, 1986:71). The enabling legislation for the OCS was the *Coastal Waters (State Powers/State Title) Acts 1980* which gave the States of Australia and the Northern Territory power over the 3 mile territorial sea, the air space above, and the sea-bed below. It was seen by the States as restoring ground lost to the Labor Whitlam Government which was in power from 1972 to 1975.

Although State jurisdiction of the territorial sea has been settled it has not precluded Commonwealth involvement in the coastal zone. The first Commonwealth inquiry into coastal zone matters was held in 1980 and examined values of the coast, issues of coastal management, past Commonwealth and State involvements, and the development of a Commonwealth coastal policy (Australia, 1980 a).[10] A second inquiry has

[10] Entitled *Australian Coastal Zone Management* the terms of reference of the inquiry were: (1) environmental aspects of legislative and administrative measures which ought to be taken in order to ensure the wise and effective management of the Australian environment and of Australia's natural resources, and (2) such other matters relating to the environment and conservation and the management of Australia's

now been instigated by the Commonwealth's House of Representatives Standing Committee on Environment, Recreation and the Arts into the protection of the Australian coastal environment and the role of the Commonwealth government in ensuring proper management of the coastal zone. The terms of reference present the dilemmas facing the Australian marine and coastal environment.[11] Thus, while the States retain jurisdiction over the territorial sea and land mass, the continuing involvement of the Commonwealth government in coastal zone matters seems to be assured.

Finally nine years after the WCS was released and six years after the NCSA was discussed the Commonwealth Labor Government released a national environmental statement (*Our Country, Our Future*) by Prime Minister R.J.L. Hawke on 20 July 1989. The environmental statement only includes implicit goals related to marine protected areas, stating that, through "cooperation with the States, the Government will continue to work towards a national strategy to ensure all ecosystems are represented in a reserve network", whilst noting that in "recent years another important reason has been recognition of the need to preserve representative and sustainable examples of ecosystems" (Hawke, 1989:21-23). Other related activites include the following: the Commonwealth has

natural resources as are referred to it by: (a) the Minister responsible for those matters, or (b) resolution of the House.

[11] The terms of reference are: (1) the causes, effects and costs of pollution, sewerage disposal, coastal land degradation and resource depletion; (2) management of urban water resources; (3) impacts on tourism, fishing and other industries dependent on the coastal zone and coastal waters; (4) the adequacy of existing management regimes; (5) administrative arrangements, legislative measures and development policies required to ensure sustained use and environmental protection; (6) review of previous parliamentary reports relating to the coastal zone; and (7) the role of the Commonwealth government in ensuring proper management of the coastal zone.

referred coastal zone issues to the Resource Assessment Commission; a National Working Group on Coastal Management has been established with representatives from all levels of government, industry, and community groups to facilitate dialogue on coastal zone issues; a major policy statement is promised which will examine the range of policies which can foster an efficient and dynamic Australian fishing industry operating within the sustainable limits of the resources; Australia will press for a moratorium on the taking of the depleted Southern Bluefin Tuna and will press for a global ban on driftnet fishing; and the Commonwealth may also consider holding a referendum to increase federal environmental powers if public support grows (Hawke, 1989). While an important document for the future of Australia's environmental policy, the statement has distinct limitations for the future provision of a national system of representative marine protected areas. Like the NCSA, the Hawke environmental statement does not explicitly recognize the important role of marine protected areas, nor does it spell out *how* the Commonwealth and States will work towards ensuring that all ecosystems are represented in a reserve network.

In summary, there are three distinct periods in offshore jurisdiction that have relevance to marine protected areas legislative and administrative arrangements. The first period, from Federation to 1973, was characterized by State control of the offshore with increasing Commonwealth involvement, spurred on by the revenue producing activities of fisheries in the 1950s and hydrocarbon development in the 1960s. Marine protected areas were extremely rare, and only two areas were declared before 1973. State governments, however, continued to declare protected areas in the nearshore estuarine environment under terrestrial legislation.

The second period, from 1973 to 1979, saw the *Seas and Submerged Lands Act 1973* lay the groundwork for Commonwealth sovereignty in Australian marine waters (Bates, 1983:77). During this period State government responsibility was limited to internal waterways, estuarine areas, and land within the baseline, State parks and fisheries agencies having no legislative power to declare marine protected areas in the territorial sea. State agencies such as fisheries departments, which previously had offshore responsibility, were restricted to intertidal and estuarine areas. However, internal waters including most bays and inlets within the baseline were considered under State jurisdiction. During this period State governments responded by declaring estuarine protected areas and extending terrestrial nature reserves. Expansion was undertaken largely *via* State terrestrial legislation and agencies with expertise in terrestrial planning and management. The exception to this was the *Great Barrier Reef Marine Park Act 1975* which provided for the first time direct Commonwealth involvement in marine protected areas.

The third period, from 1980 to the present, is characterized by the 15 OCS *Agreed Arrangements* which included, *inter alia,* agreements on the Great Barrier Reef Marine Park, other marine protected areas, and historic shipwrecks (Australia, 1980 b).[12] The OCS gave jurisdiction of the territorial sea to the States, which could now legally designate marine

[12] They are: extension of the legislative powers of the States in and in relation to coastal waters; vesting in the States the title to seabed beneath the territorial sea; amendment of the *Seas and Submerged Lands Act 1973;* offshore petroleum arrangements outside the 3 mile territorial sea; offshore petroleum arrangements inside the outer limit of the 3 mile territorial sea; offshore mining for other minerals; offshore fisheries; historic shipwrecks; Great Barrier Reef Marine Park; other marine parks; crimes at sea; agreement on shipping and navigation; ship-sourced marine pollution; Northern Territory; Jervis Bay Territory.

protected areas beyond the low water mark. The responsibility of the States was determined as the outer limit of the territorial sea, whereas parks or reserves beyond would be established by the Commonwealth, whilst marine protected areas which straddled the boundary of the territorial sea would be managed jointly (see Figure 1.2). If a proposed park within the territorial sea had international significance and the State did not wish to declare the area, the Commonwealth could then legislate to do so (Australia, 1980 b:12). This third period also represents increased Commonwealth involvement in the coastal zone through inquiries into the adequacy of existing measures for protection and management.

The following three sections analyze Commonwealth and State legislative and institutional arrangements for marine protected areas as they pertain to the three periods identified above.

3.4 Intergovernmental Commonwealth, State, and Territory Marine Protected Area Cooperation

Intergovernmental standing committees allow for ministerial consultation between Commonwealth, States, and Territories. Councils with marine interests established for Commonwealth and State ministers include: Minerals and Energy (1968); Fisheries (1969); Marine and Ports (1970); Environment (1972); Water Resources (1973); and Nature Conservation (1974).

The Council of Nature Conservation Ministers intergovernmental standing committee is an existing forum that promotes marine protected areas in its tripartite role of policy, consultation, and coordination. Consisting of Ministers with nature conservation responsibilities in the

Commonwealth and States, the Council coordinates policies for nature conservation, especially the reservation and management of areas of land and sea. Meetings take place at least once a year and each Minister is usually accompanied by her/his permanent head and several other members of the public service and the Minister's private staff (Table 3.1).

The involvement of CONCOM with marine protected areas dates back to 1978 when an *ad hoc* Working Group on Marine Parks and Reserves reported to its Standing Committee and this report, adopted by CONCOM, serves as the basis for general discussion on the protection of marine areas for conservation, scientific, recreational, and educational purposes (CONCOM, 1978). This was immediately followed by the OCS in 1979 which resolved the question of offshore sovereignty and the overall responsibility for marine protected areas. The first CONCOM *Workshop on Policies for Marine Parks Management* was held in Perth, Western Australia in October 1982 (CONCOM, 1982). In 1984 CONCOM endorsed selection and management objectives for marine protected areas developed at the Perth workshop (CONCOM, 1985:1). The objectives were identical to those listed by IUCN in 1976 (see Chapter 2), thus establishing the complementarity between the IUCN and CONCOM objectives for marine protected areas.

A second workshop on policies for the selection and management of marine protected areas was held at Jervis Bay, Australian Capital Territory in 1985 (CONCOM, 1985). Convened by the Australian National Parks and Wildlife Service (ANPWS), the main objectives of the workshop were to (1) report on the implementation of the principles for selection and management of marine protected areas, and (2) continue the

Table 3.1 Responsibilities of the Council of Nature Conservation Ministers

Role:	Policy/consultative/coordinating. The development of coordinated policies for nature conservation and for the reservation and management of adequate areas of land for this purpose, and for the conservation and management of Australia's wildlife.
Establishment:	January 1974 by agreement between the Prime Minister and Premiers.
Charter:	In conjunction with the Australian Environment Council.
Membership:	
Commonwealth:	Minister for Arts, Sport, the Environment, Tourism and Territories, Minister for Science.
State/Territory	State and Northern Territory Ministers responsible for nature conservation and wildlife protection.
Other:	New Zealand and Papua New Guinea Ministers responsible for nature conservation and wildlife protection (observers).
Operation:	
Chair:	Rotates.
Meetings:	At least annually.
Overlap:	Australian and New Zealand Environment Council.
Advisory Committee:	CONCOM Standing Committee (see entry below).
Secretariat:	
Source:	Department of Arts, Sport, the Environment, Tourism and Territories, Canberra, A.C.T., Australia 2601.
Resources:	None.
Funding:	None.
Reports:	Verbatim transcript for members; summary record of resolutions tabled in Commonwealth Parliament.
Funds:	No funds administered.

Table 3.1 Responsibilities of the Council of Nature Conservation Ministers (continued)

Advisory Committee:	**CONCOM Standing Committee**
Role:	Advisory/consultative/coordinating. Advises CONCOM on all matters relating to the functions of the Council.
Establishment:	January 1974 by CONCOM.
Responsible to:	CONCOM.
Membership:	
Commonwealth:	Chief officers and officials from the Australian National Parks and Wildlife Service and the Commonwealth Scientific and Industrial Research Organization.
State/Territory:	Officials from State and Northern Territory nature conservation and agencies.
Other:	Officials from Papua New Guinea and New Zealand nature conservation and national parks agencies (observers).
Meetings:	Bi or triannually.
Subcommittees:	Council has authorized, through its Standing Committee, the formation of subcommittees as required to provide specialist advice.
Secretariat:	Provided, as for CONCOM, by the Department of Arts, Sport, the Environment, Tourism and Territories, but separate from Australian and New Zealand Environment Council Secretariat.
Funds:	No funds administered.

Source: ACIR, 1986:104-105.

momentum towards the development of an integrated system of marine protected areas at regional and national levels, through the discussion and evaluation of related issues (CONCOM, 1985:2).

Five working groups were established to work concurrently during the workshop: selection; planning and management; management assessment; legislation; and information, education, and interpretation. The legislation working group recommended:

(1) that Commonwealth, State, and Territory governments further develop and implement standardised nomenclature for marine protected areas; and

(2) that Commonwealth, State, and Territory governments work towards incorporating as appropriate in their legislation relating to marine and estuarine protected areas the following desirable legislative provisions relating to:
- objectives encompassing conservation, recreation, education, scientific research;
- control over all marine resources of fauna, flora, terrain and superjacent water and air;
- capacity for management of potentially competing users/uses (multiple use zoning);
- capacity for control over outside activities which may adversely affect resources within a marine protected area;
- development and review of management plans;
- public participation in the planning process, particularly when defining boundaries and at the stage of development of management plans;

- research to assist development, implementation and monitoring of management plans;
- development and implementation of information, education and interpretation programs; and
- development and implementation of monitoring programs (CONCOM, 1985:8-9).

While the working groups' recommendations seem laudable there are distinct limitations with CONCOM with respect to their effective implemention. The recommendations of CONCOM working groups on marine protected areas are not binding between the Commonwealth and States, or between the States themselves. While all Commonwealth and State conservation ministers have agreed unanimously on the above recommendations CONCOM has no power to force any tier of government to instigate either legislative or institutional reform with respect to marine protected areas. Moreover, CONCOM is severely restricted because it has no resources or funding of its own. The CONCOM Secretariat of one person relies on in-kind support from ANPWS and State agencies to publish working group reports. Because of budgetary restraints *CONCOM News,* which was effectively a press release from CONCOM meetings, was terminated in 1987 (McAlister, 1989). CONCOM's role to date in promoting a national system of representative marine protected areas must be seen as minimal.

One important recognition by the legislation working group is the need for a "capacity for control over outside activities which may adversely affect resources within a marine protected area". This clearly paves the way for the support of open conservation as adopted by the biosphere

reserves.

The CONCOM charter is also closely linked with the Australian and New Zealand Environment Council (ANZEC). The ANZEC provides a forum for environmental matters and promotes consultation and coordination between the Commonwealth and States. In addition, there is the Australian Fisheries Council (AFC), an intergovernmental body responsible for consultation and development of fisheries policy, and advised by a Standing Committee which in turn has several technical and advisory committees. Its membership includes, *inter alia,* fisheries agencies with responsibility for State marine protected areas. Because AFC is *not* a formal member of CONCOM it has no Ministerial representative at its meetings and it does not have formal input into marine protected area policy coordination. AFC members, however, attended and contributed to marine protected area forums supported by CONCOM in 1982 and 1985 . The AFC is a Subcommittee member of the ANZEC through the Joint Technical Working Group on Marine Pollution. This Subcommittee does not have responsibility for marine protected areas, and, therefore, the AFC, a major actor in Australian marine protected areas, has no formal input either through the CONCOM or ANZEC.

While Commonwealth and State governments can therefore publically support IUCN objectives for marine protected areas through the CONCOM forum, there is no binding agreement to implement those objectives. CONCOM does not have adequate resources and funding to either host marine protected area workshops on a regular basis or publish working group reports. For instance, the 1985 Jervis Bay workshop papers

remain unpublished and therefore unaccessible to the public. Moreover, CONCOM membership is restricted and does not include any State fisheries agencies that have direct responsibility for marine protected areas.

Having examined the intergovernmental limitations of CONCOM in promoting a national system of representative marine protected areas the thesis now turns to an analysis of existing marine protected area legislative and institutional arrangements.

3.5 Commonwealth Legislative and Institutional Arrangements for Marine Protected Areas

The Commonwealth is responsible for the joint management of the Great Barrier Reef Marine Park which straddles the territorial sea boundary with Queensland and four marine protected areas in the AFZ. Two Acts are the cornerstones of Commonwealth marine protected area legislation, enacted in 1975 by the Whitlam Labor Government: the *National Parks and Wildlife Conservation Act 1975 (Commonwealth)* and the *Great Barrier Reef Marine Park Act 1975 (Commonwealth)* (Table 3.2). The *National Parks and Wildlife Conservation Act 1975* is a general Act applying to both terrestrial and marine environments representing the second category of du Saussay (1980) discussed in Chapter 2. This Act established the ANPWS which advises on national nature conservation and wildlife policies and collaborates with relevant Commonwealth, State, and Territory agencies (Ivanovici, 1985 a, 1985 b). With respect to marine protected areas, ANPWS manages areas under Commonwealth jurisdiction, except the Great Barrier Reef Marine Park, and in areas requested by State or Territory authorities. The functions of the ANPWS

Table 3.2 Legislation, Administration, and Designations of Commonwealth Marine Protected Areas

Legislation

(1) The *Australian National Parks and Wildlife Conservation Act 1975 (Commonwealth)* provides for the establishment and management of parks and reserves over land and sea areas where there is a basis for Commonwealth interest, as well as the protection of nature conservation sites and the meeting of various obligations under international treaties and conventions.

(2) The *Great Barrier Reef Marine Park Act 1975 (Commonwealth)* provides for the establishment, control, and development, to the fullest extent that the Constitution permits, of a marine park in the waters of the Great Barrier Reef Region.

Administration

(1) The ANPWS is responsible for areas proclaimed under the *National Parks and Wildlife Conservation Act 1975*, including External Territories, and is the principal advisor to the Commonwealth government on national nature conservation and wildlife policies.

(2) The *Great Barrier Reef Marine Park Act 1975* establishes the Great Barrier Reef Marine Park Authority, which is made up of Commonwealth and Queensland appointees and establishes a Consultative Committee which advises the Authority and Commonwealth and State Ministers.

Designations (12 marine protected areas covering 362,355 square km; 8 jointly managed by the Commonwealth and Queensland and 4 managed by the Commonwealth)

(1) **Great Barrier Reef Marine Park** (8 areas) *(Great Barrier Reef Marine Park Act 1975)*: This marine protected areas includes eight sections totalling 344,480 square km.

(2) **National Nature Reserve** (3 areas) *(National Parks and Wildlife Conservation Act 1975)*: Nationally significant areas are set aside primarily for nature conservation. The two Coral Sea Islands reserves protect seabirds and turtles, feeding areas, and the marine environment. The Ashmore Reef reserve protects populations of marine and terrestrial fauna and flora, especially seabirds, turtles, and seasnakes.

(3) **Historic Shipwreck Protected Zone** (1 area) *(Historic Shipwrecks Act 1976, Commonwealth)*: Total protection of a historic shipwreck.

in marine areas are as follows:

(1) identification and nomination for declaration of areas representative of major biogeographic zones and habitats;
(2) identification and nomination for declaration of areas that are fragile (i.e., particularly susceptible to impact by human activity);
(3) identification and nomination for declaration of critical areas (i.e., areas such as breeding and feeding grounds and migratory pathways, which may be important for the conservation of species);
(4) development and implementation of criteria for the identification of areas of international significance; and
(5) identification of major management problems in marine areas (Australia, 1986).

In the 13 years that ANPWS has existed only three marine protected areas have been declared. Two National Nature Reserves were declared in the Coral Sea Islands in 1982 totalling 17,292 square km, and Ashmore Reef (583 square km), the third reserve, was declared in 1983. Although these three marine protected areas represent almost five percent of the total area of marine protected areas declared in Australia, there is insufficient evidence to suggest that the Commonwealth government has embraced protecting higher biological units such as habitats, ecosystems, and biomes. The large size of the marine protected areas could be more attributable to the fact they are all located in External Territories, requiring no intergovernmental arrangements with the States.

Suggestions that intergovernmental arrangements have constrained the designation of marine protected areas seem well founded. Under the

terms of the OCS *Agreed Arrangements,* provision was made for joint consultative arrangements between the Commonwealth and State governments with respect to marine protected areas, yet it is interesting to note that only one joint consultative arrangement (Ningaloo Marine Park, Western Australia will be discussed in Chapter 3.6.6) presently exists outside the Great Barrier Reef Marine Park. The Commonwealth can also propose a marine protected area within the State 3 mile territorial sea if the area has international significance, and the relevant State does not wish to declare the area. No unilateral declaration of this sort has been undertaken by the Commonwealth as it would most likely be seen as a test of State rights over the 3 mile territorial sea.

Overall the Commonwealth ANPWS has not been an active proponent of marine protected areas and it is clearly evident that terrestrial protected areas have a higher profile within the Service. While ANPWS was instrumental in organizing the two earlier CONCOM workshops on marine protected areas, and though these workshops have produced important principles for selection and management, the momentum towards the development of a national system of representative marine protected areas seems to be waning. Although marine biogeographical regions have been delineated for Australia (see Figure 1.3) ANPWS has not identified representative marine areas of Australian significance, let alone nominated potential marine protected areas that represent the major biogeographic zones. Nor has ANPWS identified, or nominated for declaration, areas that are particularly susceptible to impact by human activity and which present major management problems.

The ANPWS has, however, made some important contributions to marine protected areas in directed research (Ivanovici, 1987). In response to their mandate, in 1978 the Director of the ANPWS commissioned the Centre for Environmental Studies, Macquarie University, to produce a report on the development of policy for Australian marine resources (Rooney *et al.*, 1978). The report considered the need for marine reserves in Australia, problems related to their implementation, a management plan, and criteria for selection. It surveyed what had been achieved in Australia, and reported on overseas experiences. ANPWS was instrumental in publishing a comprehensive two volume inventory of declared marine protected areas in Commonwealth, State, and Territory waters which for the first time provided a systematic inventory of Australian marine protected areas (Ivanovici, 1984). This is a necessary starting point for any serious marine protected area analysis and its significance as such must be stressed. ANPWS also provided a chair and support for the ACIUCN Sub-Committee on marine reserves, which released a proposed Australian marine protected area policy (to be discussed in Chapter 3.7).

The second cornerstone of Commonwealth marine protected area legislation is the *Great Barrier Reef Marine Park Act 1975 (GBRMP Act 1975)* which was a unique piece of legislation because it specifically encompassed the management of the *overall* marine ecosystem of a proclaimed area. Representing the third category of du Saussay (1980) (discussed in Chapter 2), the aim of the Act was to ensure a level of usage which is consistent with maintenance of the ecological system and which is accepted as reasonable by society. This management approach is translated into practise by developing zoning plans in order that protective management regimes can be designated (GBRMPA, 1980).

The *GBRMP Act 1975* and the statutory authority are generally considered to have been a success. The Great Barrier Reef Marine Park is the largest marine protected area in the world and has the single greatest pool of expertise nationally and internationally of marine protected area planners and managers. Combined with the Queensland marine protected areas, the Great Barrier Reef Marine Park represents 94 percent of all marine protected area in Australia. The GBRMP is a very useful model in offshore jurisdiction and intergovernmental relations for a national system of representative marine protected areas, and for this reason it will be discussed in detail in Chapter 4.

3.6 State and Territorial Legislative and Institutional Arrangements for Marine Protected Areas

3.6.1 Introduction

This analysis will focus on how States and Territories have undertaken marine protected area legislative initiatives. Interagency struggles between parks and fisheries agencies over primary statutory reservation powers, primary regulatory powers, and primary management responsibilities for marine protected areas are discussed. Out of these struggles a number of agencies have been relegated to secondary regulatory or advisory roles, however, these secondary functions will only be noted when relevant to other matters. Throughout this analysis it is important to be cognizant of the three variations of protected area jurisdiction identified by Lausche (1980:30): (1) different types of areas within the same program may be under the jurisdiction of different authorities; (2) within a protected area unit, different matters may be

under the jurisdiction of different institutions; and (3) jurisdictional questions may be raised regarding authority over external activities, both immediately outside the protected area as well as further away, which have potentially detrimental effects inside the protected area. This section concludes with a summary of the extent to which legislative and institutional arrangements for marine protected areas have adopted either an open or closed system of conservation.

3.6.2 Queensland

Queensland marine protected area legislative and institutional arrangements are unique in Australia because the State has control over island and coastal national parks (State marine protected areas), and it has joint responsibility with the Commonwealth over the GBRMP. This analysis will focus on State initiatives, whereas joint responsibility for the GBRMP will be discussed in Chapter 4.

Queensland alone has 70 marine protected areas totalling approximately 4,247 square km (approximately 1.1 percent of the total declared in Australia) and a coastline of 7,400 km (Table 3.3).[13] From 1976 to 1983 the *Fisheries Act 1976* was used to designate 61 marine protected areas, most of these being proclaimed on 19 November 1983. The large number of Fish Habitat Reserves reflects the State's interest in commercial and recreational fisheries. "The intent of these Reserves is to enhance rather than restrict fishing activities. Therefore these Reserves are set aside for fisheries purposes and not as general conservation areas" (Pollock, 1985 a:2). The government publishes a compendium called *Reserves for*

[13] Three marine protected areas declared (1987, 1988, 1989) do not have their size calculated. Areas have not been calculated because of outstanding jurisdictional differences between the Commonwealth and Queensland (see Chapter 4).

Table 3.3 Legislation, Administration, and Designations of Queensland Marine Protected Areas

Legislation

(1) Marine national parks were first declared under the *Forestry Act 1959-1981.*

(2) These were transferred to the *Queensland Fisheries Act 1972-1982 (Part VIII, Section 71)* in 1976.

(3) The *Marine Park Act 1982* was passed as an agreement between the Queensland and Commonwealth governments that the State enact separate legislation to complement the *Great Barrier Reef Marine Park Act 1975.*

(4) The *National Parks and Wildlife Act 1975* allows parks to be established to conserve areas of scenic, scientific, or historic beauty.

Administration

(1) The *National Parks and Wildlife Act 1975* provides for the establishment of a National Parks and Wildlife Service. The Marine Parks Section of the Queensland Fisheries Service was transferred to the National Parks and Wildlife Service in December 1981.

(2) The Department of Primary Industries is the managing authority of the *Fisheries Act 1972-1982,* and uses field officers from the Boating and Fisheries Patrol of the Department of Harbours and Marine.

(3) The *Marine Park Act 1982* is administered by the Premier's Department.

(4) The National Parks and Wildlife Service is responsible for the day-to-day management of the GBRMP.

Designations (70 State marine protected areas covering 4,247 square km)

(1) **Fish Habitat Reserves** (33 areas) *(Fisheries Act 1972-1982)*: Multiple use estuarine and intertidal marine environments protecting commercially valuable species for commercial and recreational fishing.

(2) **Wetland Reserves** (21 areas) *(Fisheries Act 1972-1982)*: Areas providing protection for habitat and regulations not as strict as Fish Habitat Reserves. Considered as multiple use buffer zones usually bordering on Fish Habitat Reserves.

(3) **Fish Sanctuaries** (6 areas) *(Fisheries Act 1972-1982)*: Areas prohibit the taking of aquatic animals and prohibit all forms of commerical and recreational fishing. Because these sanctuaries only provide protection for the marine life, greater levels of protection are afforded by additionally declaring a Fish Habitat Reserve or Wetland Reserve.

(4) **Marine Park** (6 areas) *(Marine Park Act 1982)*: Protection of all marine resources.

(5) **National Park** (2 areas) *(Forestry Act 1959-1981)*: Protection of mangroves and coastal areas.

(6) **Historic Shipwreck Protected Zone** (2 areas) *(Historic Shipwrecks Act 1976, Commonwealth)*: Protected shipwrecks.

Fisheries Purposes and states that the "reserves are designed as a management measure to enhance rather than restrict fishing activities and to ensure that productive amateur and commercial fisheries will continue in the State by protection of important habitat" (Queensland, n.d.). Fish habitat reserves and wetland reserves are thus declared to protect the habitat of fish, crustaceans, and other aquatic animals which support commercial and/or recreational fishing activities (Pollock, 1985 b:2-4). Maximum protection of aquatic animals and habitat protection is provided by declaring fish sanctuaries concurrently with fish habitat reserves and wetland reserves. Marine protected area legislation under the *Fisheries Act 1976* predictably reinforces, rather than prohibits, fishing activities and little concern is shown for the future of species without commercial value. Because only three marine protected areas have been afforded maximum protection it is fair to assume that the conservation of representative habitats and ecosystems of the Queensland State marine environment is not a high priority.

During discussions over the GBRMP Queensland and the Commonwealth made an agreement that the State would enact separate legislation to complement the *Great Barrier Reef Marine Park Act 1975*. Queensland finally passed the *Marine Park Act* in 1982, *seven years after* that agreement, but was, a result, the first State to enact specific legislation for marine protected areas. Provisions in the *Fisheries Act 1976* covering marine parks were revoked and new arrangements were incorporated in the *Marine Park Act 1982* (Hesse, 1985 b:1). The Premier's Department subsequently authorized the Queensland National Parks and Wildlife Service (Q.NPWS) (*sic*) as the principal agency for marine parks under

the Act in the immediate vicinity of the GBRMP (Hesse, 1985 a:3).[14] Up until 1987 only two marine parks had been declared under the *Marine Park Act 1982,* and both were originally designated under the *Forestry Act 1959* then tranferred to the *Fisheries Act 1976.* Since a recommendation to extend the Queensland marine parks system (Environmental Science Services, 1987) the Act has been used to declare six new management areas in the Capricorn Section of the GBRMP.

The situation in Queensland is therefore complicated because two pieces of legislation can be used to designate marine protected areas. Often the two different agencies responsible for marine protected areas are competitive and mutually obstructive. Presently the Q.NWPS has proposals for marine parks in Cape York coastal and estuarine areas. The fisheries department acknowledges the need for protected areas, but maintains that Fish Reserves and Sanctuaries should be designated, not marine parks. Cooperation in marine protected area planning and management will be difficult to achieve.

The Q.NPWS also undertakes the day-to-day management of the GBRMP with guidelines and in accordance with policies and principles set out by the Great Barrier Reef Marine Park Authority (GBRMPA). A unique arrangement in offshore jurisdiction exists whereby the GBRMPA is responsible from the low water mark on the mainland or around islands owned by Queensland and Q.NPWS is responsible landward of the low water mark. This interagency relationship will be discussed in detail in Chapter 4.

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[14] Q.NPWS is now called the Division of Conservation, Parks, and Wildlife within the Department of Environment and Conservation.

3.6.3 New South Wales

New South Wales has 17 marine protected areas representing 38 square km (less than 0.01 percent of the total declared in Australia) and a 1,900 km coastline (Table 3.4). The State has an early involvement with marine protected areas dating back to 1971 when the National Parks and Wildlife Service declared the Bouddi National Park marine extension (Collett and Pollard, 1975; Pollard, 1977:185). It has been 18 years (at the time of writing) since Bouddi was declared and it remains the only official marine national park declared under the *National Parks and Wildlife Act 1974* (Cahill, 1985 b). Robinson and Pollard (1982:19) argue that the *Seas and Submerged Lands Act 1973 (Commonwealth)* prevented State marine protected area declarations below the low tide mark and subsequently limited the number of marine protected areas. Commonwealth offshore sovereignty from 1973 to 1979 certainly limited the power of the National Parks and Wildlife Service and the State Fisheries to declare marine protected areas in the territorial sea. But most bays and inlets were considered under State jurisdiction and during that time two estuarine areas were added by extending existing terrestrial nature reserves.

Because the original *Fisheries and Oyster Farms Act 1935* allowed fish closure areas it has always been considered "conservation-oriented in providing for the protection as well as the management of fish and fisheries" (Pollard, 1980:39). When the States regained offshore jurisdiction in 1979 New South Wales decided to amend the *Fisheries and Oyster Farms Act 1935* (rather than the *National Parks and Wildlife Act 1974*) in order that aquatic reserves could be declared over Crown lands. The *Fisheries and Oyster Farms Act (Amended) Act 1979* predictably reinforced the bias towards fisheries management by placing

Table 3.4 Legislation, Administration, and Designations of New South Wales Marine Protected Areas

Legislation

(1) The *Fisheries and Oyster Farms (Amended) Act 1979* can declare aquatic reserves in freshwater, estuarine, and oceanic areas. Fish are defined very broadly under the Act and include all aquatic animals except whales and birds.

(2) The *National Parks and Wildlife Act 1974* provides for national parks and nature reserves to be declared over any lands within the territorial jurisdiction of New South Wales, which now includes the territorial sea, but the Act makes no mention of marine protected areas. The 1984 amendments gave nature reserves the status of national parks and made allowance for public participation in plans of management. No amendments were made relevant to marine protected areas.

Administration

(1) The New South Wales National Parks and Wildlife Service has responsibility for all animals other than *fish*, within the meaning of the *Fisheries and Oyster Farms Act 1935*. *Fauna* are defined as mammals, birds, and reptiles. Marine and freshwater invertebrates and fish are not included.

(2) The New South Wales State Fisheries manage *fish* the definition of which includes all marine, estuarine, and freshwater animal life (excluding whales). A number of marine protected areas are managed jointly by National Parks and Fisheries.

Designations (17 State marine protected areas covering 38 square km)

(1) **National Park** (6 areas) *(National Parks and Wildlife Act 1974)*: Relatively large areas designated to protect flora and fauna and natural landscape, and dedicated for public enjoyment and education.

(2) **Aquatic Reserve** (7 areas) *(Fisheries and Oyster Farms (Amendments) Act 1979)*: Small areas providing recreation, education, and conservation.

(3) **Nature Reserve** (4 areas) *(National Parks and Wildlife Act 1974)*: Estuarine and mangrove areas protected for scientific research and migratory waders.

marine protected area jurisdiction into the hands of State Fisheries.

