Perception and Reality of Conflict: Walkers and Mountain Bikes on the Queen Charlotte Track in New Zealand

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Abstract: A variety of social and physical impacts are attributed to mountain biking. In many cases, the perception of these impacts differs from the reality of on-site experiences. This distinction is explored in two ways. First, a brief review of impact issues associated with mountain bikes is carried out. Second, results are presented from a survey of 370 walkers on a multi-day natural track where biking has been allowed on a trial basis. Walker opinions are surprisingly positive toward bikes. These opinions are found to be more positive among those walkers who had actual encounters with bikes. By contrast, more negative opinions were found among those who had no such encounters. Such distinctions between perception of a conflict and the actual outcome from an experience have important implications for park managers responsible for providing a range of different recreation opportunities.

INTRODUCTION

Like most other government departments managing conservation areas, the Department of Conservation (DOC) in New Zealand has dual responsibility for protecting environmental values and allowing appropriate recreational uses. With this responsibility, the DOC manages almost 30% of New Zealand's land area, most of which is, by international standards, highly protected natural environment of high wilderness quality. Development of roads is not normally allowed, and as a consequence, recreation use has traditionally been limited to foot access through an extensive network of backcountry walking tracks and unmarked wilderness routes.

While rough surfaces and challenging terrain prevent bike access to most of these tracks, there are many that could be ridden by very fit and technically experienced riders. A smaller proportion would be relatively easy to ride by less experienced riders. These are the types of tracks providing the range of natural environment and challenging single-track riding experiences most sought by off-road riders (Cessford, 1995b; Hollenhorst et al., 1995; Hopkin and Moore, 1995; Goeft & Alder, 2000; Symmonds et al, 2000). The range of riding opportunities is one of the main reasons that such natural settings have experienced such biking growth (Hollenhorst et al., 1995). Such spread into a wider range of previously walking-only tracks is a world-wide trend, and the issues arising provide similar challenges to park managers everywhere. One of the main options available to managers has been to incorporate bike use through allowing shared use tracks. This option is often attractive to managers as it makes more effective use of existing resources, limits costly replication of facilities,

avoids additional environmental effects from new track development, and in the case of areas with limited new-development capacity, may be the only feasible course available. Woehrstein (1998) notes this latter point is often the case in Europe for example.

While national legislation in New Zealand restricts bikes to formed roads in the national parks, biking is otherwise recognised as a legitimate activity in most other protected lands. Here the DOC does designate some shared tracks for walking and biking, where such use does not exceed acceptable levels of social, physical or ecological impact. A key New Zealand example is the popular Queen Charlotte Track (refer www.qctrack.co.nz for description). It is open for walking and biking all year, apart from partial closure to bikes during the peak-use summer season. Provision for shared use here has been opposed by some walker advocacy groups, and is characteristic of recreation conflict situations. This paper explores some of the impact issues managers face in providing such shared biking/walking tracks, and reports on a recent survey of walker perceptions of biking on this track.

MOUNTAIN BIKING IMPACTS

The variety of reasons people give for disapproving of biking can be summarised in three types of impact issues. First; from perceptions of physical impacts on the environment. Second; from social impact perceptions of safety hazards. And third; from social impact perceptions that biking is inappropriate in many natural settings (Moore, 1994; Cessford, 1995a; Woehrstein, 1998; Weir, 2000). Perceptions of these types of impacts lead to conflict between riders, other track users, and track managers. Based on current knowledge, the

perceptions and realities of these impacts are discussed briefly below, followed by exploration of a conflict perception example from the Queen Charlotte Track.

Environmental Impacts

Environmental concerns often feature when people discuss problems associated with biking in natural areas. In a sample of walkers, Horn (1994a) found that 75% considered that environmental damage from biking was a problem. A similar focus for concern has been found among park managers, including 35% of those surveyed in Chavez et al. (1993), and 42% in Chavez (1996a). However, it is important to note that these impacts have almost always been related directly to the tracks on which bikes are ridden, rather than on the environments though which the tracks pass. Like any outdoor recreationists, riders will have impacts on the environment, including the soils, vegetation, water, and wildlife. But because most walkers and riders stay on the tracks, wider environmental consequences are minimal because the direct physical effects are generally confined to the track surface.

