BOULDER MOUNTAINBIKE ALLIANCE

August 15, 2008

To: Whom it may concern
Re: BMA position on City of Boulder Open Space and Mountain Park's Western Trail Study Area

WHO WE ARE: Founded in 1991 the BMA is a nonprofit 501(c)4 **collaborative stewardship** organization that helps design, build and maintain local shared use trails. To date, we have contributed over **20,000 volunteer hours** on projects such as the "Picture Rock" connector trail from Heil Valley Ranch to the town of Lyons, where 200 volunteers built 8,400 feet of trail on National Trails Day 2008. Our bike patrol ambassadors help minimize user conflict through trail etiquette education.

WHAT WE WANT: A sustainable system of trails that can be experienced on two wheels, including:

1) At least one shared use, bike accessible route from Baseline Road, south to the trailhead on Eldorado Springs Road – **NOT** the Mesa Trail
2) A shared use, bike accessible connection from Boulder up to Walker Ranch
3) Open the trails in the southernmost portion of this TSA as shared use trails, including South Boulder Creek, Big Bluestem, and Shanahan Ridge
4) Provide a quality recreation experience whenever possible by rerouting unsustainable trail segments, creating trails parallel to roads, or by other means
5) Designate Chapman Drive as an official OSMP route

WHY ADD SHARED USE TRAILS: Mountain bikers are a large, underserved user group. Both the city-sponsored Bike Summit and the OSMP's Visitor Master Plan call for better bike access to city trails. According to Bikes Belong research, 50 bicycling-related businesses in the city of Boulder **employ more than 350 people full-time and generate more than $65 million dollars annually** in direct revenue. Shared use trails near homes mean **fewer cars on the roads**. Multiple empirical studies have shown that bikers are no harder on trails or the environment than hikers. Most user conflict and erosion can be prevented through good trail design and education, two aspects of BMA's volunteerism.

Shared use trails are the norm on front range public lands such as Boulder County Open Space, Jefferson County Open Space, Fort Collins Natural Areas, Larimer County Open Space, Colorado State Parks, Colorado Springs Parks and Open Spaces, in addition to mountainous areas such as Summit County, Eagle County, Steamboat Springs, Durango, Salida, Grand Junction, Fruita, Gunnison, Crested Butte, Telluride, and countless others. It's time to accept mountain bikers as your neighbors, your fellow citizens, and your friends. **We are asking for modest and reasonable access to Boulder City Open Space and Mountain Parks lands. Please consider this request with the utmost seriousness.**

Sincerely,

Board of Directors, Boulder Mountainbike Alliance

WHO WE ARE

Founded in 1991 as the Boulder Offroad Alliance (BOA), the organization's name was changed to the Boulder Mountainbike Alliance in 2006 to more accurately describe our focus and mission. We exist as a collaborative stewardship organization, helping public land managers in Boulder County design, build, and maintain trails. We have done bike tune-ups for the City of Boulder's GO Boulder program and support the Boulder Valley YMCA Y-Riders program. In 2003 we started an IMBA Sprockids program.

We have a diverse membership of tax paying citizens made up of the general public, families, young professionals, all of whom are outdoor enthusiasts. Some of our older members have switched to cycling from hiking to save their aging knees. What we all share is a love of outdoor spaces and the joy of rolling through the mountains and plains.

To date, BMA has contributed 20,000 volunteer hours on trail building and maintenance projects, like this one at Walker Ranch. This is the equivalent of providing Boulder agencies with a full time trail worker for more than 10 years.

Our bike patrol ambassadors work with public land managers to help minimize user conflict through trail etiquette education. BMA's Patrol has been in operation since 1996 and patrolled over 50 hours last year.

The Greater Boulder Mountain Biking Community

Boulder is a gathering place for many outdoor athletes, mountain bikers among them.

- Mountain bikers made up **56% of the trail users** in 2005-2006 at Hall and Walker Ranch, the closest true mountain bike areas to Boulder, according to a County survey.
- The **International Mountain Bike Association** is based here, on Canyon Blvd. Since 1988 the non-profit educational association has been bringing out the best in mountain biking by encouraging low-impact riding, volunteer trailwork participation, cooperation among different trail user groups, grassroots advocacy and innovative trail management solutions. IMBA's worldwide network includes 32,000 individual members, more than 450 bicycle clubs, more than 130 corporate partners and about 200 bicycle retailers.
- Also based in Boulder, **Bikes Belong** is sponsored by the U.S. bicycle industry with the goal of putting more people on bicycles more often. The advocacy group has 400 industry members — bicycle suppliers and retailers — 12 professional staff members, 18 volunteer directors, and a $2 million annual operating budget. According to Bikes Belong research, the 50 bicycling-related businesses in the city of Boulder **employ more than 350 people full-time and generate more than $65 million dollars annually** in revenue.