The powers of the National Parks and Wildlife Service to establish marine protected areas are "to some extent limited and ill-defined" (Cahill, 1985 a). They are severely curtailed by the absence of control over most marine animals, fishing, and boating activities. The *National Parks and Wildlife Act 1974* fails to provide jurisdiction over marine waters, fails to include specific regulations or procedures for marine protected areas, and its definition of *animal* does not extend to *fish*: fauna are defined as mammals, birds, and reptiles (Cahill, 1985 a). Primarily a terrestrial-oriented agency with very limited experience with marine protected areas, the National Parks and Wildlife Service still has no formal marine protected area policy. Adjacent land uses, water quality, and control of shipping are all beyond their statutory powers. To address some of these problems the National Parks and Wildlife Service stated at 1985 CONCOM workshop that it was:

> preparing a specific marine protected area policy and a comprehensive strategy for action. It intends to implement a comprehensive marine park system, and to this end has delegated two of its professional officers to work part-time on preparing the marine parks and reserves policy and strategy, to liaise with Fisheries and other departments and to draft appropriate amending legislation (Cahill, 1985 b).

Five years later a marine protected area policy and an associated strategy for action have not been released.

As a result of inaction by the National Parks and Wildlife Service the State Fisheries has now largely taken responsibility for promoting marine protected areas. It identified 40 potential sites as suitable marine protected areas along the New South Wales coastline, with surveys of 30 areas completed and 15 considered high in priority, while six have been declared as aquatic reserves (Pollard, 1985:4). State Fisheries produced a management plan for the Towra Point aquatic reserve at Botany Bay which was designated in 1987 (Leadbitter and Pollard, 1986). The management plan complements the terrestrial Towra Point nature reserve and involves joint agency cooperation with the National Parks and Wildlife Service.

The role of State Fisheries in marine protected areas has been further strengthened by the withdrawal, in 1989, of the National Parks and Wildlife Service from the Solitary Islands marine reserve interagency steering committee. Mentioned as a potential marine protected area as early as 1975 at the Tokyo Conference (Pollard, 1977:186), the Solitary Islands proposal might have provided a potential framework for joint agency cooperation, but the National Parks and Wildlife Service felt it could not set a precedent by allowing exploitative, multiple use activities to occur in a marine protected area (Pollard, 1989). As a result, State Fisheries has now proceeded unilaterally and prepared a draft management strategy for the Solitary Island marine reserve proposal with a zonation methodology closely resembling that adopted by the GBRMP (New South Wales, 1989).

Despite the failure of interagency cooperation, there is promise in recent international interest shown in the potential application of the MAB

marine biosphere reserve concept for the Solitary Islands (Pollard, 1989). The US MAB is considering a proposal for a comparative study of the US east coast and the coast of New South Wales, including the Solitary Islands (Ray, 1989). Given the large size (approximately 850 square km), complexity of adjacent land-uses, and existing activities that could compromise the Solitary Islands marine reserve, a full marine biosphere reserve may warrant further exploration.

3.6.4 Victoria

Victoria has 16 marine protected areas covering 50 square km (less than 0.01 percent of the total declared in Australia) (Table 3.5) and a 1,800 km coastline. The majority of marine protected areas were designated under the *National Parks Act 1975* or the *Crown Land (Reserves) Act 1978*. The National Parks Service, with jurisdiction to the low water mark, focussed attention on the intertidal zone, and because of this:

> [t]he status of these areas as marine protected areas (according to the CONCOM definition) is questionable as all were designated primarily to protect and manage aspects of terrestrial biotas and habitats, and there is no specific provision for the protection of marine or estuarine biotas and habitats (MacDonald, 1985).

The legislative arrangement for marine protected areas is characterized by a largely unworkable division between the *National Parks Act 1975* and the *Fisheries Act 1968*. Responsibility rests with the National Parks Service from the low tide mark shoreward and with the Fisheries and Wildlife Division from low tide mark to the edge of the territorial sea. "The fundamental problem associated with the establishment and

Table 3.5 Legislation, Administration, and Designations of Victorian Marine Protected Areas

Legislation

(1) The *Fisheries Act 1968 (Section 79A)* provides for the protection of marine and estuarine environments through the designation and management of marine protected areas.

(2) Under the *National Parks Act 1975* provision is made for national parks extending to the low water mark on the coastline.

(3) The *Crown Land (Reserves) Act 1978* provides for the protection of wildlife reserves.

Administration

(1) The Fisheries and Wildlife Division, Department of Conservation, Forests and Lands is the only agency with statutory responsibility for marine protected areas.

(2) Jurisdiction of the National Parks Service extends only to the low water mark along the coastline.

Designations (16 State marine protected areas covering 50 square km)

(1) **Coastal Park** (3 areas) *(National Parks Act 1975)*: Thin intertidal strip of coast reserved for conservation and recreation.

(2) **Marine Reserve** (2 areas) *(Fisheries Act 1968)*: Small coastal and marine sites reserved for conservation, recreation, and scientific study.

(3) **National Park** (4 areas) *(National Parks Act 1975)*: Thin intertidal strip of coast reserved for conservation and recreation.

(4) **State Park** (1 area) *(National Parks Act 1975)*: Thin intertidal strip reserved for conservation and recreation.

(5) **Wildlife Reserve** (4 areas) *(National Parks Act 1975 and Crown Land Reserves Act 1978)*: Small areas protecting seabirds and migratory waders.

(5) **Historic Shipwreck Protected Zone** (2 areas) *(Historic Shipwrecks Act 1981)*: Small 1 square km sites protecting historic shipwrecks.

management of Victorian MEPAs is that no *one* government agency has been designated or acknowledged as being responsible for *all* aspects of this process" (MacDonald, 1984).

The problems associated with this artificial legal boundary between the marine and coastal ecosystem are illustrated below. The Victorian Labor Government in 1982 proposed four new marine protected areas in the South Gippsland area (Larsen, 1983:5). Marine and intertidal areas were proposed for Wilsons Promontory, Corner Inlet, Nooramunga, and Shallow Inlet (Victoria, 1984), the latter three areas being of international significance for migratory wading birds (Anon., 1986).

In response to this proposal the Fisheries and Wildlife Division established and published a systematic procedure for establishing Victorian marine protected areas (MacDonald, 1982). However, because the National Parks Service has responsibility to low water mark they were invited to sit on an interdepartmental steering committee, which attempted to reduce the interagency rivalry in marine protected area planning and management. Consisting of representatives of Fisheries and Wildlife Division, National Parks Service, Museum of Victoria, and the Ports and Harbours Division, the Steering Committee drafted a proposal for the establishment and management of these marine protected areas. During public comments leading up to the proposal a reputable marine scientist involved in the management plan suggested that:

> The allocation of this responsibility to two or more agencies almost inevitably leads to conflict of interest, indecision, inactivity and inconsistent or irrational management proposals (MacDonald, 1984).[15]

This position has been justified by subsequent events.

Now over seven years since these marine protected areas were first suggested, there are finally signs that the last of the four will be designated (Robinson, 1988). However, a claimed intention by the Department of Conservation, Forests and Lands "to establish a system of marine parks along the Victorian coast" (Victoria, 1987:i) must be viewed with scepticism. The same departmental brochure states that "NO OTHER AREAS (*sic*) in Victoria will be declared as marine parks or reserves during this Government's term of office" (Victoria, 1987:ii). The message is clear and discouraging - an expansion of the numbers, size, and biophysical representation does not seem likely in the forseeable future.

3.6.5 South Australia

South Australia has 53 marine protected areas covering 213 square km (0.06 percent of the total declared in Australia) and a 3,700 km coastline (Table 3.6). This was the first State to legislate specifically to establish aquatic reserves (Johnson, 1988 a). The single largest designation occurred in 1971 when marine protected areas were declared under the *Fisheries Act 1971* for commercial and recreational fisheries.

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[15] Dr C.M. MacDonald, Fisheries Biologist for the Commerical Fisheries Branch, Fisheries and Wildlife Division, Ministry for Conservation, Forests and Lands, has been closely involved in Victorian marine protected area developments and authored *A Systematic Approach to the Establishment of Marine and Estuarine Protected Areas in Victorian Coastal Waters* (MacDonald 1982).

Table 3.6 Legislation, Administration, and Designations of South Australian Marine Protected Areas

Legislation

(1) The *Fisheries Act 1982* provides for, *inter alia,* the conservation, enhancement and management of fisheries, the regulation of fishing and protection of certain fish species and aquatic habitat.

(2) The *National Parks and Wildlife Act 1972* provides for the establishment and management of reserves for public benefit and enjoyment and the conservation of wildlife in a natural environment.

(3) The *Coast Protection Act 1972* provides for the conservation and protection of beaches and coast.

Administration

(1) The Department of Fisheries is responsible for the management of the marine environment, including aquatic reserves, and has established an Aquatic Ecology Section.

(2) The South Australian National Parks and Wildlife Service within the Department of Environment and Planning manages conservation and national parks.

Designations (53 State marine protected areas covering 213 square km).

(1) **Aquatic Reserve** (16 areas) *(Fisheries Act 1982)*: Provide for the conservation, enhancement, and management of fisheries, the protection of aquatic habitat, and the protection of fish, and/or marine mammals, sands, shell, coral, rock, and seaweed. Generally they are single zone, high protection areas.

(2) **Sanctuary** (4 areas) *(Fisheries Act 1982)*: Set up to provide strict protection of the southern rock lobster.

(3) **Conservation Park** (3 areas) *(National Parks and Wildlife Act 1972)*: Protected sites for mangroves, saltmarsh ecosystems, and sea lions.

(4) **National Park** (1 area) *(National Parks and Wildlife Act 1972)*: Has the primary purpose of conserving an extensive estuarine lagoon system and wetlands.

(5) **Restricted Use Areas, Jetties, Piers, Wharves, and Netting Enclosures** (28 areas) *(Fisheries Act 1982)*: Small areas for public safety.

(6) **Historic Shipwreck Protected Zone** (1 area) *(Historic Shipwrecks Act 1976, Commonwealth)*: Protected shipwreck.

Similar to the Victorian situation, the problem of agency responsibility has been recognized as a major concern:

> ... no single agency, governmental or otherwise, has the funding, resources and inclination to monitor, regulate and where necessary prosecute users and their uses of the coastal water in an effective manner (Ottaway *et al.*, 1980:12).

Following the OCS deliberations in 1979 the South Australian government decided to rationalize responsibility for marine protected areas between the South Australian Department for Environment and Planning and the Department of Fisheries. In 1983 a working party, formed to examine the management of marine reserves, recommended that "responsibility for management of the marine environment remain with the Department of Fisheries; aquatic reserves and marine parks should accordingly remain that department's responsibility" (Johnson, 1985 a). These recommendations were ratified with the approval of both Departments in August 1984. There was a certain amount of public dissatifaction with this arrangement, and pressure built up for amendments to the *National Parks and Wildlife Act 1972* to enable the National Parks and Wildlife Service to administer and enforce regulations concerning marine protected areas (Johnson, 1985 a, 1985 b). The working party established "clearer lines of responsibility with respect to managing marine conservation areas" and as a result subsequent interagency coordination between the Department of Fisheries and the National Parks and Wildlife Service with respect to the management of coastal areas has been good (Johnson, 1986, 1988 a, 1988 b).

The goal of the Department of Fisheries is the development of a "system of marine (aquatic) reserves concurrent with fisheries resource management ... to provide for the wise use, protection, appreciation and enjoyment of the marine habitat in perpetuity" (Johnson, 1986). To fulfill these objectives it began surveying marine and coastal areas with the aim "to protect and manage a series of representative habitats of the South Australian coast and water and the organisms associated with these areas by proclamation of aquatic reserves" (Johnson, 1985 a). It was proposed that the broad function of the State's aquatic reserves reflect the IUCN objectives adopted in 1976, and subsequently supported by CONCOM (Johnson, 1983:4).

The South Australian Department of Fisheries is one of the few State agencies in Australia to have a policy statement in relation to aquatic reserves. Because the Department of Fisheries is responsible for both biological and economic information on aquatic habitat and its organisms (although its *primary management objective* is exploitation of the marine environment) it has subsequently developed expertise in marine ecology and management of marine environments.

3.6.6 Western Australia

Western Australia has a coastline of 12,500 km, the longest of any State in Australia, and 11 marine protected areas totalling 5,059 square km (approximately 1.3 percent of the total declared in Australia) (Table 3.7). The *Conservation and Land Management Act 1985* provides sole authority for the establishment of marine parks and marine nature reserves. The Act also "contains extensive provision for the preparation of management plans and public involvement and can incorporate land

Table 3.7 Legislation, Administration, and Designations of Western Australian Marine Protected Areas

Legislation

(1) The *Fisheries Act 1901-1981* allows aquatic reserves to be established for fisheries management.

(2) The *Conservation and Land Management Act 1985* has sole authority for the establishment of marine parks and marine nature reserves. The Act vests authority of marine reserves in the National Parks and Nature Conservation Authority.

Administration

(1) The Department of Fisheries and Wildlife is responsible for the management of commercial and amateur fisheries and aquatic reserves.

(2) The Department of Conservation and Land Management has overall responsibility for coastal national parks and marine parks as well as day-to-day management.

Designations (11 State marine protected areas covering 5,059 square km)

(1) **Marine Reserve** (1 area) *(Fisheries Act 1901-1981)*: Protection of marine habitat.

(2) **National Park** (high water mark to low water mark) (7 areas) *(Conservation and Land Management Act 1985)*: Coastal national parks.

(3) **Historic Shipwreck Protected Zone** (1 area) *(Historic Shipwrecks Act 1976, Commonwealth)*: Protection of shipwrecks.

(4) **Marine Parks** (2 areas) *(Conservation and Land Management Act 1985)*: Ningaloo Marine Park is a joint arrangement with Australian National Parks and Wildlife Service, while Marmion Marine Park is the sole responsibility of the Department of Conservation and Land Management.

and water in a reserve" (May, 1985 a, 1985 c). The main limitation of the Act is its subordinate status with respect to other Acts. For instance, mining and petroleum exploration or exploitation takes precedence over any marine protected area declared under the *Conservation and Land Management Act 1985*.

> ... in the event of any conflict or inconsistency with any other Act, the other Act prevails. In many respects it may be less satisfactory than the *Fisheries Act 1901-1981*. The need therefore remains for specific legislation to be eventually enacted relating more specifically to the establishment, protection and management of marine protected areas in Western Australia before the long term security and viability of marine protected areas can be assured (May, 1985 b:5).

Only two marine protected areas have been designated under the *Conservation and Land Management Act 1985*: Ningaloo Marine Park, hailed by some as the Great Barrier Reef of Western Australia (May *et al.*, 1983), was designated in 1987, whilst Marmion Marine Park was designated in 1986 (Western Australia, 1985:88-93). Ningaloo Marine Park is a joint venture between Western Australia and the Commonwealth whereby the relevant section of the 3 mile territorial sea, a portion of the 200 mile AFZ, and an adjacent terrestrial area are managed cooperatively (May, 1986). The Commonwealth marine environment is managed under the *National Parks and Wildlife Conservation Act 1975 (Commonwealth)* and the Western Australian Department of Conservation and Land Management has day-to-day management responsibility. Ningaloo Marine Park is managed as a multiple use resource where the principle of zoning is applied to separate potentially

conflicting uses[16] so that conflict is minimized and opportunities for recreation maximized (May *et al.*, 1983:18-23). The zoning methodology adopted is very similar to that used by the GBRMP and the MAB biosphere reserves program.

Ningaloo Marine Park was initially seen as a potentially important model for the long-term development of Western Australian marine protected areas and for an Australian system of representative marine protected areas (Kriwoken, 1987:19). It was the first time a State government had invited the involvement of the Commonwealth in a marine protected area to jointly address the complexities of managing the marine and terrestrial environments as one interdependent ecological unit. By supporting the principles of an open system of conservation, incompatible developments in the terrestrial environment that might compromise the integrity of the marine protected area could be addressed. The principles of an open system of conservation should ideally serve as a model for other marine protected areas, and it is pleasing to see that nine other marine protected areas are now being examined within the Western Australian 3 mile territorial sea.

3.6.7 Tasmania

Tasmania's 15 marine protected areas cover 487 square km (approximately 0.13 percent of the total declared in Australia) along its 3,200 km coastline (Table 3.8). As the majority of marine protected areas were designated before 1960 as wildlife sanctuaries for wading birds, it is not suprising that Tasmania has 10 out of 28 Australian wetlands declared under the Ramsar Convention (Tasmania, 1980). However, the Ramsar

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[16] Conflicting uses in Ningaloo can include: fishing and collecting; recreation, tourism; petroleum exploration; commercial development; and coastal land management.

Table 3.8 Legislation, Administration, and Designations of Tasmanian Marine Protected Areas

Legislation

(1) The *Sea Fisheries Act 1959* provides for the regulation and management of fish and fishing.

(2) The *National Parks and Wildlife Act 1970 (Section 3(1))* defines land as including "land covered by the sea or other waters, and the part of the sea covered by the sea or other waters" and provides for the reservation and management of land areas.

Administration

(1) The Department of Sea Fisheries is responsible for the conservation of fish (including shellfish, scale fish, and rock lobster) for fishing regulations and enforcement.

(2) The Department of Parks, Wildlife and Heritage is responsible for the protection of marine creatures such as seals and seabirds, and reservation, interpretation, enforcement, and management.

Designations (15 State marine protected areas covering 487 square km)

(1) **Conservation Area** (9 areas) *(National Parks and Wildlife Act 1970)*: Wildlife sanctuaries protecting wading bird habitat and the marine portion of the South-West World Heritage Area.

(2) **Marine Reserve** (1 area) *(Sea Fisheries Act 1959)*: Small area reserved for rock lobster research.

(3) **National Park** (2 areas) *(National Parks and Wildlife Act 1970)*: Protection of wading bird habitat and the marine portion of the Southwest World Heritage Area.

(4) **Nature Reserve** (1 area) *(National Parks and Wildlife Act 1970)*: Protection of sub-Antarctic Macquarie Island wildlife, research, and wilderness.

(5) **Historic Site** (2 areas) *(National Parks and Wildlife Act 1970)*: Aboriginal settlement and historic shipwreck.

Convention (discussed in Chapter 3.2) does not legally bind parties to prohibit activities that will change the ecological nature of wetland areas (Lyster, 1985).

No marine protected area has been declared since 1981 and the one marine reserve declared protects an area for rock lobster research (O'Sullivan, 1985). Although two marine protected areas (representing over 80 percent of Tasmania's marine protected area) are within the South-West World Heritage Area (also a UNESCO biosphere reserve) and the South-West Conservation Area these reserves can be seen as little more than marine extensions to existing terrestrial parks, boundaries perhaps drawn for symmetry rather than any desire to include marine environments in the parks. These areas may only be considered to have *de facto* protection as they are not managed as marine reserves nor are there management plans outlining marine conservation (Kriwoken and Haward, 1991). Joint management of marine protected areas is required between the Department of Sea Fisheries (responsible for fish and fishing) and the Department of Parks, Wildlife and Heritage (responsible for the protection of marine creatures such as seals and seabirds) (O'Sullivan and Bosworth, 1985). Realizing this dilemma, in 1981 both agencies published a draft joint policy statement outlining the establishment and management of marine reserves in Tasmania (Tasmania, 1981; Kriwoken and Haward, 1991). A program of marine surveys was undertaken by the National Parks and Wildlife Service, with a National Estate grant through the Australian Heritage Commission, to document and evaluate proposals for marine protected areas (Edgar, 1981). Adverse public reaction to the survey promoted a withdrawal of the draft joint policy

statement, and the second survey of marine protected areas (Edgar, 1984) was never publically released.

The past history of neglect may be changing as the incoming minority Labor State government has supported marine protected areas in the D'Entrecasteaux Channel south of Hobart, and off Maria Island and Bicheno on the east coast. It now seems likely that new declarations[17] will take place within the forseeable future, and it is likely that the Department of Primary Industry, which incorporates the former Department of Sea Fisheries, will lose its joint carriage of marine protected areas.

3.6.8 Northern Territory

Both the Northern Territory Conservation Commission and ANPWS have responsibility for marine protected areas. Together they have set up five marine protected areas, representing 2,671 square km (0.7 percent of the total declared in Australia) along the 6,200 km length of coast (Table 3.9). The Commonwealth is restricted to the territorial sea and the littoral zone under the *Aboriginal Land Rights (Northern Territory) Act 1976*. The Territory can only declare marine protected areas in approximately 25 percent of the coastline and adjacent waters (Fox, 1985). The two most significant marine protected areas are the intertidal areas of Kakadu National Park (a World Heritage Area) and the national park surrounding Cobourg Peninsula. The Cobourg Peninsula marine national park is jointly managed by the Cobourg Peninsula Sanctuary Board and the Conservation Commission (Mitchell, 1987). No new

[17] At the time of writing four new marine protected areas are under review. They are: Maria Island; Tinderbox; Ninepin Point; and Bicheno.

Table 3.9 Legislation, Administration, and Designations of Northern Territory Marine Protected Areas

Legislation

(1) The *National Parks and Wildlife Conservation Act 1975 (Commonwealth)* provides for Federal parks involvement in conservation and preservation matters.

(2) The *Territory Parks and Wildlife Conservation Act 1951 (Section 12)* allows parks and reserves to be declared on land defined as the sea above any part of the seabed of the Territory and allows the park service to provide conservation and protection on Aboriginal land.

(3) The *Cobourg Peninsula Aboriginal Land and Sanctuary Act 1981* provides for the joint management of Cobourg Peninsula by Aboriginal land claimants and the Northern Territory.

(4) The *Fish and Fisheries Act 1980* provides for the management of the commercial fishing industry and permits the reservation of areas as aquatic parks (Section 57).

Administration

(1) The Conservation Commission of the Northern Territory and the Commonwealth Australian National Parks and Wildlife Service both have park service management responsibilities.

(2) The Department of Ports and Fisheries and the Department of Police administer the *Fish and Fisheries Act 1980.*

Designations (5 marine protected areas covering 2,671 square km)

(1) **Fishery Reserve** (1 area) *(Fish and Fisheries Act 1980)*: Protects fish as a tourist attraction.

(2) **Marine National Park** (1 area) *(Territory Parks and Wildlife Conservation Act 1951)*: Protection of marine resources.

(3) **National Park** (1 area) *(National Parks and Wildlife Conservation Act 1975) (Commonwealth)*: Conservation, recreation, and fisheries management, largely of estuarine mudflats and mangrove forest.

(4) **Sanctuary** (1 area) *(Cobourg Peninsula Aboriginal and Sanctuary Act 1981)*: Conservation of resources and traditional use by Aboriginals.

(5) **Historic Shipwreck Protected Zone** (1 area) *(Historic Shipwrecks Act 1976, Commonwealth)*: Protection of a shipwreck.

marine protected areas have been declared since the Ivanovici (1984) inventory and no formal proposals are currently being considered in the Northern Territory (Wanders, 1989).

3.6.9 Australian Capital Territory

The Australian Capital Territory, under the *Australian Capital Territory Fishing Ordinance 1967* and the *Australian Capital Territory Nature Conservation Ordinance 1982,* is responsible for waters managed in sympathy with the nature reserve in Jervis Bay. The nature reserve covers an area of eight square km (less than 0.01 percent of the total declared in Australia) while the coastline is 35 km in length (Logan, 1985). The marine protected area is managed by the Australian Capital Territory Parks and Conservation Service.

3.6.10 Summary of State and Territory Initiatives

All three variations of protected area jurisdiction identified by Lausche (1980:30) are evident in State marine protected areas: (1) terrestrial protected areas adjacent to marine protected areas are often under the jurisdiction of different authorities; (2) within a single marine protected area matters of conservation, boating, and fishing are often under the jurisdiction of separate institutions; and (3) those external activities that could be potentially detrimental to a marine protected area often have overriding jurisdiction.

It is therefore unlikely that existing State legislation could adequately provide a framework for a national system of representative marine protected areas embracing an open system of conservation. Queensland

marine protected areas under the *Fisheries Act 1976* have reinforced commercial and amateur fishing activities, while the *Marine Parks Act 1982* has been used sparingly. In New South Wales, Victoria, and Tasmania there has been little attempt to rationalize responsibility for marine protected areas and no new marine protected area legislation has been introduced. In New South Wales the parks agency has withdrawn from a marine reserve interagency steering committee, putting in jeopardy future cooperative marine protected area arrangements. In Western Australia the *Conservation and Land Management Act 1985* can be overridden by any other Act that supports development activity.

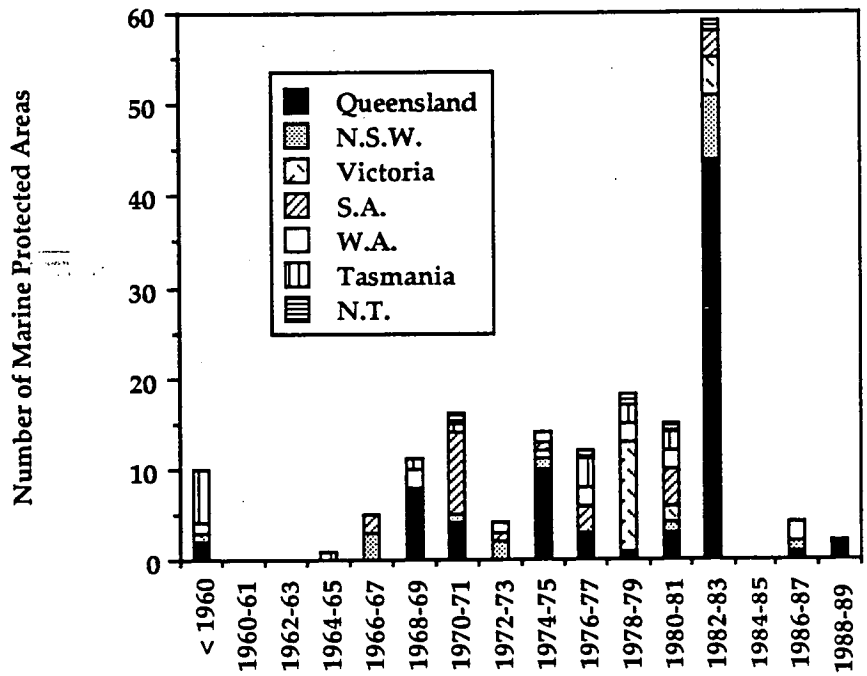
More promising is the South Australian concept of State aquatic reserves. Marine protected area legislation and institutional arrangements between the fisheries and parks agencies have been successfully rationalized, and the Department of Fisheries is one of the few State agencies in Australia to have a policy statement in relation to aquatic reserves. The Western Australian project also offers promise. Ningaloo marine park is unique because it jointly addresses the complexities of managing the marine and terrestrial environment as one interdependent ecological unit and embodies the principles of an open system of conservation whereby incompatible developments on the terrestrial environment that could compromise the integrity of the marine protected area can be addressed. While the Act responsible may be overridden, the principle of an open system of conservation could be a model for other marine protected areas.

Interest in other marine protected area concepts is beginning to grow. The exciting proposal to adopt the MAB marine biosphere reserve concept for the Solitary Islands has aroused international interest, and a comparative

study between the US east coast and the coast of New South Wales could be soon explored. Because the marine biosphere reserve concept adopts an open system of conservation it could be extremely useful in addressing adjacent land-uses and existing activities that could compromise the marine protected area.

Finally, State legislative and institutional arrangements for marine protected areas can be summarized by plotting numbers designated versus dates of declaration (Figure 3.1). It is not suprising that before the First World Conference on National Parks in 1962 there were virtually no marine protected area designations. One notable exception is the Tasmanian estuarine designations that occurred before 1962. From 1962 until the Tokyo Conference in 1975 every State declared a marine protected area. Queensland from 1968-69 and 1974-75 and South Australia from 1970-71 were most prolific. The largest numbers of marine protected areas were designated from 1975 until the first CONCOM workshop on policies in Perth in 1982. Victoria from 1978-79 and Queensland from 1982-83 (largely fish habitat reserves for commercial and amateur fisheries) were most active. The last five years from 1984 to 1989 have been disappointing with only six marine protected areas declared. These low numbers would tend to suggest that State governments are not seriously addressing the CONCOM objectives for marine protected areas. Because States have been generally slow to adopt specific marine protected area legislation options for future legislative and institutional reform need to be canvassed. The next section examines marine protected area

Figure 3.1 Australian State Marine Protected Areas: Numbers Versus Date of Declaration



reform suggested by two Australian nongovernmental organizations.

3.7 Legislative Initiatives from Nongovernmental Organizations

Since 1983 two initiatives on marine protected area legislative and institutional reform have come from nongovernmental organizations, as these organizations have moved to fill the void left by Commonwealth and State government inactivity. The Fund for Animals Ltd. (Australia) (Suter, 1983) produced a booklet reviewing marine reserves and outlining draft legislation, with the publication and its model legislation sparking off considerable debate. ACIUCN agreed to examine and comment upon the proposed legislation for Australian marine protected areas (ACIUCN, 1986).

Although legislative initiatives are clearly the priority here, there have also been problems associated with the overall management approach whereby principles and guidelines are established by agencies involved in management (in zoning plans, for instance: see Kriwoken, 1987). Suter (1983) examined the legal machinery required to implement an Australian marine reserves management system and argued that the Commonwealth should enact overarching legislation to create a national system of marine protected areas. Suter argued for "blanket legislation for marine reserves which solve the problem of multiple jurisdiction over marine areas" and the "standardization of management of all marine protected area reserves throughout Australia" (Suter, 1983:13). Suter (1983:13) further suggested that Commonwealth legislation could embody a workable national management philosophy to encompass all marine reserves and that "it is unlikely that the States could ever provide, and implement, a satisfactory marine reserves policy".

Given the analysis of the limitations of State legislation in Chapter 3.6 the latter point is well made. More specifically, it is unlikely that State legislative and institutional arrangements could collectively provide a marine protected area policy that would constitute a representative national system supporting WCS/NCSA objectives. However, it would be naive to think that the introduction of blanket marine protected area would automatically solve problems of multiple use marine management. Chapter 3.3 identified strong economic interests in the offshore, and that, as a consequence, the OCS include arrangements for, *inter alia,* oil and gas, fisheries, and mining. Moreover, the standardization of management of marine protected areas may prove very difficult given the variation of legislation revealed in Chapter 3.6 and what may be a decreasing interest by States in marine protected areas.

In March 1984 ACIUCN agreed to establish a marine reserves sub-committee, with members from the Great Barrier Reef Marine Park Authority, two nongovernmental organizations, State governments, and a representative of the Australian National Parks and Wildlife Service as chair. The ACIUCN marine reserves sub-committee discussed the many legislative routes to declaration and management of marine protected areas but chose in the end not to recommend any one option:

> Given the realities of the Australian federal system of government we find it less important to seek uniform legislation than to use those various legislative avenues that are presently available to declare more marine protected areas. An attempt to develop and implement national legislation will lead to further long delays in declaring those areas that should be protected NOW (ACIUCN, 1986:19).

There is thus little support for blanket national marine protected area legislation within ACIUCN. The sub-committee saw the problems of convincing the States of incorporating national marine protected area legislation too daunting. Rather, they argued that additional marine protected areas should be declared under existing legislation.

Debate centres around the centralist approach of blanket legislation and standardization of management of all marine protected area reserves throughout Australia, and the realities of federalism, whereby uniform legislation is most unlikely to occur. This debate is central: how can legislative and institutional reform best promote an Australian system of representative marine protected areas meeting accepted international WCS standards, as adopted by NCSA? This debate will be further explored in Chapter 5, *via* three options for the future operation of a national marine protected area system.

3.8 Evaluation of Commonwealth and State Legislative and Institutional Arrangements Relating to Marine Protected Areas

The broad objective of this chapter has been to survey existing Commonwealth and State legislative and institutional arrangements for marine protected areas to determine if WCS/NCSA objectives have been met. In general Commonwealth and States have proceeded unilaterally, resulting in a lack of standardization and little coordination and agreement on marine protected area legislation. Legislation is limited to only three Acts of the relevant 17 with *primary* statutory reservation, regulatory, and management responsibilities having been introduced specifically for the conservation of marine protected areas. The

remaining 14 Acts are primarily concerned with fisheries and terrestrial resources. This interpretation has been reinforced by the CONCOM working group on legislation which shows that State marine protected areas have the following deficiencies:

(1) lack of consistency in nomenclature for protected areas or zones;
(2) objectives may not be explicitly stated in legislation, or when stated not be consistent with CONCOM/IUCN. The group realized that in many cases, objectives were implicit in statements of power or functions of administering authorities established by the legislation or by administrative arrangements;
(3) some legislation did not contain requirements or obligations for administering authorities to undertake activities considered desirable such as development and review of management plans, and commitment to undertake research, monitoring, interpretation and education. The working group again recognized that such activities were in many cases carried out administratively (CONCOM, 1985:48).

