

STEWARDS OF THE SEQUOIA

Division of CTUC non profit 501c3

PO Box 1246

Wofford Heights CA 93285

February 19, 2013

Station Director Alex Friend
USDA Forest Service
Pacific Southwest Research Station
P.O. Box 245
Berkeley, CA 94701

Re: Errors and Issues with *“Science Synthesis to Support Land and Resource Management Plan Revision in the Sierra Nevada and Southern Cascades”*

Dear Director Friend,

We have participated in the Sierra Cascades Dialog for the past two years. We sincerely appreciate the opportunity for us to participate in these important discussions. The Science Synthesis drafted by your office is an important product of these sessions.

Our goal in participating in the Sierra Cascade Dialogs has been to assist the Forest Service in the creation of a fair and balanced Science Synthesis document that includes relevant information related to recreation and the related economic and environmental aspects of forest planning. We have contributed a wealth of knowledge and on the ground experience to the Dialogs. Upon reviewing the document we note that our contributions during the dialogs as well as the studies and information we have provided has not been included in the Science Synthesis.

We also note that some members of the public who participated in the Sierra Dialog were allowed to review the document and suggest changes that have been incorporated into the final draft, yet we were not provided with the same opportunity. We recognize that this may have been an oversight and welcome this opportunity to review the draft Synthesis and to provide additional information for inclusion. We appreciate your staff's willingness to consider our attached comments and information. Other supporting organizations may provide additional information.

The draft Science Synthesis is “intended to help identify information and expertise to help inform assessment”. This is an important document which the Forest Service must ensure is accurate, factual and balanced prior to publication. This will help ensure that the resulting bioregional assessment and forest plans are also balanced. It is apparent the Science Synthesis has incorrectly cited certain studies and omitted others that are highly relevant. We provided examples of both in our attached comments.

We maintain that the public has the expectation that the Forest Service will ensure availability of recreational opportunity public lands without having to lobby for it.

Furthermore, we submit that:

- The tens of thousands of hours off roaders, horseman and mountain bikers donate each year to help maintain recreation trails and reduce environmental impacts on Forest Service lands should be recognized in the section on recreation.
- That the millions of dollars the self funded Off Highway Motor Vehicle program and others provide each year to the Forest Service and Sierra Forest communities should likewise be acknowledged in the section on recreation.

During the Forest Planning Rule public meetings a few years ago seven priority topics chosen with a table designated for each one. Recreation was not one of them. At those meetings the public requested that a topic table be created for Recreation. That table had by far the most public interest. We were informed that Recreation being a priority had been overlooked and that this omission would not be repeated, yet the Sierra Cascades dialog did not include a Dialog for Recreation until we were able to convince Region 5 staff to hold one. It was, again, very popular with the public. Ultimately there were seven dialogs, of which Recreation was one, prior to the drafting of the Science Synthesis.

We were surprised to find that the Science Synthesis included only thirteen paragraphs on Recreation out of 504 pages. The enormous public interest in recreation certainly warrants a more comprehensive treatment of this topic. In addition, the studies cited are limited and fail to represent the full spectrum of available information. A much broader inclusion of available references and a more comprehensive treatment of recreation are warranted in an important policy document such as the Science Synthesis.

We look forward to receiving an updated draft of the Science Synthesis incorporating our input prior to publication.

Sincerely,

Chris Horgan
Executive Director
Stewards of the Sequoia
Division of CTUC 501c3 non profit
chris@stewardsofthesequoia.org

CC: Dr. Rick Bottoms- PSWRS Program Manager
Dr. Patricia Winter- PSWRS Social Scientist & Team Leader
Barnie Gyant- Deputy Regional Forester for Natural Resources
Joe Stringer- Director Ecosystem Planning
Deb Whithall-Region Social Scientist
Ron Pugh-Deputy Director Ecosystem Planning