Only in particular cases may the passage of bikes or walkers result in significant impact on important environmental features, as opposed to normal wear-and-tear on tracks. For example, Goeft & Alder (2000) described a case where bikes were included along with walkers, forestry vehicles and wildlife as potential vectors by which a particular plant disease could be spread. Woehrstein (1998) noted that numerous European studies had found little difference in effects of walkers and bikers on wildlife. And Papouchis et al (2001) found that bikers had far less disturbance effects on Bighorn Sheep than walkers, mainly due to walkers more often moving off tracks and surprising or approaching the animals. To date there appears to be no evidence of bikes having any more significant impact on important environmental features than other recreation uses (Cessford, 1995a; Woehrstein, 1998; Weir, 2000).

Biking does have an effect on the condition of tracks. These effects are often highly visually distinctive from those of walking due to the basic differences between tyre tracks and footprints. Related to this visual perception, the main concern expressed is that bike tyres create linear channels that may promote runoff and erosion, as opposed to the puddling caused by footprints (Keller, 1990). Bjorkman (1996) and others have made extensive investigations that clearly demonstrated impacts on tracks from bikes, although these were not compared with those of walkers. What is not clear is the relative significance of bike and boot impacts on tracks. For park managers, this distinction is particularly important when they are considering the costs of track maintenance. The usual perception is that biking has disproportionately higher impact on tracks than does walking. However, when the comparative effects of different recreation activities have been investigated, the real differences identified do not conform to these perceptions.

Comparative research on track impacts by Weaver & Dale (1978) found that motorbikes had the greatest effects while going uphill, but that when going downhill, the effects of horses and walkers were greater. Including bikes, Wilson and Seney (1994) identified a similar pattern, and noted that lighter and low-powered bikes had much less track impact potential than motorbikes. And European research has found that while bikes had greater uphill effects, walkers had greater downhill effects (Woehrstein 1998). This draws attention to the basic distinction between the mechanical effects of rolling wheels and stepping feet (Cessford 1995a; Weir, 2000), which both have impacts in different ways.

Despite the general perception otherwise, most available comparative reviews and studies have concluded that while visibly very different, the physical impacts of bikes on tracks were not any worse than those of walkers overall (Keller, 1990; Wilson & Seney, 1994; Chavez et al. 1993; Ruff & Mellors; 1993, Cessford, 1995a; Woehrstein, 1998; Weir, 2000; Thurston & Reader, 2001;). This appears to be the case whether considering important biological features or the physical state of the tracks. On this basis, selective restrictions to biking based on physical impact concerns may be inappropriate. Any physical impact problems that arise are more likely to be the effects of greater use-levels overall, or from tracks passing through physically sensitive environments, particularly related to bad drainage characteristics. Here it seems that the problem relates more to how biking is generally perceived rather than the actual effects it may have.

Perceptions of Safety Hazards

Bikes are perceived as a hazard when they are considered to be riding too fast for the conditions (e.g., on crowded, multiple-use trails); not slowing enough when approaching blind corners; or where they surprise people because they move quickly and quietly (Moore, 1994; Cessford, 1995a). These are valid concerns that managers do recognise (Chavez et al. 1993; Chavez, 1996b), and it is apparent that the behaviour of some riders has posed a hazard. Keller (1990) noted a number of problems from the reactions of horses to bikes in particular. With reference to data from an unpublished survey of almost 1500 walkers (Pettit & Pontes, 1987), both Grost (1989) and Jacoby (1990) noted that most did not consider bikes were a safety hazard, and in fact characterised riders as being polite. Jacoby (1990) also noted that only 15 bike encounters were cited by walkers as potentially hazardous, and the only actual accident reported involved bikes hitting each

other while making way for a walker. From a survey of 40 resource managers, Chavez et al. (1993) found only one case of reported walker injury. From 300 accident records, Edger (1997) stated very few resulted from bike-walker collisions. Almost none of the many thousands of incidents reported in several years of accident statistics in the German Alps involved bikes and walkers (Woehrstein, 1998). And on the Queen Charlotte track itself, while managers were aware of some accidents, these were all bike-only (Grose, 2001).