WHAT WE WANT

For the Western Trail Study Area, BMA has identified the following "Aspirations":

1) **At least one shared use, bike accessible route from Baseline Road, south to the trailhead on Eldorado Springs Road** so mountain bikers can ride from town without the use of a car. We understand that the trails out of Chautauqua are some of the most heavily used in the OSMP system and we do not wish to contribute to unreasonable user conflict. Consequently, we are open to creative management regimes to ensure that user conflict does not undermine this important route. We believe that access to the Mesa Trail would also lead to unreasonable user conflict. Consequently, we envision a route largely east of the existing Mesa Trail.

2) **A shared use, bike accessible connection from Boulder up to Walker Ranch.** OSMP managers are already exploring the use of the Eldorado Canyon Trail, but we would like to keep other options on the table pending a final determination as to whether this route is feasible.

3) We would like to **open the trails in the southernmost portion of this TSA as shared use trails, including South Boulder Creek, Big Bluestem, and Shanahan Ridge.** Along with the trails in the Marshall Mesa area and the Doudy Draw area, this will provide a destination for mountain bikers that we can ride to without the use of an automobile.

4) Like hikers, mountain bikers want a quality recreation experience. Many of the routes in this TSA are roads, not trails, and some trail segments are so unsustainable as to require significant maintenance or rerouting. We would like OSMP to **pursue a policy of providing a quality recreation experience whenever possible by rerouting unsustainable trail segments, creating trails parallel to roads, or by other means that allow mountain bikers and all trail users to get a quality experience out of OSMP lands.** (See next page.)

5) Explore the possibility of **designating Chapman Drive as an official OSMP route** that would get cyclists and others from Boulder Canyon up to Flagstaff Mountain Road.

MOUNTAIN BIKERS UNDERSERVED IN BOULDER

Of the hundreds of miles of city trails only 6 percent offer a real mountain bike experience. **Many City residents drive to Hall or Walker County Open Spaces where they comprise 56 percent of users.**

- There are 43 miles of trails open to mountain bikes (MTBs) on OSMP land.
- The majority are located in 3 areas on the outskirts of Boulder
    - North – Wonderland Lake and Boulder Valley Ranch
    - East – Teller Farm
    - South – Marshall Mesa and Doudy Draw.

- To the north and east, the bike accessible trails are 'multi-use recreational paths' (think dirt roads with no cars). These are great for teaching kids to ride a bike away from traffic but they are NOT mountain bike trails (see pictures below).

- Optimistically 15 of the 43 miles are real MTB trails (mainly in the Southern area).

- In comparison, hikers enjoy ~260 miles of hiking trails on OSMP land (includes 130 miles of mapped trails and at least an equal number of 'accepted' social trails).

A "multi-use recreational path" near the Boulder Reservoir. Note the social singletrack to the right, created because neither hikers nor bikers enjoy "dirt road" trails.

*A **real** mountain bike trail in the Doudy Draw area. Good trail design reduces erosion and provides a true off-road experience in a natural setting for all users.*

Summary

- Real MTB trails currently account for **6% of OSMP trails.**
- In contrast, at Hall and Walker Ranch (nearest MTB trails to Boulder City), mountain bikers made up **56% of the trail users** in 2005-2006*!!
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Conclusion

- **Mountain Bikers are very clearly underserved on OSMP land, as recognized in the Visitor Master Plan.**

*Boulder County Parks and Open Space visitation study data

VISITOR MASTER PLAN CALLS FOR BETTER BIKE ACCESS

The BMA's aspirations are directly in line with the City's own Visitor Master Plan for OSMP, which was approved by City Council in April 2005 after years of work by City staff and countless hours of public input. As described in its introduction, the purpose of the VMP is to "identify the programs and projects that the city will focus on to provide visitor services for the next ten years."

The VMP states there is room for improved access for mountain bikes, including trails to connect from the east side of Mountain Parks to Walker Ranch, and that existing trails should be retrofitted to accommodate mountain bikes. To save you time, we have excerpted passages from the VMP:

Pg II **Executive Summary:**
Goal #1 "Maintain or enhance the quality of the visitor experience when engaged in passive recreational activities such as hiking, climbing and **bicycling**."

Pg 21 **What's Working and What's Not:**
#1 item under "Room for Improvement": "Access for mountain biking."

Pg 23 **Key Unmet Public Desires:**
Unmet desires for "more trail connections" and "more challenging bike terrain."

Pg 26 **Expanded Trail Opportunities:**
"… separation of trail uses (e.g., different trails for different uses, time-sharing among users)."

Pg 39 **Management Strategies**
New Bike Trails. Work with community groups to examine the feasibility of possible mountain biking/multi-use trails that would: (1) connect the east side of Mountain Parks to Walker Ranch or U.S. Forest Service land: and/or (2) provide more mountain biking opportunities west of State Highway 93.

