



Recreation Research Update



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Mountain Bike Etiquette

A recent study completed by Bill Hendricks (Cal Poly, San Luis Obispo), Roy Ramthun (Concord College), and Debbie Chavez (PSW) examined the effects of three sources of messages and two appeal types on mountain bicyclists' compliance with social and resource trail etiquette situations on Mt. Tamalpais in Marin County, California. Trail etiquette, a popular educational management approach, is designed to encourage appropriate riding behavior. Baseline data and intervention data were collected. The three message sources were a volunteer biker, a volunteer hiker, or a volunteer in uniform. The messages communicated to mountain bicyclists were either a fear appeal or a moral appeal. The two social trail etiquette conditions were yielding behavior when approaching two hikers and speed traveled. Yielding behavior, measured unobtrusively by two individuals hiking up a protection road side by side was rated on a 9-point scale ranging from no yield to a superior yield. Bicyclist speed traveled was also measured unobtrusively with a radar gun. A 15 mph speed limit is enforced on Mt. Tamalpais. The resource conditions were whether the bicyclist rode or walked across a posted, closed section of trail (where walking a bike is required) and whether a bicyclist rode through a stream or crossed a bridge to avoid the stream (trail etiquette recommends avoiding wet and sensitive areas). These behavioral observations were also conducted unobtrusively (n=772).

The initial analysis included a comparison of baseline data to results obtained in the interventions. There was a statistically significant difference between the overall mean score for yielding regardless of the appeal types and message sources when compared to the baseline yielding mean score. In a comparison of baseline observations with appeal types and sources, there was more compliance with the hiker source--the fear appeal was significantly greater in gaining compliance.

In the baseline data 56% of the total sample was traveling over the 15 mph speed limit and with the appeals and message sources data 59% of the total sample was above the limit.

Using ANOVA procedures to examine differences in appeal types and message sources during the yielding situation, the source did not make a difference, but the fear message was more effective than the moral

message in gaining compliance. Speed traveled was also examined with ANOVA. The volunteer biker was more effective than the volunteer in uniform and the moral appeal was significantly more effective than the fear appeal.

For the single-track trail resource situation, following an intervention the subjects were more likely to comply by walking their bikes across the trail. Similarly, more subjects exposed to a moral appeal or a fear appeal were in compliance by walking their bikes compared to baseline subjects.

Observations on the single-track trail indicated that bicyclists receiving a moral appeal from a volunteer biker were more likely to walk their bikes than bicyclists receiving a fear appeal from a volunteer biker. In the stream situation, more bicyclists complied with traveling over the bridge when receiving the fear appeal than did those following the moral appeal.

Overall the results of this study indicated that communicating appropriate trail etiquette regardless of the source or the type of message is more effective than receiving no information for three of the four trail etiquette situations observed. Following an intervention, bicyclists are more likely to announce an approach in a yielding situation, and to comply with etiquette guidelines designed to reduce impacts to natural resources. In all four trail etiquette conditions the uniform volunteer was least effective in gaining compliance.

The results suggest that providing uniforms for volunteers may not always be the most beneficial approach and that moral messages from mountain biker volunteers have potential particularly for agencies favoring indirect management strategies. This study indicates that volunteer mountain bike patrols, such as those organized and trained by IMBA's National Mountain Bike Patrol, have the potential to be an effective and low cost mechanism for influencing the behavior of bicyclists.

For more information about this study contact Debbie Chavez at 909.680.1558.

Reactions to Water Quality Problems

A collaborative effort between George Cvetkovich of Western Washington University, Pat Winter (PSW), and the San Dimas Technology and Development Center was focused on water quality issues on the

Colville National Forest. A multitude of problems associated with recreational use were occurring, including siltation from human movements such as OHVs; soil compaction from people parking and camping in sensitive areas; destruction of vegetation; and the improper disposal of human waste. The risk of area closure to recreation was present, because of threatened and endangered fish in the watershed.

