

Managing Bushwalker Impacts in the Tasmanian Wilderness World Heritage Area, Australia

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Abstract: As recreational use of the Tasmanian Wilderness World Heritage Area in Australia increases, associated environmental impacts must be controlled. Tasmanian bushwalkers were surveyed to obtain their opinions and attitudes toward potential tools to manage impact problems and an overnight permit system. There was support for nine of the 11 potential tools, with most support for priority erosion control, track stabilization, and rerouting. Respondents did not support the introduction of an overnight walker permit system for the entire Tasmanian Wilderness World Heritage Area, but did support a permit system if it was targeted at impacted areas.

Introduction

The Tasmanian Wilderness World Heritage area (TWWHA) was added to the World Heritage List in 1982 (World Heritage Commission 1982) and extended in 1989 (World Heritage Commission 1989) to become one of Australia's largest conservation reserves. The TWWHA occupies approximately 20% of the state of Tasmania (1.38 million hectares, or 3.4 million acres) and is managed by the Tasmanian Parks and Wildlife Service (TPWS) in accordance with the Tasmanian Wilderness World Heritage Management Plan (TPWS 1999) (see Figure 1). The TWWHA includes five main national parks: Cradle Mountain-Lake St Clair National Park, Walls of Jerusalem National Park, Franklin-Gordon Wild Rivers National Park, Southwest National Park, and Central Plateau Conservation Area.

The World Heritage Commission (WHC) lists 730 properties on the World Heritage List globally (World Heritage Centre 2002). The TWWHA is a mixed property, satisfying all criteria for natural values and three of seven criteria for cultural values. The undisturbed natural values of the TWWHA are largely free from human interference (TPWS 1999). These values include glacially formed landscapes and karst systems, extensive unmodified coastal formations, alpine and rainforest ecosystems, and endemic and threatened flora and fauna. The outstanding cultural value of the



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(PEER REVIEWED)

TWWHA is the significant number of relatively undisturbed Aboriginal sites over 35,000 years old. In addition, the more recent colonial convict sites are outstanding early examples of major global social phenomenon, and along with other historic sites including Huon pine logging and mining, they provide a source of reflection, inspiration, and testimony to cultures that have disappeared (TPWS 1999).

Limited, and often conflicting, data are available concerning the number of visitors to the TWWHA, but estimates place approximately 245,000 bushwalkers in the area each year, including 22,000 overnight bushwalkers (TPWS 1996). Visitor numbers to the TWWHA are believed to be increasing by 7% per annum (TPWS 1996).

Increasing visitor numbers to the TWWHA has resulted in environmental impacts to some of the area's internationally significant values (see Figures 2 and 3). Physical and biological effects include vegetation damage, track (trail) formation, soil loss and compaction, water pollution, and the spread of weeds and pathogens (Whinam and Chilcott 1999; TPWS 1998; Sun and Liddle 1993; Calais and Kirkpatrick 1986; Calais 1981). Generally, impacts of these types tend to be concentrated in high-use areas, such as campsites and tracks, while nearby areas are often relatively undisturbed (Cole 1995; McEwen and Tocher 1976).

In response to increased levels of environmental impacts, the TPWS produced a walking track management strategy for the area in 1994 (TPWS 1998), based largely on relevant literature that considered strategies for managing impacts on natural areas. For example, Cole, Petersen, and Lucas (1987) detailed management strategies for combating common wilderness recreational problems, and Cole (1994) identified six mechanisms to manage impacts: controlling type of use, encouraging low impact use behavior, avoiding use when areas are vulnerable,

encouraging use of durable sites, constricting use in popular areas, and dispersing use in lightly used areas. A contentious issue discussed in the strategy was the introduction of an overnight walker permit system as a mechanism to help manage and limit the number of walkers to the TWWHA. This system was proposed as a suitable management option, proposing to divide the TWWHA into walking areas with quotas specifying usage limits, depending on the environmental sensitivity of each area.