The Commonwealth ANPWS has been instrumental in organizing CONCOM workshops which have produced important principles and guidelines for marine protected area selection and management. However, the Commonwealth has not been highly active in promoting a national system of representative marine protected areas. Although marine biogeographical regions have been delineated for Australia, ANPWS has not identified representative marine areas of Australian significance nor nominated potential marine protected areas representative of the major biogeographic zones.

Existing Commonwealth and State marine protected area legislation does not generally reflect current international moves towards protecting higher biological units, such as ecosystems and biomes. Nor have they embraced an open system of conservation whereby environmental planning and management techniques of integrated coastal zone management have been utilized. The planning and management of existing marine protected areas promotes a closed system of conservation whereby they are isolated from other marine policy decisions and do not usually incorporate relevant interrelationships, such as oil and gas exploitation, tourism, and coastal development. For example, legislation does not generally extend upstream to regulate marine pollution activities, or landwards to control activities that adversely affect marine protected areas. Legislation does not extend to include the geographical area wherein wider consequences of the marine protected area policy decisions are relevant and does not generally include all the actors and users within the marine activity system. In general, jurisdictional overlap and sectoral conflict (fishing, mining, recreation, shipping) characterize marine protected area policy even though the OCS requires "consultation between the States and the Commonwealth in the establishment of marine parks and reserves" (Australia, 1980 b:12). The OCS does not include operational arrangements for marine protected areas and as a result problems of mobilizing and coordinating jurisdictional control, overlapping responsibilities, and insufficient policy coordination continue to exist.

Interagency conflict often exists between parks and fisheries agencies where the responsibility for marine protected areas has not been rationalized. Conflict can also exist in cases where the two agencies are in

ongoing competition with each other, the situation that has been noted in the case of Queensland. Parks agencies tend to be conservation and recreation-oriented and established in accordance with the principles favoured by terrestrial expertise. Their underlying philosophies proclaim conservation management, public utilization, and the establishment of recreational and tourist developments. On the other hand fisheries agencies are largely exploitation and development-oriented though they do have marine science expertise. Because fisheries agencies have primarily been oriented towards resource development, new conservation responsibilities such as marine protected areas may not be easily accommodated. Fisheries legislation does not usually cover recreational use or development (except in relation to fishing) and certainly gives limited recognition to non-exploitation values. As a result the mandates of fisheries agencies often mitigate against conservation and preservation measures. Jurisdictional division often necessitates interagency agreements, but most States have not recognized that there is a need to rationalize cooperation and designate a lead marine protected area agency. When it comes to primary statutory powers over declaration, regulation, and management, State fisheries agencies largely control the planning and management of State marine protected areas (in keeping with the predominant developmentalist value of State governments generally). In interagency struggle the general tendency has been that the parks agencies have been relegated to secondary regulatory or advisory roles and can only *contribute* to marine protected area planning and management.

Finally, the official CONCOM intergovernmental forum for marine protected areas is severely limited. While Commonwealth and State governments can publically support objectives for marine protected areas through the CONCOM forum, there is no binding agreement to implement those objectives. The 1985 CONCOM objective of "continu[ing] momentum towards the development of an integrated system of marine protected areas at regional and national levels" (CONCOM, 1985:2) does not seem any closer to being met five years later. In over ten years since the *ad hoc* working group on marine parks and reserves first reported to CONCOM only two workshops have been held (1982 and 1985). The membership of CONCOM does not include State fisheries departments even though they often have primary statutory authority over marine protected areas.

Having identified the weaknesses in Australian legislation and institutional arrangements at both Commonwealth and State levels the thesis now attempts to provide some prescriptions for promoting a national system of marine protected areas. Chapter 4 examines the legislative and institutional arrangements underlying the Great Barrier Reef Marine Park. This represents an important precedent that will have future implications for any national system because it embodies extensive cooperative intergovernmental relations at both the legislative and institutional levels.

Chapter 4
Great Barrier Reef Marine Park Intergovernmental Relations

4.1 Introduction

The Great Barrier Reef region (GBR region) of Queensland covers approximately 350,000 square km and extends 2,000 km from the Torres Strait to south of the Tropic of Capricorn; the associated reef is more than 2,200 km long with 2,500 reef structures and supports about 1,500 species of fish (Kelleher, 1985:4). The region is described as the single largest coral reef in the world, supporting one of the most diverse ecosystems in the world, and is one of the most outstanding natural features of Australia (Australia, 1985 a:1).

The political history of the GBR region over the last 25 years is characterized as a conflict between the Commonwealth and Queensland to maximize jurisdiction and control over this ocean space. However, Australia's federal structure has meant that policy formulation in the region involves a complex system of intergovernmental arrangements. Intergovernmental relations in the GBR region involve a number of arrangements for, *inter alia,* joint fiscal management, aerial surveillance, and management planning. For the purposes of the present thesis intergovernmental relations refers to the legislative and institutional

arrangements which have evolved after a decade of strained Commonwealth and Queensland governmental relations. This tension was directly related to offshore issues involving major litigation in the High Court over the jurisdictional boundary of Commonwealth/State legislative responsibilities.

Legislative and institutional intergovernmental relations discussed in Chapter 3 revealed the complexities of developing a marine protected area policy in a federal maritime system. This Chapter analyzes the evolution of intergovernmental legislative and institutional arrangements in the GBR region, identifies problems, and provides recommendations for future cooperation deriving from this model that would have relevance to an Australian system of representative marine protected areas. The GBR model is also very similar to that adopted by the MAB Program for biosphere reserves, discussed in Chapter 5.

The second section discusses the genesis of maritime intergovernmental relations between the Commonwealth and Queensland with special reference to increased interest in offshore resources, and documents the historical context of maritime intergovernmental relations in the GBR region. The third section analyzes the responsibilities of the GBRMPA, the relevance of the OCS, the Great Barrier Reef Ministerial Council (GBRMC) (established in 1979 to coordinate Marine Park policy at Ministerial level), and responses by the Queensland government. Section four presents problems associated with intergovernmental relations, and the final section makes recommendations for their improvement and for future cooperation as relevant to an Australian system of marine protected areas.

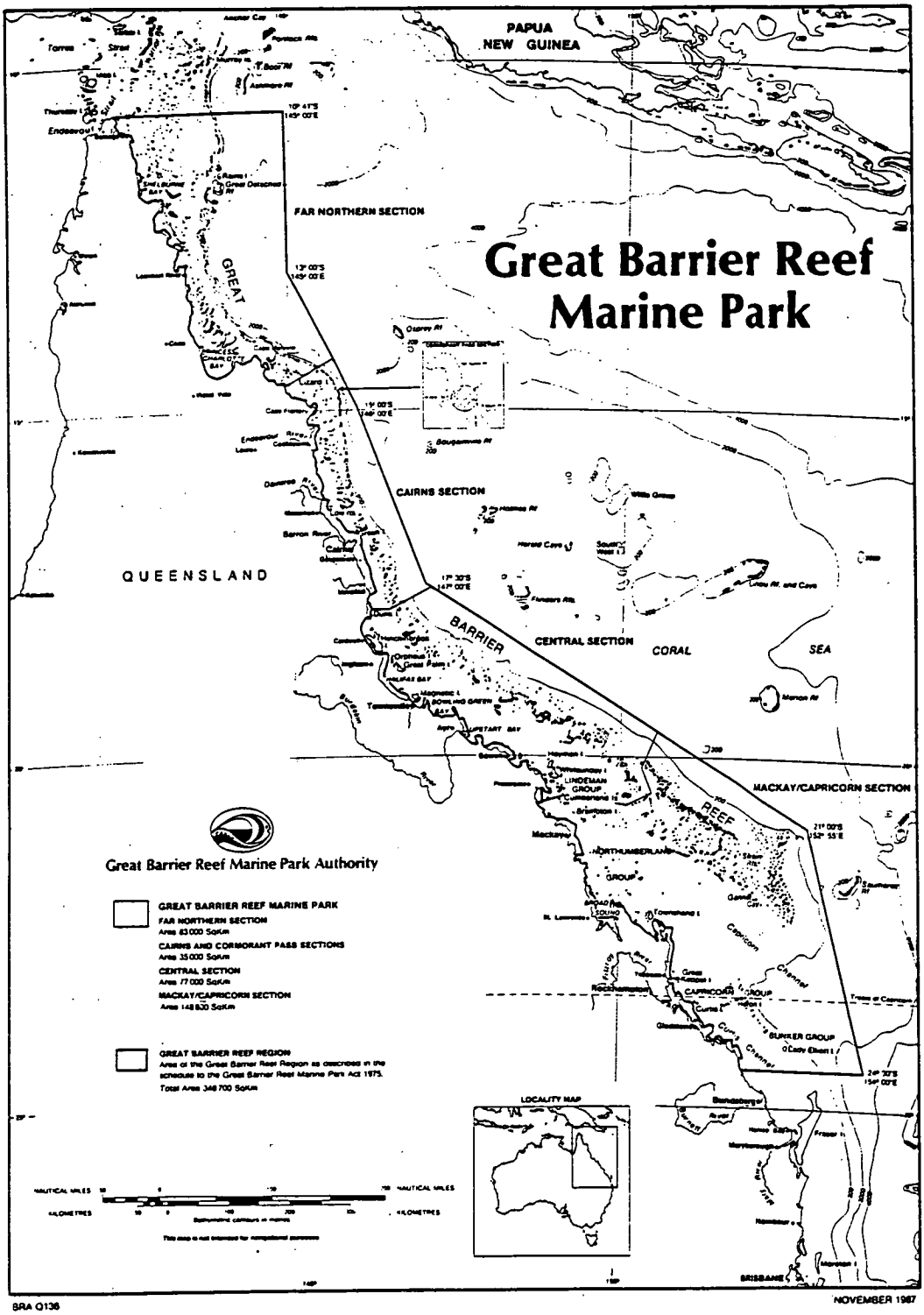
4.2 Development of Commonwealth and Queensland Intergovernmental Relations

Intergovernmental relations in the GBR region have their genesis in the nature of maritime jurisdiction prior to Australian federation (Figure 4.1). Under the *Australian Constitutions Act 1842, 1850* a colony north of New South Wales was created. Letters patent in 1859 delineated the Colony of Queensland and an Order in Council subsequently made provisions for a bicameral legislature. The terrestrial boundary between Queensland and New South Wales at the coast was defined as 28 degrees south latitude by both colonies. Particularly important for present offshore jurisdictional arrangements was the delineation of offshore islands.

Letters patent of 1872 authorized the annexation to Queensland of islands within sixty miles of the coastline and further letters patent of 1878, which were followed by the *Queensland Coast Islands Act 1879,* annexed to Queensland all islands lying within the Barrier Reef and in Torres Strait. Islands lying outside the Barrier Reef have been constituted a federal territory under the *Coral Seas Islands Act 1969* (Lumb, 1980:44).

As early as 1893 naturalists documented the flora and fauna of the region (Lawrence, 1988:4). At Federation (1901) Queensland maintained offshore administration, except for some islands transferred to the Commonwealth for navigation purposes. Organizations such as the Great Barrier Reef Committee (started in 1922) supported reef research and included representatives from Queensland, Australia, and overseas (Jones, 1974:733).

Figure 4.1 The Great Barrier Reef Region, Queensland



Intergovernmental maritime relations between the Commonwealth and all States grew in the 1950s with the passing of the *Australian Fisheries Act 1952*.[1] This Act began the Commonwealth involvement in fisheries activities (Harrison, 1982), yet the agreed boundaries outlined in the Act were solely concerned with fisheries and had no bearing on offshore jurisdictional matters (Cullen, 1985). Intergovernmental relations which initially emerged in the GBR region were therefore restricted to the fisheries resource with little concern over questions of offshore jurisdiction. As discussed in Chapter 3.3, the discovery of hydrocarbons in the 1960s heightened the debate over offshore jurisdiction (Stevenson, 1976; Haward, 1986). The *Petroleum (Submerged Lands) Act 1967* was passed to regulate petroleum exploration and construction of pipelines. A *designated area* was proclaimed offshore from each State for the administration of petroleum mining. The 1967 agreement *avoided* questions of sovereignty *vis a vis* Commonwealth and State by this complementary scheme.

Oil drilling began in the GBR region in 1959 with the Humber Barrier Reef 1 well and in 1967 development pressure increased with an application to mine Ellison Reef (off Innisfail) for coral lime. Oil drilling was opposed by trade unions in 1969 and this opposition helped suspend Ampol plans for further drilling. In 1970 the *Oceanic Grandeur* grounded in Torres Strait and discharged 1,000 tonnes of oil (Kelleher, 1985:4), raising considerable concern over adequate protection of the GBR region. The oil industry, however, continued to apply pressure to mine in the GBR region, arguing that oil exploration and production were not

[1] The *Australian Fisheries Act* was introduced in 1952 and passed in 1955.

environmentally harmful (Horler, 1974:714).

Serious debate over the future of the GBR region emerged following pressure from environmental organizations in Australia and overseas. The management of the GBR region became a Queensland *and* Commonwealth concern when problems of oil and mining exploration were raised at the 1969 Australian Conservation Foundation Symposium entitled *The Future of the Great Barrier Reef* (Australian Conservation Foundation, 1969:1). Kelleher and Kenchington (1982) emphasize the significance of the pressure applied from overseas conservation interests. This period also saw a series of election campaigns (Queensland in May 1969 and Federal in October 1969) which provided a ready-made issue for both State and Commonwealth political parties. These elections preceded the establishment of a Royal Commission on Oil Drilling (Horler, 1974:704-705; Australia, 1974). Following the formation of a Marine National Parks Committee in late 1969, the Queensland Department of Forestry was directed to amend its legislation to provide for the establishment of national parks in the marine environment.

The Royal Commission into the GBR region was a major inquiry into issues facing the reef and its ecosystem (Australia, 1974). Because of the constitutional antagonism between the Commonwealth and Queensland governments there were two Royal Commissions, one appointed by the Commonwealth, and one by Queensland, but each Commission had the same three Commissioners and the same Terms of Reference. The Royal Commission examined the risk of damage to the coral reefs, the coastline, and the ecological and biological aspects of the reef from oil drilling (Australia, 1974:2). There was, however, only one hearing, with the two

Commissions sitting in parallel, and only one report compiled.

On 1 November 1974 the Chairman of the Royal Commission recommended to both governments that no further exploration for oil or renewal of exploration permits should be allowed in the GBR region until the results of short and long term research were known (Kelleher, 1985:4). At approximately the same time the Commonwealth established a Committee of Inquiry into the National Estate which subsequently supported the proposal to establish a marine park. The Committee recommended joint responsibility between Commonwealth and Queensland governments to preserve and manage the reef, administered by a statutory authority (GBRMPA, 1983:2). *This was a landmark decision because it was the first time that an intergovernmental arrangement for a marine protected area between the Commonwealth and any State government had been promoted.*

Prior to the Royal Commission, Queensland did not support cooperative arrangements for a marine park.

> The Queensland government has been widely seen as opposed to the development of the [Marine] Park in principle and of attempting to delay and fragment the [Marine] Park. The Queensland government initially supported proposals to drill for oil in the reef, but has now said it agrees with the Federal government in opposing any drilling or mining which could damage the reef (Bird and Cullen, 1983:1527).

As intergovernmental arrangements for the GBR region became formalized, the implications of Commonwealth involvement in the offshore, through the Whitlam Labor Government's *Seas and Submerged Lands Act 1973*, became apparent. As discussed in Chapter 3.3 the Act vested control of all territorial waters (low water mark to the continental shelf) in the hands of the Commonwealth (Suter, 1983:9). The declaration of sovereignty from low water mark was taken as a direct affront by Queensland and led to increased antagonism between the Commonwealth and States:

> During recent years, relations between the Queensland government and the National government have been so bad as to make it seem on occasions that the State of Queensland and the Commonwealth of Australia are hostile foreign powers ... [I]ntergovernmental conflicts have been in the nature of struggles for political and administrative power, concerned with determining which governments are to have the power to represent and make decisions affecting the lives of the Australian people. The different governments have all sought to maximize their jurisdiction and control over different parts of the public sector (Mathews, 1976).

Eventually opposition from *all* State governments resulted in a High Court challenge (led by New South Wales) to the validity of the *Seas and Submerged Lands Act 1973*. The constitutional validity of the *Seas and Submerged Lands Act* was upheld in the High Court (Suter, 1983:9). The defeat of the Whitlam Government prior to the High Court decision again raised the issue of offshore jurisdiction (Haward, 1986:70). With the *Seas and Submerged Lands Act 1973* the Commonwealth gained jurisdiction and title to the seabed beyond the low water mark around Australia, and from 1975 the Commonwealth was to be a major actor in

any intergovernmental negotiations over the GBR region.

The impetus for Commonwealth involvement continued with the introduction of the two Acts which are considered the cornerstones of Australian federal marine park legislation. The first Act emerged from the proposal by the Committee of Inquiry into the National Estate to establish a marine park with a statutory authority providing joint management between Commonwealth and Queensland governments. The *Great Barrier Reef Marine Park Act 1975 (GBRMP Act 1975)* provided the first direct Commonwealth involvement in marine conservation and was passed through the Commonwealth Parliament with support from all political parties. The second Act, the *National Parks and Wildlife Conservation Act 1975 (Commonwealth),* (discussed in Chapter 3.5) established the Australian National Parks and Wildlife Service and provided for the establishment and management of parks (including marine protected areas) and reserves in Federal Territories. In addition, the Act provided a means for the meeting of obligations under international treaties and conventions.

4.3 Great Barrier Reef Region Intergovernmental Arrangements

The intergovernmental arrangements for the GBR region can be examined under a series of headings. The institutional arrangements for such intergovernmental relations are discussed in relation to the *GBRMP Act 1975,* zoning methodology generally, then zoning practices used in the GBRMP, the implications of the OCS, the Great Barrier Reef Ministerial Council, and finally Queensland government responses.

4.3.1 Great Barrier Reef Marine Park

The *GBRMP Act 1975* was unique because it specifically addressed the management of the *overall* marine ecosystem of the region and included extensive intergovernmental arrangements between the Commonwealth and Queensland. The function and structure of the GBRMPA are well documented (Kelleher and Kenchington, 1984; Bird and Cullen, 1983; GBRMPA, 1984; Woodley, 1985). As a Commonwealth statutory authority its goal is "to provide for the protection, wise use, appreciation, and enjoyment of the Great Barrier Reef in perpetuity through the development and care of the Great Barrier Reef Marine Park" (GBRMPA, 1984) and to to ensure a level of usage which is consistent with maintenance of the ecological system and which is acceptable by society (Kelleher and Kenchington, 1982, 1984:264). The GBRMP concept therefore "exemplifies the principles enunciated in the World Conservation Strategy, providing for sustainable development and management for the benefit of the human race" (Baker, 1983:21).

The Act provides for:

- the Great Barrier Marine Park Authority, which comprises a full-time Chairman nominated by the Commonwealth and two other members, one nominated by Queensland and the other by the Commonwealth;
- a Great Barrier Reef Consultative Committee with government and nongovernment organizations with interests in the reef;

- the functions to be carried out by the GBRMPA, including making recommendations to the Government on development and care of the Marine Park (including recommendations as to regulations that should be made under the Act), carrying out or arranging for research, preparing zoning plans and advising on and facilitating financial arrangements with Queensland for administration of the Marine Park and related matters; and
- no drilling or mining in the Marine park, except for approved research purposes (Kelleher, 1985:4).

The Act was passed in 1975 but formal relations over the management of the GBR region between the Prime Minister of Australia and the Premier of Queensland did not begin until four years later in 1979. The delay was caused by problems in offshore jurisdiction, which culminated in the introduction of the OCS in 1979. The then Prime Minister stated:

> It is desirable that the declaration of the Marine Park should await the outcome of discussions with Queensland which flow from the 1978 Premiers Conference agreement that the powers of the States be extended to the territorial sea, including the sea-bed. Because of the proximity of the reef to the Queensland coast, the question of appropriate jurisdiction over that national asset is of obvious relevance in that context. To this end, I wrote to the Premier of Queensland on 19 December last year [1978] and suggested that there should be consultation between our respective Governments on development of arrangements resulting from the Premiers Conference agreements and also the establishment control, care and development of a Marine Park in the Great Barrier Reef region (Australia, 1979).

Functions of the GBRMPA include the recommendation of areas for marine park status; research and monitoring; guidelines for management; education and information programs; and the preparation of zoning plans and regulations to ensure reasonable use consistent with conservation of the Great Barrier Reef region. This management philosophy is translated into actual practice by developing zoning plans in order that protective management regimes can be designated (GBRMPA, 1980; Kriwoken, 1987). Spatial separation is the primary means of regulating incompatible uses in the GBRMP.

4.3.2 Zoning Methodology

The thesis argues that the system of zoning used in GBRMP, which is applied to an area of international importance, has application to a system of marine protected areas in Australia. The general application of zoning methodology and the specifics of GBRMP zoning methodology will therefore be discussed in detail. Zoning used by GBRMPA is very similar to that which forms the basis to the MAB biosphere reserves program, which is discussed in Chapter 5.

Zoning for marine protected areas is analogous to land use and regional planning. Spatial separation of activities, or zoning, allows sensitive habitats to be protected from damaging activities and intensive use can be regulated so that activities are not irreversibly harmful to the marine environment. Incompatible activities are separated to reduce or avoid conflicts. Zoning in the land use context has two applications - the generation of zoning plans and zoning classifications. A zoning plan is a management plan which relates to a geographic region where certain activities are permitted, prohibited, or permitted by an appropriate agency.

The later refers to each zone type found in the zoning plan.

Cocks *et al.* (1983:87) identify four steps in the land use planning method: establishing terms of reference and plan-making guidelines; data collection and generation of plans; plan-making (evaluation of plans); and legitimation, implementation and updating. Salm and Clark (1984:73) describe six advantages of zoning in site planning and management of marine protected areas: zoning allows the selective control and mix of activities at different sites; the establishment of core conservation areas; the separation of incompatible recreational activities; the designation of damaged areas needing to recuperate; the protection of breeding populations of fish and other organisms for replenishment of overfished areas nearby; and it provides a cost-effective means of managing different uses.

The basic concepts expressed in these six themes have become widely accepted by marine protected area managers, including the GBRMPA, and now form the foundation of planning and management. In contrast, responsible State marine protected area agencies vary immensely in the acceptance of zoning as a premise. Some States have accepted zoning (although not in the form adopted by the GBRMPA), while the remaining States, although not formally rejecting the concept, have addressed zoning only at a perfunctory level.

4.3.3 GBRMP Zoning Methodology

The GBRMP meets the criteria for the IUCN Category VIII *Multiple Use Management Area/Managed Resource Area,* where large areas are designated suitable for a range of primary production and recreation activities. The multiple designation aims to provide sustainable yields of natural products, preserve genetic diversity, and protect natural features and systems. Sustainable yield management is based on the maintenance of the overall productivity of the area and its resources in perpetuity, with zoning used to provide additional protection to specific sub-areas (Salm and Clark, 1984:239-240). The GBRMP also meets the criteria for selection and management as a biosphere reserve (Category IX) (Kelleher, 1984:152), although it has never been established as one, and was designated in 1981 as a World Heritage Area (Category X).

Under the *GBRMP Act 1975* there are specific requirements for zoning plans (Morris, 1983). There are not specific legislative requirements for providing zoning classifications, though the GBRMPA, in conjunction with the Queensland government, has the power to make detailed arrangements related to zoning classifications.

Zoning classifications are separated into areas by reference to permitted use of the marine resource (Table 4.1). Areas in the GBRMP used for reasonable extractive activities are given general use zoning. Those areas utilized for non-extractive activities are given marine national park zoning (Kenchington, 1985:18). Extractive and non-extractive uses of

Table 4.1 Zoning Classification used in the Great Barrier Reef Marine Park

ACTIVITIES	GENERAL USE 'A' ZONE	GENERAL USE 'B' ZONE	MARINE NATIONAL PARK 'A' ZONE	MARINE NATIONAL PARK BUFFER ZONE	MARINE NATIONAL PARK 'B' ZONE	SCIENTIFIC ZONE RESEARCH	PRESERVATION ZONE
BOATING, DIVING	Yes	Yes	Yes	Yes	Yes	No	No
COLLECTING (e.g. beach-de-mer, shells corals, aquarium fish)	Permit	Permit	No	No	No	No	No
LINE FISHING	Yes	Yes	Yes	No	No	No	No
GILL NETTING	Yes	Yes	No	No	No	No	No
BAIT NETTING	Yes	Yes	Yes	No	No	No	No
TROLLING (for pelagic species)	Yes	Yes	Yes	Yes	No	No	No
SPEARFISHING	Yes	Yes	Yes	No	No	No	No
POLE AND LINE TUNA FISHING	Permit	Permit	No	No	No	No	No
TRAWLING	Yes	No	No	No	No	No	No
TRADITIONAL FISHING	Yes	Yes	Permit	Permit	Permit	Permit	No
TRADITIONAL HUNTING	Permit	Permit	Permit	Permit	Permit	Permit	No
CRUISE SHIPS	Yes	Permit	Permit	Permit	Permit	No	No
GENERAL SHIPPING (other than shipping area)	Yes	No	No	No	No	No	No
CRAYFISHING		Yes	Yes	Permit	No	No	No
SCIENTIFIC RESEARCH	Permit	Permit	Permit	Permit	Permit	Permit	Permit

EMERGENCIES: Access to all zones is allowed in emergencies.

AREAS OF PERIODIC RESTRICTED USE AND SHIPPING AREAS
- ———— Replenishment Area
- • • • • • • • Seasonal Closure Area
- ——— Shipping Area

the reef are further divided into six management zones and three protected areas, along a gradient from virtually unrestricted use, to use in the most exceptional circumstances.

In addition there are three types of protected area zones. The reef appreciation area excludes fishing and collecting to enable the public to observe marine life relatively undisturbed by human activity. The seasonal closure area is an area important for breeding animals, and is closed during the breeding season. The replenishment area is designed to test whether periodic closure will increase the productivity of demersal reef fisheries (Kelleher and Kenchington, 1984).

Zoning plan objectives are, as defined by the *GBRMP Act 1975*:

(1) the conservation of the Great Barrier Reef;
(2) the regulation of the use of the Marine Park so as to protect the Great Barrier Reef while allowing the reasonable use of the Great Barrier Region;
(3) the regulation of activities that exploit the resources of the Great Barrier Reef Region so as to minimize the effect of those activities on the Great Barrier Reef;
(4) the reservation of some areas of the Great Barrier Reef for its appreciation and enjoyment by the public; and
(5) the preservation of some areas of the Great Barrier Reef in its natural state undisturbed by man except for the purposes of scientific research.

The preparation of a zoning plan involves representatives from each of the Planning, Research and Monitoring, Park Management, and Education and Information Sections of the GBRMPA. This type of project team approach facilitates the coordination of planning and management

necessary for an effective zoning plan. In addition, a working group which comprises the Premier's Department and other relevant Queensland departments, and a separate Commonwealth working group, assist in the zoning plan development (GBRMPA, 1984:15-16).

The steps in developing a zoning plan are:

(1) assembly of information available in the scientific literature, in maps, and in Government reports;
(2) a public participation program advising intent to prepare a zoning plan and seeking information from the public;
(3) development of a draft zoning plan;
(4) a public participation program seeking comment on the published draft zoning plan;
(5) finalization of the zoning plan taking into account comments by the public and users;
(6) consideration by the Great Barrier Reef Ministerial Council;
(7) submission to the Commonwealth Minister for approval;
(8) tabling in the Commonwealth Parliament;
(9) promulgation by the Commonwealth Minister (Kelleher, 1986:89-90).

The most detailed examination into the GBRMP zoning process was undertaken in a cooperative resource use planning exercise involving the GBRMPA and the Commonwealth Scientific and Industrial Research Organization's (CSIRO) Division of Water and Land Resources. The application of the SIRO-PLAN planning method to the Cairns section of the GBRMP was completed by Cocks *et al.* (1983). This pre-planning exercise, with the application of the SIRO-PLAN land use planning method, outlined a zoning plan which reflects the demands of the user

groups of the Reef, the interests of future generations, vicarious users, third parties, and management personnel. Generally the zoning plan involves "identifying interest group demands in relation to the zoning plan; identifying conflicts between interest group demands; and producing a zoning plan which satisfies non-conflicting demands and develops a *best* compromise in relation to conflicting demands" (Cocks *et al.*, 1983:2).

Kenchington (1984:153) identifies three major groups with interests in the reef resources: fishing (amateur and commercial); recreation (tourism); and conservation. A fourth interest group, commercial shipping, constitutes another important interest in the reef. Fishers, from professionals through to amateurs, include line-fishers, spear-fishers, trollers, and trawlers. Recreationists are generally involved in diving/snorkelling, boating, and reef walking and conservationists are generally concerned that the biological and physical systems remain in as natural a state as possible (Cocks *et al.*, 1983:3). "A zoning plan, if it is to be generally acceptable, must balance the reasonable use of requirements of these groups" (Kenchington, 1984:153).

Each of the four groups have distinct interests and make different demands; but in practice there is considerable overlap between the groups. Many recreationists enjoy fishing; amateur fishers explore the reef on chartered vessels which represent tourist interests; conservationists often partake in diving and snorkelling activities in addition to amateur fishing.

4.3.4 Public Participation in the Zoning Process

Public representations are sought before a zoning plan is prepared and after a draft zoning plan has been published. This two-tiered process seeks public comment on matters which should be considered in developing the zoning plan and usually provides detailed information on usage of specific sites and areas. The initial phase commences with publication of a statutory notice by the GBRMPA giving the intent to prepare a zoning plan. The second tier seeks public comment on the draft zoning plan. From this feedback the zoning plan may be modified in response to widespread demand for some additional provision(s) in the plan.

The overall aim is communication between the public and the GBRMPA. The GBRMPA uses brochures, posters, television and radio advertisements, displays, and public meetings to solicit public information. It also gives the GBRMPA an opportunity to clearly explain the intent of the zoning (Kelleher, 1986:90). The Act provides for a minimum period of one month in which public representations are received. In practise the GBRMPA allows the program to operate for three months. This period allows the GBRMPA to obtain information from a wide range of individuals and organizations. Once the analysis of the responses to the program have been undertaken the GBRMPA commences work on the draft zoning plan.

4.4 Great Barrier Reef Ministerial Council and the Great Barrier Reef Consultative Committee

Queensland is responsible landward of the low water mark, including internal waterways, most bays and inlets within the baseline, and estuaries. Queensland has responsibility for almost all islands in the

GBR region under original claims and the 3 mile territorial sea. Commonwealth owned islands, all the waters, reefs and shoals below the low water mark are the responsibility of the Commonwealth government. The GBRMPA is responsible from the low water mark on the mainland or around islands owned by Queensland. Commonwealth powers prevent State marine park declarations below the low tide mark.

Because of the formal division between national and sub-national governments in Australian federalism, policy formulation in almost all areas requires interaction between each sphere of government. Overlapping legislative and institutional responsibilities between the Commonwealth and States have given rise to what has been termed as *moderating institutions* such as interjurisdictional ministerial councils, multifunctional intergovernmental boards and commissions, and administrative and technical relationships (Chapman, 1982). Interjurisdictional Ministerial Councils:

> provide a forum in which component units of the federal system can come together to arrive at a common understanding of the issues. The informal nature of the discussions and the relatively non-partisan context increases opportunity for frank exchanges of views. This is not to say that political considerations do not play any part, nor to claim that members of councils are not sometimes fettered by instructions from their cabinet colleagues or their Premiers. Generally, however, it would appear that tensions between State and State, and State and Commonwealth may be alleviated at these meetings. They are tools of effective policy-making in a federal system; ways of coping with the inevitable conflicts of jurisdiction and interest that emerge over time (Chapman, 1988:107).[2]

Because both governments share the same objectives of providing *protection and wise use* of the GBR region an interjurisdictional ministerial council was first supported at the joint *Emerald Agreement* (Table 4.2). The 1978 *Emerald Agreement* formally outlined the role of the GBRMC. The *Emerald Agreement* provides that:

> (1) the *Great Barrier Reef Marine Park Act 1975* and the boundaries of the Great Barrier Reef region (within which parts of the Marine Park may be declared) are not changed;
> (2) a Ministerial Council comprising two Queensland and two Commonwealth Ministers be established to address major issues;
> (3) the Capricornia Section be declared as the first part of the Marine Park;
> (4) Queensland will have responsibility for carrying out day-to-day management of the Marine Park, subject to the GBRMPA;
> (5) Queensland legislation will be amended to be on the same line;
> (6) arrangements with Queensland regarding the territorial sea (i.e., within the 3 mile limit) will be on the same basis as arrangements with other States; and
> (7) the Ministerial Council should endorse and monitor scientific research in the region (Kelleher, 1985:5).