There is some indication that increased familiarity with biking and accumulated experience of encounters with bikes may change the hazard perceptions of walkers (Chavez et al., 1993; Bannister et al., 1992; Horn, 1994; Woehrstein, 1998). When referring to the Pettit & Pontes (1987), study, Chavez et al. (1993) noted that negative attitudes by walkers toward bikes remained constant despite an increase in riding use-levels from 7 to 24% in two years, and safety issues remained minimal.

While it does appear that actual safety hazards are over-estimated by walkers, it seems clear that some will feel uncomfortable knowing that bikes may be present, whether a real hazard exists or not. Reducing this social impact issue is of concern to track managers. The real danger from bikes appears to be for their own riders.

Perceptions of Social Impacts

Perceived conflict between walking and biking parallels other widely documented inter-activity conflicts. As has been apparent for biking, the perceived impacts of motorised use have similarly emphasised environmental impact and safety; the appearance, noise, behaviour, presence of mechanisation; and the inappropriateness of these in natural settings. Implicit in this has been the assumption that the recreation objectives, environmental attitudes, and values of these other recreationists are also different.

Inter-activity conflict research has often found clear differences that reflect these perceptions, such as those between the recreation preferences and motivations of snowmobilers and cross-country skiers (Knopp & Tyger, 1973; Butler, 1974; Devall and Harry, 1981; Jackson & Wong, 1982). When both groups are trying to use the same settings, perceptions of conflict are almost inevitable. Similar patterns of experience preferences were also reflected in the other activities in which these groups participated. Given these differences, it was concluded that such groups would always tend to be in conflict, even when in different activities and settings. The main question here is if such differences are represented between walking and biking.

Qualitative comments made about bikes (e.g. Keller, 1990, Horn, 1994) indicate that for many walkers (and managers), bikes are conceptually indistinct from motorised off-road vehicles. The characteristic conflict perception asymmetry, where walkers perceived bikers more negatively than vice versa, has also been identified (Watson et al., 1991; Ramthun, 1995; Carothers et al., 2001). Biking is visually very distinctive. Qualitative comments commonly indicate that the use of bright cycling clothing and the mechanised appearance of bike and rider can create conflict perceptions from walkers (e.g. Keller, 1990; Horn, 1994). In addition, most research profiles of riders (e.g. Cessford, 1995b; Hollenhorst et al., 1995; Horn; 1994; Ruff & Mellors, 1993; Keller, 1990), show that riders usually over-represent males and younger ages relative to walkers. Such obvious visible differences will have had effects on the general perceptions of biking. However, it is not clear whether these differences are also reflected in the actual motivations, preferences and environmental attitudes of riders.

While some differences are found, the main studies that have compared the attitudes and preferences of the two groups have found they are more similar than was perceived. (Watson, et al., 1991, 1997; Horn, 1994; Ramthun, 1995). When Watson et al. (1991) compared perceptions of similarity with the actual characteristics, they found that for hikers in particular, the perceptions were different from the reality. In addition, the degree of asymmetry in these perceptions was less than anticipated given the characteristic patterns found in wider conflict research. In follow-up work to the 1991 study, Watson et al. (1997) found a high proportion of walkers and riders did both activities. In the European setting where use intensity is higher and bicycle riding in general is more common, differences between walkers and bikers appear even less distinct. While restrictions commonly remain on single-track riding, shared tracks are becoming more common, more walkers are also riding, and perceptions of conflict appear to be reducing in general (Woehrstein, 1998; ADFC, 2001;). While comparative research has not been extensive, results suggest that differences in attitudes and preferences between bikers and walkers are less than is generally perceived. This inconsistency may diminish as participants gain greater familiarity with each other. For example, a reduction in conflict perceptions from 30 to 21% was identified over a 5 year period (Watson et al, 1997).