Pg A-28 **Recommended Management Actions:**
"Consider a possible mountain bike (multi-use) trail corridor from the frontside to the backside of Mountain Parks."

Pg 39 **Bicycling Management Strategies:**
"Retrofitting Trail for Bikes: As trail improvement projects are being planned, give consideration to the appropriateness of designating and constructing them to include bicycling."
"New Bike Trails: Work with community groups to examine the feasibility of possible mountain biking/multiple use trails that would 1) connect the east side of Mountain Parks to Walker Ranch or US Forest Service land; and/or provide mountain biking opportunities west of State Highway 93."

Pg 45 **Bicycling Compatibility:** "Work with community groups to reduce potential conflicts between bicyclists and other visitors."

Other comments in the VMP point out the desire to have bikes in the Bluestem/South Boulder Creek area and the need to deal with considerable resistance to it.

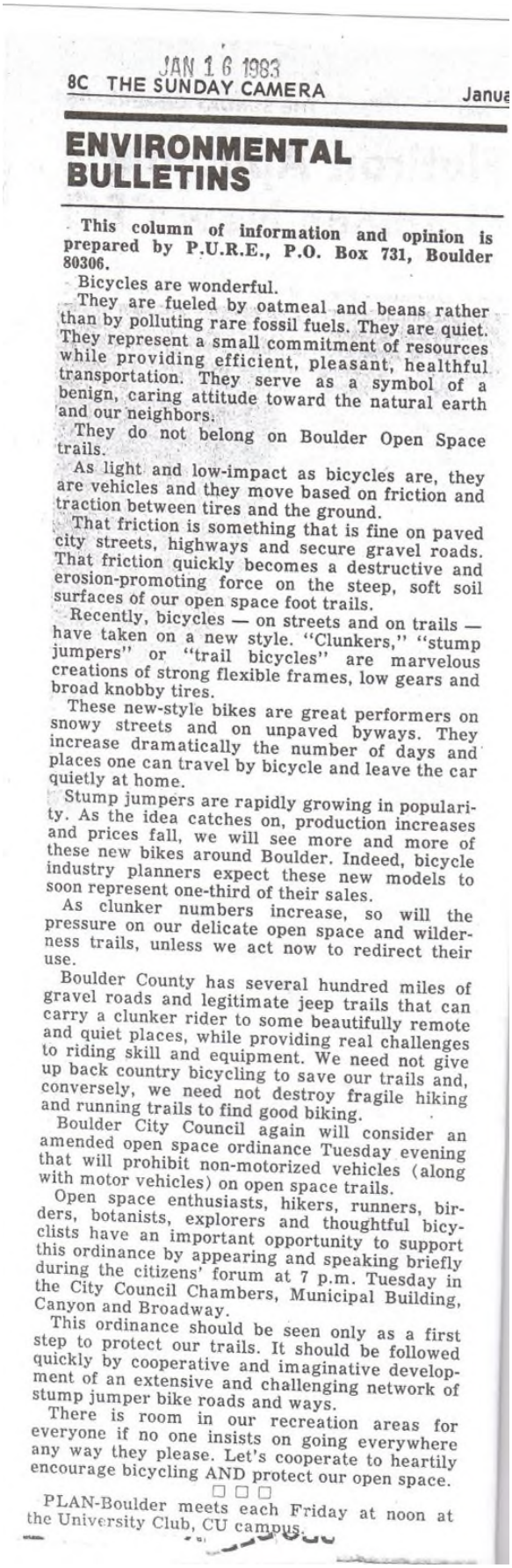
CITY'S BICYCLE SUMMIT CALLS FOR OFF-ROAD BIKING

Our aspirations are also in line with the goals identified at a City-sponsored bike summit in September 2007. The following are excerpts from the Summary Report delivered to City Council in April 2008:

- "**One hundred leaders** for the Boulder bicycling community gathered in September 2007, for a Bike Summit, an initiative of the Boulder City Council. A major theme of the Bike Summit was to **envision a time in the future when Boulder was the number one cycling city in the world**."

- "In order to be a world-class destination for recreational cyclists to live and visit, Boulder needs world-class recreational bicycling facilities and policies**. Bicycling would be a full and equal partner in the use of trails** on City and County parklands and open space. Bicycling would be encouraged as a way of **experiencing nature** and building political support for preserving ecosystems. **Shared trails would be more common**."

- "This also means **urban trails would lead to popular mountain bike trails,** so cyclists can **mountain bike without using a car**. There should also be facilities for all sorts of other recreational cycling- cycle cross tracks, criterium tracks, etc."



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ENVIRONMENTAL BULLETINS

This column of information and opinion is prepared by P.U.R.E., P.O. Box 731, Boulder 80306.