In 1979 the first Great Barrier Reef Ministerial Council was appointed. The Ministerial Council consists of four Ministers, two from each government, and usually meets once a calendar year. Complementary management has been an ongoing theme in GBRMC meetings since its inception (Table 4.3). In 1979 and in 1981 a report was sought on establishing complementary management regimes and the possibility of establishing complementary regimes for islands, reefs, and waters in the

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[2] Interjurisdictional Ministerial Councils have been identified to differentiate them from meetings of ministers from within the same jurisdiction.

Table 4.2 Responsibility of the Great Barrier Reef Ministerial Council

Role:	Policy/coordinating. Consultation, coordination, cooperation and liaison between the Commonwealth and Queensland governments on Great Barrier Reef region matters. Oversees and monitors reports on both long and short-term reef research.
Establishment:	14 June 1979 by agreement between the Prime Minister and the Premier of Queensland.
Charter:	Formal establishing agreement.
Membership:	
Commonwealth:	Minister for Arts, Sport, the Environment, Tourism and Territories.
Queensland:	The Premier and the Minister for Tourism, National Parks, Sport and the Arts.
Operation:	
Chair:	Commonwealth Minister for Arts, Sport, the Environment, Tourism and Territories.
Meetings:	Meetings generally held in Brisbane, but have been held in Cairns, Townsville, Heron Island and Canberra, depending on agenda. Venues are alternately provided by the Commonwealth and Queensland.
Source of Business:	(1) Matters raised by advisory and other official level committees. (2) Matters raised by individual Ministers.
Agenda:	A suggested agenda is prepared by the Secretariat and conveyed to the Council Convenor together with letters for the convenor's signature to other council members. These letters generally outline meeting arrangements as well as the proposed agenda, and invite members to suggest other agenda items. The final agenda is then prepared by the Secretariat in consultation, if necessary, with the Commonwealth and Queensland officers.
Decision-making process:	Consensus.
Overlap:	Never.

Table 4.2 Responsibility of the Great Barrier Reef Ministerial Council (continued)

Advisory Committees: Management Coordinating Committee, Committee on Offshore Development in the Great Barrier Reef Region.

Members:	Senior departmental officers.
Chair:	Commonwealth.
Meetings:	As required.
Subcommittees:	A number of *ad hoc* working groups have been set up under the day-to-day Management Committee to prepare specific reports. These have been disbanded at completion of task.
Secretariat:	The Secretariat is provided by officers of a Commonwealth statutory authority.
Source:	Great Barrier Reef Marine Park Authority, P.O. Box 791, Canberra, A.C.T., Australia 2601.
Resources:	2 part-time as part of normal duties, 2 part-time as part of other duties.
Reports:	Communique.
Funds:	No funds administered.
General:	Formation of the council was announced in a Prime Ministerial Council media release of 14 June 1979.

Source: ACIR, 1986:109-110.

Table 4.3 Issues of Complementary Management within the Great Barrier Reef Ministerial Council (1979 to 1988)

(1) **4 October 1979, Brisbane (Inaugural meeting)**
Support for complementary management regimes: the proclamation of terrestrial and marine national protected areas under Queensland legislation; consideration given of the suitability of legislation, both Commonwealth and Queensland, for establishing a uniform management approach, particularly with reference to the difficulties of law enforcement at the interface between the two jurisdictions; consultative mechanisms in the development of proposals considered.

(2) **28 March 1980, Brisbane**
Draft zoning plan for Capricornia Section; discussion of day-to-day management; financial arrangements for Capricornia Section. Confirmed that a legal agreement should be drawn up between both governments concerning detailed arrangements of day-to-day management.

(3) **1 August 1980, Brisbane**
Capricornia Section proclaimed; discussion of cost sharing for an initial capital works program for day-to-day management; progress towards a joint declaration of Cairns Section.

(4) **28 September 1981, Brisbane**
Developments on islands within the outer boundaries of the Capricornia Section considered, and progress of complementary management regimes for the islands, reefs, and waters discussed. Report sought on establishing complementary management regimes. Day-to-day management of Capricornia Section and cooperative budget allocation considered.

(5) **14 May 1982, Cairns**
Examined the possibility of establishing complementary management regimes for the islands, reefs and waters of the Capricornia Section; agreed that these areas are biologically interrelated and need to be managed as a single unit. Administration and financial arrangements for day-to-day management of Capricornia Section and a Day-to-Day Management Coordinating Committee established.

(6) **5 November 1982, Heron Island**
Examined a report on a pilot study of complementary management regimes for Heron Island; progress reports on the establishment of day-to-day management of Capricornia Section. Delineation of boundaries, especially the western boundary of Cairns Section.

Table 4.3 Issues of Complementary Management within the Great Barrier Reef Ministerial Council (1979 to 1988) (continued)

(7) **3 June 1983, Townsville**
Desirability of adopting complementary management regimes discussed; consultation in the Queensland *Marine Parks Act 1982* reported.

(8) **23 May 1984, Brisbane**
Progress report on a pilot study in relation to Heron Island on complementary management plans for the Capricornia Section. Signing of the Assets Agreement outlining formal cost sharing.

(9) **3 April 1985, Canberra**
Progress towards an agreement for day-to-day management, and agreement on building at Heron Island. Queensland action to declare marine protected areas in the vicinity of the GBR Region.

(10) **29 October 1985, Cairns**
Examined proposed zoning plan for Central Section. Allocation of funding for crown of thorns research program.

(11) **3 April 1986, Gladstone**
Review of day-to-day management strategies underway with an aim of determining whether more effective management practises can be developed. Progress on the development of a management Agreement for day-to-day management of the Marine Park.

(12) **8 April 1987, Townsville**
Development of a Management Agreement defining arrangements for day-to-day management. Arrangements made for complementary management of lands and waters and promotion of cooperative resolution of jurisdictional matters. Great Barrier Reef Wonderland Complex opened as a Joint Commonwealth/Queensland Bicentennial Commemorative Project.

(13) **10 May 1988, Brisbane**
Signing of the Day-to-Day Management Agreement formalizing cooperative management with islands, reefs, and waters of the GBRMP and Queensland Marine and National Parks adjacent to its boundaries. Progress on cooperative legislation for offshore facilities. Recognition of public confusion in complementary zoning provisions; joint intrepretative map series introduced. Implementation of dual permits.

Capricornia Section was examined in 1982. The Council agreed that these areas were biologically interrelated and needed to be managed as one unit. A report on a pilot study for Heron Island was examined in 1982 and in 1983 complementary management was seen as desirable to avoid public confusion. A progress report on the Heron Island pilot study was received in 1984 and in 1987 arrangements for the management of lands and waters and promotion of a cooperative resolution of jurisdictional matters were supported. A *Day-to-Day Management Agreement* formalizing cooperative management with islands, reefs, and waters of the GBRMP and Queensland marine protected areas was signed in 1988. In addition, the Great Barrier Reef Consultative Committee was established under the *GBRMP Act 1975* as an independent advisory body for the responsible Commonwealth Minister and the GRBMPA.

The specific functions of the Consultative Committee defined in Section 21 of the Act are as follows:

> (a) to furnish advice to the Minister, either of its own motion or upon request made to it by the Minister, in respect of matters relating to the operation of this Act, and
> (b) to furnish advice to the GBRMPA in respect of matters relating to the Marine Parks, including advice as to the area that should be parts of the Marine Park, referred to it by the GBRMPA.

The Consultative Committee represents a variety of public and private sector user groups within the GBR region, including fishing, tourism, conservation groups, universities, science, and recreation groups. Members of the Committee are appointed by the Commonwealth

Minister for three years, the last Committee having 15 members with the GBRMPA providing the Secretariat. One member of the Consultative Committee is a representative of the GBRMPA nominated by the Authority, while half of the remaining members are nominated by the Queensland Government. The Committee meets up to three times a year and has the power to appoint working parties. Since 1981 the Committee has been concerned with the complementary management of the GBR region (Table 4.4).

4.5 Queensland Governmental Responses

Political relations between Queensland and the Commonwealth have not been conducive to the promotion of cooperative intergovernmental relations in the GBR region. Queensland's Bjelke-Petersen National Party Government, between 1968 and 1988, took a high profile antagonistic stance in its public dealings with the Commonwealth.[3] A key dynamics of any federal system is the relationship between the levels of government. This is particularly significant to an understanding of Queensland politics because opposition to Canberra constitutes a major component of the dominant political culture. Discussions of many public policy issues often resolve into disputation over the extent to which the wishes of the Commonwealth are to prevail over the wishes of the State - this is true over health, education, aboriginal affairs, development projects such as dams and roads and (inevitably) the environment (Scott *et al.*, 1986:67). Moreover, policy-making in Queensland has been centralized in the Premier's Department. Queensland's pro-development

[3] The beginning of the Bjelke-Peterson Premiership coincided with the Gorton Prime Ministership, a period of conflict over Commonwealth powers, particularly with respect to offshore jurisdiction (see Emy, 1974:204-205).

Table 4.4 Issues of Complementary Management within the Great Barrier Reef Consultative Committee

(1) **31 October 1981, Cairns (17th Meeting)**
Committee considered the constitutional interpretation of low water mark boundaries around cays. Progress was noted in day-to-day management concerning proposal for complementary management, monitoring, and surveillance.

(2) **7-8 July 1982, Canberra (19th Meeting)**
With the introduction of the *Queensland Marine Park Act 1982* members recognized the cooperation required between the Commonwealth and Queensland in proclamation and management of marine and national parks in the Great Barrier Reef region. Emphasis was placed on the need for the Commonwealth and Queensland marine parks on the reef to be perceived by the public as a unified whole.

(3) **3 September 1985, South Mission Beach (29th Meeting)**
The Committee endorsed the review of the Capricornia Section zoning plan as an opportunity to further simplify zonings and to facilitate complementary management of the GBRMP and the adjacent Queensland national and marine parks. It was noted that the Queensland marine parks staff have arranged joint patrols with fisheries officers.

(4) **16 May 1986, Brisbane (31st Meeting)**
The Committee again endorsed the review of the Capricornia Section zoning plan and noted that the GBRMPA was examining ways to minimize the number of zones, using larger zones where practicable. A sub-committee continued to develop a paper on the roles and attitudes of the Committee to marine park planning and management to be submitted to the GBRMPA innovative planning/management workshop.

culture has led to the downgrading of some policy areas - for example a low priority on educational funding but a comprehensive mineral development policy (Galligan, 1988:289).

Bjelke-Petersen built up the power of the Premier's Department in the 1980s by including the technocrats from the Co-ordinator General's Department (Halligan, 1988:43). The cabinet was also reduced in power; in fact there are no cabinet committees nor a developed cabinet office and procedural guidelines akin to other States (Halligan, 1988:43). Also significant is the exclusion of department heads from access to cabinet submissions, which "reduces cabinet's deliberative capacity, and concentrates authority in the hands of the Premier and his deputy, and their own advisers" (Coaldrake, 1985:114). Many Ministers suffered from the particular *policy style* of the Bjelke-Petersen period, including those Ministers responsible for protected areas and the environment generally. Such Ministers had a relatively low status in the Queensland cabinet as they were peripheral to *pro-development* policy priorities.

During the Bjelke-Petersen period the Marine Parks Section of the Queensland Fisheries Service was transferred to the National Parks and Wildlife Service to form the Maritime Estate. Q.NPWS, now the Division of Conservation, Parks and Wildlife, Department of Environment and Conservation (DEC), has day-to-day management responsibility for the GBRMP, which includes research and monitoring, surveillance and patrols, law enforcement, and education, and retains its identity and formal relationship with the GBRMPA. There are essentially three roles: undertaking day-to-day management of the GBRMP in

accordance with policies and principles set out by the GBRMPA; responsibility for marine protected areas within the State system; and managing island national parks.

The administration of commercial and recreation fisheries is the responsibility of the Queensland Fish Management Authority, working within the broad policy framework of the Department of Primary Industry. The policing of fisheries and boating regulations is the responsibility of the Queensland Boating and Fisheries Patrol within Primary Industry. Athough Q.NWPS is the primary agency responsible for day-to-day management the Boating and Fisheries Patrol has a role in the remoter areas where the primary user sector is commercial fishing.

Early attempts were made by Queensland to delay and fragment the GBRMP (Kriwoken, 1988). An agreement was made between both governments in 1975 (later confirmed in the *Emerald Agreement*) that Queensland should enact separate legislation to complement the *GBRMP Act 1975*. Queensland did not enact legislation until *seven years later* when the *Marine Park Act* was passed in 1982. The Queensland government decided that the Act was not the responsibility of the Q.NPWS and asserted executive control over the *Marine Park Act 1982* by placing the administration in the Premier's Department. It was part of the Bjelke-Petersen style to place potentially contentious issues, including those which would involve intergovernmental relations, under direct control of the Premier. All operative and administrative functions of the Act are therefore under the responsibility of the Coordinator-General. The powers, functions, and duties have been delegated to the Q.NPWS Director (Queensland, 1987).

The *Marine Park Act 1982* does not support the conservation of representative marine habitats and ecosystems, nor does it adequately protect endangered species and habitats. It provides for the zoning of marine protected areas but does not specify zones either by name or in terms of pre-defined objectives. Hesse (1985 b:1) maintains that "the Act is silent also on a general objective for marine parks". In addition, the *Marine Park Act 1982* does not fully support public participation in the preparation of management plans (Jeffreys, 1988) which may increase tension over the role of marine protected areas.

Queensland's enforcement, surveillance, and public relations activities in the GBR region are presently undertaken by a number of agencies. The Department of Primary Industries is the managing authority of the *Fisheries Act 1972-1982* and uses field officers from the Boating and Fisheries Patrol of the Department of Harbours and Marine. Administration of commercial fisheries, whether in the GBRMP or outside it, is primarily the responsibility of the Queensland Boating and Fisheries Patrol. Marine park field staff may enforce regulations in relation to commercial fisheries in the course of their normal marine park duties, and conversely Boating and Fisheries personnel may enforce marine park regulations in the course of their normal boating and fisheries duties. Joint patrols are being organized with marine park staff and fisheries officers. Finally, in 1987 a recommendation was made to extend the present Queensland marine protected areas system (Environment Science Services, 1987). The Capricornia Section of the GBRMP had six new management areas designated with the responsibilities for these being additional to the day-to-day management of the GBRMP.

4.6 Shortcomings in Intergovernmental Relations

The following intergovernmental issues in the GBR region illustrate the delicate arrangement existing between the Commonwealth and State government, and particularly the problems of the GBRMC as an interjurisdictional council. Although the GBRMC was set up in 1979 to be a tool for effective policy-making in a federal system, shortcomings in the arrangements can be identified by examining issues of intergovernmental relations. The role of intergovernmental ministerial councils in the policy-making process is often minimal, and setting the agenda may "endeavour to ensure that the intergovernmental relationship is maintained [and] non-contentious activities are favoured" (Chapman, 1988:117). Chapman (1988:117) refers to what he calls the "minimum tolerable consensus" where "reaching an innocuous compromise is thus regarded as more important than providing a specific and clear directive". The GBRMC favours non-contentious activities, reaches innocuous compromises and sometimes has little or no influence in issues characterized by inevitable conflicts of jurisdiction and interest that emerge between Commonwealth and State. Jurisdictional boundary disputes, control over adjacent land use and zoning, and attempts at selling State national parks (e.g., Lindeman Island) have strained intergovernmental relations and the limits of the GBRMC have become evident.

The major shortcomings arise from the political failure to support institutional and administrative arrangements; this failure stems chiefly from the ability of either the Commonwealth or Queensland governments to act unilaterally and thereby destroy complementary

management. Complementary management also falls foul of boundary delineation problems. The two types of problems often link together. The western coastal boundary (Cairns Section) of the GBRMP is an example of a unilaterally-taken Commonwealth decision and the ineffectiveness of the GBRMC. Queensland opposed the proposed low water mark boundary because it would have potentially jeopardized adjacent land uses (Bird and Cullen, 1983:1528). The Commonwealth believed the low water mark should form the boundary with jurisdiction and responsibility under the *GBRMP Act 1975*. On 12 November 1981 the Prime Minister announced that agreement on the boundary could not be reached with Queensland (Australia, 1981 c) and a unilateral western boundary was declared for 550 km, of which about 30 percent was the low water mark. The boundaries excluded port and other marine areas adjacent to intensive industrial or agricultural developments on land, unless conservation reasons dictated otherwise (Australia, 1981 b). This unilateral decision reinforced the presence of the Commonwealth in the GBR region. The boundary delineation problem was never formally addressed at a GBRMC forum, and its theoretical role of alleviating tension between the Commonwealth and State was therefore not put into practice.

Problems also arise from the uncertainty that exists with the interpretation of the low water mark boundary around coral cays. Such claims to jurisdiction and incompatible zoning arising from boundary delimitation disagreements constitute a major problem in intergovernmental relations and is an area where the GBRMC has been largely ineffectual. Islands and reefs in the Mackay/Capricorn Section are especially subject to overlapping claims of jurisdiction. Where

Queensland owns coral cay islands it also claims the surrounding reef flats and reef crests and argues that the reef crest is the low water mark. The Commonwealth maintains that the low water mark surrounds the coral cay islands and that the intertidal reef areas and reef crests are under Commonwealth jurisdiction. This uncertainty translates into confusing zoning boundaries.

Further evidence of incompatible uses within existing zones arises in the Queensland Mackay/Capricorn Marine Park, Keppel Bay Management Plan where the marine area between Curtis Island and the coast has been declared a *Conservation and Mineral Resource Zone* in anticipation of future oil shale mining and processing. The zone lies within what is referred to as the "5 kilometre coastal strip that belongs to the State". The presence of this type of zoning is a concern for the adjacent GBRMP, considering that the *GBRMP Act 1975* specifies that no operations for the recovery of minerals may be carried out within its boundaries. Although this area is not in the GBRMP boundaries Queensland may proceed to mine within this zone irrespective of the adjacent GBRMP requirement for no mining. The Queensland Conservation Council is therefore correctly calling for the "[d]eclaration as marine park of all inshore waters and reefs and all intertidal lands and waters along the Queensland coastline and islands within the Barrier Reef Region presently not included in the Commonwealth Marine Park" (Queensland Conservation Council n.d.).

Resolution of these jurisdictional and zoning incongruities is important to clarify institutional responsibility. However, because unilateral action could further damage delicate intergovernmental relations these disputes

will likely remain unresolved and confusion will continue. Now that GBRMP boundaries have been declared the resolution of these incongruities does not seem to be of major importance. Concern is centred on the sound management of the GBRMP, and a test in the courts, by either government, would signal an unsolicited provocation.

Unilateral Queensland expansion of a State marine park system has added to the confusion in intergovernmental relations and contributed to the decline in complementary management. This has occurred, for instance, in the Capricornia and Capricorn (*sic*) Section of the GBRMP. The Capricornia (as distinct from Capricorn) Section (12,000 square km) was the first section to be declared in the GBR region in 1979 by the GBRMPA. In 1981 the GBRMPA released a zoning plan for this Section and in just over five years the plan was reviewed with the Capricornia Section expanded to include the southern GBR region and proclamation of the Mackay/Capricorn Section (GBRMP) in 1987. This amalgamation was seen as an opportunity to further simplify zoning within the GBRMP, however, as the Capricorn Section enveloped the former and smaller Capricornia Section public confusion over expansion and nomenclature became evident.

In 1987 the Queensland Premier's Department solicited a unilateral review of the State Capricorn-Bunker zoning plan (as distinct from the GBRMP Capricornia and Capricorn zoning plans) and began an investigation into the potential declaration of a Queensland marine park within the GBRMP Capricorn Section (Environment Science and Services, 1987). The report recommended the declaration of a Queensland

Mackay/Capricorn Marine Park with six management areas - Cumberland Islands, Broad Sound, Keppel Bay, Rodds Bay, Capricorn-Bunker Group, and Outer Islands.

As a result, the Queensland Capricorn-Bunker group management area is in the Queensland Mackay/Capricorn Marine Park within the GBRMP Mackay/Capricorn Section - very confusing. The boundaries of these similarly named Marine Parks and Sections are not the same. The Queensland Mackay/Capricorn Marine Park covers State tidal land and tidal waters within the six management areas. The GBRMP Mackay/Capricorn Section includes the remaining sea and seabed. And the Mackay/Capricorn Marine Park is *not* within the Mackay/Capricorn Section (Perrin, 1989). The additional declaration of the Queensland marine park system in the one region, and the lack of clarity in names of marine parks, zones, and management areas have not simplified matters for the planner, manager, or the user.

Complementary management has been discussed for almost 10 years between the two governments yet management regimes and zonings within the GBR region are still not necessarily identical and difficulties arise where marine use extends above and below the low water mark. Because legislation is not identical, differences and discrepancies can lead to problems with interpretation and management. The Queensland Conservation Council (n.d.) argues that islands are subject to *ad hoc* State decision-making, development pressures, poor levels of protection, and inadequate management.

Although discussions in the relatively non-partisan context of GBRMC meetings increase opportunity for an exchange of strategies on protecting the GBR region, political considerations do play a significant part. Members of the Council are often under direct instructions from cabinet or their Premier/Prime Minister. Commonwealth and State governments often have policy differences or different priorities even though the ultimate objective - "the protection, wise use, appreciation, and enjoyment of the Great Barrier Reef in perpetuity" - is held in common. In some instances the two governments may be antagonists either because their policy interests are incompatible for partisan or because regional reasons or they consider they are competing for scarce resources. Members of the GBRMC may thus have conflicting responsibilities. Evidence of this conflict is illustrated in the Lindeman Island controversy.

In 1986 the Queensland government attempted to sell Lindeman Island to East-West Airlines who were to build a $340 million tourist resort on the island. Lindeman Island's national park status was to be revoked to allow this development. The then Queensland Minister for Arts, Heritage and Environment Mr McKechnie said it would be excellent for national parks because the money received would go towards acquisition of land for new parks (Seccombe, 1986). Eventually the government bowed to public pressure and declined to sell the island, with several party branches of the National Party supporting the campaign to save Lindeman Island (Doyle, 1986:17). Under current Queensland national parks legislation there is no requirement for Parliament to consider such changes and revocation of national park status can be granted at an executive level.

More significantly, Mr McKechnie, the Queensland Minister responsible for Arts, Heritage and Environment, was on the GBRMC at the same time the Queensland government was negotiating with East-West Airlines for the sale of Lindeman Island. The sale of Lindeman Island was never officially raised at Council meetings because the *GBRMP Act 1975* does not apply to islands within the GBR region and the GBRMPA had no legal recourse to halt such State activities, although they would potentially have a significant environmental impact on the GBRMP.

This raises some very important points. Queensland can sell islands within the State national parks system with no regard to the compatibility of adjacent zoning within the GBRMP. Queensland national parks legislation does not guarantee that adjacent land uses will be compatible. The Commonwealth cannot stop Queensland from revoking national park islands or supporting increased offshore tourism development. These unilateral State actions place increased strain on intergovernmental relations. The general ambiguity of Ministerial roles on Council must be questioned. On the one hand a State Minister can be negotiating the selling of national park islands, whilst on the other hand be supporting complementary management in intergovernmental forums such as the GBRMC. Because the GBRMC has no legal recourse, when State national parks are sold under Queensland legislation, its role in promoting complementary management seems limited in this instance.

Finally, intergovernmental relations can also be characterized by issues where the Commonwealth could act unilaterally. Unlike the western boundary issue, unilateral action on issues of adjacent land use, including the regulation or prohibition of activities could be exercised under Section 66 (2) (e) of the *GBRMP Act 1978* which states that:

> The Governor-General may make Regulations ...
>
> (e) regulating or prohibiting acts (whether in the Marine Park or elsewhere) that may pollute water in a manner harmful to animals and plants in the Marine Park.

Section 66 (2) (e) is a unique piece of legislation. It can be used to promote an open system of conservation for the marine park because it has the potential to address outside activities that could compromise the integrity of the GBRMP. While the potential exists to control outside activities the actual enforcement of Section 66 (2) (e) can be difficult. The controversial Daintree Road from Cape Tribulation to Cooktown, Queensland is an example.

Conservation groups argued that the construction of the Daintree Road has increased the siltation rates on the fringing coral reef of the GBRMP. If this allegation was true then the Commonwealth could have taken direct action to halt road construction activities. However, it has not been proven that the Daintree Road is the single cause of increased siltation in the region. The area has a very high suspended silt regime and monitoring supported by the GBRMPA has not revealed any significant difference between road and non-road areas. It would therefore have been questionable whether Section 66 (2) (e) could have withstood a legal

challenge to halt road construction activities.

That unilateral action was never taken is also a reflection of the state of intergovernmental relations between the Commonwealth and Queensland. The Report from the House of Representatives Standing Committee on Environment and Conservation on the Protection of Greater Daintree recommended:

> [i]t would not be appropriate to use the Act to prevent further construction of the road to save a small area of the reef as it could *irreparably damage the delicate arrangement which exists between the Commonwealth and the Queensland governments concerning the sound management of what is effectively represents 80 percent of the eastern Queensland coast* (Australia, 1984:14; emphasis added).

Thus Commonwealth-State relations were considered so contentious that the use of Section 66 (2) (e) would have seriously jeopardized the relationship, with consequences for the remainder of the GBR region.

The real power of Section 66 (2) (e) is that its existence strengthens the position of State pollution regulatory agencies in arguing for better standards and against ministerial exemptions on discharges. Hopley (1988:39) shows that detrimental human impacts from the mainland, adjacent to the GBRMP, include lindane, pesticides and polyclorinated biophenols (PCBs); disposal of sewage and associated eutrophication; toxic wastes in sewage and industrial effluent; nutrient or organic enrichment form phosphate dust; toxic substances from mining activities, particularly tin; and increased sedimentation. Similar impacts have been identified by

Isbell (1983:85) who states that "the most likely effects to coral ecosystems are those due to excess freshwater inflow, sediment load, and deleterious effects due to fertilizers and pesticide residues". Moreover, luxury tourism resorts totalling about $2.57 billion are planned for North Queensland's coast during the next 10 years (Wonka, 1988). Ultimately the Commonwealth may be forced to use Section 66 (2) (e) against the Queensland government if it is to defend the goal of providing for the "protection, wise use, appreciation and enjoyment of the Great Barrier Reef in perpetuity" (GBRMPA, 1984). The intergovernmental arrangement which exists between the Commonwealth and the Queensland governments could then be jeopardized.

4.7 Lessons for an Australian Marine Protected Area System

Offshore intergovernmental relations between the Commonwealth and Queensland commenced in the 1960s, but conflict over maritime resource jurisdiction has characterized the relationship. Four years after the *GBRMP Act 1975* was promulgated, intergovernmental relations, hitherto concerned primarily with offshore resources management, were extended through the OCS to include marine protected areas. Legislative and institutional arrangements to implement the OCS necessitated the appointment of an interjurisdictional ministerial council, the Great Barrier Reef Ministerial Council, which coordinated policy in the GBR region.

Intergovernmental relations in the GBR region thus highlight the delicate arrangement that potentially exists between Commonwealth and State, and particularly problems that can occur with interjurisdictional councils. The following lessons, derived from intergovernmental

experience in the GBR region, are intended to provide an insight into Commonwealth and State relations that may be applicable for an Australian system of marine protected areas.

4.7.1 Legislative Responses

Two Commonwealth Acts, the *GBRMP Act 1975* and the *National Parks and Wildlife Act 1975*, and the OCS deliberations, established the Commonwealth a major actor in offshore intergovernmental relations. Likewise the OCS (and the enabling legislation under the *Coastal Waters [State Powers/Title Act] Act 1980)* gave all States constitutional power over the territorial sea. The present constitutional complexity of the offshore requires that both Commonwealth and States be involved in any marine protected area legislative development.

Queensland's early resistance to Commonwealth involvement in the GBR region may well be repeated by other States, with overriding Commonwealth marine protected area legislation meeting varying degrees of opposition. Although other States are unlikely to exhibit the same basic hostility as Queensland, a precedent has been set opposing Commonwealth involvement in the offshore with the High Court challenge to the validity of the *Seas and Submerged Lands Act 1973* (which vested control of all coastal and territorial water in the hands of the Commonwealth). It would be naive to think that similar litigation would not occur if any future Australian marine protected area legislation failed to uphold State offshore rights.

The *GBRMP Act 1975* is a unique piece of Australian legislation and has been effective in a short period of time (15 years after the passing of the

Act the GBRMP is the largest marine park in the world covering over 344,480 square km). The Act promotes the management of the overall marine ecosystem and includes provisions for extensive intergovernmental arrangements. There are limitations to the Act, however, that should be recognized in any proposed Australian legislation for a system of marine protected area.

Controlling land uses and watersheds adjacent to the GBRMP will require new levels of intergovernmental cooperation as the environmental impact on the GBR region changes:

> [o]ne hundred years ago the major environmental impacts were probably confined to the inshore zone associated with widespread land clearance, agricultural expansion and mining. Fifty years ago the first developments of tourist resorts on the continental islands took place. Today floating hotels and fast catamarans are overcoming the problems of distance and rough water. The movement of recognizable impacts from the mainland to the Reef has been accelerating (Hopley, 1988:41).

Section 62 (2) (e) of the amended *GBRMP Act 1978* could be used by the Commonwealth to regulate or prohibit impacts, within the GBRMP or elsewhere. The Act could also be used to increase unilateral Commonwealth involvement in the coastal zone, possibly in planning activities. The Commonwealth's lack of will to use the powers accorded it in Section 62 (2) (e) is a matter that will need to be addressed in any attempt to set up a national system of marine protected areas.

The planning and management of the coastal zone is critical for any legislative arrangement supporting an Australian marine protected areas

system. Legislation should incorporate a capacity to override adjacent land uses and other legislation. Commonwealth involvement in State coastal zone planning and management activities could increase, even if it consists in leadership (which might take the form of coastal development advice or education) only, rather than control. Ultimately Commonwealth *infringement* on State jurisdiction could cause a breakdown in intergovernmental relations and/or lead to constitutional problems. Although this may be necessary to maintain the health of the marine and coastal environment and promote an Australian system of marine protected areas, the evidence suggests that it would be difficult to achieve.

There is also a strong case to resolve all legislative uncertainties, as prolonged uncertainty promotes intergovernmental jurisdictional differences. This is graphically described above with overlapping claims of jurisdiction over low and high water marks in the GBRMP. An increase in the number of States involved in an Australian marine protected areas system would compound the likelihood of similar claims. One method of resolving these differences is the development of complementary legislation between both tiers of government, which should, ideally, be a major feature of any Australian system of marine protected areas.

However, the slow Queensland response to introducing complementary legislation to the *GBRMP Act 1975* indicates that States may agree in principle to a cooperative intergovernmental protected area policy, but delay action on legislative reform. Even when it is undertaken State legislation may not mirror that of the Commonwealth. For instance, the

Queensland *Marine Park Act 1982* allows mining under permit in the GBR region and does not fully promote public participation in the preparation of management plans, whereas under the *GBRMP Act 1975* no operations for the recovery of minerals may be carried out (except for research purposes) and public participation is fully supported.[4] Until the *Marine Park Act 1982* is amended to include these requirements in areas adjacent to the GBRMP objectives of complementary management will be difficult to meet. Complementary Commonwealth and State legislation is critical, and the deficiencies in the case of the GBRMP underscore the importance of political commitment in making intergovernmental arrangements succeed.

4.7.2 Institutional Arrangements

The intergovernmental relations involved in the GBRMP also provide some important lessons for the institutional arrangements of an Australian system of marine protected areas. It has been shown that interjurisdictional councils often favour non-contentious activities and reach innocuous compromises, rather than provide specific and clear directives. For instance, the GBRMC recognizes that the "islands, reefs and waters of an area are biologically interrelated and need to be managed as a single unit" ... and that "[c]omplementary management regimes would ensure efficient, coordinated and compatible management is achieved in areas of adjacent or overlapping jurisdictions" (GBRMC, 1982). As threats increase to the GBR region the GBRMC must address more contentious issues, including jurisdictional boundary disputes,

[4] Mirror legislation between the Commonwealth and State refers to identical legislation passed in both Houses of Parliament. Complementary legislation refers to the integration of legislation at both tiers, and is not necessarily identical.

control over adjacent land use and zoning, and attempts at selling State national parks. While the GBRMC may favour compromises, these issues are likely to continue to strain intergovernmental relations and its role as a moderating institution becomes of vital importance. As any Australian system of marine protected areas would include complex intergovernmental relations (between the Commonwealth and States, and between States), an interjurisdictional council, with representatives from the Commonwealth and States, would often be contentious.

