

Social Conflict Between Mountain bikers and Other Trail Users in the East Bay

Tsering Alleyne

Abstract Since mountain bikers have become one of the dominant groups of public land users in the last 25 years, many new challenges and concerns have arisen. Previous research suggests that the social compatibility of this new user group with the existing pedestrian and equestrian groups is of largest concern. The nature of the issues that exist between the user groups generally are of interpersonal conflict, dealing with the relations and social exchanges between users based on their activities. To best understand the nature of the conflicts and to come up with policy solutions the user groups can adhere to, I identified my study groups as the three activity participant groups; pedestrians, equestrians, and mountain bikers. Through a four question open-ended interview, I have collected opinions from each user group regarding what they perceive as the problem and how it might be resolved. The objective of this research is to use the perceptions of each user group to recommend policy to accommodate social compatibility between the groups. This ultimately is hoped to reduce interpersonal conflict, increase safety for all users, and reduce environmental impact by accommodating user groups specific trail needs. I found that individual users tend not to have strong opinions, but are mainly concerned with personal safety and disruption by other users. Most solutions were concerned with separating user groups. This may be an area for further study to determine the effectiveness of such a solution.

Introduction

With increasing trends in trail use, trails are becoming a scarce resource (Frost, 1995). The relative number of individuals in different activities has also changed with mountain biking as one of the fast growing categories (Frost, 1995). Since the inception of mountain biking in the 1980's the sport has grown to become a well established recreational activity. As of 2005, more than 50 million people actively participate in the sport (OIA 2005). The average number of outings per year per participant is around 19 which come to a total of approximately 900 million outings yearly from this group (OIA 2005). Most mountain bikers have made use of already existing trail systems throughout public lands to engage in their activities. In 1996, the USDA compiled a study of national forest managers' observations of mountain bike usage (Chavez 1996). In the findings, "at least two National Forests from every region (except region 10 [Alaska region]) reported use of greater than 10,000 mountain bike riders per year (Chavez 1996)." Twenty five percent of the forest managers logged use of parks by mountain bikers from 15,000 to 376,000 annually (Chavez 1996). The influx of mountain bikers has added a user group to trails, which before the 1980's, served mainly hikers and equestrians. This new user group has brought about new challenges and concerns. According to a 1996 USDA study, 70% of forest managers reported trail user conflicts dealing with mountain bikers and 59% reported ecological damage due to mountain bikers. In addition to this, managers reported safety issues related to biking and accidents involving mountain bikers as other concerns. The study found the two major issues plaguing the mountain bike user group are perceived ecological damage and conflicts with other trail users.

Interactions between users are a major issue for the land managers; this especially becomes an area of interest when it pertains to conflict between users. The occurrence of conflict in a recreational situation may be a result of what an individual does as well as what an individual fails to do (Jacob and Schreyer 1980). Conflict in recreation generally falls into two categories, interpersonal conflict and social values conflict (Carothers et.al., 2001). Problems can result from individuals who participate in the same activities as well as individuals in different activities (Moore, 1994). This means conflict can occur between a pedestrian and a cyclist and also between two pedestrians. A social values conflict can be characterized by differing on concerns over respect towards the environment or toward the safety of others (Carothers et.al., 2001). Interpersonal conflicts are more commonly found between individuals participating in

different activities (Carothers et.al., 2001). These types of conflicts are characterized by one-way conflict where one party is unequally affected by an others activity (Carothers et.al., 2001).

Mountain bikers enjoy riding single track trails, and just like hikers, have a desire to feel “a close connection to nature (Cessford 1995).” For the purposes of this study, a trail will be defined as a single track trail about 12 – 18 inches wide able to accommodate one user in its width. Single track further “separate[s] recreationists from the world of cars,” and offers greater challenge to the experienced rider (IMBA 2007). Many of the problems associated with the difficulties of multiple user groups stem from the unified affinity of all user groups for single track trails.

There have been numerous studies on the ecological impact of trail users, but “it has not been established in the research done to date that mountain bikes have greater overall impact on tracks than do walkers (Cessford, 1995).” Statistically speaking there is very little difference between the physical impact of hikers and mountain bikers (Weir, 2001). In an article by American Trails 2001, three studies from 1995, 2000, and 2001 all found the same result in study locations in New Zealand, Alberta, and Ontario respectively. The article also cited that “the type and amount of use has far less to do with erosion than factors like amount of rainfall and trail steepness and design (Lanza, 2001).” A 2006 study, by Dave White et.al, echoes these sentiments adding that “moderate to severe slopes are an area of concern for increased incision.” This is a problem because, “studies have shown that mountain bikers prefer trails with steeper slopes (White 2006).”

