

## California Department of Parks and Recreation Seeks Trail Conflict/Safety Data and Documents

The Department is conducting a Statewide Roads and Trails Change-in-Use Program Programmatic Environmental Impact Report (PEIR). We are conducting background research regarding trail use conflict and safety issues and solutions.

We are seeking hard data and documented practices, including success stories and failures. **THIS IS NOT AN OPINION SURVEY**; rather it is an attempt to find the most complete and objective documentation of the issues, and the best practices for addressing them. The goal is to complete the research collection and document review by April 30, 2011.

We have already received several references and resources on this topic from those who commented on the scope for the PEIR (listed in Attachment A). Attachment B presents our initial working list of reference documents and data (it may duplicate some resources in Attachment A). We would like any other study, strategy, contact, or other source of information on techniques for managing multiple user types on trails and shared-use paths.

Additional data, documents, or suggestions, or questions about the research should be directed to Hannah Kapell, Research Coordinator: [hannahkapell@altaplanning.com](mailto:hannahkapell@altaplanning.com) or (510) 540-5008 x111.



# Attachment A: References and Attachments Provided in NOP Comment Letters

## NOP Comment Letter O-5 Attachments:

- D. Impact of Mountain Biking - Palos Verdes Nature Preserve, compiled by Lynn Brown.
- E. Article "Trail Wars at Annadel State Park" dated July 6, 2010
- F. Summary of personal reports of incidents involving bikers, compiled from Park Watch.org
- G. CET&LC Safety Considerations for Multi-use Trails.
- H. Motion to Intervene, Lake Oroville Relicensing, Federal Energy Regulatory Commission, March 31, 2006

## NOP Comment Letter O-9:

For additional consideration of trail conflict and the research conducted on its causes and solutions, please refer to the following sampling of studies:

- Hoger & Chavez (1998). Conflict and management tactics on the trail. *Parks & Recreation*, 33(9), 41-49.
- Moore, (1994). Conflicts on Multiple-Use Trails: Synthesis of Literature and State of Practice. Washington, D.C.: Federal Highway Administration.
- Ramthum (1995). Factors in user group conflict between hikers and mountain bikers. *Leisure Sciences*, 17(3), 159-170
- Schneider (2000). Revisiting and revising recreation conflict research. *Journal of Leisure Research*, 32(1), 129-132.
- Vaske, Donnelly, Karin & Laidlaw (1995). Interpersonal versus social-values conflict. *Leisure Sciences*, 17(3), 205-222

Some examples of research conducted that compare the effects of bicyclists with other trail users:

- Marion & Wimpey, (2007). Environmental Impacts of Mountain Biking: Science Review and Best Practices. Originally published in *Managing Mountain Biking: IMBA's Guide to Providing Great Riding* (2007).
- Bjorkman, Alan. 1996. Off Road Bicycle and Hiking Trail User Interactions: A Report to the Wisconsin Natural Resources Board. Wisconsin Department of Natural Resources: Bureau of Research.
- Chiu, Luke and Kriwoken, Lorne. Managing Recreational Mountain Biking in Wellington Park, Tasmania, Australia. *Annals of Leisure Research*, (in press).
- Crockett, Christopher S. 1986. Survey of Ecological Impact Considerations Related to Mountain Bicycle Use on the Edwards Field Trail at Joseph D. Grant County Park. Santa Clara County (CA) Parks Department.

- Gander, Hans and Ingold, Paul. 1996. Reactions of Male Alpine Chamois *Rupicapra r.rupicapra* to Hikers, Joggers and Mountainbikers. *Biological Conservation* 79:107 - 109.
- Goeft, Ute and Alder, Jackie. 2001. Sustainable Mountain Biking: A Case Study from the Southwest of Western Australia. *Journal of Sustainable Tourism* 9(3): 193 - 211.
- Herrero, Jake and Herrero, Stephen. 2000. Management Options for the Moraine Lake Highline Trail: Grizzly Bears and Cyclists.
- Papouchis, Christopher M. and Singer, Francis J. and Sloan, William. 2001. Responses of Desert Bighorn Sheep To Increased Human Recreation. *Journal of Wildlife Management* 65(3): 573 - 582.
- Spahr, Robin. 1990. Factors Affecting The Distribution Of Bald Eagles And Effects Of Human Activity On Bald Eagles Wintering Along The Boise River. Boise State University.
- Taylor, Audrey R. and Knight, Richard L. 2003. Wildlife Responses to Recreation and Associated Visitor Perceptions. *Ecological Applications* 13(4): 951 - 963.
- Thurston, Eden and Reader, Richard J. 2001. Impacts of Experimentally Applied Mountain Biking and Hiking on Vegetation and Soil of a Deciduous Forest. *Environmental Management* 27(3): 397 - 409.
- Weesner, Meg. 2003. Cactus Forest Trail Environmental Assessment, Saguaro National Park, Arizona, National Park Service.
- Wilson, John P. and Seney, Joseph. 1994. Erosional Impacts of Hikers, Horses, Motorcycles and Off-Road Bicycles on Mountain Trails in Montana. *Mountain Research and Development* 47(1): 77 - 88.