The accountability of interjurisdictional council members towards marine protected areas may often be limited. As illustrated in the Lindeman Island case, State Ministers on the council could pursue pro-development and pro-tourism activities that are incompatible with the values of a marine protected area system. This raises some important questions for the future of an Australian system of marine protected areas. In instances where single States may jeopardize the system of marine protected areas, the council may have a collective duty to publicize the damage of such potential activities at the possible expense of intergovernmental relations.

Nevertheless, intergovernmental relations as promoted by the Great Barrier Reef Marine Park model could be very useful in developing an Australian marine protected area system. The *Great Barrier Reef Marine Park Act 1975 (GBRMP Act 1975)* is considered by the Great Barrier Reef Marine Park Authority Chairman to be a successful model of joint cooperation: "because there is a Queensland appointee on the GBRMPA there is a degree of automatic coordination built into the arrangements ... *I believe it would be a useful model for joint management programs which have relevance to both Commonwealth and State*

responsibilities" (Australia, 1981 a:18; emphasis added). In addition, the GBRMP model has been recommended to other countries "whereby development appears essential for national economic stability and for the well-being of the people, but natural features and environmental quality must be conserved" (Baker, 1983:2).

Finally, the role of the GBRMPA in providing marine protected area planning and management assistance beyond the GBRMP has, up until recently, been minimal. GBRMPA personnel have contributed by attending CONCOM workshops and assisted with the ACIUCN policy on marine protected areas. Kelleher and Kenchington (1990), from the GBRMPA, are presently drafting a new IUCN policy on marine protected areas. Kenchington (1989a, 1989b) has provided expert advice for Ecuador on planning for the Galapagos marine resources reserve and the GBRMPA has assisted Indonesia, the Republic of Maldives, and the Malaysian Department of Fisheries in training marine park managers (Reeflections, 1990:2). A legislative basis for formal marine protected area planning beyond the GBR region is given in the *Great Barrier Reef Marine Park Amendment Act 1988,* ratified 6 December 1988. The Act, *inter alia,* allows the GBRMPA to assist other institutions and individuals in environment management issues. Moreover, "[t]o ensure that the assistance provided does not detract from the GBRMPA's prime responsibility to manage the marine park, requests for assistance will be subject to ministerial approval. Provision is also made for the recovery of the costs of providing such assistance" (Australia, 1988:655).

The implications for such assistance have not yet been fully realized by the GBRMPA. The role of marine protected area planning and

management could well be expanded to include cooperative planning and management assistance to other States and potentially to an Australian system of marine protected areas. Kriwoken (1987) has suggested an expanded role for the GBRMPA in assisting the federal government in the development of a representative system of marine protected areas. The GBRMP is the largest marine protected area in the world and the GBRMPA is the single greatest pool of expertise, nationally and internationally, of marine protected area planners and managers. An expanded function may be warranted.

The broad objective of this Chapter has been to describe how intergovernmental legislative and institutional arrangements in the GBR region evolved, identify problems, and provide recommendations for future cooperation that would have relevance to an Australian system of marine protected areas. With these lessons in mind the thesis now turns to options for an Australian system of representative marine protected areas.

Chapter 5

Options for an Australian Marine Protected Area System

5.1 Introduction

Chapter 5 canvasses legislative and institutional options that might assist Australia in meeting international standards for a system of marine protected areas. Three options are examined:

(1) maintaining the *status quo,* that is, maintaining existing Commonwealth and State legislation and institutional responsibilities;

(2) changing existing Commonwealth and State legislative and institutional arrangements; and

(3) introducing new legislation and administrative arrangements that embrace protected area planning and management endorsed by the UNESCO MAB Biosphere Reserve Program.

5.2 Maintaining the Australian Marine Protected Area *Status Quo*

Clearly there exists a range of Commonwealth and State legislative and institutional arrangements that could be used to achieve a limited number of the international objectives for a national system of marine protected areas. However, an analysis of existing legal and institutional arrangements for marine protected areas at the State level (in Chapter 3) highlighted the inadequacy of the legal and administrative framework for meeting WCS/NCSA objectives for marine protected areas. Even the

three State Acts, (Queensland, *Marine Park Act 1982;* South Australia, *Fisheries Act 1982;* Western Australia, *Conservation and Land Management Act 1985*) representing the most significant legislative developments in State marine protected areas, do not adequately meet these objectives. The other 14 Acts of State Parliament are primarily concerned with fisheries and terrestrial resources, concerns which do not conform with international developments for marine protected areas. Existing marine protected areas underrepresent the five levels of marine organization (population, communities, habitats, ecosystems, biomes) found in Australia's biogeographical regions. The majority of States have a closed system of conservation whereby the problem of controlling upstream or adjacent impacts on marine protected areas is not addressed. The limited State legislative support for marine protected areas is reflected in the fact that less than 0.06 percent of the Australian marine environment has been declared protected area. Moreover, State institutional arrangements are often characterized by overlapping jurisdictions, interagency conflict, and insufficient policy coordination. Under the existing State marine protected area legislation these institutional arrangements will continue to overlap and interagency rivalry will be exacerbated.

The GBRMP represents a unique arrangement between the Commonwealth and Queensland government, and although there are intergovernmental problems (as outlined in Chapter 4), it represents a successful model that could be supported by other States in a national system of marine protected areas. The Commonwealth *GBRMP Act 1975* (discussed in Chapter 4) has been internationally accepted as the model for marine protected area planning and management. However,

the *GBRMP Act 1975* specifically deals with the Great Barrier region, and intergovernmental relationships between the Commonwealth and Queensland in the planning and management of that region. This Act, in its present form, cannot provide the legal framework for a national system of marine protected areas; it can only provide a model for other Australian marine protected areas and the future development of legislation and associated intergovernmental relations.

The *status quo* therefore constitutes a closed conservation system with significant limitations on the legislative and institutional capacity to control outside activities that may compromise the integrity of the protected area. Intergovernmental marine protected area policy often treats protected areas as *islands of management in a sea of mismanagement*. Under the present arrangements the *status quo* option cannot meet international objectives and has severe limitations as a basis for a national system of marine protected areas.

5.3 Incremental Change of Existing Commonwealth and State Marine Protected Area Arrangements

The second option concerns the promotion of incremental change of Commonwealth and State legislative and institutional arrangements for marine protected areas. This option assumes that these arrangements would be reviewed and updated to more closely reflect international marine protected area objectives. At the outset it should be realized that incremental change is characterized by:

> consideration of a restricted range of policy alternatives, as close to the *status quo;* modification of goals to agree with what the policy-maker feels is realistically attainable; and policies which are remedial and oriented to solving immediate, short-term goals (Gardner, 1984:129).

Because of the limited scope inherent in incremental change, it is unlikely to be a means of attaining an Australian national system of marine protected areas meeting international objectives. However, incremental change could effectively support an *increased* Commonwealth or State commitment to marine protected areas, given the restrictions identified in existing intergovernmental arrangements.

Two nongovernmental marine protected area policy initiatives (discussed in Chapter 3.7) represent potential models for incremental legislative and institutional change and are particularly noteworthy given that Commonwealth and State initiatives have been conspicuously absent. One can be loosely categorized as a centralist approach (Suter, 1983), the other as a decentralist approach (ACIUCN, 1986).

Suter's (1983:19-37) hypothetical *Australian Marine and Estuarine Reserves Act* advocates a centralist approach with overarching Commonwealth legislation to create a national system of marine protected areas. Suter's (1983:35-36) proposal "provides for the Australian National Parks and Wildlife Service to hold responsibility for the care, control, and management of the reserves". There would be a number of advantages in such an arrangement for a national system of marine protected areas:

> Centralization offers the advantage of a concentration of administrative and financial means. It facilitates the implementation of national policy on protected areas [and] appears to be the most economic global method of management ... A central authority can always impose its views, supervise the activities of the officials responsible for the areas and modify them ... In a word, it is the organizational method which, in principle, is most favourable to administrative continuity (du Saussay and Prieur, 1980:48).

A centralized approach would certainly have most of these advantages. However, in Australia it is not possible (or it is extremely difficult) for a central authority to always *impose its views* on the States, especially in relation to Commonwealth proposals for conservation legislation.[1] This is clearly shown in Chapter 4 in the instance of struggle between Commonwealth and Queensland over the GBRMP. ACIUCN (1986) argues that the two-tiered Australian federal system would make blanket legislation of the type advocated here virtually untenable. Given the complexities of offshore jurisdiction discussed in Chapter 3, and the example of the GBRMP discussed in Chapter 4, it is clear that centralist Commonwealth marine protected area legislation would be extremely difficult, or even impossible, to implement without State cooperation.

These problems are highlighted by Australian offshore jurisdictional arrangements (discussed in Chapter 3) where the full cooperation of the States in national marine protected area legislation would be required for

[1] The difficulties of gaining complementary action in the offshore have been illustrated with respect to the implementation of the Offshore Constitutional Settlement arrangements in a number of marine policy areas. For example, the Great Barrier Reef negotiations took four years (1975 to 1979) for intergovernmental accommodation (see Haward, 1989).

reserves found within the 3 mile territorial sea. Given the lingering controversies surrounding the States' claims over offshore sovereignty, centralized Commonwealth legislation would probably receive little support from the States.

The development of the GBRMP highlights many of these issues. The problems of centralized administration were realized early in the development of the GBRMP. Given dual jurisdiction of the marine environment, a Great Barrier Reef Ministerial Council was developed and included ministerial representatives from both the Commonwealth and Queensland. Policy direction comes from the GBRMPA and the day-to-day management is undertaken by the Queensland government. Realizing that local interests needed to be accommodated for in the smooth running of the GBR region a Great Barrier Reef Consultative Committee was appointed. As shown in Chapter 4, the Consultative Committee represents a cross-section of interests in the region, both public and private sectors, including tourism, fishing, science, and conservation (GBRMPA, 1984:10). *Incorporating regional and other sectoral interests in the decision-making process enables policy makers to consider influences that may otherwise compromise the marine protected area.* As du Saussay and Prieur argue:

> ... [d]ecentralization makes it possible to entrust the management of areas set up by the State to local administrative bodies or even to private individuals. This solution is obviously of interest when the State sets up a marine area that supplements a protected area on land which is dependent on a territorial authority (du Saussay and Prieur, 1980:49).[2]

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[2] *State* in this context refers to *nation state.*

The decentralist approach promoted by ACIUCN highlighted the benefits to be gained from a move away from a centralist administration. Unlike Suter however, ACIUCN did not recommend any possible legislative action, and chose to reiterate the nine desirable legislative provisions identified by CONCOM:

(1) objectives encompassing conservation, recreation, education, scientific research;
(2) control over all marine resources of flora, fauna, terrain and superadjacent water and air;
(3) development of management plans;
(4) public participation in the planning process,
(5) capacity for management of competing users (multiple use zoning);
(6) capacity for control of outside activities;
(7) research to assist management plans;
(8) interpretation and education; and
(9) monitoring of users and activities (CONCOM, 1985:48).

ACIUCN (1986:19; emphasis added) recommended that "additional MEPAs be declared using *existing* legislative avenues".

There are some problems evident in the adoption of the ACIUCN approach. The analysis from Chapter 3 and Chapter 5.2, indicates that existing legislative avenues are not sufficient to implement international marine protected area standards. Those States that have introduced recent marine protected area legislation have not incorporated the above nine legislative provisions. For example, a number of Acts have been criticized because they fail to control outside activities which could compromise the integrity of the protected area. From overseas examples discussed in Chapter 2, and Australian examples in Chapter 3, it is clear that marine protected area legislation *must* incorporate controls on

external impacts that may compromise a protected area. Moreover, given the separation of responsibilities between Commonwealth and States the implementation of marine protected area policy may involve larger federal conflicts. The example of the Great Barrier Reef region imbroglio discussed in Chapter 3.6.2 showed how Queensland was slow to adopt separate legislation to complement the *GBRMP Act 1975*. And even when the Queensland *Marine Parks Act 1982* was promulgated it failed to support public participation in the planning process. These examples support Suter's (1983:13) contention that "it is unlikely that the States could ever provide, and implement, a satisfactory marine reserves policy".

ACIUCN argues that immediate declaration of protected areas is urgently required and that there is no time to develop and implement national legislation. If State governments made a concerted effort to amend existing State legislation, this option could be successful. However, there is no evidence to suggest that State governments will unilaterally reform marine protected area legislation to include the ACIUCN provisions. Given this, State legislative reform is unlikely to meet recognized international standards for an Australian system of marine protected areas.

The Suter proposal for promoting overarching Commonwealth legislation has been criticized, for valid reasons. It is somewhat paradoxical that it is this type of proposal that is most likely to provide international standards for an Australian system of marine protected areas, yet has the least chance of implementation. Much merit

nevertheless remains in Suter's proposal. His proposal for national, State, and local marine and estuarine reserves councils and local marine and estuarine reserve committees could be extremely useful in providing expert advise on marine protected areas, and his suggestion for an increased role of the Australian National Parks and Wildlife Service in developing and administering marine protected areas may be warranted, although likely to involve heightened interagency tension with the States.

If a national system of marine protected areas is to be achieved in Australia then a framework is required for cooperative Commonwealth and State legislation and administrative arrangements that support this two-tiered structure. The next section examines the capacity of the biosphere reserves concept to provide this framework for cooperative Commonwealth and State action.

5.4 Towards a Biosphere Reserve System

5.4.1 Introduction

The following sections detail the third option (as identified at the beginning of the Chapter) of MAB marine biosphere reserves as the most satisfactory basis for an Australian system of marine protected areas.[3] The remaining part of this Chapter investigates the international biosphere reserve system, the marine biosphere reserve concept, and international responsibilities for Australia.

[3] Marine biosphere reserves can include coastal and terrestrial environments.

5.4.2 The International Biosphere Reserve System

There has been active international support since the late 1960s for The Biosphere and UNESCO MAB Biosphere Reserves (Table 5.1). The concept for the MAB Program was first initiated in September 1968 at UNESCO headquarters in Paris during the UNESCO *Conference on the Rational Use and Conservation of the Resources of the Biosphere* (commonly called the Biosphere Conference), held at time when environmental issues were first assuming prominence on the international political agenda. The Conference was a response to the "increasingly serious concern of numerous scientific circles - biologists, ecologists, soil scientists, and so on - over the acceleration of utilization (and often deterioration) of terrestrial resources, particularly of so-called renewable resources" (Bourlière and Batisse, 1978:14).[4] The early efforts of the International Biological Program (IBP), an international project which led to collaboration in biological research, are also credited as the driving force behind the 1968 Biosphere Conference (Di Castri *et al.*, 1981:52). The IBP was instrumental in the development of conservation science and helped shape the type of protected area research currently undertaken by MAB. However, because the research focus of the IBP was largely on the terrestrial environment there was little mention in the late 1960s of marine biological and conservation research themes. There was also no specific reference to biosphere reserves at the time of the so called Biosphere Conference (Batisse, 1986:2).

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[4] Held four years before the Stockholm Conference, it was the "first world-wide intergovernmental meeting to adopt a series of recommendations concerning problems of the human environment ... the first meeting to firmly declare that conservation should be part of the rational use of resources, ... and the first time that a conference of this nature had clearly advocated an interdisciplinary approach in the overall study of the interactions between man and the environment" (Bourlière and Batisse, 1978:14).

Table 5.1 Important Developments in Promoting The Biosphere and Biosphere Reserves

1875 Suess coins the term *Biosphere.*

1926 Vernadsky publishes *The Biosphere (Biosfera)* in Russia.

1968 UNESCO Conference on the Rational Use and Conservation of the Resources of the Biosphere (commonly called the Biosphere Conference).

1971 MAB Program formally launched at the first session of the International Coordinating Council.

1971 First International Conference on Environmental Future, Finland.

1972 MAB Program officially endorsed by the Stockholm Conference.

1974 MAB Task Force on Criteria and Guidelines for the Choice and Establishment of Biosphere Reserves.

1976 First biosphere reserves designated in Australia, United Kingdom, and USA.

1977 118 biosphere reserves designated in 27 countries.

1979 Sixth session of the International Coordinating Council reviews the operational phase of the biosphere reserves.

1979 Council of the Programme on Man and the Biosphere, Final Report.

1981 US MAB Program *Interim Guidelines for Identification and Selection of Coastal Biosphere Reserves.*

1983 Founding of the World Council for The Biosphere.

1983 World Council for The Biosphere and the International Society For Environmental Education support world education concerning The Biosphere.

1983 First International Biosphere Reserve Congress, Minsk, Byelorussia, USSR.

1984 Action Plan for Biosphere Reserves adopted by MAB-International Coordinating Council.

1985 The above Action Plan adopted at the 19th session of the IUCN Council.

1986 261 biosphere reserves in 70 countries.

1988 Biosphere reserve Workshop on the Georges Bank proposal.

1989 UNESCO/IUCN Workshop on the application of the biosphere reserve concept to coastal areas, San Francisco, USA.

1989 AIBS US MAB Symposium and Workshop, Toronto, Canada.

As an intergovernmental and interdisciplinary program of research, MAB was formally launched in November 1971 at the first session of the International Coordinating Council (ICC), which oversees the MAB Program. The MAB Program, officially endorsed by the Stockholm Conference in 1972, consists of 14 major themes of research with Project 8 supporting the *conservation of natural areas and the genetic material they contain* through a series of protected areas linked through a coordinated international network (Batisse, 1984, 1985:17).[5] The concept of the biosphere reserve was initiated and given three objectives: (1) to reinforce the conservation of genetic resources and ecosystems and the maintenance of biological diversity (*conservation role*); (2) to establish a well identified international network of areas directly related to MAB field research and monitoring activities including training and information exchange (*logistic role*); and (3) to associate environmental protection and land resources development as a governing principle for research and education activities (*development role*) (Batisse, 1986:2). It is these tripartite objectives of the biosphere reserve that provides its distinct character.

At the national level responsibility for the MAB program originates from a MAB National Committee with leadership and council provided from the ICC, which includes experts from other countries and UN and nongovernmental organizations. The MAB National Committee coordinates the national program which involves some or all of the 14 major research themes. Research for funding and training programs is

[5] These themes deal with the study of interactions between humans and ecosystems (e.g., forests, mountains, coastal zone), or with the processes and impacts of human activity found in the biosphere (e.g., pollution, large engineering projects).

largely received from the national government, although external funding is sometimes available for developing countries (Di Castri *et al.*, 1981:54). Because of the extensive planning and preparation MAB Project 8 did not reach its operational phase until 1976 (Di Castri and Loope, 1977; Bourlière and Batisse, 1978).

Biosphere reserves represent one of ten protected area categories recognized internationally by the IUCN (1976) (see Table 2.2). The designation of biosphere reserves "carries no legal obligation for the country but the biosphere reserve should have adequate legal protection under the national legislation to ensure a long-term commitment to protect the site concerned" (Anon., 1982:23). It was seen as an innovative protected area concept because it highlighted an international network of reserves, supported nature conservation with scientific research, environmental monitoring, training, education, and local participation, and because biosphere reserves can contain *both* natural areas and areas modified by human activity. The terrestrial, coastal, and marine reserves, which include significant examples of the world's biomes, are linked globally by the exchange of personnel, information, and the necessary scientific and material support to the projects. A 1974 MAB Task Force defined the three primary objectives of biosphere reserves:

(1) to conserve for present and future use the diversity and integrity of biotic communities of plants and animals within natural and semi-natural ecosystems and to safeguard the genetic diversity of species on which their continuing evolution depends;
(2) to provide areas for ecological and environmental research, including baseline studies, both within and adjacent to such reserves; and
(3) to provide facilities for education and training (UNESCO, 1974).

The main characteristics of biosphere reserves are:

(1) biosphere reserves are protected areas of land and coast environments; together they should constitute a world-wide network linked by international understanding on purposes, standards, and exchange of scientific information;
(2) the network of biosphere reserves should include significant examples of biomes throughout the world;
(3) each biosphere reserve should include one or more of the following:
    (i) representative samples of natural biomes;
    (ii) unique communities or areas with unusual features of exceptional interest;
    (iii) examples of harmonious landscape resulting from traditional patterns of land-use, and/or;
    (iv) examples of modified or degraded ecosystems that are capable of being restored to more-or-less natural conditions;
(4) each biosphere reserve should be large enough to be an effective conservation unit, and to accommodate different uses without conflict;
(5) biosphere reserves should provide opportunities for ecological research, education and training; they will have particular value as benchmarks or standards for measurement of long-term changes in The Biosphere as a whole;
(6) a biosphere reserve must have adequate long-term legal protection; and
(7) in some cases biosphere reserves will coincide with, or incorporate, existing or proposed protected areas, such as national parks, sanctuaries, or nature reserves (Batisse, 1982 b:102).

These characteristics highlight the two important features of biosphere reserves. First, such reserves promote *conservation as an open system rather than a closed system* by "looking out towards the management problems of the surrounding areas, and incorporating land-use

management concerns of the local populations" (Batisse, 1982:103). Chapter 3.8 indicated that restricting adjacent uses is one of the major problems with existing State legislation for marine protected areas because there is not the legislative capacity to control outside impacts. The MAB concept protects areas of undisturbed natural ecosystems by surrounding the areas with sympathetic and compatible activities. A biosphere reserve "should, perhaps, be looked upon less as a *reserve* than as an area of ecologically representative landscape in which land-use is controlled, but may range from complete protection to intensive, yet sustainable, production" (Batisse, 1985:19).

Linked to an open system of conservation is the way in which new research orientations have been developed since the 1984 MAB Council established an independent, expert advisory panel to review the scientific program. These new research orientations reflect "the growing trend to consider environmental and biosphere changes caused by human activities as an integral part of the continually changing and interacting environment" (UNESCO, 1987:12). As an open system of conservation looks outwards to control impacts that may compromise the integrity of a protected area, it becomes imperative that MAB research must address humans in, and their interactions with, biosphere reserves. Thus four new research orientations have been endorsed for the 1990s: (a) ecosystem functioning under different intensities of human impact;
(b) management and restoration of human-impacted resources;
(c) human investments and resource use; and (d) human response to environmental stress (UNESCO, 1987:12-15).

A second important feature is that the biosphere reserve system can function as a *conservation system*. Eidsvik (1984 b:16) is "convinced that there is role for biosphere reserves in protected area systems" because they "are pioneering ... a new wave in conservation - integrated area management, which preserves and protects the values of a core area while ensuring that cross boundary or frontier impacts are considered". Some nation states are now adopting biosphere reserves as a basis for protected area systems, "for example, the preparation of draft legislation to provide a legal foundation for biosphere reserves in India is a demonstration of a positive new direction which will aid conservation in the sub-continent, as well as demonstrate positive new directions for biosphere reserves" (Eidsvik, 1984 a:73-74).[6]

Most proponents of biosphere reserves in fact fail to mention specific legislative action for biosphere reserves and often argue that all "countries, in cooperation with the appropriate international organizations, must therefore provide the means - administrative, technical, personnel and financial - necessary to give all present and future biosphere reserves their full operational and multidimensional character" (Batisse, 1986:11). Specific legislative arrangements for protected areas within biosphere reserves will vary widely because of the legislative techniques peculiar to each country (du Saussay, 1980).

Some other countries that support the MAB Program have, or will soon adopt, biosphere reserves legislation:

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[6] Information is not readily available on the Indian legislative initiative.

> A few countries such as Mexico and Honduras, have accomplished this by legally establishing biosphere reserves. India has gone still farther and is presently developing legislation for a national system of biosphere reserves. Such legislation for a national system of biosphere reserves may someday be available in the United States, but the large number of legally established protected area systems precludes this at present, and obliges us to build our biosphere reserve network using existing protected areas (Gregg, 1983:2).

Gregg has identified an important restriction on the potential development of legislation for biosphere reserves - specifically, the level of the existing system of protected areas. The distinction between the marine and terrestrial environment is important if a biosphere reserve network is to be based on existing protected areas. Terrestrial biosphere reserves "were areas already protected, such as national parks or nature reserves, and in most cases the designation was not adding new land, new regulations or even new functions" (Batisse, 1986:4). In some countries this has allowed the expansion of the biosphere reserve network where, with:

> large numbers of legally protected sites [such as] in the USA, it has been possible to create in a relatively few years a large biosphere reserve network, which now contains 38 units. At least one biosphere reserve is located in 17 of the country's 20 biogeographic regions. Unfortunately, these sites rarely accommodate all of the biosphere reserve functions because most are managed for specific purposes under policies which prohibit carrying out many activities (Gregg, 1983:2).

Australia, like the USA, has an extensive terrestrial protected area system. In some cases new terrestrial biosphere reserves did not substantially add

to the existing protected area system and as Gregg notes above, in this situation not all objectives of the biosphere reserve are likely to be fulfilled.

However, the same problem does not exist with respect to the marine environment because of the small numbers of marine protected areas and the relatively recent attention these areas have received. Australia, like the USA (discussed in Chapter 2.5.4), has an incomplete marine protected area system supporting a closed system of conservation. Established marine protected areas in Australia cannot be effectively used as a sole means to further develop a biosphere reserve network. This does not mean that existing marine protected areas cannot be included in biosphere reserves; it means that the existing areas cannot, in themselves, provide a sufficient base for a biosphere reserve network. While it may be easier to accommodate biosphere reserve functions in the marine environment, the many marine users and multiple use nature of the marine environment may restrict the functions of the reserve.

Despite the legislative obstacles noted above, Davis and Drake (1983:4) have argued that "if there are compelling reasons why a state or nation finds it advantageous to have legislation covering ecological reserves, including biosphere reserves, it should do so". *The present thesis argues that there are compelling reasons to at least amend existing Australian marine protected area legislation to include marine biosphere reserves because existing Commonwealth and State marine protected area legislation does not adequately provide for representative biogeographical regions or the cooperative management of terrestrial*

and coastal ecosystems adjacent to those protected areas. The biosphere reserve concept could be appropriately introduced as an amendment to existing Commonwealth and State legislation, but it is unlikely that *unilateral* amendments would provide a unified national approach to marine protected areas. Amendments of this sort are more likely to contain the same constraints that Commonwealth and State legislation have for existing marine protected areas (as discussed in Chapters 3 and 4).

Both the promotion of conservation as an open system incorporating interactions with outside activities and the use of biosphere reserves as a basis for protected area systems are desirable characteristics for an Australian system of marine protected areas (see CONCOM, 1985:48) and provide a sound alternative to the *ad hoc* and uncoordinated introduction of marine protected areas. However, the role of conservation and development, Eidsvik argues, should not be misconstrued: "*conservation with development* means reaching out from the protected core area to improve management in the surrounding area. We must emphasize again and again that *it does not mean reaching into the protected area to reduce conservation values*" (Eidsvik, 1984 a:77; emphasis added).

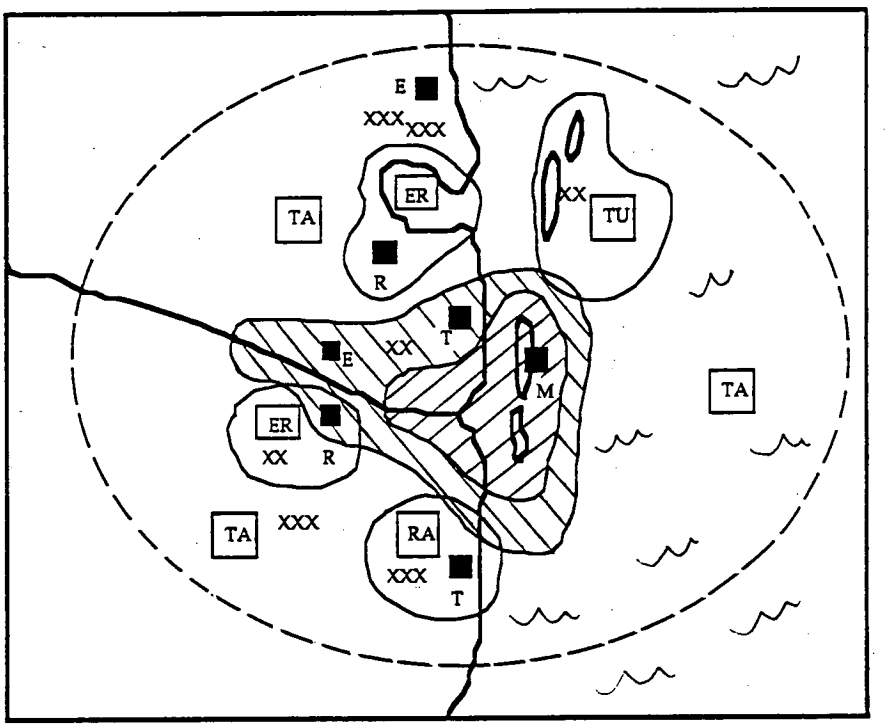
To promote an open system of conservation the biosphere reserve concept adopts the core and buffer zoning methodology (Di Castri and Robertson, 1982). The core area is protected by a surrounding buffer zone which may mediate incompatible uses and enhance protection of the core values. Biosphere reserves can thus provide multiple use functions by a system of zoning in much the same manner as in the GBRMP (as discussed in Chapter 4.3.3). Such a scheme allows different management objectives to be conferred on different zones (Figure 5.1). The theoretical

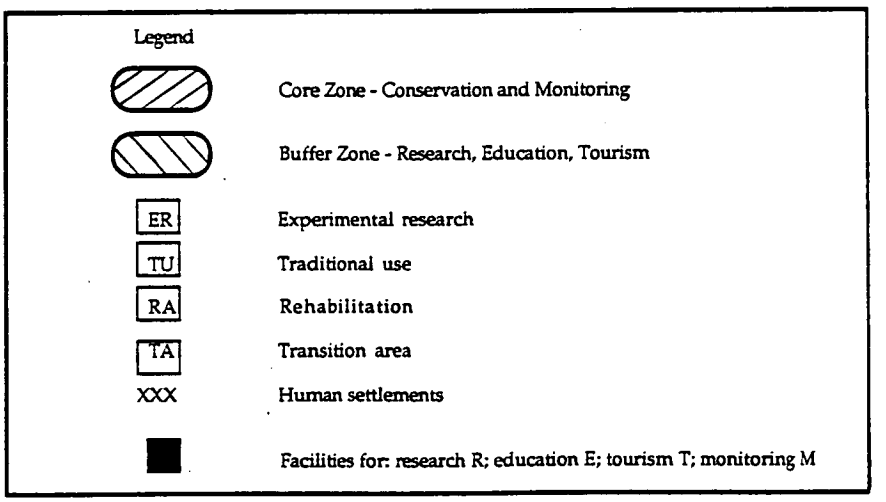
relationship between core and buffer in a biosphere reserve is outlined in detail in Appendix III. The characteristics of the core area are important; the central core area, surrounded by one of more buffer zones "should be representative of a major ecosystem of world significance, and be large enough to allow for *in situ* conservation of the genetic material of this ecosystem" (Batisse, 1982 b:102). In other words, the flora and fauna of the ecosystem should be sufficiently large to be self-sustaining. Human intervention should be kept to a minimum in the core area and research restricted to baseline monitoring. The buffer zones can contain human-modified ecosystems, degraded areas or restored ecosystems.

Management strategies can, as has been indicated earlier, differ between buffer zones. A buffer zone, for example, could be used for education and training, manipulative research on conservation and ecosystem management, controlled resource use, recreation, and possibly reclamation (Batisse, 1982 b:102). Buffer zones can incorporate human settlements provided the activities of the local people correspond with the objectives of the biosphere reserve.