Although perceptions surrounding mountain bikes' environmental impact is a big issue, group conflict may be the larger issue. In a report released in 2004 by the Northeastern Recreation Research Symposium, 69% of state parks reported conflict between hikers and bikers, and 66% reported conflict between equestrians and bikers. Gordon Cessford's (1995) paper on the Off Road Impacts of Mountain Bikes, outlines the perceptions of mountain bikers held by pedestrian trail users. The perceptions are in the categories of negative environmental impact, safety hazard, inappropriate behavior, considered to be motorized, rider characteristics, and asymmetric conflict perceptions (Cessford 1995). Each of the perceptions is a social problem that has been identified with mountain bikers. In a 2002 study by Cessford the findings from the 1995 study are put to the test in a survey to determine which of the pedestrians concerns were predominant. The results said that hikers believed environmental impacts, individual behavior on

the part of the cyclist, and that only a small number of riders were really the problem (Cessford 2002).

Competition resulting from the limited resource of trails and the growing population of mountain bikers has also forced hikers to become aggressive in maintaining their stake (Moore , 1994). Hiking groups nationwide have lobbied to reduce trail access to bikers. It seems as if these closures are more of a social issue than an ecological one and that hikers, the original and more established user group, are using their pull to get what they want (Lanza, 2001). As a direct response to the closure of trails, bikers have continued to ride illegal trails. This activity has become known colloquially as “poaching” and is frowned upon even in mountain bike communities. Not all trails are suitable to bikes and wilderness area is something both groups seek to protect, but the closure of trails seems to have created more conflict. However, since trail regulations have become so strict, most bikers have probably poached a few times whether they know it or not. Poaching along with illegal trail building by mountain bikers creates a very negative image for mountain bikers in the eyes of other trail users and land managers. Three men who illegally built a trail in April 2001 in Marin, CA face felony charges, up to 10 years in jail, and \$250,000 in fines each (Foley, 2001). From my experience as an avid cyclist, this kind of punishment along with fines as high as \$200 just for riding illegal single track trails in the bay area seems to be standard. However, since both illegal building and riding continue to take place (personal observation), clearly fines are not solving the problem. The resources it takes to police the trails are also a burden on the park system's resources.

The response of opposed groups to the threat of irresponsible or ignorant mountain bikers has been more extreme than the punishment legally handed out by the state. Recently, in Marin County, a group of riders mistakenly turned onto an unmarked illegally built trail to be greeted by barbed wire across the trail (Stienstra 2007). Narrowly missing the wire, the riders then came upon fence stakes imbedded in the trail intended to impale oncoming riders (Stienstra 2007). In this case it was found to be the park that had set up the booby traps to catch potential outlaw bikers, but many examples of booby trapping trails have been found (Stienstra 2007). Most instances have been attributed to local hiking and equestrian groups (Stienstra 2007).

The issues of poaching and booby trapping are examples of how far out of hand trail user group conflicts have become. The behavior on the behalf of both parties may be attributed to the perception of hikers that mountain bikes are more environmentally damaging than they are.

Multi-use trails may never be problem-free; however, closing trails to an entire user group has not been a sustainable solution. The question that needs to be addressed is how can mountain biking be better managed to reduce conflict between users groups? I believe that through understanding of exactly what type of conflicts are occurring and considering the needs and desires of each user group, a practicable and sustainable solution can be found. From this I have devised two questions that need to be answered: What do users believe is the nature of the conflict? And what do users believe are practicable solutions to these conflicts?

For each user group I have made a hypothesis as to what they may believe the conflict is and how it can be solved. I chose not to include equestrians in this study, because of the small population of equestrians and the limitations of this study. I hypothesize that hikers believe bikes cause ecological damage and mechanized travel is disruptive to their experience of nature. This group will want bikes restricted to fire roads and speed limits if allowed at all. I hypothesize that mountain bikers will feel like hikers are overly defensive of trails and that hikers perceive they are entitled to use as being the source of conflict. This user group will see the solution as equal share in access to trails combined with greater consideration among all user groups for each other.