Bicycles are wonderful.

They are fueled by oatmeal and beans rather than by polluting rare fossil fuels. They are quiet. They represent a small commitment of resources while providing efficient, pleasant, healthful transportation. They serve as a symbol of a benign, caring attitude toward the natural earth and our neighbors.

They do not belong on Boulder Open Space trails.

As light and low-impact as bicycles are, they are vehicles and they move based on friction and traction between tires and the ground.

That friction is something that is fine on paved city streets, highways and secure gravel roads. That friction quickly becomes a destructive and erosion-promoting force on the steep, soft soil surfaces of our open space foot trails.

Recently, bicycles — on streets and on trails — have taken on a new style. "Clunkers," "stump jumpers" or "trail bicycles" are marvelous creations of strong flexible frames, low gears and broad knobby tires.

These new-style bikes are great performers on snowy streets and on unpaved byways. They increase dramatically the number of days and places one can travel by bicycle and leave the car quietly at home.

Stump jumpers are rapidly growing in popularity. As the idea catches on, production increases and prices fall, we will see more and more of these new bikes around Boulder. Indeed, bicycle industry planners expect these new models to soon represent one-third of their sales.

As clunker numbers increase, so will the pressure on our delicate open space and wilderness trails, unless we act now to redirect their use.

Boulder County has several hundred miles of gravel roads and legitimate jeep trails that can carry a clunker rider to some beautifully remote and quiet places, while providing real challenges to riding skill and equipment. We need not give up back country bicycling to save our trails and, conversely, we need not destroy fragile hiking and running trails to find good biking.

Boulder City Council again will consider an amended open space ordinance Tuesday evening that will prohibit non-motorized vehicles (along with motor vehicles) on open space trails.

Open space enthusiasts, hikers, runners, birders, botanists, explorers and thoughtful bicyclists have an important opportunity to support this ordinance by appearing and speaking briefly during the citizens' forum at 7 p.m. Tuesday in the City Council Chambers, Municipal Building, Canyon and Broadway.

This ordinance should be seen only as a first step to protect our trails. It should be followed quickly by cooperative and imaginative development of an extensive and challenging network of stump jumper bike roads and ways.

There is room in our recreation areas for everyone if no one insists on going everywhere any way they please. Let's cooperate to heartily encourage bicycling AND protect our open space.

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PLAN-Boulder meets each Friday at noon at the University Club, CU campus.

WHY BIKES BELONG

The 1983 *Daily Camera* article to the left side of this page makes many of the historical arguments that were used to exclude bikes from Boulder OSMP lands. Because mountain bikers took these issues (and the consequent loss of access) seriously, we started strong programs of research into sustainable trail design, engineering trails to reduce user conflict, and managing trail systems to ensure that all trail users enjoyed a positive experience. The Boulder Mountainbike Alliance believes that we have all learned a lot since the 1980s. **Shared use trails are the norm on Front Range public lands such as Boulder County Open Space, Jefferson County Open Space, Fort Collins Natural Areas, Larimer County Open Space, Colorado State Parks, Colorado Springs Parks and Open Spaces, in addition to mountainous areas such as Summit County, Eagle County, Steamboat Springs, Durango, Salida, Grand Junction, Fruita, Gunnison, Crested Butte, Telluride, and countless others.** It's time to accept mountain bikers as your neighbors, your fellow citizens, and your friends. **We are asking for modest and reasonable access to Boulder City Open Space and Mountain Parks lands. Please consider this request with the utmost seriousness.**

BIKING AND THE ENVIRONMENT

Like hikers, most mountain bikers don't want to spend an hour traveling on pavement before they hit the dirt of a nice trail. But if trailheads are close to where people live, they are less likely to drive to get there. **According to conservative BMA estimates, an in-town trailhead would equate to 257,000 fewer miles driven per year, an annual total of 226,000 pounds of CO2 emissions avoided, and $51,000 saved in residents' gas costs.** As gas costs continue to rise, we can expect the environmental benefits of an in-town trail to far outstrip this estimate.

A recent city survey at the new High Plains Trail showed that mountain bikers represented 85 percent of users and were most likely to follow the rules — 99 percent of them stayed on the trail.

In terms of trail erosion, user conflict, and other issues of concern with shared-use trails, multiple empirical studies have found that there is no significant difference between hiking and biking. Furthermore, most of these issues can be managed by engineering sustainable trails that manage user conflict and using management actions as appropriate to ensure that all tax-paying citizens that support our open spaces have access to open space lands. The article below summarizes the findings of the peer-reviewed literature on the environmental impacts of recreation.