"Since being founded in 2004, Stewards of the Sequoia continues to be the largest on-the-ground organization of volunteers in the Sequoia National Forest. Our crews have maintained over 1900 miles of trails and have planted hundreds of trees in reforestation projects. We represent in excess of 2500 members whose activities include camping, hunting, fishing, hiking, mountain biking, motorized recreation, boating, windsurfing, rock climbing and horse riding"

Promoting Responsible Recreation & Environmental Stewardship

The following share the concerns outlined in this letter:

American Lands Access Association Shirley Leeson, President	Kernville Chamber of Commerce Cheryl Borthick, President
Americans For Forest Access. Eddie Phillips. Chairman	Lake Isabella-Bodfish Property Owners Association Jon Ream President,
Backcountry Horseman of California Bob Magee, Vice President Public Lands	Los Altos Dirt Bikers Corp John Haaker, Founder
Backcountry Horsemen of California, Mother Lode Unit Mike Kohlbaker, President	National Cattlemen's Beef Association Dustin Van Liew, Federal Lands Director
Backcountry Horseman Redwoods Unit Carole Polasek, President and Public Lands Chair	NOHVCC Ed Goss, South Dakota Representative
Backcountry Horseman Youth Education & Secretary American River Parkway Trail Patrol Cathy Andrews, Co-Chair	Northwest Motorcycle Association Tod Petersen, Legislative / Land Use Coordinator
Bakersfield Trailblazers Jon Aichele, Director of Land Use	N2Dirt Katherine Kelsey, President
California Deer Association Jerry Springer, President	OHV Recreation Advocate Bob Ham
California Sporting Dog Association Turlock chapter Zach Couch, President,	OHV Acoustics Alexander D. Bub, President
California Trail Users Coalition Ed Waldheim, President	Public Lands Council Dustin Van Liew, Federal Lands Director
California Federation of Mineralogical Societies Bud McMillin, President	Public Access Preservation Association Tom Thomas, Director
Care-USA Candace Oathout, Chair	Piute Property Owners Association Mike Graves, President
Chaparrals Motorcycle Club Michael J. Adams, President	Paradise Ridge Riders Bill Major, President
Cheaha Trail Riders, Inc Glenn Myers, President	Piute Mountain Recreation Club Richard Bortolott, Vice President
Colorado Off Highway Vehicle Coalition Scott Jones, Chair	Recreation Outdoors Coalition Sylvia Milligan, Executive Director
Colorado Snowmobile Assoc Randy Miller, President	Sierra Access Coalition Corky Lazzarino, Executive Director
Coconino Trail Riders James Hall, Director	Southern Sierra Fat Tire Mountain Bike Association Ernest Garcia-Diaz, Secretary
Concerned Off-Road Bicyclists Association Steve Messer, Vice President	Southern Idaho Desert Racing Association Scott Williams, Government Affairs Officer
Elegant Ears Mule Association Randy Kirkbride, President	Santa Barbara Motorcycle Club Jim Ciontea, President
Friends of Tahoe Forest Access Rick Krause, Founder	San Diego Adventure Riders Randy Lazar , President

French Meadow and Camp Nick Williams Neil C. Kitchen, Trustor	Stewards of the Sierra National Forest Mike Wubbels, Executive Director
Georgia Trail Riders Doug Reynolds, Director	Timekeepers Motorcycle Club Ken Deeg Legislative Action Officer
Ghostriders MC Rick Araujo, Treasurer	Tule Gem & Mineral Society Bill Bingaman, President
Grass Valley 4-Wheelers Martin Ward, President	Tuolumne County Alliance for Resources and Environment-TUCARE, Melinda Fleming, President
Greenhorn Grange #384 & Pomona Grange Anthony Intiso, Master & Overseer	Utah Shared Access Alliance (USA-ALL) Michael Swenson, President
Gear Grinders 4WD Club Randall Schortzmann, President	Upper Tule Association Jeff Jefferson, President
Idaho Mountain Dirt Riders Association Inc David Sundholm, President	Valley Trail Riders Tim Lopez, President
Ironman Dual Sport Robert Van Court, President	Western Rockhound Association Marie Brashear, President
Kern Off Highway Vehicle Association Jack Patterson, Vice President	Western Legacy Alliance Jennifer Ellis- Board Chairman
Kern Habitat Club Dick Miller, President	Washington Off Highway Vehicle Alliance Byron Stuck, President
Kern River Valley Chamber of Commerce Fred Roach, President	Wisconsin Off Highway Motorcycle Association Alexander D. Bub, President