Methods

The method I will use to address my research questions will be an interview of members from each user group. I chose to use the interview format (**Appendix 1**) because of its ability to give an in-depth understanding of the experiences of an individual. A standard survey would have too many possible variables to account for and would not give as pertinent results. These ideas are particularly important when trying to accommodate for feuding groups separated by their interpersonal differences as in the case of my study. The context of individuals' actions can be taken into consideration using the interview method, which can be very helpful in determining how policy will affect individuals' actions in the future. The access to my study population is limited to individuals who volunteer to participate on site at park trailheads. Once interview time and location are accounted for, some bias may be found on the part of the researcher's choice of subjects as well as individuals' attitudes about being interviewed. This constraint again lends itself to the active dialogue of an interview. I will be able to get the most information in a short amount of time by actively engaging with study participants. Also, this allows me to clarify any

misunderstandings that may arise from study questions, which will reduce the possibility of error due to survey design.

Interviews were conducted at three locations. The first is Tilden Regional Park, where I located myself at the Meadows trailhead. I choose Tilden as a study site because all three user groups are present, although the bikes are restricted to fire roads. The second location is the Strawberry Canyon fire trail. This location has the two largest groups, pedestrians and mountain bikes, however mountain bikes are not allowed at all. There are more pedestrians than bikers, due to the fact that bikes are only present illegally. For this location I started at the fire trail head and moved up the fire trail to where the illegal mountain bike trail comes across the fire trail for my study. The final location was at Redwood Regional Park. This location has large populations of all three user groups and some bike legal single track, which increases risk for conflict. In Redwood I positioned myself at the Skyline gate staging area.

I interviewed at each of the locations on both weekends and weekdays at varying times from morning, to midday, to evening so I could get a more representative sample of all users. Morning was from 8am – 11am, midday from 12pm - 3pm, and evening from 4pm – 7pm. Actual times ranged dependant on location and time availability. Each outing lasted one hour from the time of my arrival. The equipment I used on each survey outing was a clipboard, my informed consent script, a copy of the interview questions, spare pens, paper to record answers on, as well as copies of the questionnaire. When soliciting a potential subject I first identified myself and asked if they would like to take part in a short interview survey. If they consented, I then read my informed consent script and asked if they would still like to take part. If consent is given I would then begin to ask the interview questions in sequential order, allowing participants to ask clarifying questions if necessary. Interview responses were written down exactly as they were dictated to me, and follow up questions were noted. Once the interviews were complete I asked them to fill out the demographic questionnaire. Each set of responses were numbered in order with their corresponding demographic questionnaire. After participants returned the questionnaire to me, I thanked them for their participation, offered them my contact information, and asked if they have any questions. Care was taken to be out of ear-shot of other individuals so participants were comfortable in the interview atmosphere.

Once the data was collected, the interview answers were typed into a computer and analyzed. Analysis consisted of a qualitative analysis in which I described the answers and trends

in answers between user groups for each question. From this information I was able to determine the outstanding concerns, the trends in responses from each user group, and the differences between study sites.

Results

A total of 21 interviews were conducted. 10 mountain bikers were interviewed and 11 pedestrians were interviewed. At the Meadows Canyon trailhead 5 people were interviewed total, 4 bikes and 1 pedestrian. At Strawberry canyon 6 people were interviewed, 4 pedestrians, and 2 mountain bikers. The mountain bikers at this study site were interviewed on foot and self identified as mountain bikers, no bikers actively using illegal trails were interviewed. At the Skyline gate study site 10 individuals were interviewed, 6 were pedestrians, and 4 were mountain bikers. In this study pedestrians were any individual on foot who did not specifically identify as a mountain biker. This included runners, hikers, dog walkers, and walkers. Mountain bikers were identified as such if they were on a mountain bike or if they specifically identified themselves as a mountain biker. Almost every mountain biker in the study identified as also being a pedestrian user at other times. In the following sections the responses to each interview question will be given for the overall participant pool denoted when it was a pedestrian's or a biker's response.