Natural Resource Impacts of Mountain Biking

A summary of scientific studies that compare mountain biking to other forms of trail travel

By Gary Sprung, International Mountain Bicycling Association (IMBA)

This article was originally published in Managing Mountain Biking: IMBA's Guide to Providing Great Riding, a 256-page book produced by IMBA in 2007. The book offers an essential collection of best practices for planning, designing, and managing successful trail networks and parks. Managing Mountain Biking is a companion to IMBA's trailbuilding how-to book Trail Solutions. Both are available at http://www.imba.com.

In recent years, hiking and environmental groups have lobbied to ban mountain bikers from trails on the grounds that mountain bikes damage the environment. Some land managers have closed trails to bicycling because of alleged, excessive resource damage.

Do mountain bikers truly cause more impact on natural resources than other trail users?

Very little research has been in done in an attempt to answer this question, but the empirical studies that have been conducted do not support the notion that bikes cause more natural-resource impact. What studies do demonstrate is that all forms of outdoor recreation - including bicycling, hiking, running, horseback riding, fishing, hunting, bird watching, and off-highway-vehicle travel - cause impacts to the environment.[1]

Social scientists have conducted surveys to study the feelings, perceptions, and attitudes of cyclists, hikers, equestrians and motorized trail users toward one another. This information, along with anecdotal evidence and media reports, shows that trail users don't always get along. User conflict, as a concept, is fairly well understood and demonstrably real.

In a democracy, the allocation of trails based on users' differing interests is a normal, appropriate course of action. Land managers must consider the opinions and concerns of the people who use their trails. But when individuals make unsubstantiated allegations regarding natural resource damage to justify the prioritization of their type of trail use, land managers should be wary.

Objective information, independent of conflicting human desires, must be the basis for sound policy decisions. The results of scientific studies can provide land managers and recreationists with a better understanding of user impacts, and should guide political debate and public policy.

This document examines three main categories: physical impacts to trails or facilities, vegetation damage, and effects on wildlife.

In each case, several studies have examined the topic, but only a handful have compared the effects of bicyclists with other trail users.

No scientific studies show that mountain bikers cause more wear to trails than other users.

Trails deteriorate over time. To what extent do bicyclists cause this deterioration, and how does the impact of bicyclists compare with that of other trail users? Many people have hypothesized about impact, basing their theories on ideas involving the characteristics of tires versus shoes, skidding, area and pressure of impact, and other factors. But as of 2003, only two empirical studies have scientifically compared the erosion impacts of bicycling with other forms of trail travel. (editor: For a more recent and complete review of scientific studies, see Environmental Impacts of Mountain Biking: Science Review and Best Practices by Jeff Marion and Jeremy Wimpey published in Managing Mountain Biking: IMBA's Guide to Providing Great Riding (2007).

Wilson and Seney: Hooves and feet erode more than wheels

In 1994, John Wilson and Joseph Seney of Montana State University published "Erosional Impacts of Hikers, Horses, Motorcycles and Off-Road Bicycles on Mountain Trails in Montana" (12). The study tracked 100 passages by each of the four groups over control plots on two trails in national forests. For some of the passages, the researchers prewet the trail with a fixed quantity of water using a rainfall simulator. The researchers measured sediment runoff, which correlates with erosion.

Wilson and Seney found no statistically significant difference between measured bicycling and hiking effects. They did find that horses caused the most erosion of the trails, and that motorcycles traveling up wetted trails caused significant impact. They also concluded, "Horses and hikers (hooves and feet) make more sediment available than wheels (motorcycles and off-road bicycles) on prewet trails, and that horses make more sediment available on dry plots as well" (p.74). Wilson and Seney suggested that precipitation will cause erosion even without human travel, and this factor may significantly outweigh the effects of travel. Trail design, construction, and maintenance may be much more important factors in controlling erosion than excluding specific user groups.

Chiu and Kriwoken: No significant difference between hiking and biking trail wear

In a study whose publication in Annals of Leisure Research is pending, two researchers at the University of Tasmania, Australia, conducted an experiment on an abandoned fire road to compare track ("track" is the term for trail in Australia) impacts from hiking and bicycling. For the study "Managing Recreational Mountain Biking in Wellington Park, Tasmania, Australia" (2), the authors had hikers and bicyclists

pass test plots 400 times each, and measured the surface profile of the track before, during, and after the passes. They compared flat, steep, wet, and dry conditions. Chiu and Kriwoken found no significant difference in the trail wear caused by the two user groups. They did find significant impact from skidding tires, and they also found that impacts on wet trails were greater than on dry for both types of use.

Goeft and Alder: Erosion trends not clear

Other, non-comparative studies have looked at the erosion effects of bicycling. Goeft and Alder (5) investigated erosion on two trails in western Australia for one year, including various combinations of uphill, downhill, and flat sections as well as curved and straight stretches in their study. They found that trail width varied with time, narrowing a little but not showing a clear trend. Soils on older sections of trail were more compacted than newer. Erosion was influenced by slope, time, and age of trail, but did not show a clear trend.