The proposal was rejected by Tasmania's bushwalking community, who believed that a permit system would unnecessarily interfere with freedom in the TWWHA. The Tasmanian state minister responsible for the TWWHA subsequently formed the Track Assessment Group (TAG) in 1999 to recommend the most appropriate solution to the bushwalker impact problem (TAG 2000).

The aim of this article is to report research on the level of support by Tasmanian bushwalkers for 11 potential tools discussed by TAG and the introduction of an overnight walker permit system in the TWWHA.

Track Assessment Group

TAG included representatives of major stakeholder and interest groups, including the TPWS, TWWHA Consultative Committee, Tourism Tasmania, Federation of Tasmanian Bushwalking Clubs, independent bushwalkers, and the University of Tasmania.

In response to the minister's request, TAG made preliminary recommendations for user regulations in the TWWHA (TAG 2000). TAG members were selected for their expertise on the TWWHA, bushwalking, and natural area environmental impacts. Management tools were developed at meetings held in late 1999 to early 2000 and the final report included a discussion of 11 potential management tools to solve bushwalker-impact problems. These management tools varied in their level



Figure 1—Tasmanian Wilderness World Heritage Area.



Figure 2—Vegetation damage and soil compaction caused by bushwalkers in the Western Arthur Range, TWWHA, that have resulted in degradation to natural values. Photo courtesy of the TPWS Track Management Team Slide Library.

of acceptability and implementation costs and are listed here in the order of expected decreasing acceptability to bushwalkers:

- Create education/self-regulation system to encourage walkers to use less impacted tracks
- Promote Tasmania's "Great Bushwalks" and other appropriate or less impacted tracks
- Use volunteers to help manage the TWWHA
- Undertake priority erosion control, track stabilization, and rerouting
- Liaise with organizations to obtain agreement to minimize use in environmentally sensitive areas and advise on more suitable areas
- Change patterns of use (e.g., track rotation, disperse use, and the

nonprovision of certain facilities) to reduce overuse of vulnerable areas

- Remove information (e.g., track markers, maps, routes, and obscuring entrances) facilitating access to sensitive areas
- Establish party size limits to reduce unacceptable impacts by regulating usage
- Create new tracks to take pressure off currently overused tracks
- Impose quotas to regulate usage
- Close pads (camping areas) either temporarily or permanently to prevent further degradation or allow the recovery of the areas

TAG recognized that environmental impact varies across sites and that no single management approach would be successful for the entire area. The minister stated that the system (or systems) recommended by TAG must meet three conditions: it must be (1) workable and cost effective, (2) environmentally effective, and (3) supported by bushwalkers. An often-quoted figure of 70% had been estimated for bushwalker support of a permit system, but this was frequently refuted by bushwalkers who did not support a permit system (Bennett 2000; TPWS 1996).

Research Design

Potential strategies as discussed by TAG	Primary instrument	Validation instrument
	Bushwalking club respondents (%) ^a	Bushwalking community respondents (%) ^a
Undertake priority erosion control, track stabilization and rerouting	93	92
Establish party size limits appropriate to the walking area and campsites on specific tracks	85	85
Use volunteers to help manage the WHA (working with walking community, maintenance of tracks, adopt-a-track)	85	80
Liaise with organizations and the public that hold walks to obtain agreement to minimize use in sensitive areas and advise of more suitable areas	84	83
Promote the "Great Bushwalks" and other appropriate tracks to encourage walkers to use less impacted tracks	81	81
Create new tracks to take pressure off currently overused tracks, to provide different/new walking experiences	73	55
Create education/self-regulation system (Internet and telephone)	68	66
Change patterns of use, such as track rotation, fan out, nonprovision of certain facilities	58	64
Close pads (camping areas) and tracks to prevent further degradation and, in some cases, to allow the recovery of pads	50	56
Impose quotas to reduce unacceptable walker impacts by regulating usage through a quota system	33	44
Remove information facilitating access to sensitive areas, such as track markers, maps, routes, and obscuring entrances	26	31
^a Percentages include the sum of "support" and "strongly support" responses from a scale: strongly support, support, uncertain, do not support, strongly against, and cannot decide/not enough information.		