Responses to interview questions 1. *From your perspective, what is the nature of the relationship between mountain bikes, hikers, and equestrians? What is the specific nature of the interactions you have observed and/or perceive between mountain bikes and other user groups on trails?* A majority of the responses stated positive attitudes towards the nature of the relationship between trail users. Participants cited mountain bikers as being courteous and respectful to other trail users. Participants who identified as mountain bikers also noted on numerous occasions the need for mountain bikers to be the proponents of good etiquette on the trail, such as giving hikers the right of way and warning upon approach. A few mountain bikers also stated that the persecution of mountain bikers by other user groups forces them to be overly nice in order to maintain places to ride legally. One participant said "bikers are more open to share, but hikers would rather have the trails to themselves," while another said bikers are "courteous because equestrians get too much [trail access] for the percentage of the population [of total users] they occupy" and "equestrians are scared of bikes." A minority of the pedestrians

interviewed found negative perceptions of mountain bikes. The arguments of these participants stated that mountain bikes travel too fast, sometimes yell when passing, and can be rude. Every participant who made a negative observation noted bikes going fast as part of their perception.

2. *Considering feasibility, the fact that heavy fines and illegalization of trails to mountain bikes has not been an effective deterrent in the use of trail, and the rights of all user groups to have access to a venue for their recreation, what do you think are possible solutions to any aforementioned issues?* Participants who did not find problems between users in question one were still encouraged to answer. Pedestrians called for revised forms of punishment. One suggestion was the confiscation of bikes for illegal use of trails or misconduct. Another respondent suggested sentencing cyclists to experience the difficulties of having to walk as a hiker in order to teach tolerance and understanding. The respondent said “riding fast is rude; bikers should be made to walk as alternative punishment to understand the perspective of a walker.” Pedestrians also responded with an idea to segregate trails based on user. The idea was to have mountain bike-only trails and pedestrian-only trails to resolve conflict. This idea was also corroborated by mountain bikers who were interviewed. Pedestrian participants made suggestions of further passive regulation; in the form of signage and trail design and for further self regulation among cyclist. Multiple pedestrians also called for increased sensitivity among mountain bikers when passing other trail users. Mountain bikers surveyed believed more trails should be opened to bikes, because there were not strong negative interactions. One cited that most hikers stay to main trails close to the trailhead so this would further separate the two groups and effectively reduce conflict. While another believed that without ecological reasons for limited trail access to mountain bikes, there should be no reason not to open trails to them. Multiple mountain biker participants believed that alternating days of legal trails to bikes would reduce conflict while opening up greater area for riding by mountain bikers. In this idea, some days hikers would have trails to themselves and on other days bikers would have trails to themselves.

3. *When you use a trail what do you want out of your experience and how does the presence of other user groups affect this?* Almost all the pedestrian & mountain bike users surveyed cited a desire to experience nature and be away from the city as a reason for using the trail. A minority of pedestrian users surveyed believed nobody had an effect on their experience, while a majority of mountain bikers experience was unaffected by other users. Some pedestrian

users believed high density of other users had a negative effect on their experience. One mountain biker respondent believed that density of other users negatively affected their experience. One pedestrian wanted to have at least a 10ft radius from other users while another was concerned with disruption of train of thought or activity. Both believed too many other users were the sources of a negative experience. A couple pedestrian participants believed that the presence of other users made their experience on the trail better. Observing social behavior provided entertainment, and the respondents believed all users shared an unspoken bond. Many pedestrians as well as mountain bike users were also looking for exercise as a part of their trail experience. A general trend appeared that participants across activities who stated exercise as a part to their desired experience were less affected or completely unaffected by other users. Conversely participants (only pedestrians in this case) who listed only experiencing nature as the desire in their outing were affected by other user's presence.

4. *Describe your ideal trail access/availability situation. On a daily use basis, how much would you be willing to pay (if anything) and how long in time would you be willing to commute (if at all) for this ideal? How different is this ideal from the reality of your current situation (if at all)?* For question four the trail descriptions will be omitted and only the details that quantify value of the ideal trail will be included. Only a couple pedestrian surveyed were willing to pay a \$2 - \$5 daily use fee for their ideal trail. In the case of mountain bikers a majority was willing to pay \$3 - \$5 for daily use fees as well as travel on average 15 minutes for their ideal trail. Bikers were also willing to ride as long as 45 minutes on their bicycle to a trail head. A majority of pedestrians were willing to pay in the form of taxes, or not willing to pay at all. A minority of pedestrian respondents were willing to drive from 10 – 25 minutes for their ideal. Other pedestrians were in favor of being able to take public transportation as part of their ideal. All of the pedestrian respondents believed that the current situation was very close to their ideal. Over half of the mountain bikers believed that their current trail situation was very different from the ideal they pictured. One of the mountain bikers believed their situation was pretty close to ideal, while a couple others believed it was acceptable but not ideal.