Two groups of people participated in the study. The first group consisted of 23 students enrolled in classes at the local high school. The second group were campers in both dispersed (n=64) and developed (n=18) sites along the watershed. High-schoolers participated based on presence in the classroom on the day of the study, campers through presence at the sites and willingness to participate. High-schoolers completed a self-administered survey and participated in focus groups. Campers participated in an interview onsite, with items similar to the high school survey.

Slightly more males (57.9%) than females participated in the study. Respondents expressed a high concern about water quality (mean of 6.58 on a scale from 1 to 8 where 8=greatly concerned); however they rated the concern others might have as much lower (mean of 4.62).

Three variables were created, based on a composite of survey items. Acceptance of High Impact Interventions was the average of ratings of approval for banning certain uses in the area and closing logging roads to recreational users. Acceptance of Low Impact Interventions was the average of ratings of approval for having posters and pamphlets and having a ranger visit campers. Trust Average was the average of responses to ratings of perceived shared values, goals, views, and overall trust in the Forest Service.

Ratings on High Impact interventions were predicted by gender, perceived effectiveness of closures, perceived effectiveness of banning uses, and Trust Average ($R^2=.478$). About 10% of the variance was explained by Trust Average. Ratings on Low Impact interventions were predicted by gender, number of times respondent had visited the area, perceived effectiveness of visits, perceived effectiveness of posters, and concern over water quality ($R^2=.316$). Less than 1% of the variance was explained by Trust Average. While less intrusive interventions were generally acceptable, their acceptance did not hinge on

trust. On the other hand, acceptance of more intrusive interventions was linked to trust.

While less intrusive interventions were more acceptable, the use of posters and pamphlets was not expected to be as effective as face-to-face contact (mean of 4.68 on a scale from 1 to 8 where 1= would not be effective, 8 = would eliminate the problem behavior). Personal visits from rangers were rated as the most effective (mean of 5.32). The more intrusive interventions received lower ratings of perceived effectiveness (banning uses had a mean of 4.28, closing roads a mean of 4.29).

Qualitative and quantitative data suggest the presence of six barriers preventing pro-environmentally responsible behaviors. Those barriers include: 1) The lack of physical barriers preventing adverse recreational impacts in dispersed settings; 2) A belief that activities other than recreation are accounting for the declining water quality; 3) A lack of awareness of how to perform in a more pro-environmental way; 4) A long-standing pattern of recreational behaviors equivalent to habits and not subjected to introspection; 5) The values of having a good time and freedom from restrictions (frequently paired with the recreational experience) are contrary to pro-environmental action; and 6) A possible social norm of destructive activities through observation of others acting in depreciative ways.

Educational approaches including onsite posters and pamphlets, paired with ranger visits are recommended in light of these findings. In addition, the agency's efforts of working with organized user groups to provide education on environmental responsibility should be continued.

For more information about this study contact Pat Winter at 909.680.1557.

A Marketing Approach to Satisfaction Among Four Age Groups of Visitors

A report from the Sedona/Red Rock Market study by Guat Loo and Dwayne Baker (Arizona State University) and James Absher (PSW) looks more closely at market mechanisms across four age groups. It compares non-senior and senior visitors' ratings of overall satisfaction and analyzes a marketing-based, service quality model of satisfaction.

A structural equation approach examined the overall satisfaction of non-seniors (under 35, 35-44 and 45 and older) and seniors (55 and older) as a function of past experience, sources of information, perceived service quality performance and multiple-attribute ratings.

The results show that overall satisfaction for the 55 and over age group was influenced by service quality performance and suggest that managers might focus on generating

effective sources of information that increase the impact of service quality performance. For those under 35, service quality performance was fully mediated by multiple-attribute satisfaction and suggests that managers need to monitor both overall service quality performance and multiple-attribute satisfaction. Also, this study demonstrated that the helpfulness of information sources has a significant effect on respondent's overall satisfaction.

For more information about this study contact Jim Absher at 909.680.1559.