## NOP Comment Letter O-11 attachments/links:

- Environmental Impacts of Mountain Biking: Science Review and Best Practices. <http://www.imba.com/resources/research/trail-science/environmental-impacts-mountain-biking-science-review-and-best-practices>. By Jeff Marion and Jeremy Wimpey. 2007.
- <http://www.imba.com/resources/research/environmental-impacts>
- <http://www.imba.com/resources/research/trail-science/environmental-impacts-mountain-biking-science-review-and-best-practices>

## NOP Comment Letter I-14:

- [www.americantrails.org](http://www.americantrails.org) (provides information on environmental impacts caused by various user groups)

## Attachment B: Resources Collected to Date

Author	Org/Agency	Title
AASHTO	AASHTO	<i>Guide for the Development of Bicycle Facilities</i>
Alta Planning & Design	East Bay Regional Park District	<i>DRAFT Narrow Natural Surface Trails Managing Multiple Use</i>
Bjorkman, Alan	Wisconsin Bureau of Natural Resources: Bureau of Research	<i>Off Road Bicycle and Hiking Trail User Interactions: A Report to the Wisconsin Natural Resources Board</i>
Bondurant, J., L.Thompson et. Al.	N/A	<i>Trail Planning for California Communities</i>
Brown, Lynn	?	<i>Impact of Mountain Biking – Palos Verdes Nature Preserve</i>
CA State Parks	CA State Parks	<i>Park Watch Reports for Folsom Lake Pioneer Express Trail</i>
CA State Parks	CA State Parks	<i>California Recreational Trails Plan</i>
CA State Parks	CA State Parks	<i>Best Management Practices For Road Rehabilitation: Road to Trail Conversion</i>
CA State Parks	CA State Parks	<i>State Parks Policy on Roads and Trails Change in Use</i>
CA State Parks	CA State Parks	<i>Trail Manager's Toolbox</i>
California Equestrian Trails & Lands Coalition	California Equestrian Trails & Lands Coalition	<i>Safety Considerations for Multi-use Trails</i>
Caltrans	Caltrans	<i>Bikeway Planning and Design</i>
Caltrans	Caltrans	<i>Manual on Uniform Traffic Control Devices</i>
Caltrans	Caltrans	<i>Capacity Analysis of Pedestrian and Bicycle Facilities: Recommended Procedure</i>
Carothers, P., J. Vaske, & M. P. Donnelly		<i>Social values versus interpersonal conflict among hikers and mountain bikers</i>
Cessford, G.R.	International Mountain Bike Association	<i>Perception and Reality of Conflict: Walkers and Mountain Bikes on the Queen Charlotte Track in New Zealand</i>
Chiu, Luke and Kriwoken, Lorne		<i>Managing Recreational Mountain Biking in Wellington Park, Tasmania, Australia</i>
Coalition for the Capitol Crescent Trail	Coalition for the Capitol Crescent Trail	<i>Capitol Crescent Trail User Survey</i>
Cole, David N.	Aldo Leopold Wilderness Research Institute	<i>Visitor and Recreation Impact Monitoring: Is it Lost in the Gulf Between Science and Monitoring?</i>
Crockett, Christopher S	Santa Clara County (CA) Parks Dept.	<i>Survey of Ecological Impact Considerations Related to Mountain Bicycle Use on the Edwards Field Trail at Joseph D. Grant County Park</i>
FERC	FERC	<i>Notice of Motion, Motion to Intervene, Protest and Comments. . .</i>
FHWA	FHWA	<i>BIKESAFE Website</i>
FHWA	FHWA	<i>Evaluation of Safety, Design and Operation of Shared Use Paths: Final Report</i>
Gander, Hans and Ingold, Paul		<i>Reactions of Male Alpine Chamois <i>Rupicapra r. rupicapra</i> to Hikers, Joggers and Mountainbikers</i>
General Manager of Engineering Services	City of Vancouver, BC	<i>Speed Limits on Recreational Bicycle Paths</i>
Goeft, Ute and Alder, Jackie		<i>Sustainable Mountain Biking: A Case Study from the Southwest of Western Australia</i>
Hoger & Chavez		<i>Conflict and management tactics on the trail</i>
Jackson, S. A., Haider, W., & Elliot, T.		<i>Chilkoot Trail National Historic Site, British Columbia</i>
Jellum, C. M.	Central Washington University	<i>Managing Mountain Bike Recreation and User Conflicts: A Case Study on Mt. Baker-Snoqualmie National Forest, Washington State</i>
Johnson, Julie		<i>Trail wars at Annadel State Park</i>
Litman, Tod	bicyclinginfo.org	<i>Share the Trail: Minimizing User Conflicts on Non-Motorized Facilities</i>
MN Dept of Natural Resources	MN Dept of Natural Resources	<i>Trail Planning, Design, and Development Guidelines</i>
Moore, R. L.	Federal Highway Administration	<i>Conflicts On Multiple-Use Trails: Synthesis of the Literature and State of the Practice</i>
Papouchis, Christopher M. and Singer, Francis J. and Sloan, William		<i>Responses of Desert Bighorn Sheep To Increased Human Recreation</i>
Ramthum		<i>Factors in user group conflict between hikers and mountain bikers</i>
Reynolds, C., M. Harris, K. Teschke, P. Cription, and M. Winters.	N/A	<i>The Impact of Transportation Infrastructure on Bicycling Injuries and Crashes: A Review of the Literature</i>
Rodgers, G.B.		<i>Factors Associated with the Crash Risk of Adult Bicyclists</i>
Ryan, K.L. (Ed)	N/A	<i>Trails for the Twenty-First Century</i>
Schneider		<i>Revisiting and revisign recreation conflict research</i>