While the core/buffer zonation scheme is fundamental to terrestrial biosphere reserves the same scheme has been found to be less than satifactory when applied to the marine environment (Kenchington and Agardy, 1990). The inappropriateness relates to the insistence on core zones as strictly protected *in situ* genetic conservation unit. As shown in Chapter 1, the marine ecosystem is characterized by its

Figure 5.1 Hypothetical Marine Biosphere Reserve Showing the Relationship between Core and Buffer Zones





interdependence, large size and mobility. The problem of the application of the core zone in the biosphere reserve scheme is illustrated in the marine environment of the Bay of Fundy and Gulf of Maine region. According to current patterns and larval dispersal the *in situ* core area would be extremely large. The strict protection of such a large area is politically inconceivable and there is not necessarily any indication that such a level of protection is needed to conserve and manage the region. The criteria and objectives of terrestrial biosphere reserves cannot be therefore directly transferred to that of marine biosphere reserves. Bearing these distinct problems in mind, there are a number of methods of nomination that could be appropriate for marine biosphere reserves.

Where a single biosphere reserve site in a biogeographic province cannot be identified such reserves can include multiple sites. Multiple-site biosphere reserves, using the core and buffer zoning system, are typically incorporated in what has been termed a cluster biosphere reserve (McCrone, 1984).

> The cluster concept was originally focused on linking separately designated biosphere reserves under different administrations, which carry out complementary programs in the same type of ecosystem. In 1981, the concept was expanded to accommodate the designation of multiple sites containing different ecosystems as a single biosphere reserve (Gregg, 1983:4).

The problem of nominating single sites has become such that the "concept of multiple-site biosphere reserves ... is now becoming the basis of establishing biosphere reserves in the United States" (Gregg, 1983:3). This concept refers to a combination of a number of contiguous and non-

contiguous areas which together support the functions of the reserve. Successful examples of the cluster type nomination are found in the marine environment in Australia, although these are not specifically biosphere reserves:

> Perhaps the best example of a marine protected area that meets all the criteria for a cluster biosphere reserve is the Great Barrier Reef Marine Park. This is administered by a single agency and consists of approximately 120 core areas linked by continuous buffer and transition zones covering an area of 350,000 sq. km (Kelleher and Kenchington, 1990).

Here, incidentally, is further support for the use of the GBRMP as an ideal-type of marine protected area policy and administration. The case study in Chapter 4 has revealed problems inherent in offshore intergovernmental relations, but it also portrays a marine protected area that fulfills the criteria of a cluster biosphere reserve.

Internationally, the first biosphere reserve was established in 1976, and by 1977 over 118 biosphere reserves had been established in 27 countries (Golubev, 1983). The reserves designated in these first years were skewed towards the conservation rather than a logistic or developmental role of biosphere reserves (Batisse, 1982 a:4). By 1983 biosphere reserves totalled over 1,154,828.76 sq. km and were established in 62 countries, with a mean size of 5,100 sq. km and a median size between 100 and 250 sq. km (Miller, 1984 a:5).[7] In 1986, ten years after the first biosphere reserves were

[7] The largest biosphere reserve in the world is Northeast Greenland National Park, Denmark, which was designated in 1977. At 700,000 sq. km it is nearly as large as New South Wales.

designated, there were 261 biosphere reserves in 70 countries (IUCN, 1986). These figures, however, are not meant to suggest that any one of the areas represents a true *model* biosphere reserve, nor are they meant to suggest that the system of reserves represents a true international network. The diversity and range of terrestrial and marine biogeographic types is by no means represented in the existing biosphere reserve areas.

Notwithstanding international advances in setting biosphere reserves in place, in terms of representing biogeographical regions the reserves are heavily skewed towards the protection of the terrestrial environment. Out of the 193 terrestrial biogeographic regions identified by Udvardy (1975), 102 do not have representation (Miller, 1984 a:6). There have, however, been moves towards identifying and designating marine biosphere reserves (Ray *et al.*, 1981), which will be discussed below. The biosphere reserve concept has been successfully applied to a range of environments - from polar to tropical, from coastal areas to mountains. For instance, Arctic and sub-Arctic biogeographical regions account for 76.5 percent (879,793 sq. km) of the total area designated under the biosphere reserve classification. The classification of these areas is unique because it includes both the terrestrial (including ice sheets and shelves) and marine environments (Keage, 1986).

Although the international biosphere reserve system represents a substantial total area Miller (1984 a:5) notes that 82.5 percent was already protected by law as some form of protected area and only 1.6 percent (17,000 sq. km) was added in accordance with biosphere reserve designations. Miller (1984 a:5) believes that most biosphere reserves are too small and questions the long-term ecological viability of such

reserves - and, ultimately, the contribution made thereby to global ecosystem protection.

At the sixth session of the ICC in Paris in 1979 the operational phase of the biosphere reserves was reviewed and further plans and strategies for the Program were promoted (UNESCO, 1979). One of the concerns of this session was to evaluate how the conservation, logistic, and development roles of the biosphere reserves worked together as a single concept (Batisse, 1986:3). Given these concerns (see Miller, 1984 a) the defining (and refining) of objectives and priorities for biosphere reserves has become increasingly important for this new protected area category:

> During the last few years, a new term has crept into the vocabulary of conservation, namely *biosphere reserve.* Yet few people know what [the term biosphere reserve] really means, and many have confused, or even conflicting ideas about what it actually covers. This situation results from the fact that the concept is relatively new, that it is multifaceted, and that it has already undergone some evolution as theory has translated into practice (Batisse, 1982 b:101).

Kellert (1986:101) further observes that "[o]ne unfortunate possibility is that the very concept may puzzle rather than enlighten the general population concerning the real value of land [and marine] protection". Concern over the need for standardized research and monitoring and an international data base has also been raised (Harrison, 1984).

In addition to specific UNESCO support for biosphere reserves, there is an additional forum which has been promoting the concept of The Biosphere to an international audience. The Foundation for

Environmental Conservation, founded in 1975 by IUCN, the World Wildlife Fund, and Professor Nicholas Polunin, supports, *inter alia,* the international journal *Environmental Conservation* and the International Conferences on Environmental Future (Polunin, 1988 b:71).[8] The Foundation also supports the World Council for The Biosphere (WCB) founded in 1983 (Polunin, 1988 a:98). The main purpose of the Foundation is:

> to safeguard the continuing integrity of The Biosphere by serving as a select international forum for the analysis and appraisal of existing and foreseeable relationships between human population and economic development on one hand and, on the other, the totality of living and life-support systems of our planet which collectively constitute The Biosphere (Polunin, 1988 b:72).

Suggestions to increase the general public's knowledge of The Biosphere have ranged from an *International Year of The Biosphere* to the *World Campaign for The Biosphere* and a *World Decade of The Biosphere* (Anon., 1982; Worthington, 1982; Polunin, 1980, 1982 a, 1982 b, 1984; Vallentyne, 1984). The aims and objectives of the *World Campaign for The Biosphere* by the Foundation for Environmental Conservation were:

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[8] Professor Nicholas Polunin is President of the World Council for The Biosphere and the Foundation for Environmental Conservation, and is founder and Editor of *Environmental Conservation.* The first Conference was held in Finland in 1971, the second in Iceland in 1977, and the third in Scotland in 1987. A fourth Conference took place in 1990 with the theme of *Threats to The Biosphere and Imperative Countermeasures* (Polunin, 1988 a:98).

(1) to develop and foster, on a continuing basis, educational programs and allied activities designed to make the concept (and reality) of our Biosphere intimately known and personally meaningful to people of all ages and cultures throughout the world;
(2) to further the development of scientific understanding of the design and operation of The Biosphere;
(3) to prepare for, launch, and guide, practical actions towards safeguarding our one and only Biosphere; and
(4) to encourage the development of political and other institutions to reduce the physical and spiritual harm which we inflict unnecessarily on ourselves and Nature by failing to accommodate The Biosphere's ways and needs (Anon., 1982).

The WCB focus on environmental education has meant that it is closely associated with the International Society for Environmental Education (ISEE), and Polunin (1984:297) has argued for a world-wide educational campaign. Although the *International Year of The Biosphere* or the *World Decade of The Biosphere* did not eventuate the campaign served to promote The Biosphere world-wide.

To specifically address the problems of biosphere reserves the First International Biosphere Reserve Congress was held in Minsk, Byelorussia, USSR in 1983 by UNESCO and UNEP (in cooperation with the UN Food and Agriculture Organization and IUCN). This Conference resulted in a publication entitled *Conservation, Science and Society*

(UNESCO-UNEP, 1984).[9] On the basis of the Minsk Congress an Action Plan[10] for Biosphere Reserves was adopted in 1984 by MAB-ICC to support the following nine objectives and actions:

(1) International network: to enhance the role of the international network of Biosphere Reserves in global ecosystem conservation;
(2) Management: to improve and upgrade the management of existing and new Biosphere Reserves to correspond with their multipurpose objectives;
(3) *In situ* conservation: to promote the conservation of key species and ecosystems in Biosphere Reserves;
(4) Research: to promote coordinated research projects on conservation science and ecology within Biosphere Reserves;
(5) Monitoring: to develop monitoring activities in Biosphere Reserves in order to provide a basis for scientific research and management activities and contribute to the understanding of environmental change;
(6) Regional planning: to enhance the role of Biosphere Reserves in regional planning and development;
(7) Local participation: to promote local participation in the management of Biosphere Reserves;
(8) Environmental education and training: to promote environmental education and training related to Biosphere Reserves, and to use the full potential of the Reserves for these purposes;

[9] The publication included papers on: (1) biogeographical coverage; (2) establishment and management; (3) relationships to other protected areas; (4) management of key species and communities; (5) ecological research, modelling, and forecasting; (6) global and regional monitoring; (7) World Conservation Strategy; (8) regional planning for social and economic development; (9) local participation; (10) environmental education.

[10] The Action Plan was reprinted as Batisse (1985).

(9) Information: to use fully the potential of the network to generate and spread knowledge about the conservation and management of the biosphere, and to promote the Biosphere Reserve concept through information and demonstration (Anon., 1984:15-22).

The Action Plan is now fully integrated with the strategies of other international bodies responsible for marine protected areas. At the 17th IUCN General Assembly Resolution 17.38 was passed supporting the protection of the coastal and marine environment (Appendix IV). The 19th session of the IUCN Council (14-15 November 1985) endorsed the Action Plan for Biosphere Reserves, and by 1986 the Action Plan was fully integrated into the IUCN Program. The Action Plan has also been fully endorsed at the thirteenth session of the Governing Council of UNEP in 1985 and the UNESCO Executive Board. And in 1987 the 4th World Wilderness Congress in Colorado, USA, supported the development of national systems of marine protected areas and the concept of *marine wilderness* (Appendix V).

One of the recommendations of the Action Plan was the establishment of a Scientific Advisory Panel for Biosphere Reserves which would review its implementation and examine both the conceptual and practical nature of biosphere reserves, and the combined tripartite role of conservation, logistics, and development. It was also to be responsible for evaluating new biosphere reserve proposals, criteria for selection, and the effectiveness of the network (UNESCO, 1987:9).

Thus, in 1984, at the 8th session of the MAB Council, a General Scientific Advisory Panel was established with the responsibility of providing general scientific advice to the Council. Its research "focussed on developing future orientations of the MAB Programme, which were considered first by the Bureau in April 1986 and then by the Council at its ninth session in October 1986" (UNESCO, 1987:9). By 1986 the MAB Council considered that the General Scientific Advisory Panel had sufficiently developed future orientations for the Programme. However, the Advisory Panel continues to operate through small groups of experts. As a result , the biosphere reserve concept is now firmly established as a strategy for protection of biogeographical regions by the international conservation community and evidence suggests that nation states are beginning to accept the potential of biosphere reserves in the conservation of natural areas.

5.4.3 The Australian Biosphere Reserve System

Biosphere reserves were first identified for Australia in 1975-76 when the Australian MAB Committee requested both Commonwealth and State governments to nominate biosphere reserve areas. The first five areas nominated were given formal approval by the MAB Bureau in Paris in January 1977, with additional areas accepted in October 1977 (4 areas), April 1978 (1 area), and September 1982 (2 areas). As a result, the majority of Australia's 12 biosphere reserves (covering an area of 47,816.31 sq. km[11]) are over ten years old, with no biosphere reserve nominated or designated in Queensland (Table 5.2) (Figure 5.2). Although there was a flurry of initial activity, interest in biosphere reserves in Australia seems

[11] In comparison the State of Tasmania is 67,923 sq. km in area.

Table 5.2 Australian Biosphere Reserves

(1) **Uluru (Ayers Rock-Mount Olga) National Park, Northern Territory.**
Approval by MAB Bureau: January 1977. **Area:** 132,538 ha.
Land tenure: Crown land. **Legal Protection:** Protected as a national park under the *National Parks and Wildlife Act 1975 (Commonwealth).* The day-to-day management is conducted by the Conservation Commission of the Northern Territory and the Australian National Parks and Wildlife Service.

(2) **Danggali Conservation Park, South Australia.**
Approval by MAB Bureau: January 1977. **Area:** 253,230 ha.
Land tenure: State Government reserve. **Legal Protection:** Protected as a Conservation Park under the South Australian *National Parks and Wildlife Act 1972-74.*

(3) **Kosciusko National Park, New South Wales.**
Approval by MAB Bureau: January 1977. **Area:** 625,525 ha.
Land tenure: Crown land vested in the State of N.S.W. **Legal Protection:** Protected as a national park under the New South Wales *National Parks and Wildlife Act 1974* and managed by the N.S.W. National Parks and Wildlife Service.

(4) **Unnamed Conservation Park of South Australia, South Australia.**
Approval by MAB Bureau: January 1977. **Area:** 2,132,600 ha.
Land tenure: State Government reserve. **Legal Protection:** Protected as a Conservation Park under the South Australian *National Parks and Wildlife Act 1972-74.*

(5) **Yathong Nature Reserve, New South Wales.**
Approval by MAB Bureau: January 1977. **Area:** 107,241 ha.
Land tenure: Crown land vested in the State of N.S.W. **Legal Protection:** Protected as a national park under the New South Wales *National Parks and Wildlife Act 1974* and managed by the N.S.W. National Parks and Wildlife Service.

(6) **Croajingalong National Park, New South Wales.**
Approval by MAB Bureau: October 1977. **Area:** 100,800 ha.
Land tenure: State-owned (public) land (sic). **Legal Protection:** Protected as a national park under the Victorian *National Parks Act 1975.*

Table 5.2 Australian Biosphere Reserves (continued)

(7) **Macquarie Island Nature Reserve, Tasmania.**
Approval by MAB Bureau: October 1977. **Area:** 12,343 ha.
Land tenure: Crown land. **Legal Protection:** Protected as a State reserve under the Tasmanian *National Parks and Wildlife Act 1970* and managed by the Tasmanian National Parks and Wildlife Service.

(8) **South-West National Park, Tasmania.**
Approval by MAB Bureau: October 1977. **Area:** 442,240 ha.
Land tenure: Crown land, partly subject to the rights of the Hydro-Electric Commission. **Legal Protection:** Protected as a State reserve under the Tasmanian *National Parks and Wildlife Act 1970* and managed by the Tasmanian National Parks and Wildlife Service.

(9) **Hattah-Kulkyne National Park and Murray-Kulkyne Park, Victoria.**
Approval by MAB Bureau: September 1982. **Area:** 49,550 ha.
Land tenure: State-owned (public) land (sic). **Legal Protection:** Protected as a national park under the Victorian *National Parks Act 1975.*

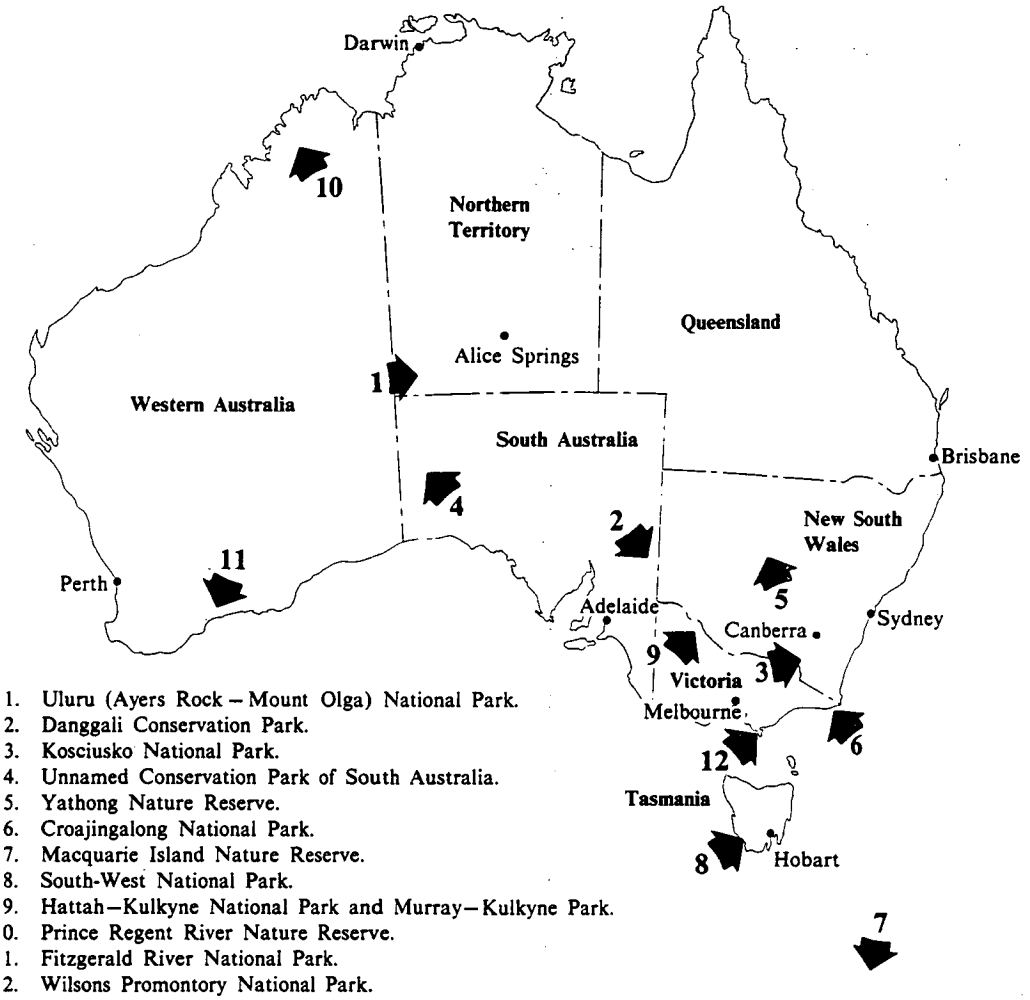
(10) **Prince Regent River Nature Reserves, Western Australia.**
Approval by MAB Bureau: October 1977. **Area:** 633,825 ha.
Land tenure: Public land. **Legal Protection:** Protected as a reserve under the Western Australian *Land Act* and declared a *prohibited area* under the *Wildlife Conservation Act.* The reserve is vested in the Western Australian Wildlife Authority.

(11) **Fitzgerald River National Park, Western Australia.**
Approval by MAB Bureau: April 1978. **Area:** 242,739 ha.
Land tenure: Crown land of the State of Western Australia. **Legal Protection:** Protected as a national park under the *National Parks Authority Act 1976* and administered by the National Parks Authority of Western Australia.

(12) **Wilsons Promontory National Park, Victoria.**
Approval by MAB Bureau: September 1982. **Area:** 49,000 ha.
Land tenure: State-owned (public) land (sic). **Legal Protection:** Protected as a national park under the Victorian *National Parks Act 1975* and the *Wildlife Act 1975.*

Source: Davis and Drake, 1983.

Figure 5.2 Location of Australia's Biosphere Reserves



1. Uluru (Ayers Rock – Mount Olga) National Park.
2. Danggali Conservation Park.
3. Kosciusko National Park.
4. Unnamed Conservation Park of South Australia.
5. Yathong Nature Reserve.
6. Croajingalong National Park.
7. Macquarie Island Nature Reserve.
8. South-West National Park.
9. Hattah–Kulkyne National Park and Murray–Kulkyne Park.
10. Prince Regent River Nature Reserve.
11. Fitzgerald River National Park.
12. Wilsons Promontory National Park.

Source: Davis and Drake, 1983:9.

to have decreased since 1982, possibly because of the higher priority given by Australia to World Heritage Area designations. Raising the profile of biosphere reserves seems unlikely in the immediate future as the Australian National Commission for UNESCO is not aware of any biosphere reserves presently under consideration (Burford, 1989).

As Figure 5.2 indicates, present biosphere reserves do not adequately cover the terrestrial biogeographical regions of Australia, and more significantly "there has not yet been any systematic evaluation of Australia's biogeographical provinces to determine where new biosphere reserves should be established" (Davis and Drake, 1983:9).

Furthermore, because most of the initial nominations were "received only from the State and Federal national park services" (Davis and Drake, 1983:9) it is not suprising that all 12 biosphere reserves in Australia are largely representative of terrestrial ecosystems (five reserves contain a limited extent of the coastal and marine environment). The interest of the Commonwealth and State park agencies is commendable, however the perception that biosphere reserves are the province of such institutions has contributed to the lack of marine biosphere reserves, or the involvement of marine resource agencies. For instance, no biosphere reserves have been nominated by fisheries agencies responsible for State marine protected areas and there are no biosphere reserves designated solely for the marine environment. The limited involvement of other

agencies is emphasized in other areas. Publications undertaken on biosphere reserves to publicize their designation or for research and management purposes are usually joint efforts between the Australian National Commission for UNESCO Secretariat, ANPWS, and members of the Australian UNESCO Commission for the MAB Program.

In contrast with Australia, the USA nominated its first biosphere reserves in 1974 and now has 43 sites representing over 90,000 square km (IUCN, 1986), the largest number of reserves designated by any single nation state. Sixteen of the terrestrial biogeographic provinces in the USA are represented (Udvardy, 1975) and five of twelve coastal regions (Turner and Gregg, 1983:231). Most of the reserves are federally administered by the US Forest Service or the National Park Service. Turner and Gregg (1983:232), in a study of scientific activities in USA biosphere reserves, make the important distinction between reserves "managed primarily for ecosystem conservation" (which include national parks and monuments and average 400,000 ha.), and reserves "managed primarily for experimental research" (oriented towards sustaining or enhancing productivity, or managed ecosystems for human benefit, and average 18,000 ha.). Not suprisingly, given the emphasis of the USA Program, biosphere reserves managed primarily for experimental research on marine systems have been lacking in the USA system. It is therefore timely that the US MAB Program now includes a separate Marine and Coastal Ecosystems Directorate that has identified aquatic areas and wetlands as a priority program area (Anon., 1989:2).

Legislative and institutional arrangements for the management of Australian biosphere reserves vary enormously. There are no Commonwealth or State statutes specifically for biosphere reserves. Existing nominated biosphere reserves have been given legal protection either under the *National Parks and Wildlife Conservation Act 1975 (Commonwealth)* or appropriate State parks legislation (e.g., the Kosciusko National Park and biosphere reserve is protected as a national park under the New South Wales *National Parks and Wildlife Act 1974).* Institutional arrangements are equally varied. Biosphere reserves are usually managed by the appropriate State park agency (e.g., the Kosciusko National Park and biosphere reserve is managed by the New South Wales National Parks and Wildlife Service). No single Australian agency or nongovernmental organization is therefore solely responsible for the nomination and enforcement of all Australian biosphere reserves, reflecting the overlapping responsibilities for environmental management in Australia's federal system.

Inevitably biosphere reserves will coincide with, or incorporate, existing or proposed protected areas, such as national parks, sanctuaries, or nature reserves. Given the lack of legal status for biosphere reserves, there exists the "practical necessity of designating, as [biosphere] reserves, sites which already have legal protection" (Kellert, 1986:102). The overlaps between existing protected areas and biosphere reserves are quite significant in many cases. Eidsvik (1984 b:15) shows that 82 percent of all nominated biosphere reserves under the UNESCO MAB Program are existing protected areas and only 1.6 percent of the total area represents a new form of protected area. The pattern of biosphere reserve nominations overlapping existing protected areas is particularly apparent with

terrestrial protected areas and terrestrial biosphere reserves in countries, such as the USA, that have a well-developed national parks system. The linking of biosphere reserves to existing protected areas has limitations in the marine environment. In most countries the marine protected area system is not nearly as extensive as the terrestrial, with Australia providing a graphic example. The terrestrial environment of Australia has 4.95 percent protected under legislation, including many ecologically significant areas. However, marine protected areas represent only 0.06 percent of the total area of marine jurisdiction, and often many significant areas are not included (as discussed in Chapter 3). Although an overlap between existing marine protected areas and marine biosphere reserves is possible in Australia, such techniques would not provide adequate protection for the range of reserves for the simple reason that existing marine protected areas do not adequately represent the five levels of marine ecological organization.

The overlap between existing protected areas and biosphere reserves raises some important concerns for governments, including Australian governments, contemplating the MAB concept. Kellert (1986:102) maintains that it "would not be unreasonable to suppose that the biosphere reserve concept might add an additional layer of perplexity for an already bewildered public". Such a comment seems justified. The problems arising from multiple jurisdiction and the impact on zoning plans was discussed with respect to the GBRMP in Chapter 4. Another criticism of the concept is that the biosphere reserve is just an additional category to the 23 marine protected area categories already identified in Australia. Concern also exists that in "countries with a long national parks tradition ... the biosphere reserve concept might divert public

attention from the importance of national park status" because "the needs of local human populations could dilute support for the notion of national parks as 'inviolate'" (Kellert, 1986:101).

There are four important differences between biosphere reserves and existing marine and terrestrial protected areas. First, the MAB objective involves establishing a global network of representative ecosystems. Nations, by nominating and managing reserves, are therefore contributing to an international network of protected areas. Marine biosphere reserves which include *representative* ecosystems, contrast with existing Commonwealth or State marine protected areas which are often established on the basis of *exceptional or unique species or habitat.* Second, the concept of the biosphere reserve emphasizes the need to incorporate the values of the local population in the creation and management of the protected area. The importance of involving the local population in the development and nomination of protected areas is well illustrated in a variety of studies, and is identified as a crucial element (Salm and Clark, 1984; Kelleher, 1984; Kriwoken, 1985; Kriwoken and Haward, 1991). Public understanding of and support for the protected area is so crucial that a failure to consult the public may ultimately lead to the failure of the marine protected area. Third, MAB adopts the core and buffer zonation concept to control outside activities that may impact on the protected area. This zoning methodology, adopted by the GBRMP, has become accepted as an international model for marine protected areas. In acknowledging the impacts of surrounding activities and areas the biosphere reserve can be seen as the "master integrator of the functions performed individually or severally by other protected areas" (Gregg,

1983:1), whereas the traditional national park concept often has little concern for the sustainable development of the surrounding area. Fourthly, biosphere reserves support an international network of research, monitoring and information exchange (Batisse, 1986:7) and "ecological and environmental research, including baseline studies, both within and adjacent to such reserves" (Batisse, 1982 b). For these reasons biosphere reserves should not be considered as adding a disparate factor to the perplexity of environmental protection policy, but as an innovative concept that can *augment* existing and potential protected area planning and management.

MacFarland (1984) argues that the biosphere reserve can actually be interpreted as a management category with the same status as national park or recreational reserve. "The question remains open as to whether the resource management profession and the responsible resource agencies will treat the biosphere reserve as a management category ... or whether it will be considered as a concept for international cooperation and the promotion of research in particular environments" (Miller, 1984 a:8).

While existing protected areas and biosphere reserves should be considered as potentially compatible, there are some important differences. Biosphere reserves foster the nomination and management of a range of areas representing particular biogeographic variables. Attempts to enact such reserves under existing international conventions are difficult to promote, as the concept of a biosphere reserve differs materially from any other protected area. This problem is illustrated in the difference between World Heritage areas (as discussed in Chapter 3.2)

and biosphere reserves. World Heritage areas protect world cultural and natural heritage of *outstanding universal value,* whereas biosphere reserves conserve *representative* samples of terrestrial and marine ecosystems that may only contain a limited number of flora and fauna. Although biosphere reserves and World Heritage areas have different objectives "it is possible for certain outstanding biosphere reserves to conform to the criteria for World Heritage Sites" (MacFarland, 1984:200). There are, however, important legal differences between World Heritage areas and biosphere reserves. Although both "biosphere reserves and World Heritage properties require adequate long-term protection at the national level ... the *World Heritage Convention* as an international legal instrument provides additional legal protection for properties included in the World Heritage List" (von Droste and Vernhes, 1984:243). The fact that the former is supported by domestic legislation, and the latter is not, is illustrated in the following two examples of the GBRMP, Queensland, and South-West National Park, Tasmania.

The GBRMP is of outstanding universal value and was designated as a World Heritage area in 1981. Kelleher (1984:154) argues that the GBRMP also satisfies biosphere reserve requirements, but "because of the protection provided by the legislation and Australia's international obligations deriving from the inscription of the Great Barrier Reef on the World Heritage List, it could be considered that there does not appear to be any need to seek to have the reef formally designated as a biosphere reserve". In the case of the GBRMP the existing legislative arrangements are seen as sufficient to protect the integrity of the Great Barrier Reef region, reinforced by the Commonwealth parliament's constitutional power to implement legislation protecting World Heritage areas against

Queensland objections.

The second example shows how effective the *World Heritage Convention* is as an international legal instrument, ratified by Commonwealth legislation, and how State legislative arrangements for biosphere reserves are less than adequate. The South-West National Park in Tasmania, a State Reserve under the Tasmanian *National Parks and Wildlife Act 1970,* was declared a biosphere reserve in October 1977. The biosphere reserve is administered by the now Department of Parks, Wildlife and Heritage. The reserve includes the humanmade 25,000 ha hydro-electric impoundments, Lake Gordon and Lake Pedder. The flooding of Lake Pedder in 1972 was a local and an international cause celebre (Hay and Haward, 1988), however the original, natural, Lake Pedder was supposedly protected as a State national park. Again in 1982 the Tasmanian State government proposed to flood the Franklin River, also within the South-West Tasmanian biosphere reserve. During the campaign that developed to oppose the hydro-electric developments it became apparent that to protect the integrity of the South-West National Park the area had to be declared a World Heritage area under UNESCO's *World Heritage Convention,* in order to argue that the South-West National Park was a representative ecosystem *and* an ecosystem of outstanding universal value. *The 1977 biosphere reserve designation was not subject to any international Convention and not ratified under Commonwealth legislation.* The biosphere reserve was under the control of the State government which overturned all existing State legislation to promote the hydro-electric impoundment. Nomination of the area as World Heritage became the preferred option because the

Convention provided legislative backing. Australia subsequently ratified the *World Heritage Convention* under the *World Heritage Properties Conservation Act 1983 (Commonwealth)*. The South-West National Park was nominated, and subsequently accepted, as a World Heritage area in 1982 with a High Court decision halting the second hydro-electric project (Sornarajah, 1983).

The Tasmanian example illustrates that under current Commonwealth and State legislative arrangements the biosphere reserve designation in Australia is not sufficient to restrict or limit activities within or outside the reserve that may compromise the integrity of the protected area. This represents a significant problem if the marine biosphere concept is to provide a framework for an Australian system of marine protected areas. It is thus clear, from the discussion above, that it would be advantageous if biosphere reserves legislation was promulgated or if Commonwealth and State legislation was amended. The next section discusses how the marine biosphere reserve concept has developed.

5.5 The Marine Biosphere Reserve Concept

The application of the biosphere reserve concept to the marine environment has been gaining support as an appropriate means of providing and managing marine protected areas. A group of experts under the auspices of the US MAB Program met in 1980 to "develop a basis for a biogeographic classification system for the nation's [USA] coasts and to develop a process for identifying and selecting areas in order to support the nomination and designation of Coastal Biosphere Reserves of

highest quality" (Ray *et al.*, 1981:1).[12] The Ray *et al.* (1981) report proposed a classification of the USA coastal zone based on Udvardy (1975), Ray (1975), and Hayden *et al.* (1984). The biogeographic classification system adopted by CONCOM (discussed in Chapter 3) for Australian marine protected areas (CONCOM, 1982) is closely modelled on this classification system. The group of US MAB experts considered that ecological processes should be considered crucial in making the nomination, with consideration "given to species which are of ecological importance and significance, of commercial importance, or are depleted or endangered" (Ray *et al.*, 1981:14). The group developed an identification and selection process that evaluates candidate areas relative to representativeness, diversity, naturalness, effectiveness as a research and conservation unit, and uniqueness (Ray *et al.*, 1981:16-17). To this the additional criterion of "manageability" could be usefully added.