Outdoor Recreation Service Quality Items

The report from a three-phase study of outdoor recreation service quality items by James Absher (PSW), Dwayne Baker (ASU), Tim Green (LBL) and Randy Virden (ASU) is now available. Based on customer service research, the forest visitor's outdoor recreation experience is framed through key experiential benefits and attributes and then analyzed to obtain a robust set of customer service items.

This study's protocol was in three phases: on-site contact, focus groups to generate attributes, and a questionnaire to measure the experiential service quality factors and items. Visitors were contacted at 12 sites on the Tonto National Forest (TNF) and three sites at Land-Between-The-Lakes NRA (LBL). Five focus groups (n=32) were held for TNF visitors, and an additional nine were convened at LBL (n=45).

From these focus groups 254 experiential attributes emerged, and were further aggregated into similar items, generating a common pool of six "generic" outdoor recreation factors with 41 items: 1) facilities; 2) employees; 3) safety/security; 4) information sources; 5) other visitors; and 6) recreation opportunities. An additional 44 items were produced that comprise an activity-specific pool related to five uses: 1) trails, 2) water-based/ boating related recreation, 3) camping facilities, 4) interpretive exhibits, and 5) concession services. Thus, both broad scale outdoor recreation and activity-specific items emerged.

Next, a service quality assessment instrument for these items was pilot tested through a mail-back survey of 165 respondents. Analysis shows that each attribute factor has reliability greater than .70.

In general the protocol was able to generate meaningful and readily interpretable items for further use in customer service surveys, and suggests outdoor recreation quality may be based on a combination of relatively universal attributes and activity specific items. *For more information about this study contact Jim Absher at 909.680.1559.*

Recent Publications

Absher, J.D.; Jeong, W.C. 2000. **Market position of outdoor recreation opportunities on National Forest lands: A case study of the Sedona/Red Rock Area.** Proceedings paper. Travel and Tourism Research Association 31st Annual Conference, Burbank, California, June 11-14, p. 186-190.

Burn, S.M. 1999. **Environmental intervention handbook for resource managers – Steps for shaping recreationist behavior.** Unpublished. Riverside, CA: USDA Forest Service, Pacific Southwest Research Station.

McAvoy, L.; Winter, P.L.; Wilson Outley, C.; McDonald, D.; Chavez, D.J. 2000.

Conducting research with communities of color. *Society & Natural Resources* 13: 479-488.

McLean, D.D.; Chavez, D.J.; Knapp, J.S. 2000. **Fiscal trends in America's state parks: An 8-year analysis.** In Kyle, G. (comp.) Proceedings of the 1999 Northeastern Recreation Research Symposium, April 11-14, Bolton Landing, NY. Gen. Tech. Report NE-269. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station, p 257-263.

Schneider, I.E.; Chavez, D.J.; Borrie, B.; James, K. 2000. **Proceedings from the Third Symposium on Social Aspects and Recreation Research, February 16-19, Tempe, AZ.** Tempe, AZ: Arizona State University. 274 p. Included are:

- Hendricks, W.W.; Ramthun, R.; Chavez, D.J. 2000. **To cross or not to cross: Mt. bicyclists' resource trail etiquette behavior.** p 153-158.
- Hoger, J.L.; Mangun, J.C.; Chavez, D.J. 2000. **Do mountains matter? A comparison of two regional mountain biker profile studies.** p 159-163.
- Jeong, W.C.; Godbey, G.C. 2000. **Ethnic variation in outdoor recreation use: The case of Asian Americans.** p. 55-60.
- McLean, D.D.; Chavez, D.J.; Hurd, A. 2000. **State parks: A diverse system.** p 147-151.
- Tierney, P.; Dahl, R.; Chavez, D.J.; Apt, J. 2000. **Motives and constraints to vacationing in natural areas: A comparison of Los Angeles and Hong Kong residents.** p 61-68.
- Tynon, J.F.; Chavez, D.J. 2000. **Urban crimes in natural environments: Are we prepared?** p 43-46.
- Winter, P.L.; Cvetkovich, G.T. 2000. **Understanding public response through the trust filter.** p 47-52.