However, among the complicating factors that may affect the validity of conflict perception measures is the possibility that this reduction results in part from recreation displacement (Bjorkman 1996; Watson et al., 1997). Another is that the conflict levels reported often exceed those that actually occurred (Countryside Agency, 2001). And there is also a distinction between conflict perceptions based on wider social values, and those based on actual interpersonal encounters in the

field. Some of inconsistencies in walker perceptions of conflict with biking point to such an effect (Carothers et al., 2001), and the following brief research results provide another example of such inconsistency.

CONFLICT PERCEPTIONS ON THE QUEEN CHARLOTTE TRACK

Shared use of the track was established as a trial. This survey of 370 walkers was carried out to monitor walkers' acceptance of this arrangement, and their opinions about bikes. However, when the walkers who encountered bikes were distinguished from those who did not, it has also provided useful insight into the difference between perceived and actual conflict situations. Results relating to this difference are the main ones reported here.

Satisfaction and seeing bikes

The most important primary results for managers were those related to the high levels of walker satisfaction on the track. In total, 97% of walkers stated they were totally or mostly satisfied with their visit, and this high level did not significantly vary according to any walker characteristics or visit experiences. Among these visit experiences were encounters with bikes. These results indicated that walkers who encountered bikes were no less satisfied with their visit were those who did not. Reinforcing this, when walkers who encountered bikes were specifically asked if these bikes caused them dissatisfaction in any way, 88% indicated that they did not. And when walkers who did not expect to encounter bikes were asked if they might have changed their trip plans had they known, 92% said that they would have come to the track anyway.

Overall, these represent very positive results for this management arrangement. However, in acknowledgement that overall satisfaction scales are often coarse measures, some additional evaluative questions were asked of all walkers. Firstly, they were asked if seeing bikes had, or would have, affected their enjoyment of the track. Bikes were reported as having no actual or anticipated effect on enjoyment by 69% of walkers, as having positive enhancing effects by a further 10%, and having negative detracting effects by the remaining 21%. While these are highly positive results for the shared track approach, the notable proportion of people feeling bikes had or would have detracted from their experience does require management consideration.

Who perceived conflicts with bikes?

To improve understanding of the conflicts walkers have with bikes, additional data analysis was carried out on these enjoyment perceptions. This was done using a classification tree approach

suitable for the primarily categorical data generated from the survey (D'eath & Fabricus, 2000), which in this case comes from the *AnswerTree* application associated with *SPSS 10*. Figure 1 was generated from this application, and represents a map of significant relationships between variables. The effect of bikes on walker enjoyment was the target variable, and notable variations in response were identified.

Most variation was related to whether walkers had encountered bikes on the track or not (Figure 1). Surprisingly, the more negative perceptions of bikes came from walkers who had not encountered any (32%). This reflects the distinction between perceptions based on wider social values and those based more on actual interpersonal encounters in the field, as described by Carothers et al. (2001).

Among those not encountering bikes, this negative effect was strongest among the older walkers (58%). Among those who did encounter bikes, the negative effect (14%) was greater among those not expecting to see them there. While omitted from Figure 1 due to space constraints, it is notable that among those not expecting to see bikes, the negative effect (24%) was again stronger for the older walkers than the younger (8%).

This gives managers a clear message that many of the social conflict issues surrounding bikes on this track are based on perceptions about meeting bikes, which appear to be different from the reality of experiencing them. In addition, a specific group of older walkers appear more inclined to hold these negative perceptions. These key distinctions were reinforced when specific opinions about bikes were explored.

Conflict perception issues

Walkers were asked to indicate their level of agreement with a set of characteristic opinion statements commonly made in association with bike conflict issues (Table 1).