For instance, a diverse area with reasonable shelter will often be a good fishing spot with anchorage for commercial and recreational fishers. It may also be an attractive site for diving, underwater photography, and tourist charters. Any move towards declaring the area as a strict nature reserve is likely to cause adverse public reaction. It may be more preferable to place strict protection measures on less accessible sites and manage the accessible sites in accordance with principles of sustainable use. In cases such as this the criterion of "manageability" becomes particularly important and a marine biosphere reserves working group responsible for nominating areas must be aware of such potential

[12] These interim guidelines are still in use and are being integrated into a revised guideline for all USA biosphere reserves. The August 1989 UNESCO/IUCN Workshop developed guidelines for marine biosphere reserves at the international level (Gregg, 1989).

conflicts. Nonetheless the UNESCO US MAB Report is a useful model for nations contemplating marine biosphere reserve designations.

The process for establishing a marine biosphere is as follows. Using the criteria discussed above the MAB Directorate on Biosphere Reserves appoints an interdisciplinary *ad hoc* selection panel in each coastal region which identifies and selects areas for nomination. Sites are rated and recommended to the MAB Directorate, which notifies the National MAB Committee, which in turn solicits public responses on the nomination. If all major issues are resolved the National Committee for MAB presents the nomination to the International Coordinating Council for MAB (Paris), which either accepts or rejects the nomination (Ray *et al.*, 1981:18-20) (Table 5.3).

A further refinement of the concept of marine biosphere reserves is found in the recent restructuring of the US MAB National Committee. The MAB Program in the USA now includes five ecosystem-based Directorates: Marine and Coastal Ecosystems; Temperate Ecosystems; Tropical Ecosystems; High Latitude Ecosystems; and Human Settlements. Moreover, the National Committee has identified *Aquatic Areas and Wetlands* as one of seven priority program areas (Anon., 1989:2).

Further evidence of a growing interest in development of the biosphere reserve concept is provided by the August 1989 US MAB workshop where scientists further examined the application of the biosphere reserve concept to marine and coastal areas. The Agardy and Vernhes (1991)

Table 5.3 The US MAB Biosphere Reserve Selection and Designation Process

Implementing Entity	Activity
(1) MAB Directorate on Biosphere Reserves	(1) Commissions *Ad hoc* Selection Panel to prepare nominations in a biogeographic region.
(2) *Ad hoc* Selection Panel	(1) Identifies sites to be evaluated. (2) Assembles relevant evaluation information. (3) Conducts preliminary screening. (4) Conducts full evaluation of remaining sites, text description and matrix summary. (5) Rates each site against selection criteria. (6) Combines sites according to selection criteria. (7) Selects sites to be recommended for nomination. (8) Prepares report for each nominated site to US MAB Directorate.
(3) MAB Directorate on Biosphere Reserves	(1) Reviews and either endorses, amends, or rejects recommended nominations. (2) Notifies US National MAB Committee of action on proposed nominations.
(4) US National Committee for MAB	(1) Solicits review of nominations by owner(s)/ administrator(s) of proposed biosphere reserve. (2) Refers substantive comments to MAB Directorate on biosphere reserves for coordination with owner(s)/ administrator(s).
(5) MAB Representatives and Owner(s)/ Administrators of Proposed Biosphere Reserves	(1) Fail to resolve major issues. *OR* Resolve major issues. (2) *Nomination dropped.*
(6) US National Committee for MAB	(1) Secures written acknowledgement from owner(s)/ administrator(s) of responsibility to achieve the purpose of the biosphere reserve through coordinated planning and implementation of scientific and educational activities, in accordance with availability of funding and personnel. (2) Transmits nominations and written commitment of owner(s)/administrator(s) to UNESCO/MAB for action on designation.
(7) International Coordinating Council for MAB (Paris)	(1) *Designates site as a biosphere reserve.* *OR Rejects nomination.*

Source: Ray *et al.*, 1981:20.

paper which resulted from the workshop represents a the move towards refining the biosphere reserve concept for the marine environment. As a distillation of key papers and case studies the guidelines are aimed at a large cross section of the conservation community, namely at: "natural resource planners in terrestrial and marine systems, research scientists with special interest in the land/sea interface, administrators at the local and national levels responsible for coordinating coastal development, as well as interest groups such as local fishermen's (*sic*) and nature protection associations ... " (Agardy and Vernhes, 1991:1). While the workshop signals an increasing interest in the applicability of the biosphere reserve concept to international conservation, it also demonstrates the long lead times involved in promoting new protected area concepts in the marine environment.

Although an assumption in this discussion is that the basic concept of the biosphere reserve is appropriate for both terrestrial and marine environments, it is important to emphasize that the unique nature of the marine environment has meant that the traditional terrestrial-based biosphere reserve concept has had to be revised. Kelleher and Kenchington argue:

> [t]he objectives of the biosphere reserve scheme are clearly appropriate to marine environments. Nevertheless, the scale of many marine ecosystems, and the nature and scale of the processes of population recruitment and maintenance generate considerations and priorities which are not addressed by the guidelines developed for terrestrial biosphere reserves (Kelleher and Kenchington, 1990).

The problem of controlling outside activities for Australian marine protected areas has been extensively discussed in Chapters 3 and 4. The same problems also exist for marine biosphere reserves where there is no overriding legislation. For example, Kenya's Malindi/Watamu and Kiunga marine biosphere reserves are subject to a range of activities outside the reserve (Pertet, 1984). Threats to the marine biosphere reserve have been caused by increased soil erosion and siltation, and increased chemical fertilizers and pesticides runoff. It is likely that increased degradation will occur because the reserve authorities do not have the legislative power to control these activities.

For this reason, the cluster biosphere reserve concept (discussed earlier) has been modified to include three new categories of marine biosphere reserve. These new categories are:

(1) Integrated Biosphere Reserves. A single Biosphere Reserve in one geographic area would be nominated for the coastal region on the basis of a determination that the area satisfies the essential criteria for selection to such a great extent that additional Reserves within the region would not substantially further the purposes of Reserve designation.

(2) Multiple-site Biosphere Reserve. Separate areas in close geographic proximity or closely related in terms of representative features and processes may be nominated together as a single reserve. Such conditions may arise in cases where potentially protectable or protected areas are separated by an area not capable of being protected under existing authorities, or where a unique area and a nearby representative area form a logical reserve unit; and

(3) Multiple Reserves. Two or more reserves may be designated within the same coastal region if the degree of variability in the region warrants identification of subregions within which Biosphere Reserves will be designated. Large coastal regions containing many ecosystems are the most likely to require multiple designations to ensure inclusion of representative genetic and ecological features, and a reasonable reflection of the diversity of the region, in protected units. Multiple designations may also be desirable to facilitate different kinds of monitoring and research on particular processes or resources (Ray *et al.*, 1981:25).

These three different reserve classifications reveal the inherent flexibility of the MAB program, and in particular, the importance of the multiple-site biosphere reserve which is "now becoming the basis for establishing biosphere reserves in the USA" (Gregg, 1983:3). The coastal zone, which contains a diversity of ecosystems and usually involves overlapping jurisdictions (implying complex management and enforcement issues), will often require multiple designations to ensure that the identification and selection process has been adequately met. The coastal environment lends itself to multiple-site biosphere reserves, which designate separate areas in close geographic proximity, and allow separate areas which are closely related in terms of representative features and processes to be nominated as a single reserve. This evidence suggests that these criteria are most appropriate for the nomination and management of marine protected areas.

As one of the main objectives of the MAB program is the representation of a world-wide range of ecosystems, it is not suprising that marine biosphere reserves are advocated as an appropriate means to secure such a

representative system of marine protected areas for nation states. Thus Ray and McCormick-Ray (1989) recommend that marine biosphere reserves would be the most appropriate means of securing protected areas, and argued further that:

> (1) the biosphere reserve be adopted as the appropriate concept for coastal and ocean zones;
> (2) the coastal zone and the oceanic zone be recognized as fundamental planning units at the global level;
> (3) a global classification of coastal and marine environments be undertaken, in accordance with the MAB Action plan, for the purposes of selecting representative ecological areas worldwide;
> (4) MAB, at national and international levels, seek to establish support programs, for the coastal zone in particular, to supplement terrestrial program now underway; and
> (5) the concept of the *core* be expanded to include all three major biosphere reserve components; not only conservation, but also development and logistics. *Model* studies should be implemented to illustrate these concepts (Ray[13] and McCormick-Ray, 1989:76-77).

Ray and McCormick-Ray (1989) have demonstrated how effectively the selection and designation of coastal and marine biosphere reserves along the east coast of the USA can be used. Scientific panels were established for each of the three east coast biogeographical regions: the Acadia-Boreal which extends from Newfoundland and southern Greenland to Cape Cod (the Cape Cod/Southeast of Georges Bank area is considered transitional); the Virginian-Mid Atlantic region which extends south to Cape Hatteras, North Carolina; and the Carolinian-South Atlantic which extends south

[13] Dr G. Carleton Ray was the principal author of the US MAB report *Interim Guidelines for Identification and Selection of Coastal Biosphere Reserves* (Ray *et al.*, 1981).

to the Florida Everglades.[14]

Two eastern seaboard coastal biosphere reserve nominations have been submitted to the US MAB Program, each a unique ecosystem of the world's biogeographical regions. The Virginia Coast Reserve, which stretches along the southern edge of the Delmarva Peninsula, has been reviewed by the MAB Directorate Panel. A biosphere reserve in the Acadia-Boreal region has also been proposed (Kriwoken, 1984, 1985; Agardy and Broadus, 1989), and the US MAB Directorate has received a status report from the MAB panel. A 1988 workshop has further developed the proposal of an Acadian-Boreal biosphere reserve.

The USA example provides a useful model for the east coast of Australia, and in fact it has been argued that "the destruction of the marine environment in America shows the way Australia is heading if the problem is not grasped and dealt with effectively" (Austin, 1989:42). The east coast of Australia spans four marine biogeographical regions (from tropical to cool temperate) (Figure 1.2) which is very similar to the east coast of USA. The east coast of both countries has a sizeable concentration of the nation's population and the concomitant problem of high levels of domestic sewage and industrial waste entering the nearshore marine environment. Coastal development in Australia "is jeopardizing tidal wetlands, salt marshes, seagrass beds and mangrove areas - all vital nurseries for fish and crustaceans" (Austin, 1989:36), with general coastal development often leading to the *Miamization* of the Queensland coast (Kingston, 1988; Wonka, 1988).

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[14] The nomenclature for the regions is based upon a close concurrence of terrestrial-nearshore and oceanic characteristics (Ray *et al.*, 1981).

The GBRMP has been effective in managing the marine environment, but as shown in Chapter 4, has not been effective in managing adjacent terrestrial impacts that may compromise the integrity of the marine park. Although the GBRMP is managed under an intergovernmental institutional policy making framework, the Queensland government has shown little concern for regulating potentially adverse impacts on the coastal zone (Hopley, 1988).

The other east coast Australian States (New South Wales, Victoria, Tasmania) have hitherto had little interest in, and therefore an ineffectual policy towards conserving the marine and coastal environment. An opportunity exists for a pilot program to illustrate the potential for MAB marine biosphere reserves to be established along the east coast of Australia, similar to the USA program. Recent interest shown in the Solitary Islands off the New South Wales coast as a marine biosphere reserve (Pollard, 1989) could well represent the first in a series of east coast reserves linking the range of biogeographic regions in the marine environment and coastal margin of the east coast of Australia.

5.6 International Responsibilities

An increased role for Australian marine biosphere reserves would also have international implications. Lessons from an Australian system of marine biosphere reserves could be made available to all interested countries. MAB supports international cooperation and networking by providing a well established means of disseminating information on a global basis. It offers a means of distributing publications, conferences, field-research visits, demonstrations or information bulletins, and exchange of scientific expertise through MAB Committees and MAB

Technical Notes. Di Castri *et al.* argue that:

> [i]nternational coordination of research makes it possible to avoid duplication of effort by sharing responsibility among projects. Groups of two or more countries can coordinate their research so that, for example, each country is responsible for studying one of their common problems. Within such an international framework, their collective effort can cover a whole range of land [and marine] use problems which are of interest to all the countries involved (Di Castri *et al.*,1981:54).

Three different levels of MAB international cooperation and networking have been recommended by Batisse (1980:183) and could function in an Australian system: (1) interactions between countries of a region; (2) interactions between the different regions of a biome; and (3) interactions between countries with different biomes (e.g., temperate and tropical). The implications for Australia are potentially far-reaching. Using Batisse's classification the first level of networking could occur by Australia supporting interaction with the East Asian and the South-West Pacific regions, emphasizing the role of biosphere reserves in maintaining sustainable marine use and in fostering indigenous cultures. In Batisse's second category Australia could promote the exchange of information with countries with similar environments and development pressures. For instance, the impact of tourism on sub-Antarctic Macquarie Island is likely to be similar to that of sub-Antarctic Prince Edward Island administered by the Republic of South Africa, and the problems of delineating fisheries in a coral reef ecosystem could be investigated by networking between the GBRMPA and Belize, Central America. Batisse's third category could be achieved by Australian-sponsored networking

between countries with different biomes. Discussions between Australia and Canada could provide useful information with respect to implementing the principles of the World Conservation Strategy, developing methodology for identifying marine protected areas, or the role of intergovernmental affairs in marine protected areas within similar political systems but with different marine biogeographical regions. Notwithstanding issues of international relations, the present thesis has been primarily concerned with the implications of using MAB biosphere reserves as a framework for an Australian system of marine protected areas.

5.7 Summary Evaluation of Australian Marine Protected Area Policy

This Chapter has canvassed legislative and institutional options that might assist meeting the international standards for marine protected areas adopted by Australia. The first two options - maintaining the *status quo* and incremental change - were found to have limitations in meeting international standards. The legislative and institutional arrangements outlined in options 1 and 2 promoted closed conservation with significant limitations on the capacity to control outside activities that could compromise the integrity of the marine protected area. Protected areas were often treated in isolation and could be considered *islands of management in a sea of mismanagement*. This protectionist-type of approach derives from terrestrially-based concepts of protected areas that have been inappropriately transferred to the marine environment. Options 1 and 2 were unlikely to meet WCS/NCSA objectives and would therefore have severe limitations as a basis for a national system of representative marine protected areas.

Option 3 explored the UNESCO MAB Program objectives for biosphere reserves and how they might support an Australian marine protected area system. Marine biosphere reserves support the trend towards protecting higher biological levels, as discussed in Chapter 2.3.2 and 2.3.3. As one of ten IUCN categories it represents a shift in emphasis with respect to future Australian marine protected areas, embraces the tripartite role of conservation, development, and logistics, and promotes an open conservation system. The marine biosphere reserve concept also promotes the adoption of an ecological approach to planning marine protected areas, as discussed in Chapter 2.4, yet remains sufficiently flexible to allow incorporation of new innovations in planning regimes. It could therefore provide effective support for open conservation whereby marine protected area planning and management techniques *look outward,* confronting incompatible outside activities. A system of marine biosphere reserves could also function as a conservation system incorporating the concepts of integrated area management.

While the biosphere reserve concept could provide a framework for marine protected areas, the existing Australian biosphere reserves system has not sufficiently captured the imagination of the public, nor are the objectives of the system widely known by State parks and fisheries agencies. Most terrestrial biosphere reserves lack management plans and contain no interpretation about the importance of MAB (Davis and Drake, 1983:41). All existing biosphere reserves in Australia were officially established before 1981. The time is therefore ripe for increased attention to be directed towards the biosphere reserve program, and specifically the marine environment.

The concluding Chapter will outline specific legislative and institutional requirements for an Australian system of representative marine parks based on the marine biosphere reserve concept. The Chapter will also examine the current constraints on intergovernmental cooperation, suggest the direction of policy making, and outline prospects for the future.

Chapter 6
Conclusions and Evaluation of an Australian Marine Biosphere Reserve System

6.1 Towards an Australian Marine Biosphere Reserve System

6.1.1 Commonwealth and State Legislation

The preferred legislative option in this thesis would be mirror Commonwealth and State Acts which specifically detailed complementary interest in marine biosphere reserves. These Acts would: (a) set up federal and state priorities and objectives for marine biosphere reserves; and (b) provide financial assistance schemes for the States to establish a marine biosphere reserve system in cooperation with the Commonwealth government. However, given the *ad hoc* history of Commmonwealth and State marine protected area legislation it is unlikely that mirror legislation will be established. The most hopeful scenario would be a Commonwealth and State intergovernmental agreement on marine biosphere reserves which detailed a coordinated approach between the two tiers of governments, including details on financial assistance, with possible amendments to the existing Acts relevant to marine protected areas. This type of agreement is obviously more piecemeal and less satisfactory than the preferred option of legally establishing marine biosphere reserves as a protected area category.

Pessimism concerning the likelihood of achieving mirror Acts on marine biosphere reserves seems further justified on the basis of the fact that most countries have designated biosphere reserves under existing legislation. The USA, with one of the most extensive biosphere reserve systems, is an example:

> It has generally not been necessary to create a new legal framework for establishing and managing biosphere reserves because the designations can be applied to pre-exisiting protected areas where the administrators have adequate legal authority to provide protection (Gregg, 1983:2).

A similar attitude prevails in Austalia. At a national level the Australian National Committee for UNESCO supports *not* creating new legislation for biosphere reserves. The Committee states:

> Legal protection may be available under existing legislation by modifying regulations covering protected areas. It is probably better that there should *not* be new legislation specifically for biosphere reserves because it is likely to restrict the definition of the term *biosphere reserve* and it would assume different forms in different countries (Davis and Drake, 1983:4).

Although support seems to be lacking for specific legislative action at a national or state level, there exists a range of Commonwealth and State legislation that could be utilized to promote a complementary agreement for an Australian marine biosphere reserve system, though some existing legislative avenues should be avoided.

Beause there is no international convention for biosphere reserves (as discussed in Chapter 5) the Commonwealth cannot therefore use the External Affairs power (Section 51 (xxix)) which relies on the existence and implementation of an international treaty or agreement. While the External Affairs power may not be appropriate for a marine biosphere reserve agreement, it should not be forgotten that a precedent was set by the Commonwealth government with the introduction of the *World Heritage Properties Conservation Act (1983).* Although the Act was ratified solely to fulfill Commonwealth responsibilities under the *World Heritage Convention,* it did set a precedent whereby the Commonwealth's constitutional powers were used to legally establish an IUCN recognized category of protected area.

The Commonwealth could also theoretically use its constitutional powers to introduce a marine protected area category based on the international UNESCO MAB Program and proceed unilaterally with the introduction of a marine biosphere reserve system. However, because of the cooperative nature of the biosphere reserve concept and the present offshore arrangements, unilateral Commonwealth marine biosphere reserve legislation is unlikely and would be largely ineffectual. Without the full cooperation of all States, a national system of marine protected areas based on the marine biosphere reserve concept would be difficult to realize. If one or a number of States refused to cooperate, the national system would be jeopardized.

Given these limitations the Commonwealth's wisest political course would be to seek other means of promoting a cooperative intergovernmental agreement for marine biosphere reserves. The

Commonwealth could use the Grants power (Section 96) or the States Cooperative Assistance Program to induce States to promote marine biosphere reserves and gain financial assistance to cooperate in an intergovernmental program. The Grants power has been successfully used by the Commonwealth (in soil conservation, for example) to encourage States, through financial incentives, to adopt policies supported by the Commonwealth. The Grants power could work similarly to the USA federal and state partnership in the *Coastal Zone Management Act 1972*. In exercising the Grants power the Commonwealth government would develop general policy and management guidelines for marine biosphere reserves, review and approve the State program, and provide funds for planning and administration. The States would retain full authority over the lands and the territorial sea of the coastal zone by developing marine biosphere reserves and would be given financial incentives to legislate, with the possibility of amending existing marine protected area legislation.

The States Cooperative Assistance Program (SCAP) supports the involvement of the Australian National Parks and Wildlife Service in cooperative nature conservation projects of national or international significance related to national parks (both marine and terrestrial) and reserves, and wildlife. Projects are usually initiated by State agencies, with resources provided jointly by ANPWS and the States, and some expertise may be provided by ANPWS. In 1989-90 over 40 projects were funded through SCAP to a total of $462,280, with 4 percent of the funds designated to marine area management. Of particular interest is the funding given to New South Wales Department of Agriculture and Fisheries for the Solitary Islands Marine Protected Area Project.

The Solitary Islands were first mentioned in Chapter 5.4.3 in the context of recent interest for a pilot program to illustrate a marine biosphere reserve. It would be a useful excercise to extend the current SCAP funded Solitary Islands Marine Protected Area Project to include the concept of a marine biosphere reserve. A successful Solitary Islands marine biosphere reserve project would be catalytic in promoting a series of reserves linking the range of marine biogeographic regions found on the east coast of Australia

While the above funding arrangements are of utmost importance, the future success of a marine biosphere reserve system also relies on its relationship with outside uses and users. A Commonwealth-State intergovernmental agreement on marine biosphere reserves should state that in the event of any conflict or inconsistency with any other Act, it would be highly advantageous that the agreement (or amendments of existing marine protected area legislation) on marine biosphere reserves should provide a mechanism to address other marine uses or override other Statutes. Given that objectives for marine protected areas often do not correspond with adjacent development activities, it is highly likely that inconsistencies will arise. However, the cases examined earlier in the thesis show that existing marine protected area legislation does not normally include this overriding provision. At a national level the Japanese legislation discussed in Chapter 2.5.2 revealed how fisheries interests are usually not restricted in the marine protected area and a range of economic activities are supported. The same is true at the subnational level, as shown in Chapter 3.6.6, in relation to the Western Australian *Conservation and Land Management Act 1985,* where the Act

is subordinate to mining or petroleum exploration or exploitation, precisely the activities that could compromise the integrity of the protected area. The legal-administrative regime for the transition zone is thus of major importance:

> Whereas administrative responsibility for the core areas and the delineated buffer zone is usually clearly established - and in a majority of cases rests upon a single authority - the administration of the transition area is almost inevitably split among a variety of public and private bodies, with little or no attempt having been made to organize coordination and cooperation among them. This situation is demonstrated by the relatively large number of designated biosphere reserves which have no real transition areas, which are in fact limited to a core area, surrounded or not by some kind of buffer zone, and which often merely bear the name of an already existing national park or conservation area (Batisse, 1986:10).

This problem has been recognized by Davis and Drake (1983:41; emphasis added) who state that the "existing network of biosphere reserves [in Australia] appears to possess adequate security of tenure, all reserves being located on public lands with some protective status, such as national park or nature reserve categories. But not all areas are guaranteed immunity from possible expedient political action in the future or *attrition arising from actions affecting adjacent lands*". An Australian system of marine protected areas cannot meet recognized international standards under these circumstances.

More appropriate would be a Commonwealth and State intergovernmental agreement, with an appropriate legislative base (similar to the *Great Barrier Reef Marine Park Act 1975*), that has

precedence over the activities that could compromise the integrity of the marine protected area. This is a critical condition because, as shown in Chapter 4.6 and 4.7, one of the main reasons that the GBRMP was able to progress was the existence of Section 66 (2) (e) which provided the Commonwealth sweeping overriding powers over Queensland by conferring authority for "regulating or prohibiting acts (whether in the Marine Park or elsewhere) that may pollute water in a manner harmful to animals and plants in the Marine Park". Kelleher (1984:155; emphasis added) has argued that "the provisions of the *GBRMP Act 1975* prevail over any conflicting provisions of almost all other legislation in Australia. I believe that *this is essential to the success of the Act* and the administrative system which has been created under it". The GBRMP legislation deals with the coastal environment and has the potential to deal strictly with the terrestrial environment, although clearly there remains the problem of gaining political will to apply such legislation to control adjacent land use and zoning. The GBRMP example revealed that the Commonwealth government has refused to use Section 66 (2) (e) in specific instances because it would have seriously jeopardized the Commonwealth-State relationship for the whole of the GBR region. The difficulty of applying this legislation should not detract from the fact that a marine biosphere reserve agreement must accommodate these concerns.

Given the likely constitutional and political opposition from the States to any overriding Commonwealth marine biosphere legislation it would seem clear that a cooperative Commonwealth and State intergovernmental agreement, supporting legislative amendments, offers the best prospect of ensuring the integrity of a system of marine protected

areas. While the MAB biosphere reserve is an appropriate framework on which to base a marine biosphere reserve arrangement, to implement it will require unprecedented complementary Commonwealth and State institutional arrangements in the marine environment.

6.1.2 Commonwealth and State Institutional Arrangements

A Commonwealth-State agreement on marine biosphere reserves would require concomitant institutional arrangements, working within the confines of Australian federalism. Four levels of institutional arrangements have been posited: (1) support for an active Australian MAB Committee; (2) an expanded and strengthened CONCOM; (3) marine biosphere reserve management committees; and (4) agency responsibility for marine biosphere reserves. Table 6.1 details a proposed selection and designation process for Australian marine biosphere reserves.

6.1.2.1 An Active Australian MAB Committee

Marine biosphere reserves could be promoted within existing arrangements for the Australian MAB Committee, presently under the broad umbrella of the Australian National Commission for UNESCO. Since 1975 the Australian MAB Committee has been involved in soliciting nominations from conservation agencies, and has evaluated and sent nominations to the UNESCO MAB International Coordinating Council in Paris. In 14 years the MAB Committee has only been successful in nominating 12 biosphere reserves, which suggests that the MAB Committee has not been active in soliciting, evaluating, and nominating Australian biosphere reserves. The majority of biosphere reserves are over 10 years old, are entirely concentrated on the terrestrial

Table 6.1 The Selection and Designation Process for an Australian Marine Biosphere Reserve System

Implementing Entity	Activity
(1) Australian National Committee for UNESCO	(1) Commissions Australian MAB Committee to prepare nominations in a biogeographic region.
(2) Australian MAB Committee	(1) Actively solicits nominations from Commonwealth and State agencies with statutory responsibility for marine protected areas.
(3) CONCOM Working Group	(1) Identifies sites to be evaluated.
	(2) Assembles relevant evaluation information.
	(3) Conducts preliminary screening.
	(4) Conducts full evaluation of remaining sites, text description and matrix summary.
	(5) Rates each site against selection criteria.
	(6) Combines sites according to selection criteria.
	(7) Selects sites to be recommended for nomination.
	(8) Prepares report for each nominated site to Australian MAB Committee.
(3) Australian MAB Committee	(1) Reviews and either endorses, amends, or rejects recommended nominations.
	(2) Notifies Australian National Committee for UNESCO of action on proposed nominations.
(4) Australian National Committee for UNESCO	(1) Solicits review of proposed nominations by owner(s)/ administrator(s) of proposed biosphere reserve.
	(2) Refers substantive comments to Australian MAB Committee on biosphere reserves for coordination with owner(s)/administrator(s).
(5) MAB Representatives and Owner(s)/ Administrators of Proposed Reserves	(1) Fails to resolve major issues. *OR* Resolves major issues
	(2) *Nomination dropped.*
(6) Australian National Committee for UNESCO	(1) Secures written acknowledgement from owner(s)/ administrator(s); coordinated planning and implementation of scientific and educational activities.
	(2) Transmits nominations and written commitment of owner(s)/administrator(s) to UNESCO/MAB for action on designation.
(7) International Coordinating Council for MAB (Paris)	(1) *Designates site as a biosphere reserve.* *OR Rejects nomination.*

Adapted from: Ray *et al.*, 1981:20.

environment, and do not adequately represent all Australia's biogeographical regions. No marine biosphere reserves have been nominated and nominations have only been received from the Commonwealth and State national park services, not from fisheries resource agencies.

The evidence suggests that the Australian MAB Committee needs to become more active in soliciting and nominating marine biosphere reserves. One means of encouraging a more active involvement in marine biosphere reserves could be the establishment of ecosystem based directorates and priority program areas (with appropriate funding) within the MAB Committee. This has occurred with the recent restructuring of the US MAB National Committee (discussed in Chapter 5.4.3) whereby distinct priority areas relating to the marine environment have been designated. A similar Australian marine ecosystem directorate within the Australian MAB Committee could be appointed to actively solicit biosphere reserve nominations from both Commonwealth and State parks and fisheries agencies, while promoting the significance of the biosphere reserve concept throughout Australia.

6.1.2.2 An Expanded and Strengthened CONCOM

CONCOM should have an important role to play in promoting marine biosphere reserves. Working in cooperation with the Australian MAB Committee, CONCOM could effectively liaise between relevant Commonwealth and State agencies, and actively solicit nominations for marine biosphere reserves. Intergovernmental arrangements for marine biosphere reserves could be undertaken through CONCOM, including for instance, resolving offshore jurisdictional disputes that could disrupt the

biosphere reserve program, resolving questions of control over outside activities that could compromise biosphere reserves, and fostering cooperative intergovernmental policy development.

Important suggestions have been made with respect to promoting the link between CONCOM and Australian biosphere reserves. Davis and Drake have mooted that:

> [t]he system of specialist *ad hoc* working groups which serve CONCOM is a worthwhile model and perhaps a MAB Biosphere Reserve Working Group could come under the auspices of CONCOM. Nongovernment organizations such as the Ecological Society of Australia, and institutions, academics and other interested individuals could be approached by the Working Group to provide specialist advice (Davis and Drake, 1983:43).

A successful precedent for such a marine biosphere reserve working group has been set up in the USA. Panels of experts for each biogeographic region have been established to delineate regional boundaries, identify representative ecosystems, produce a list of factors to describe and compare candidate sites, describe and rate candidate sites against UNESCO criteria, and finally recommend sites to the National Committee (Gregg, 1983:3). These panels of experts include:

(1) scientific authorities on the natural resources and processes existing in the region;
(2) agency administrators or other authorities on the protection status of existing reserves and natural areas and on possibilities for dedicating them as biosphere reserves; and
(3) at least one representative knowledgeable in the application of selection criteria to the region's coastal zone (Ray *et al.*, 1981:18).

A similar process of utilizing working groups was undertaken by Parks Canada (discussed in Chapter 2.5.3) in an effort to identify representative and nationally significant marine protected areas.

An effective marine biosphere reserve working group would require an expanded and strengthened CONCOM because of the interagency limitations discussed in Chapter 3.4. To be effective a CONCOM marine biosphere reserve working group should include representatives from fisheries agencies with primary statutory responsibility for marine protected areas, in addition to parks agencies. Technical workshops on marine biosphere reserves should be held at least every second year, while funding and resources to conduct research, publish, and educate the public should be made available from the Commonwealth and State governments. As an effective working group could not solely rely on continuing in kind support from various Commonwealth and State agencies, a long-term financial commitment would have to be given.

Each working group could use the Ray *et al.* (1981:16-17) criteria (representativeness, diversity, naturalness, effectiveness as a research and conservation unit, and uniqueness) to identify and select areas for nomination in each of Australia's marine biogeographic regions. In addition, the criterion of manageability should be included before the sites are rated and recommended to the Australian MAB Committee in the wake of public response to nominations. The biosphere working group could have a range of responsibilities:

> The role of the Working Group would be to recommend to the MAB Committee a forward strategy to develop and operate Australia's biosphere reserves network and to help implement and coordinate the strategy. The

Working Group's activities could include the following:

(1) to define detailed operational objectives and management prescriptions for existing Australian biosphere reserves;
(2) to establish a comprehensive monitoring system of reserves and in so doing;
(3) evaluate the progress of Australia's reserves network against the principles of biosphere reserve management laid down by UNESCO;
(4) to recommend changes in, and identify deficiencies of biosphere reserve management within Australia;
(5) to investigate and report on progress in establishing Australia's biosphere reserves system; and
(6) to survey Australia's biogeographical provinces to determine reserve needs and prospective sites (Davis and Drake, 1983:43).

While the importance of a marine biosphere reserve working group within CONCOM was suggested by Davis and Drake in 1983 there has been little effort towards realizing such an arrangement. The Australian National Commission for UNESCO was not aware of any moves towards supporting CONCOM as a worthwhile model for a MAB biosphere reserve working group (Burford, 1989). However, given the formal division between national and subnational governments in Australian federalism, marine biosphere policy formulation would require the active support of both these tiers of government.[1] An intergovernmental standing committee such as CONCOM offers an existing arrangement that could support MAB objectives for marine biosphere reserves.

[1] While the thesis is largely concerned with Federal and State governments, a third tier, local government and local communities, is often critical to the success of marine protected area planning and management.