Discussion

Across the user groups surveyed, the overall trend appeared to be that there was little conflict between mountain bikers and pedestrians. Participants for the most part were still willing

to contribute to ideas for solutions for potential conflict. However, no individual interviewed was strongly against mountain bikes on trails. Solutions to potential conflict were most often in the form of separating the two user groups either by staggered use, having separate trails entirely, or legalizing more trails to increase dispersion. Overall, individuals were not affected greatly by other users on the trails; only two users expressed concerns due to density of other users as an issue. Trail users were split down the middle with how they quantified the value of the trail.

Pedestrians My hypothesis that pedestrians believe bikes cause ecological damage, mechanized travel is disruptive to their experience of nature and that this group will want bikes restricted to fire roads and speed limits if allowed at all was largely refuted. Most of the pedestrian trail users interviewed had very positive viewpoints toward bicycles and believed them to be respectful and responsible trail users. Only one pedestrian was concerned with disruption of their experience, but was more directly bothered by general trail density and not specifically bikes. This response of aggravation over density on the trail agrees with previous findings that there is competition for trails as a scarce resource (Moore, 1994). No respondents were concerned with the ecological impact of mountain bikes on trails. This is unlike findings from previous studies that outlined environmental factors as a primary concern (Cessford 1995 & Cessford 2002). One user was concerned with the speed of bicyclist, but was in favor of self regulation on the part of the cyclists. The concern of speed of the cyclist agrees with the findings that riding characteristics play a part in conflict (Cessford 1995). However, congruent with my hypothesis were the two pedestrian respondents who were more in favor of revised punishment as a solution to possible continuing conflict. The pedestrian group had the only two participants who were bothered by other users on the trail, however they also had the only two respondents who were positively influenced by other users. This range of responses is most likely a result of the wide variety of pedestrian trail users. In quantifying the value of the trail, the majority of pedestrians exhibited a sense of entitlement to trails. They were in favor of more money going into parks, but were opposed to paying a fee. Some even believed further infrastructure should be in place to increase access to parks in the way of public transportation. A large part of why pedestrians responded this way, I believe, is because all the pedestrians interviewed were very happy with the current trails they had available. There was no discernable difference between study sites.

Mountain bikers I hypothesized that mountain bikers feel like hikers are overly defensive of trails and that hikers perceive they are entitled to use as being the source of conflict. This user group will see the solution as equal share in access to trails combined with greater consideration among all user groups for each other. I found this hypothesis to be partially supported. Although only one respondent mentioned hikers as being defensive, every respondent called for greater access to trails as a method for reducing conflict. One respondent also mentioned greater consideration among cyclists as a solution for reducing conflict; this is also congruent with my hypothesis. Mountain bikers did not report extreme measures being taken to prevent mountain bike use on trails as found from current events (Stienstra 2007). Cyclists were predominantly not effected by other users on the trail. This response is congruent with the ideas of one-way interpersonal conflict where one party is unequally affected by another; in this case the bikers are not bothered as much as the hikers (Carothers et.al., 2001 & Watson et al., 1991). From question four of the interview, mountain bikers were all willing to commute as well as pay a daily use fee to have an ideal trail. Part of the reason for this is that most of the bikers did not currently find the trails available to meet their ideal. I think a big part of bikers' willingness to pay is that for riders with greater skill, more challenging trails are ideal. As participants outlined what they sought out of their trail experience, challenge is important to this user group. As previous research suggests, bikers prefer trails that are steep and narrow in places (White 2006 & IMBA 2007).