Bjorkman: Artificially hardened trails erode less

Bjorkman, 1996, (1) cleared vegetation from two very steep slopes (62 %) in a state park in southern Wisconsin and left one bare while protecting the other with artificial hardening surfaces. Trail users traveled over these surfaces and the study measured sedimentation from each slope. The protected path generated 0.11 tons of sediment per acre while the untreated slope produced 10.86 tons per acre.

Crockett: Minimal change from repeated bicycle passage

In 1986 the Santa Clara County Parks and Recreation Department of northern California studied the erosional effects of bicycling on the Edwards Field Trail (3). Forty-five cyclists made a total of 495 passes over 12 transects. Measurements were taken before and after these passes. Trail width increased at some plots and decreased at others, and the cross-sectional area of the transect, which is a measurement of the amount of soil in that spot, also varied. The researcher, Christopher S. Crockett, observed minimal change in the visual trail characteristics in most cases. The data led the county parks department to open trails to mountain biking.

Discussion:

The two comparative studies discerned minimal differences between bicycling and hiking. These studies may not resolve the continuing debate over who does what to trails. This scientific inquiry needs to be repeated in other geographic locations, on other soils, with more passages by each user group.

Because the Goeft and Alder and Bjorkman studies allowed multiple users on the same trails without measuring differences, and the Crockett/Santa Clara study involved only bicyclists, those studies do not provide information to compare erosion processes among users. However, these studies do indicate that the impacts of bicycling on trail condition are minimal.

No scientific studies indicate that bicycling causes more degradation of plants than hiking.

Trails tread itself is primarily devoid of vegetation, so impacts to vegetation are not usually a concern. However, this issue is relevant with regard to the widening of trails and travel off of established trails.

Thurston and Reader: Hiking and bicycling trample vegetation at equal rates

Again, only one study has compared bicycling with other recreation with regard to the damage to vegetation caused by trampling. In 2001, Eden Thurston and Richard Reader of the University of Guelph, Ontario, published "Impacts of Experimentally Applied Mountain Biking and Hiking on Vegetation and Soil of a Deciduous Forest" (10). The authors set up two identical lanes of travel over natural vegetation in a deciduous forest. They measured plant stem density, species richness, and soil exposure before, during, and after the 500 passages in each lane by hikers and bicyclists. Results: "Three principal findings emerged from this study. First, impacts on vegetation and soil increased with biking and hiking activity. Second, the impacts of biking and hiking measured here were not significantly different. Third, impacts did not extend beyond 30cm of the trail centerline" (Thurston and Reader, 2001, p.405).

Bjorkman: Vegetation on shared-user trails occurs mostly in center of trail

Weesner/NPS: Moderate trail widening controlled by volunteers

Bjorkman, 1996, (1) studied erosion of existing and brand new trails in a state park in southern Wisconsin. Measurements on existing trails indicated a rapid and substantial loss of vegetation along the trail centerline. The disappearance of vegetation 2 meters to the side was much less and slower. Along the centerline, soil compacted steadily, but there was little compaction 2 meters to the side. The width where no vegetation existed increased rapidly at first, then a bit more slowly, was more rapid in shade than in sun, and was more pronounced where the soil had more sand, or less silt. Weesner, 2003, (11) reported the results of National Park Service observations of a trail in southern Arizona over almost a decade. Results: Some trail segments widened moderately and some just a little. Volunteer trail maintenance occurred on some plots and effectively kept the trail narrow.

Discussion:

The Thurston and Reader study provided high-quality information through a solid process. Neither Bjorkman nor Weesner controlled for multiple-uses, and thus those studies do not provide a basis for comparison of vegetative impacts of trail users.

Science has yielded mixed results in comparing the impacts on wildlife of hiking and bicycling.

To date, four studies have rigorously compared bicycling's impact on wildlife with the impacts of other users. The studies involved bison, mule deer, pronghorn antelope, desert bighorn sheep, European alpine chamois, and American bald eagle. A fifth study provided a statistical suggestion regarding grizzly bear.

Taylor and Knight: Hiking and biking cause same impact to large mammals on Utah island

In 1993, Audrey Taylor and Richard Knight published "Wildlife Responses to Recreation and Associated Visitor Perceptions" (9), a study on Antelope Island, situated in the Great Salt Lake of Utah. They measured behavioral responses of bison, mule deer, and pronghorn antelope to the passages of hikers and bicyclists. In each case, an assistant acted as a hiker or cyclist while a researcher collected data as a hidden observer. The recreationists moved at a typical pace, did not stop nor look at the animals, and did not talk. The study measured alert distance, flush response, flight distance, and distance moved. Recreationists stayed on trails for the bison and antelope trials, while the mule deer observations involved recreationists traveling both on and off trails. Taylor and Knight wrote, "...the large degree of overlap between the 95% confidence intervals for hiking and biking is indicative of a lack of biological difference between wildlife responses to these activities" (p.955).