These results are largely self-explanatory, and show that opinions both for and against biking varied considerably among walkers. The strongest responses were the 74% of walkers who considered most problems came from a few irresponsible riders, the 60% who disagreed that biking should be banned on the track, and the 58% who disagreed that biking and walking have similar track impacts. The latter is a particularly interesting example of the power of perception, when it appears that research has not established any notably greater effects from bikes on tracks. What is apparent on wet tracks with poorly consolidated surfaces is that the visibility of tyre-tracks is much higher than that of boot-prints. In that situation, attributing greater impacts to bikes is not surprising, even if it may be somewhat misplaced.

Bikes affect track enjoyment?

Cat.	%	n
No effect	**69.02**	**254**
Enhanced	10.05	37
Detracted	20.92	77
Total	(100.00)	368

See any bikes?
P-value=0.0000, Chi-square=18.6759, df=1

Yes, saw bikes

Cat.	%	n
No effect	**75.58**	**130**
Enhanced	16.28	28
Detracted	8.14	14
Total	(46.74)	172

No, didn't see bikes

Cat.	%	n
No effect	**63.27**	**124**
Enhanced	4.59	9
Detracted	32.14	63
Total	(53.26)	196

Knew MTBs were allowed here?
P-value=0.0080, Chi-square=7.0224, df=1

Age groups
P-value=0.0000, Chi-square=22.1038, df=1

Did know

Cat.	%	n
No effect	**82.42**	**75**
Enhanced	14.29	13
Detracted	3.30	3
Total	(24.73)	91

Didn't know

Cat.	%	n
No effect	**67.90**	**55**
Enhanced	18.52	15
Detracted	13.58	11
Total	(22.01)	81

Under 40

Cat.	%	n
No effect	**72.73**	**104**
Enhanced	4.90	7
Detracted	22.38	32
Total	(38.86)	143

Over 40

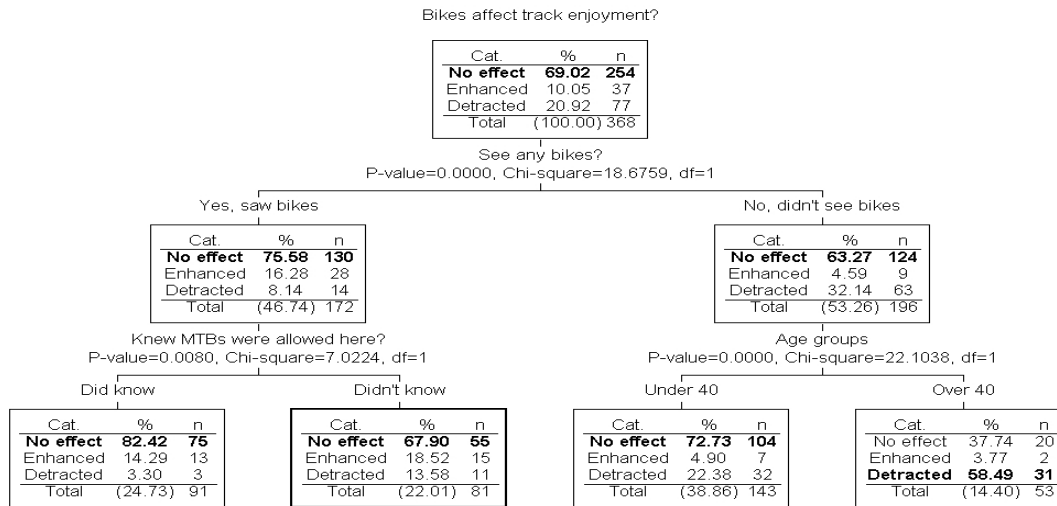| Cat.	%	n
No effect	37.74	20
Enhanced	3.77	2
Detracted	**58.49**	**31**
Total	(14.40)	53