A self-administered questionnaire survey was used with bushwalkers who were classified into two user groups: (1) those in Tasmania's bushwalking clubs and (2) the broader Tasmanian bushwalking community. The survey was administered to samples of both groups using two different methods. Though it may have been desirable, surveys were not distributed directly to visitors of the TWWHA via trailhead contacts due to the immediate need to obtain bushwalker input over the winter season (May–July 2000). Respondents were considered members of the bushwalking community, not as participants during specific outings.

The most reliable existing source of in-

formation on Tasmanian bushwalkers was an Australian Bureau of Statistics (1995) survey that investigated participation in Tasmanian sporting and physical recreational activities. The survey estimated that 19,700 Tasmanians aged 15 years or older (9.3% of the total adult population) had bushwalked in the 12 months prior to October 1994 (50.8% were male; 49.2% were female).

A mail-out, random probability survey, as described by de Vaus (2001), was used with one follow-up mailing. Members from Tasmania's bushwalking clubs were targeted, and an unbiased simple random sample was drawn. Bushwalking clubs with at least 20 members were invited to participate. Thirteen clubs were approached, with 10 willing to participate. In total, 15% of members from each club were selected, resulting in a total of 277 potential subjects.

The second research phase relied on targeting available subjects from the broader Tasmanian bushwalking community. The reliance on nonprobability availability sampling is an extremely risky sampling method, as this technique does not allow any control over the representativeness of the sample (Babbie 2002; Henry 1990; Gardner 1976). Therefore, great caution has been exercised in generalizing the results from the data (Hall and Hall 1996), and the findings have only been used to verify the reliability of the random survey results. Consequently, 327 questionnaires were opportunistically and anonymously distributed at workshops, at nature-based slide presentations throughout Tasmania, at adventure stores, and at walker registration booths in the TWWHA. Respondents were provided with a postage-paid reply envelope to return their completed questionnaires.

Researchers realized that bushwalkers with some awareness of TAG and released recommendations would potentially provide more informed responses, but may

have a predisposition toward solutions. As a result, researchers asked if respondents were either aware of, or had read, the draft TAG report. Given that the availability sample targeted participants, the second research phase was likely to include a bias toward those who had read the report. Alternatively, bushwalking club respondents were randomly sampled; therefore, it was likely that the number of these respondents who had read the report would be lower. Although the results from the random sample are less likely to be biased, the other bushwalkers may have a better understanding and knowledge of the issues investigated here.

Results and Discussion

Of the questionnaires distributed to bushwalking club members, 196 were returned (71% response). Of the 327 questionnaires distributed to the broader bushwalking community, 176 completed questionnaires were returned (54% response).

The majority of respondents from both the random (bushwalking clubs, 69.4%) and availability (broader bushwalking community, 74.4%) samples were aware of the TAG report. Furthermore, 16.8% of bushwalking club respondents had read the report, as had 40.9% of the broader bushwalking community.

Males represented 47% of the bushwalking club sample, and 53% were female; for the broader bushwalking community, 62% were male and 38% were female. Bushwalking club members ranged from 14 to 85 years in age (mean and median of 52). The broader bushwalking community ranged from 17 to 80 years (mean and median of 44).

Bushwalking club respondents indicated the highest level of support for priority erosion control, track stabilization, and rerouting (see Table 1). The two least supported tools were the removal

of information facilitating access to sensitive areas (26%) and the imposition of quotas (33%). The validation survey data from the broader bushwalking community is comparable.