The results I have found in my study have shed light on the larger issue in a way I did not expect. It seems that the average user I interviewed didn't really find strong basis for conflict between user groups on trails in the East Bay. The results would seem to argue that fines and regulations on local trails have been an effective deterrent in illegal use and commend proper trail etiquette. Or it could be that this phenomenon is endemic to the East Bay region, because this finding does not agree with previous research (Watson et al., 1991, Moore, 1994, & Chavez 1996). It may be that the predominant dog walker conflict may over-shadow pedestrian/biker issues (EBRP, 2007). Again it may also argue that the conflict is in actuality very minimal. The research I have discovered on the topic of interpersonal conflict says that conflict may only be limited to only a few individuals (Cessford 2002). Although, it is these few individuals that have led to the creation of the strict regulations that govern all mountain bikers. I believe my study has been able to identify that there is some discrepancy between the availability of trails to

pedestrians as a user group and to mountain bikers. The pedestrians are largely content, while mountain bikers who can cover far greater distances in less time have less available trail to use. It is from this discrepancy that I conjecture that a few individuals are tempted to break the rules, as admitted by some participants as well as Foley, 2001. My findings suggest that increasing the range and amount of trails will decrease the number and frequency of renegade bikers, as well as reduce conflict between lawful bikers and pedestrians. My research strongly suggests that the two user groups be separated in order to expand riding opportunities for mountain bikers. I believe that the low number of negative responses to mountain bikes and the desire for bikers to have greater access may mean the East Bay is ready for alternative trail access and use strategies. Just across the bay in Marin County, the Tamarancho Boy Scout camp hosts a ten mile loop of trail that charges a \$45 per year fee for use with great success. In the private sector, bike parks have been very profitable by creating bike-specific trails with greater challenge which entices cyclists to ride there. The bike park in Whistler, British Columbia has been successful in attracting bikers from around the world as well as keeping local cyclist enamored with bike-specific trails that have no other user groups present. Meanwhile, the local public trails are available to other users as well as bikes in some cases. While this bike park is a private industry located at a ski resort, other solutions exist which use public land. For instance, at McDowell Regional Mountain Park in Fountain Hills, Arizona there is a network of trails known as the "competition track." These fourteen-plus miles of trail are dedicated to fast moving bicycles and runners. Other areas of the park have regular multi-user trails as well as single user trails. With more research it could be found which of these solutions has the greatest effect, it may simply be a function of feasibility. Overall, the effect would hopefully result in less conflicting interactions between user groups. On my specific project, further research is necessary to determine what user groups think of a solution and if they even believe it is necessary. Alternatively, since other trail users feel more entitled to having local access, i.e. pedestrians who are unwilling to commute or pay, it also suggests that the current policy has been effective in getting mountain bikers to be more willing to travel further distances and pay more to have greater trail access. However, knowing this, the Easy Bay Regional Park could benefit from accommodating the needs of the mountain bike user group by creating bike-specific trails and charging membership fees for the use to cover extra maintenance of new trails.

Conclusion

From what I heard from both user groups, the conflicts that exist are minimal. However, it does seem as though mountain bikers as a user group could be better managed and the chances of potential conflicts reduced. From what participants related in their interviews, separating the user groups would reduce possible conflict. Since the amount of land is very limited compared to the population it serves, I don't believe alternating access to trails would make a good solution. Instead, I think that focusing on dispersing the users would be the best way to put distance between them. In order to do this, I would propose building and legalizing trails for mountain bikes that are at least three miles from a trail head parking lot. Since most pedestrians will not wander this far and bikes are more than capable of riding this distance, I think the user groups would have far less interactions. Main fire roads would be used to access these trails, but by having challenging bike-specific trails available to ride, bikes would not be tempted to use pedestrian-only trails. As a part of this suggestion, I would add that to further increase dispersion, bikes should be given up hill riding access to select trails within the three mile buffer. Forcing bikes to ride only up hill would allow them greater access and dispersion, but dissolve any issues related to speeding past hikers. This would also reduce traffic on main fire roads. This should only be implemented upon surveying the general user population on their thoughts on this solution to be sure there is support. I believe that the larger representative organizations of the trail user groups who fight for group rights are more aggressive and upset then the average user. The longstanding fight over trail rights between groups like IMBA and groups like the Sierra Club have made over-generalizations of the user groups they represent. These get played out into policy where whichever group gets their foot in the door first often has the biggest say over policy. In my research however, I believe that the reality of what is happening is much more important and that there can be a solution that will even make both big advocacy groups happy.

Acknowledgements:

I would like to thank the facilitators of E.S. 196, Peter Oboyski, Gabrielle Wong-Parodi, Shannon May, and Shelly Cole for their tireless effort and dedication.