Figure 1: Factors influencing enjoyment effects caused by bikes

Common opinions on biking	Agree	Neutral	Disagree	Compared by encounters with bikes	Compared by age-group
Biker behaviour					
Bikers are reckless and go past walkers too fast	29	27	44	***Not seen - agree more	***>40 - agree more
Bikers are reckless and go round corners too fast	27	36	37	*** Not seen - agree more	***>40 - agree more
Only a few irresponsible riders cause most problems	74	18	8	-	-
People over-estimate danger to walkers from bikes	38	36	26	-	-
People over-estimate conflict between bikers/walkers	42	41	17	-	-
Biker characteristics					
Bikers and walkers are different sorts of people	23	25	52	-	***>40 - disagree more
Walkers are more interested in the environment	41	22	37	-	***>40 - agree more
Bikers are louder and noisier than walkers	28	21	51	-	*>40 - agree more
Bike management					
Biking and walking have similar impact on tracks	25	17	58	-	-
As bikers learn better behaviours, conflicts will reduce	52	34	15	-	-
As people get used to bikes, conflicts will reduce	40	32	28	**Seen -agree more	*>40 - disagree more
Shared tracks for walking and biking won't work	25	25	50	***Not seen - agree more	***>40 - agree more
Biking should be banned on the Queen Charlotte	18	22	60	***Not seen – agree more	***>40 - agree more

Table 1: Walker opinions on biking
*(Chi² test significance - * p<.05, ** p<.01 ***p<.000)*

While many of these responses may be encouraging to park managers considering provision of shared-track approaches, notable proportions of negative opinions are apparent. Almost 30% considered that bikes go too fast when passing people or going around corners. A notable minority (23%) considered bikers and walkers were different kinds of people, while a majority (41%) considered walkers were more interested in the environment. As briefly noted earlier, these types of negative perceptions of behaviour and inter-group differences are the foundation for wider conflict perceptions. They are therefore important areas for improved management understanding and practice.

Acknowledging this need, it is notable that, as with overall visit evaluations, there was also distinct variation in opinions according to age, and to the occurrence of bike encounters (Figure 2). Those walkers who had encountered bikes on the track had more positive opinions about them in general. For example, walker opinions about hazard from bikes going too fast were less negative among those who actually met bikes. And opinions about biking were consistently more negative among those walkers over 40. This again draws attention to the distinction apparent between the evaluations of biking made according to perceived and actual situations, and to the consistently more negative perceptions of older walkers about bikes.

MANAGEMENT CONCLUSIONS

The emerging conclusions from research on bike impacts, and the largely positive evaluative results from specific surveys such as that on the Queen Charlotte Track, suggest a positive outlook for developing shared tracks. It seems that the perceptions and realities of impacts can sometimes be quite different, and that greater awareness and experience can lead to a reduction in problem perceptions. The generally more positive perceptions among those who actually encountered bikes suggests that some 'encounter-effect' may occur that somehow results in reduced negative

feelings. This may reflect some unanticipated positive aspect from experiencing bikes and their riders, such as friendly contact, and riding behaviour that was less threatening than expected. Or, it may reflect some form of conciliatory coping response by visitors when faced with perceived conflict situations, as widely documented in conflict literature. Some caution is required regarding possible displacement effects on the more 'bike-sensitive' walkers, such as the older walkers on the Queen Charlotte Track. All of these possibilities suggest fundamental and important research questions for managers to address if considering shared-track options.

There is a general need to ensure people are aware that bikes are likely to be encountered, and that biker behaviour is appropriate and friendly. The efforts of biking advocates to promote positive riding and encounter behaviours through codes of conduct would appear to be very appropriate. How these strategies may affect walker perceptions of biking over time represent another important area of research. Managers who are concerned about the notable proportion of walkers feeling that bikes detract from their enjoyment should be concentrating attention on the needs and concerns of older walkers, and how this might change as they are succeeded by the younger generation.

Given the emerging understanding of the differences between the perceptions and realities of conflict, opting to provide for shared tracks will require managers to become more proficient at conflict management processes. Emphasis will be required on the types of indirect (education, information) and bridge-building (co-operation, volunteerism) approaches described by Moore (1994), Chavez (1996) and others.

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