Bushwalking club respondents were asked to list their level of support for the introduction of an overnight permit system (see Table 2). A majority of these respondents (61%) support the introduction of an overnight walker permit system where they can be demonstrated to effectively deal with the particular area/problem. The broader bushwalking community results are comparable. A minority of bushwalking club respondents (27%) do not support permits in any shape or form anywhere in the TWWHA, and 53% of respondents only support permits after other management options have been tried and failed. Only 17% of bushwalking club respondents supported a permit system for all the TWWHA.

Table 3 presents the 11 potential management tools in the order of expected acceptability projected by TAG. There was notable variation in ranking of several items. For instance, for education/self-regulation tool, TAG (2000) expected this

Table 2—Level of Support for an Overnight Walker Permit System in the TWWHA

Respondents were asked if they supported the following statements:	Primary instrument	Validation instrument
	Bushwalking club respondents (%) ^a	Bushwalking community respondents (%) ^a
I support permits where they can be demonstrated to effectively deal with the particular area/problem at hand	61	60
I support permits only after management options (apart from closure) have been tried and failed (e.g., education, track work)	53	44
I do not support permits "in any shape or form" anywhere in the TWWHA	27	13
I support a permit system for all the TWWHA	17	15
^a Percentages include the sum of "support" and "strongly support" responses from a scale: strongly support, support, uncertain, do not support, strongly against, and cannot decide/not enough information.		

tool would be the most acceptable, whereas bushwalking club respondents ranked it seventh. In addition, bushwalking club respondents indicated priority erosion control and track stabilization to be the most supported management tool, whereas TAG had projected this tool to be fourth.

Table 3—Level of Support for Potential Tools as Discussed by TAG

Potential strategies as discussed by TAG	TAG ^a	Primary instrument		Validation instrument	
		Bushwalking club respondents	Bushwalking community respondents		
	Rank	(%) ^b	Rank	(%) ^b	Rank
Create education/self-regulation system	1	68	7	66	6
Promote the "Great Bushwalks" and other appropriate tracks	2	81	5	81	4
Use volunteers	3	85	2	80	5
Undertake priority erosion control and track stabilization	4	93	1	92	1
Liaise with organizations	5	84	4	83	3
Change patterns of use	6	58	8	64	7
Remove information facilitating access to sensitive areas	7	26	11	31	11
Limit party size	8	85	2	85	2
Create new tracks	9	73	6	55	9
Impose quotas	10	33	10	44	10
Close pads	11	50	9	56	8

^a Level of acceptability as expected by TAG.

^b Percentages include the sum of "support" and "strongly support" responses from a scale: strongly support, support, uncertain, do not support, strongly against.



Figure 3—Unplanned track development and associated environmental deterioration caused by walkers at Lake Cygnus, TWWHA. Photo courtesy of the TPWS Track Management Team Slide Library.


The rankings of some tools did not vary between TAG and the bushwalkers. For example, TAG's ranking of the expected level of acceptability for the imposition of quotas was identical to the rankings derived from bushwalkers. As expected, a minority of bushwalking club respondents (33%) supported the tool.

Conclusions

As the TWWHA is increasingly recognized and marketed for its nature-based tourism and bushwalking opportunities, it is likely that bushwalker associated environmental impacts will continue to increase unless controls are implemented. This research found that the majority of bushwalkers surveyed did not support the introduction of an overnight walker permit system for the whole TWWHA or the removal of information facilitating access to sensitive areas. However, support was found for nine of the 11 potential management tools investigated. In addition, the majority of bushwalkers surveyed support the introduction of an overnight walker permit system in the TWWHA if it is targeted at impacted areas where it can be shown to effectively mitigate negative environmental impacts. This finding is important, as it is contrary to the belief espoused by some bushwalkers.

Finally, this article highlights that although TAG followed assumptions frequently made about user support for management actions, they were often different than those currently held by bushwalkers. Consequently, this research indicates that predictions held by those managing wilderness and heritage areas can be different than those held by the users of these areas.

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