Calculating the amount of trails and the sensitivity distances of wildlife, Taylor and Knight estimated that approximately 7% of the island "was potentially unsuitable for wildlife due to disturbance from recreation." (Only the northern half of the island has trails, and the southern half is off limits to public recreation.)

Taylor and Knight also surveyed recreationists on the island and found that hikers, bicyclists, and equestrians blamed other groups more, and their own groups less, for wildlife impacts. The study also found that all recreationists underestimated the distances at which wildlife were sensitive to human presence.

Papouchis, Singer, and Sloan: Hikers have greatest impact on bighorn sheep

Christopher Papouchis, Francis Singer, and William Sloan, reported in 2001 on "Responses of Desert Bighorn Sheep To Increased Human Recreation" (7). The authors observed 1,029 bighorn sheep/human interactions in two areas, a high-use and a low-use, of Canyonlands National Park, Utah, in 1993 and 1994. They compared behavioral responses, distances moved, and duration of responses to vehicles, mountain bikers, and humans on foot. Hikers caused the most severe responses in desert bighorn sheep (animals fled in 61% of encounters), followed by vehicles (17%) and mountain bikers (6%), apparently because the hikers were more likely to be in unpredictable locations and often directly approached sheep.

Gander and Ingold: Hikers, joggers, and mountain bikers - all the same to chamois

In 1996 Hans Gander and Paul Ingold published, "Reactions of Male Alpine Chamois Rupicapra rupicapra to Hikers, Joggers, and Mountain bikers" (4). The authors measured the effects on male alpine chamois of the passage of hikers, bicyclists, and joggers. Thirty-two passages were carried out by single persons traveling on a trail that runs through a meadow above timberline in a game reserve in the Bernese Oberland of Switzerland. The animals responded similarly to each of the human activities. Subsequent to the passage of people, the chamois tended to avoid the pasture.

Spahr: Hikers have greater impact on eagles than cyclists

In her 1990 graduate thesis, Robin Spahr examined "Factors Affecting The Distribution Of Bald Eagles And Effects Of Human Activity On Bald Eagles Wintering Along The Boise River" (8). Spahr observed people recreating and also "simulated" recreational behaviors on a section of the Boise River in Boise, Idaho, in order to measure the effects on eagles.

Spahr found that walkers caused the highest frequency of eagle flushing, with 46% of walkers causing eagles to flush. Fishermen were second at 34%, with bicyclists at 15%, joggers at 13%, and vehicles at 6%. Bicyclists caused eagles to flush at greatest distances, with a mean of 148 meters, a minimum of 96 meters, and a maximum of 200 meters. Walkers' mean was lower, at 87 meters, but their minimum was closer, at 17 meters, and their maximum was higher than bicyclists', at 300 meters. Mean distance of eagle flushing by vehicles was 107 meters, by fishermen was 64 meters, and by joggers was 50 meters. "The disturbance indexes, which reflect both flushing distance and frequency, indicated that walkers were the most disturbing to eagles. Bicyclists, followed closely by fishermen, were the next most disturbing," Spahr wrote.

Herrero and Herrero: Bikers more likely to suddenly encounter bears

In 2000 Jake Herrero and Stephen Herrero published, "Management Options for the Moraine Lake Highline Trail: Grizzly Bears and Cyclists" (6). The authors' firm was hired by Parks Canada to provide recommendations for managing bicycling on a particular trail in Banff National Park in Alberta Canada.

Intended primarily as a management strategy, the report was not an experimental investigation of grizzly bear responses to bicyclists. However, the authors referenced their compiled database of human/grizzly bear interactions and found a statistical suggestion that bicyclists, because they travel quietly and quickly, are more likely to have sudden confrontations with grizzly bears on that trail than are other trail users, such as hikers and equestrians. The authors also found no difference between the effects of bicycling and hiking on bear habitat and stated there was no evidence that bicyclists should be managed differently than other users in that regard.

Discussion:

These studies scratch the surface of a complex topic. The diversity of species and their differing responses to human recreation make generalizations across species difficult. However, this group of studies at least suggests that the impacts of bicycling on wildlife are generally similar to the effects of hiking.

Conclusion

Mountain biking, like other recreation activities, does impact the environment. On this point, there is little argument. But people often debate whether or not mountain bikes cause more damage to trails, vegetation, and wildlife than other forms of recreation such as hiking and horseback riding.

A body of empirical, scientific evidence now indicates that mountain biking is no more damaging than other forms of recreation, including hiking. Thus, managers who prohibit bicycle use (while allowing hiking or equestrian use) based on impacts to trails, soils, wildlife, or vegetation are acting without sound, scientific backing.