6.1.2.3 Marine Biosphere Reserve Management Committees

The provision of workshops and forums alone are not sufficient to effectively manage marine biosphere reserves. Also required is a formal marine biosphere reserve management committee that has direct managerial responsibility for the reserve, including administrative and scientific cooperation.

> The members of this committee should be the administrators who have fiscal and program responsibility for the units in the cluster and their principal scientific advisers. This committee should meet at least annually, and conduct business from a formal agenda. The continuation of other informal modes of interaction should, of course, be encouraged (McCrone, 1984:211).

The appointment of a marine biosphere reserve management committee could closely follow the model of the Great Barrier Reef Consultative Committee (discussed in Chapter 4.4). A management committee should promote representation from a variety of public and private sector user groups with the power and financial ability to appoint working parties. Moreover, the management committee could be responsible for promoting sustainable development in buffer zones and adapting to local requirements. The committee would therefore cooperate with regional and local government authorities in the planning and management of the marine biosphere reserve.

In addition, the committee should encourage nongovernmental organizations to have planning and management input. For instance The Nature Conservancy assists in the implementation of the Virginia Coast Reserve in the USA. Privately funded bodies such as these often

have financial resources that can be used effectively in biosphere reserves. These organizations can draw upon a large cross-section of the community, which ultimately ensures the success of the biosphere designation.

6.1.2.4 Agency Responsibility for Marine Biosphere Reserves

Agency commitment and expertise are crucial for the successful operation of marine biosphere reserves. However, the two-tiered nature of marine responsibility in Australia precludes the appointment of any single marine biosphere reserve agency. More appropriate would be the framework of coordinated planning and management adopted by the GBRMP (discussed in Chapter 4) whereby policy and planning is undertaken by the Commonwealth and the day-to-day management is the responsibility of the Queensland government. A Commonwealth conservation agency could provide planning and policy, while State agencies could undertake day-to-day management responsibilities of the marine biosphere reserves.

A Commonwealth agency based in Canberra, ACT, such as the Australian National Parks and Wildlife Service, could be responsible for marine biosphere reserves and liaise with the Australian National Committee for UNESCO and the Australian MAB Committee. The Commonwealth agency could provide policy and planning guidance to the regional or local levels responsible for the day-to-day management of the marine biosphere reserve. The day-to-day operations of the marine biosphere reserve would require an interdisciplinary and professional team of planners and managers dedicated to MAB objectives. The appointment of

a single State agency responsible for marine biosphere reserve management would be recommended. However, as shown in Chapter 3.8, interagency enmity between State parks and fisheries agencies could hinder the appointment of a single agency responsible for marine biosphere reserve management.

Although the identification of a single agency may be difficult, the appointment of new Commonwealth and State agencies responsible for marine biosphere reserves is highly unlikely given current fiscal restraints. Kelleher and Kenchington (1990) have argued that new agencies for marine protected areas should not be promoted, and that *existing agencies should be modified,* according to the requirements of the marine protected area system. The importance of agency responsibility is argued by Di Castri *et al.* (1981:56) who show that "[b]reaking down institutional barriers is an extremely difficult task, and an extremely important one. Indeed the application of MAB results will depend, in large measure, on the orientation of policy and planning bodies".

6.1.3 A Demonstrative Intergovernmental Agreement on Marine Biosphere Reserves

The above intergovernmental legislative and institutional arrangements for marine biosphere reserves could be actively supported through a demonstrative agreement between the Commonwealth and a State government. The first intergovernmental marine biosphere agreement could be focussed on the Solitary Islands region of New South Wales as this marine environment has received international attention (Ray, 1989; see also Chapter 3) and would be extremely useful in educating legislators,

public servants, scientists, and the public on general management principles of marine biosphere reserves. The Solitary Islands marine biosphere reserve could function as a working model to demonstrate how the biosphere reserve concept could be applied to the marine environment and how the demands of conservation, development, and logistics are supported through the MAB Program. The overall objective would be to open discourse on a fully functioning marine biosphere reserve, eliminating confusion over the overlap between protected areas under different legislative and institutional arrangements. It could also function as a working model for intergovernmental consultation and coordination through CONCOM. Moreover, a successful demonstrative agreement would make it easier to encourage the establishment of the marine biosphere reserve as a legally established protected area.

The Solitary Islands agreement could also assist in raising the profile of the Australian MAB Committee and in promoting the role of the Australian National Parks and Wildlife as a State agency responsible for marine biosphere reserve planning and management. Subsequent CONCOM workshops on marine protected areas could therefore include working groups on marine biosphere reserves, promoting an exchange of ideas on the concept. If sufficient interest in marine biosphere reserves grew then working groups responsible for identifying and nominating reserves in each of Australia's biogeographic regions could be appointed. An Australian National Committee for UNESCO publication outlining the demonstrative agreement could be useful in the promotion of the biosphere reserve concept for Australia's marine environment.

6.2 Attributes of an Australian Marine Biosphere Reserve System

The single most important attribute of a marine biosphere reserve system is its support of open conservation. This does not mean a reduction of conservation values; it means addressing management problems surrounding the reserve and those activities that may compromise the ecological integrity of the protected area. In addition to being recognized as a major innovation in protected areas, the biosphere reserve concept has also been recognized as providing support for natural resources management. The unique linking of conservation, science, and social factors underpinning the biosphere reserve means that a marine biosphere reserves could provide an important contribution to a national program of conservation. The open conservation approach adopted for marine biosphere reserves fully supports integrated regional planning and resource management and the promotion of sustained ecologically sound development. Marine biosphere reserves offer a methodology for integrating conservation with development value, demonstrating that balanced and sustainable development is tied to conservation in the wider biogeographical region. Protected areas must therefore be integrated into the socioeconomic context of the biogeographical region. These reserves could ultimately be used to demonstrate the economic and social benefits of conservation and encourage conservation as an integral component of coastal development projects. Management of marine protected areas should no longer be confined within the reserve limits, devoid of interaction between the protected areas and the surrounding biogeographical region.

Marine biosphere reserves also offer unparalleled opportunity for the protection of representative samples of the world's coastal environments as human pressure increases on the world's remaining natural ecosystems. The designation of marine biosphere reserves in Australia would assist in the expansion of representative ecological areas (including natural areas and those modified by humans to some degree) within each of the world's biogeographical regions. Marine biosphere reserves could also provide a means for coordinated international effort in the search for solutions to interrelated environmental problems. Moreover, the biosphere reserve concept provides support for the development of programs for management-oriented ecological research and environmental monitoring.

The characteristics of such an Australian marine biosphere reserve system could be applied more generally to the theory and practice of marine protected areas in other countries with a similar federal arrangement, such as Canada, India, and the USA. The thesis has provided an analysis of alternative approaches to marine protected area policy, ranging from the centralist approach of blanket national legislation and the standardization of management, to the decentralist approach which promotes and encourages subnational variation. Australia could provide an intergovernmental model for other federal nations contemplating a system of marine protected areas. The cooperative role of national and subnational governments in providing a national system of representative marine protected areas is critical if the imposition of broad national standards for these marine protected areas is to be effective.

The thesis began by detailing Australia's responsibility for an enormous marine and coastal domain and it was argued that compilation of basic, accurate data on the characteristics of the Australian marine environment should be an urgent priority. The majority of research money has been traditionally allocated towards marine sciences: fisheries research, biological and chemical oceanography, primary production, and taxonomic research (Australia, 1981 a). Traditionally little research effort has been directed towards marine protected area policy, ecologically-oriented research such as conservation biology, marine protected area planning and management, or sustainable resource development, although increased public concern is reshaping the research agenda. Notwithstanding the lack of information, politicians and the public are requiring answers on options for marine and coastal resource management, and the implications for policy and program development. The functional combination of marine ecological realities, constitutional and jurisdictional processes, government agencies, interest groups, and the concerns of politicians are encouraging an emerging field of inquiry into the state of marine protected areas.

The marine biosphere reserve concept is ideally suited to support these new endeavours, though there are some problems concerning the need to devise specific criteria for the marine environment (Kenchington and Agardy, 1990). It is especially appropriate that the MAB Program views ecological problems from a global perspective, yet supports solutions at the international, national, and subnational level. The marine biosphere reserve concept could, for instance, be effective in assessing cumulative impacts of human activity on regionally dependent and related ecosystems with the establishment of appropriate research programs. As the importance of integrating protected areas into the broader

development of the biogeographical region increases, flexible regional environmental databases or geographic information systems could be examined as management tools. This has been promoted in land-use planning but has not yet been fully supported in marine and coastal management.

It is now appropriate to detail the limitations of the Australian marine biosphere reserve proposal.

6.3 Limitations on an Australian Marine Biosphere Reserve System

The major limitations on the development of an Australian marine biosphere reserve system relate to the difficulties involved in securing intergovernmental Commonwealth and State legislation and institutional agreement between tiers of government. An Australian marine biosphere reserve system, promoted through an intergovernmental agreement, would obviously require a political commitment to marine conservation which does not presently exist.

Because of the inherent constraints of Australian federalism on the development of a national policy, identified in Chapter 3 and discussed in Chapters 4 and 5, it is necessary that both tiers of government *cooperatively* enter into a marine biosphere reserve agreement. However, in the marine biosphere reserve system advocated in this thesis, the Commonwealth government has pivotal responsibility. It has international responsibilities to liaise with MAB and ICC authorities to ensure that marine biosphere reserve nominations meet international UNESCO standards, and the critical responsibility of cooperating with all State governments in the Commonwealth.

For most of Australia's history as a federation the Commonwealth government has not played a role in the development of marine protected areas. It was not until 1975 that a government department was given responsibility for federal parks. However, since 1975 there has been a growing involvement of the Commonwealth government in marine protected areas and coastal zone issues. Greater Commonwealth involvement has in turn become a source of increased intergovernmental conflict, and has appeared, to some, as a challenge to States' rights.

In assessing the impact of Australian federalism on marine protected area policy, certain features of Australian federalism are of particular relevance. Foremost is State jurisdiction of the 3 mile territorial sea, and Commonwealth jurisdiction over the 200 mile AFZ. State control over the 3 mile territorial sea is unlikely to be eroded by the Commonwealth government. Australian federalism therefore clearly assigns the States a major role in marine protected area policy. However, this means that the States do not have to cooperate with each other or with the Commonwealth in any legislative action promoting marine biosphere reserves in the territorial sea, unless some other constitutional mechanism provides a justification for Commonwealth involvement. The Commonwealth government, therefore, has the critical role of *selling* the marine biosphere reserve concept to the State governments, through financial or other incentives.

Another major limitation for marine biosphere reserves, and for an Australian biosphere reserve system in general, is the relatively new protected area category it represents. As Davis and Drake (1983:5) state, the

"main difficulty has been to educate legislators, public servants, scientists, and the public about the need for biosphere reserves and to justify them as additions to the existing network of protected areas". It is not yet a fully-fledged system in the terrestrial environment, which makes it difficult to support in a marine environment. Biosphere reserves have not received the international and national attention that unique World Heritage areas receive and as a result the potential benefits that can accrue are not often realized. Though Australia adopts an active role in UNESCO activities, biosphere reserves has not received adequate attention. No new terrestrial biosphere reserves have been declared since 1982, there are no marine biosphere reserves, and as Davis and Drake (1983) state, there has been no Australian study undertaken to determine potential areas for biogeographical representation.

6.4 Concluding Remarks

Notwithstanding the limitations expressed in the previous section, it is argued that the UNESCO MAB Program for marine biosphere reserves offers a suitable legislative and institutional framework for Australian marine protected areas, meeting international conservation objectives. The advocacy of the thesis coincides with recent evidence to suggest that national concern over the protection of the Australian marine and coastal environment is growing, in much the same manner as concern grew in the early 1970s over the future of the Great Barrier Reef region. A Commonwealth *Inquiry into Protection of the Coastal Environment* (discussed in Chapter 3) was appointed in July 1989 to address the environmental degradation of the Australian coastline and coastal waters. A national environmental statement was released by Prime Minister

Hawke on 20 July 1989 which stated that the Commonwealth has referred coastal zone issues to the Resource Assessment Commission and created a National Working Group on Coastal Management with representatives from all levels of government, industry, and community groups to facilitate dialogue on coastal zone issues. The Commonwealth may also consider holding a referendum to increase federal powers over environmental management, if public support grows (Hawke, 1989).

Since the *Great Barrier Reef Marine Park Act 1975* was given assent, the international marine conservation community has looked towards Australia for its innovative approach to planning and management in what is the world's largest marine protected area. The GBRMP is now widely considered the *model* for marine protected areas. Whilst a number of nations are now considering representative systems of marine protected areas based on biogeographic regions, no nation has yet to successfully implemented a truly national system. Australia thus has the opportunity to adopt the MAB marine biosphere reserve concept for a nationally representative system of marine protected areas, thereby setting new standards for marine protected areas.

However, for a marine biosphere reserve system to be successfully implemented a political commitment, which has not been evident in Australia's coastal environment for some time, is required from representatives of all tiers of government. The ultimate realization of a national system of representative marine biosphere reserves would require *unprecedented* intergovernmental and political cooperation between the Commonwealth and States. On the other hand, by failing to accept cooperative responsibility to protect and enhance Australia's

marine environment through marine biosphere reserves, the Commonwealth and States may have to address serious ecological and economic problems within the forseeable future. As the marine and coastal environment is degraded Australia rapidly loses the opportunity to develop a representative marine protected area system. With the second largest marine environment in the world and one of the greatest marine diversities, Australia has the unique opportunity to lead the world by example with a representative marine biosphere reserve system.

7.1 Bibliography

Note

The present thesis adopts the publication style developed for the Centre for Environmental Studies, University of Tasmania. This style has been influenced by the multidisciplinary nature of the Centre's activities and the academic orientation of publication. Together, this conduces to a general avoidance of abbreviations in the references. Further clarification has been sought from Pitson, J. 1978 (Third Edition); *Style Manual for Authors, Editors and Printers of Australian Government Publications;* Australian Government Publishing Service, Canberra, ACT, Australia.

Abbreviations used in the References.

ACT: Australian Capital Territory.

CONCOM: Council of Nature Conservation Ministers.

GBRMPA: Great Barrier Reef Marine Park Authority.

IUCN: International Union for Conservation of Nature and Natural Resources.

MAB: Man and The Biosphere.

UNEP: United Nations Environment Program.

UNESCO: United Nations Educational, Scientific, and Cultural Organization.

USA (or US): United States of America.

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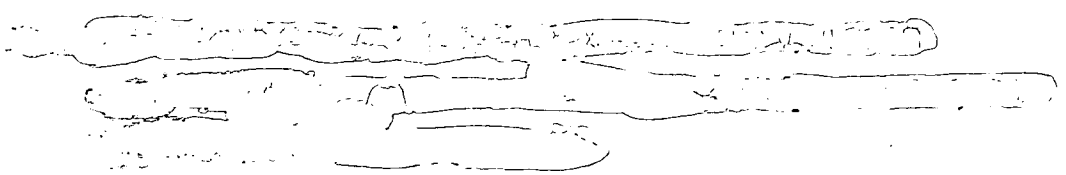

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Appendix I Abbreviations and Acronyms

AAT: Australian Antarctic Territory

ACIUCN: Australian Committee of the International Union for Conservation of Nature and Natural Resources.

AFZ: Australian Fishing Zone.

ANP&WS: Australian National Parks and Wildlife Service, Commonwealth.

CNPPA: (IUCN's) Commission on National Parks and Protected Areas.

DECT: Department of Environment, Conservation and Tourism, Queensland.

EEZ: Exclusive Economic Zone.

GBRMP: Great Barrier Reef Marine Park.

GBRMPA: Great Barrier Reef Marine Park Authority.

IUCN: International Union for Conservation of Nature and Natural Resources.

MAB: (UNESCO's) Man and The Biosphere.

MEPAs: Marine and Estuarine Protected Areas.

OCS: Offshore Constitutional Settlement.

Q.NPWS: Queensland National Parks and Wildlife Service.

UNCLOS: United Nations Convention of the Law of the Sea.

UNEP: United Nations Environment Program.

UNESCO: United Nations Educational, Scientific and Cultural Organization.

USA or US: United States of America.

WCS: World Conservation Strategy.

WWF: World Wildlife Fund.

Appendix II Declaration of the World National Parks Congress, Bali, Indonesia, 11-22 October 1982

Recommendation 3 - MARINE AND COASTAL PROTECTED AREAS

RECOGNIZING the absolute dependence of the peoples of many nations on food from the sea, and the dependence of sustainable production of food from the sea on protecting the ecological processes and diversity of coastal and marine environments;

RECOGNIZING that the movements of water transmit reproductive products, nutrients, food, and toxic substances, oil spills and other pollutants over large distances regardless of national boundaries;

RECOGNIZING that activities in one State affect the productivity of fisheries in other States, and noting examples from many parts of the world of over-exploitation of stocks of marine life, with the consequent collapse, perhaps irreversibly, of those stocks;

ACKNOWLEDGING the lack of suitably trained or experienced marine resource conservation managers and planners in most parts of the world;

NOTING the limited understanding of ecological processes in the sea, while accelerating human use and pollution threaten the integrity of marine environments;

CONSIDERING the scale of our present lack of knowledge about marine ecosystems in the deep ocean and the rapid pace of discovery of new forms of deep ocean life which have existed for millennia free from interference by those human activities which now threaten the integrity and productivity of marine environments:

The World National Parks Congress, meeting in Bali, Indonesia, October 1982:

RECOMMENDS that coastal nations:

(a) Declare as much as possible their territorial seas or other areas of jurisdiction, including islands, as managed areas with appropriate legal status and within these areas establish zones with different degrees of use and protection;

(b) Work cooperatively with neighbouring nations sharing resident and migratory species to establish coordinated networks of protected areas and other regulations to meet the critical needs of those species, with special priority for threatened and endangered species;

(c) Adhere to the Convention on the Law of the Sea as an important step in ocean conservation;

(d) Increase marine research programmes directed at understanding how marine ecosystems function and interrelate, the paths and effects of pollutants, and how to utilize such knowledge in management;

(e) Integrate their management of terrestrial, coastal and marine zones as far as the outer edge of the continental shelf by adopting a policy enforceable by law which requires environmental assessment of major economic activities in this combined zone before commitment to such activities is made, with special protection provided for the needs of endangered species;

CALLS UPON IUCN to:

(a) Develop as soon as possible an appropriate marine biogeographic classification scheme on global, regional and national levels as a basis for ensuring adequate representation of different marine ecosystems in a wide range of protected areas;

(b) Develop as soon as possible a system of categories for marine protected areas to be managed in the open seas, deep oceans and coastal waters analogous to the existing IUCN categories I-X for terrestrial protected areas but adapted to the marine and coastal environment;

(c) Develop, in cooperation with countries and international agencies, training programmes for personnel from countries seeking such training;

(d) Develop an education programme aimed at a wide audience and focussed on the significance of marine areas, the need for their wise use, and an increased awareness of human relationships to and dependence upon such areas;

CALLS UPON all nations collectively, acting through the Law of the Sea Convention, to establish large sanctuaries in the open ocean in order to further knowledge of those areas beyond the limits of national jurisdiction and to protect the Common Heritage of Mankind; and

RECOMMENDS to governments that all fishery regimes and agreements be reviewed with a view to promoting management on an "ecosystem as a whole" basis, following the model of the Convention on the Conservation of Antarctic Marine Living Resources.

Appendix III A Description of a Generalized Funtional Pattern for a Coastal and Marine Biosphere Reserve

Adapted from Batisse (1986:7-9: refer to Figure 5.1 for a schematic representation).

(1) Each biosphere reserve includes one or several core areas that are strictly protected according to well-defined conservation objectives and consist of typical samples of natural or minimally disturbed ecosystems. Collectively these core areas should be large enough to be effective as *in situ* conservation units and, whenever possible, have value as bench-marks for measurements of long-term changes in the biosphere and in the ecosystems they represent. Normally, the core area, or some of the core areas, should be representative of the surrounding ecosystems where sustainable development is to be promoted.

(2) The size and shape of the core areas depend on the type of landscape in which they are located and on the conservation objectives they are intended to meet. They can obviously be much larger in low population density regions than in regions with heavier human pressure and less available land.

(3) Core areas may correspond to *strict nature reserves,* to *wilderness areas* of national parks, or to other types of strictly protected areas. Strict protection of core areas does not necessarily mean *non-intervention*: they can be submitted to different types of protective

management, depending on their specific conservation objectives and on the character and history of the landscape. Strict protection does not necessarily entail strict delineation where, for instance, inaccessibility effectively prevents human interference. Thus, in such cases, a core area may remain undelineated within a delineated buffer zone. The protection against any action that could endanger the conservation role assigned to the core area must, however, be fully ensured. Core areas naturally exclude the presence of significant human settlements. Besides non-destructive research, one activity of growing importance that typically can take place in the core area of biosphere reserves is environmental observation and monitoring.

(4) The core areas are normally surrounded by a buffer zone corresponding to the inner buffer zone in Figure 5.1 - which must be strictly delineated and very often corresponds, together with the core areas, to a single and autonomous administrative unit. Thus, a number of national parks that have been designated as biosphere reserves are constituted in fact by core areas, namely the strictly protected areas or the *wilderness areas* of the national park, surrounded by a delineated buffer zone corresponding to the boundaries of the park. In some national parks where very limited human activity takes place, the core area may in fact be very large relative to the buffer zone.

(5) This buffer zone must have a clearly established legal or administrative status even when several administrative authorities are involved in its management. Only activities compatible with the protection of the core areas may take place. This includes in particular

research (R), environmental education and training (E), as well as tourism and recreation (T) or other uses carried out in accordance with the management requirements and regulations. Besides its other functions the buffer zone may well serve to protect areas of land that could be used to meet future needs for experimental research.

(6) The core areas and the buffer zone are surrounded by a transition area that may also constitute a protective buffer, corresponding to the *outer buffer zone* in Figure 5.1 and which serves several characteristic functions of the development role. Usually, the transition area as a whole is not strictly delineated and corresponds more to biogeographic than to administrative limits. It normally extends into a larger and open area where efforts are made to develop cooperative activities between researchers, managers and the local population, with a view to ensure appropriate physical planning and sustainable resources development in the region while maintaining the greatest possible harmony with the purposes of the biosphere reserve. This broad and open multiple-use area constitutes an *area of cooperation* of the biosphere reserve where one of the main goals, the association of environment and development, is actively pursued. The management of the transition areas is usually the responsibility of a variety of authorities and therefore requires appropriate coordination arrangements.

(7) Partly within the buffer zone or entirely outside, a biosphere reserve may include any one or some combination of the following types of associated areas used to develop knowledge and skills for ecosystem use and management: (a) areas suitable for experimental

manipulation to develop, assess and demonstrate methods for sustainable development (experimental research areas [ER]); (b) examples of harmonious landscape resulting from traditional patterns of land use (traditional areas [TA]); and (c) examples of modified or degraded ecosystems that are suitable for restoration to more natural conditions (rehabilitation areas [RA]).

(8) Experimental research areas (ER) where manipulative research on managed ecosystems is performed, are normally delineated by the research organization concerned and may be entirely located outside the buffer zone. The latter situation corresponds to a type of "cluster biosphere reserve". This cluster concept refers more generally to a combination of a number of non-contiguous areas - and possibly of research and education centres or laboratories - serving the same or different functions of biosphere reserves. These areas and centres are not usually administered by the same entity and hence the overall management of a cluster biosphere reserve calls for coordinating mechanisms through which the various administrative authorities concerned - as well as the local population - will cooperate.

Figure 5.1 attempts to show how the different functions of a biosphere reserve can be distributed on the ground. It may appear rather complex because it represents a cluster biosphere reserve where all functions and a variety of possible situations are presented. It does not correspond to any particular existing biosphere reserve but endeavours to present a conceptual generalized pattern that could apply to most of them. It does not necessarily cover the entire range of possible situations that may exist. But it shows how the multiple functions of biosphere reserves can be articulated and illustrates the orginality of the concept.

Appendix IV Resolution By The 17th General Assembly of IUCN

17.38 PROTECTION OF THE COASTAL AND MARINE ENVIRONMENT

AWARE that the area of sea and seabed is more than two and a half times as great as the total area of land masses of the world, that less than 1 percent of that marine area is currently within established protected areas and that protection of the marine environment lags far behind that of the terrestrial environment;

RECOGNIZING that the diversity of marine and estuarine animals, plants, and communities is a vital component of self-sustaining systems of local, regional, national, and international significance and is an integral part of the natural and cultural heritage of the world;

CONCERNED that there are already areas which have become seriously degraded by the direct or indirect effects of human activities and that the rate of degradation is increasingly rapidly;

RECOGNIZING that consideration must be given for the continued welfare of people who have customarily used marine areas;

BELIEVING that there are national and international responsibilities for the proper stewardship of the living and non-living resources of coastal and deeper ocean seas and the seabed to ensure their maintenance and appropriate use for the direct benefit and enjoyment of present and future generations;

BELIEVING that the development of such stewardship will require coordination and integrated management of a number of potentially competing uses at international, regional, national, and local levels;

RECOGNIZING that a number of initiatives have been taken at international, regional, and national levels for the establishment of marine protected areas and for managing the use of marine areas on a sustainable basis, including:

- the Regional Seas Program of the United Nations Environment Program (UNEP);
- the Man and the Biosphere Program of the United Nations Educational, Scientific, and Cultural Organization (UNESCO);
- the Marine Science Program of UNESCO;
- the South Pacific Regional Environment Program;
- initiatives of the Food and Agriculture Organization of the United Nations (FAO), the International Maritime Organization (IMO), the International Whaling Commission (IWC) and other international organizations;
- the proclamation of marine protected areas by 69 nations;

The General Assembly of IUCN, at its 17th Session in San Jose, Costa Rica, 1 - 10 February 1988:

(1) **CALLS** upon national governments, international agencies and the nongovernmental community to:

(a) implement integrated management strategies to achieve the objectives of the World Conservation Strategy in the coastal and marine environment and in doing so consider local resource needs as well as national and international conservation and development responsibilities in the protection of the marine environment;

(b) involve local people, nongovernmental organizations, related industries and other interested parties in the development of these strategies and in the implementation of various marine conservation programs.

(2) **DECIDES ITSELF** and further **RECOMMENDS** to FAO, IMO, IWC, the legal instrument bodies of the North Sea, UNEP, UNESCO, other international organizations and all nations, that:

(a) The following primary goal be adopted: "To provide for the protection, restoration, wise use, understanding and enjoyment of the marine heritage of the world in perpetuity through the creation of a global, representative system of a marine protected areas and through the management in accordance with the principle of the World Conservation Strategy of human activities that use or affect the marine environment";

(b) That as an integral component of marine conservation and management, each national government should seek cooperative action between the public and all levels of government for development of a national system of marine protected areas. The term "marine protected areas" is defined as: "Any area of intertidal or subtidal terrrain, together with its overlying waters and associated flora, fauna, historical and cultural features, which has been reserved by legislation to protect part or all of the enclosed environment";

(c) Such a system should have the following objectives:

- to protect and manage substantial examples of marine and estuarine systems to ensure their long-term viability and to maintain genetic diversity;
- to protect depleted, threatened, rare or endangered species and populations and in particular to preserve habitats considered critical for the survival of such species;
- to protect and manage areas of significance to the lifecycles of economically important species;
- to prevent outside activities from detrimentally affecting the Marine Protected Areas;
- to provide for the continued welfare of people affected by the creation of marine protected areas; to preserve, protect, and manage historical and cultural sites and natural aesthetic values of marine and estuarine protected areas, for present and future generations;
- to facilitate the interpretation of marine and estuarine systems for the purposes of conservation, education, and tourism;
- to accommodate within appropriate management regimes a broad spectrum of human activities compatible with the primary goal in marine and estuarine settings;
- to provide for research and training, and for monitoring the environmental effects of human activities, including the direct and indirect effects of development and adjacent land-use practices.

(d) The development by a nation of such a system will be aided by agreement on a marine and estuarine classification system, including identified biogeographic areas; and by review of existing protected areas, to establish the level of representation of classification categories within those areas; which may require:

- determination of existing and planned levels of use of the marine and estuarine environment and the likely effects of those areas;
- delineation of potential areas consistent with the objectives listed above and determination of priorities for their establishment and management;
- development and implementation of extensive community education programs aimed at specific groups, to stimulate the necessary community support and awareness and to achieve substantial self-regulation;
- allocation of sufficient resources for the development and implementation of management plans, for regulatory statutory review processes, interpretation, education, training, volunteer programs, research, monitoring, surveillance and enforcement programs.

Source: Kelleher and Kenchington 1990:47-50.

Appendix V Resolution by the 4th World Wilderness Congress, Colorado, USA, September 1987

Ocean Conservation

The Brundtland Commission's report highlights the serious threats which confront marine areas around the world. However, conservation efforts for the marine environment have lagged far behind those for the terrestrial environment, and an integrated approach to the management of the marine ecosystem is yet to be implemented. As a result, many marine areas now face serious problems, including:

- stress from pollution,
- degradation and depletion of resources, including species,
- conflicting uses of resources,
- damage and destruction of habitat.

Even though by 1985 some 69 nations had designated 430 marine protected areas, lack of technical, human and financial resources limit the effective management of many of these protected areas. This seminar recognized that Marine Protected Areas represent but one component of a broader framework of integrated marine ecosystem management of renewable and non-renewable resources. Further, wilderness as a concept is applicable to the marine environment and represents one of the most highly protected categories of protected areas.

The 4th World Wilderness Congress *calls* upon national governments, international agencies and the non-governmental community to:

(1) Implement integrated management strategies to achieve the objectives of the World Conservation Strategy and in so doing to consider local resource needs as well as national and international conservation and development responsibilities in the protection of the marine environment;

(2) Involve local people, nongovernmental organizations, related industries and other interested parties in the development of these strategies and in the implementation of various marine conservation programs.

The 4th World Wilderness Congress *recommends* to FAO, IMO, IUCN, IWC, the North Sea Ministers' Conference, UNEP, UNESCO, other international organizations and all nations:

(1) Adoption of the following primary goal:
"To provide for the protection, restoration, wise use, understanding and enjoyment of the marine heritage of the world in perpetuity through the creation of a global, representative system of marine protected areas and through the management of human activities that use or affect the marine environment in accordance with the principles of the World Conservation Strategy".

(2) That as an integral component of marine conservation and management, each nation seek cooperative action between the public and all levels of government for development of a national system of marine protected areas. The term *marine protected area* is defined as:

"Any area of intertidal or subtidal terrain, together with its overlying waters and associated flora, fauna, historical and cultural features, which has been reserved by legislation to protect part or all of the enclosed environment". *Marine wilderness* is defined as: "Marine areas where little or no evidence of human intrusion is present or permitted, so that natural processes will take place unaffected by human intervention".

(3) That such a system should have the following objectives:

(a) to protect and manage substantial examples of marine and estuarine systems to ensure their long-term viability and to maintain genetic diversity;
(b) to protect depleted, threatened or endangered species and populations and in particular to preserve habitats considered critical for the survival of such species;
(c) to protect and manage areas of significance to the life-cycles of economically important species;
(d) to prevent outside activities from detrimentally affecting the Marine Protected Areas;
(e) to provide for the continued welfare of people affected by the creation of marine protected areas; to preserve, protect, and manage natural aesthetic values of marine and estuarine areas, and historical and cultural sites for present and future generations;
(f) to facilitate the interpretation of marine and estuarine systems for the purposes of conservation, education, and tourism;
(g) to accommodate within appropriate management regimes a broad spectrum of human activities compatible with the primary goal in marine and estuarine settings; and
(h) to provide for research and training, and for monitoring the environmental effects of human activities, including the direct and indirect effects of development and adjacent land-use practices.

(4) That the development by a nation of such a system will be aided by:

(a) agreement on a marine and estuarine classification system, including biogeographic areas;

(b) review of existing protected areas, to establish the level of representation of classification categories within those areas; and will require:

(i) determination of existing and planned levels of use of the marine and estuarine environment and the likely effects of those uses;

(ii) delineation of potential areas consistent with the objectives listed above and determination of priorities for establishment and management;

(iii) development and implementation of extensive community education programs aimed at specific groups, to stimulate the necessary community support and awareness and to achieve substantial self-regulation; and

(iv) allocation of sufficient resources for the development and implemenation of management plans, for regulatory statutory review processes, interpretation, education, training, volunteer programs, research, monitoring, surveillance and enforcement programs.

Source: Kelleher and Kenchington 1990:44-46.