<b>Author</b>	<b>Org/Agency</b>	<b>Title</b>
Spahr, Robin	Boise State University	<i>Factors Affecting The Distribution Of Bald Eagles And Effects Of Human Activity On Bald Eagles Wintering Along The Boise River</i>
Stearns, R., B. Woodcock & J. Pflaum	National Trails Training Partnership	<i>Trail Maintenance and Management: We Built It and They Came</i>
Taylor, Audrey R. and Knight, Richard L		<i>Wildlife Responses to Recreation and Associated Visitor Perceptions</i>
Thurston, Eden and Reader, Richard J.		<i>Impacts of Experimentally Applied Mountain Biking and Hiking on Vegetation and Soil of a Deciduous Forest</i>
Tinsworth, D., S. Cassidy, C. Polen		<i>Bicycle-related injuries: Injury, hazard, and risk patterns</i>
Transportation Research Board	Transportation Research Board	<i>Capacity Analysis of Pedestrian and Bicycle Facilities: Recommended Procedures</i>
Transportation Alternatives	Transportation Alternatives	<i>The 15-Mile-Per-Hour Cycling Speed Limit</i>
USDA USFS	USDA USFS	<i>Trail Construction and Maintenance Notebook</i>
Vaske, Donnelly, Karin & Laidlaw		<i>Interpersonal versus social-values conflict</i>
Webber, P. (Ed)	International Mountain Bike Association	<i>Managing mountain biking: IMBA's guide to providing great riding</i>
Weesner, Meg	National Park Service	<i>Cactus Forest Trail Environmental Assessment, Saguaro National Park, Arizona</i>
Wilson, John P. and Seney, Joseph		<i>Erosional Impacts of Hikers, Horses, Motorcycles and Off-Road Bicycles on Mountain Trails in Montana</i>
International Mountain Bike Association	International Mountain Bike Association	<i>Trail Solutions: IMBA's Guide to Building Sweet Singletrack</i>
Sprung, Gary	International Mountain Bike Association	<i>Natural Resource Impacts of Mountain Biking: A summary of scientific studies that compare mountain biking to other forms of trail travel</i>
Marion, Jeff & Jeremy Wimpey	International Mountain Bike Association	<i>Environmental Impacts of Mountain Biking: Science Review and Best Practices</i>
Wimpey, Jeremy	International Mountain Bike Association	<i>Environmental Impacts of Mountain Biking: Science Review and Best Practices</i>