A land manager's decision to prohibit one user group on the basis of providing a particular type of experience for another group may or may not be justified by evidence provided by social studies, as the wisdom of prohibiting a particular user group in order to satisfy the desires of another is a matter for politics rather than science.

References

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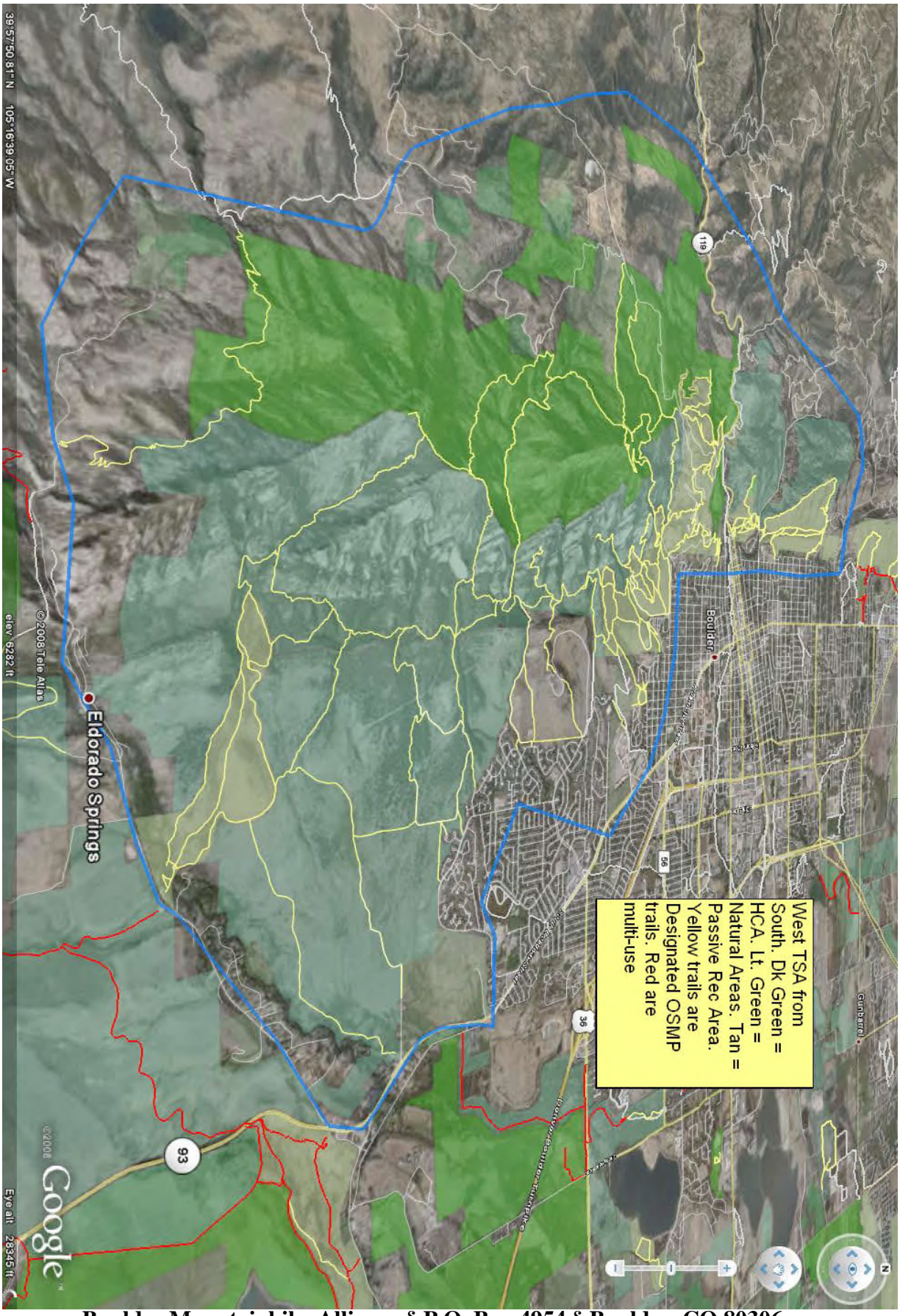
Footnotes

1. Science also demonstrates that roads -- whether used or not, or regardless of which groups use them -- can cause harmful environmental effects. A more limited body of science indicates that trails may cause somewhat similar effects. But this document addresses only the comparison of user groups' impacts, not the effects of roads and trails.


West TSA from South. Dk Green = HCA. Lt. Green = Natural Areas. Tan = Passive Rec Area. Yellow trails are Designated OSMP trails. Red are multi-use
Eldorado Springs
Boulder
Gunbarrel
93
119
36
56
39°57'50.81" N 105°16'39.05" W
elev 6282 ft
Eye alt 28345 ft
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