Reference:

- Carothers, P. et.al. 2001. Social Values verses Interpersonal Conflict among Hikers and Mountain Bikers, *Leisure Sciences*, 23:1, 47-61.
- Cessford, G.R. 2002. Perception and Reality of Conflict: Walkers and Mountain Bikes on the Queen Charlotte Track in New Zealand. *Monitoring and Management of Visitor Flows in Recreation and Protected areas. Conference Proceedings.*
- Cessford, G.R. 1995. Off-Road Impacts of Mountain Bikes. Department of Conservation. Science and Research Series NO.92.
<<http://www.mountainbike.co.nz/politics/doc/impacts/index.htm>>. Accessed 2007 April.
- Chavez, D. J. 1996 July. Mountain Biking: Issues and Actions for USDA Forest Service Managers. Res. Paper PSW-RP-226-Web. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 33 p.
- East Bay Regional Park Trail Use Survey Results. 2004. East Bay Regional Park District
<www.ebparcs.org/files/EBRPD_files/planning/trail_use_survey_findings.pdf>. Accessed 2007 April.
- Frost, D. 1995. River Valley Parks & Trail Survey. Unpublished, Edmonton River Valley Parks, Edmonton, Alberta, Canada.
- Foley, G. Trio Charged With Felonies in Illegal-Trail Case. Point Reyes Light. 2001 April 19.
<http://www.ptreyeslight.com/stories/apr20_01/trail_indictments.html> 2007 April.
- [IMBA] International Mountain Bicycling Association. 2007. IMBA home page.
<www.imba.com>. Accessed 2007 April.
- [IMBA] International Mountain Bike Association. 2007. The Importance of Single Track.
<http://www.imba.com/resources/bike_management/singletrack.pdf>. Accessed 2007 April.
- Jacob, G.R. and Schreyer, R. 1980. Conflict in Outdoor Recreation: A theoretical perspective. *Journal of Leisure Research* 12(4): 368-380.
- Lanza, M. Trail Maintenance and Management. *American Trails* 2001 April
<<http://www.americantrails.org/resources/ManageMaintain/BikeAMC.html>>. Accessed 2007 April.
- Moore, Roger L. 1994. Conflicts on Multiple-Use Trails: Synthesis of the Literature and State of the Practice. Report No. FHWA-PD 94-131, Federal Highway Administration; P. 67
- Nelson, C.M., Jennings, R., Henschell, J. 2004. Northeast Recreation Symposium.
<http://www.fs.fed.us/ne/newtown_square/publications/technical_reports/pdfs/2005/326papers/nelson326.pdf>. Accessed 2007 April.

- Outdoor Industry Association. 2004. Outdoor Industry Recreation Participation Study. <http://outdoorindustry.org/images/researchfiles/2005_Participation_Study.pdf?43>. Accessed 2007 April.
- Stienstra, T. 2007 March 16. San Francisco Chronicle. Illegal Bike Trails Threaten Riders, Rankle Officials. <<http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2007/03/16/BAGIHOMGND1.DTL>>. Accessed 2007 April.
- Watson, A. E., Williams, D. R., & Daigle, J. J. 1991. Sources of conflict between hikers and mountain bike riders in the Rattlesnake NRA. *Journal of Park and Recreation Administration*, 9, 59-71.
- | Weir, D.V. 2000. A Guide to The Impacts of Non-Motorized Trail Use. Donald V. Weir and Associates, Edmonton, Canada
- | White, D.D., Waskey, M.T., Brodehl, G.P., Foti, P.E. 2006. A Comparative Study to Mountain Bike Trails in Five Common Ecological Regions of the Southwest. *Journal of Park and Recreation Administration*. Vol. 24, #2: 21-41.

Appendix 1

1. From your perspective, what is the nature of the relationship between mountain bikes, hikers, and equestrians? What is the specific nature of the interactions you have observed and/or perceive between mountain bikes and other user groups on trails?

2. Considering feasibility, the fact that heavy fines and illegalization of trails to mountain bikes has not been an effective deterrent in the use of trail, and the rights of all user groups to have access to a venue for their recreation, what do you think are possible solutions to any aforementioned issues?

3. When you use a trail what do you want out of your experience and how does the presence of other user groups affect this?

4. Describe your ideal trail access/availability situation. On a daily use basis, how much would you be willing to pay (if anything) and how long in time would you be willing to commute (if at all) for this ideal? How different is this ideal from the reality of your current situation (if at all)?