See following pages for Additional Comments and Information

ADDENDUM- Section Comments

Re: Errors and Issues with “*Science Synthesis to Support Land and Resource Management Plan Revision in the Sierra Nevada and Southern Cascades*”

During the recent January 25 & 26 Sierra Dialogs we were told that we could provide comments and documentation to correct errors in the Science Synthesis and they would be considered. We feel that the errors we found must be corrected, not just considered.

In order to help the Forest Service in correcting the errors in the Science Synthesis and to provide additional important data for inclusion in that study you will find the following as requested.

1. In general we find the study in many cases has inappropriately or incorrectly cited studies elevating certain environmental issues, while marginalizing more balanced and appropriate studies and land use. We have listed some of them in this comment.
2. We are concerned that the thirteen paragraph Recreation section contains five paragraphs citing possible negative impacts of OHV recreation, horseback riding and downhill skiing. This is discrimination against these forms of recreation by singling them out in a **negative light**. The Science Synthesis fails to cite one single **positive aspect** of these forms of recreation such as economic, social or environmental benefits. For example the thousands of hours of volunteerism or the tens of millions of dollars of OHMVR Green Sticker funding for trail maintenance benefiting everyone and reducing trail impacts caused by every form of recreation.
3. A scientific study should treat the subject matter in an objective manner. In the above example Recreation was the subject matter and if the study wished to highlight negative impacts then it must do so for all forms of recreation. Every form of land use including every form of recreation has impacts both negative and positive and Forest Land Use planning should acknowledge them.
4. Mountain Biking, River Rafting , Rock Hounding, Hunting, Fishing are not mentioned in the Recreation section of the study even though millions of people enjoy them in the region and economies depend on them. Hunting and Fishing are included but only in the section on Tribal Activities. As popular forms of recreation these activities should also be included in Chapter 9.1.
5. We object to the inclusion of willingness to pay for preservation based on a hypothetical threat on Private Audubon land.
6. We object to the Audubon information included in your study which speculated that visitors to the Audubon preserve represent \$1.3 million to the local economy per year based on \$187 per person. Yet the Sequoia NVUM in the same year concluded that hikers spend on average \$77 per person, not \$187. The Audubon visitation value number was then multiplied by anecdotal 6000-8000 visitors per year. This anecdotal information on private preservation lands is not appropriate in a Science Synthesis such as your study.

7. Reducing impacts by dispersing recreation was not mentioned in the study, although this was discussed and documentation provided by us during the Dialogs.
8. The negative impact to the public and the economy of limiting or closing roads, trails, campgrounds was not mentioned in the study. The need to improve access to public lands was not mentioned even though we provided the USDA study citing this and do so again in this comment.
9. Under the new Forest Service All Lands Approach the study area includes all of the California Sierra Nevada National Forests including the Sequoia National Forest and the Sequoia National Monument which lie within Kern and Tulare Counties as well as lands surrounding them. The Study includes population, economic and other data for only 12 of the 24 Counties contained in the study area. The study has failed to include population, economic or recreation data for Kern or Tulare Counties among others. Yet the study did include a full paragraph devoted to economic data from four Oregon counties in the Rogue-Siskiyou National Forest lands in order to make a point about timber management. We understand Kern County was not contacted or asked to provide any data.
10. The study goes into great detail regarding the need for removal of non native fish from rivers. Yet the study fails to cite the negative economic impacts of this program which crippled the Kern River Valley for three years and forced many local businesses to close, or that it took three years to remove the ban based on a study that was available prior to instituting the ban showing the non native fish posed no risk in this area.

Inappropriate Citations

We find the following citations in the Science Synthesis to be inappropriate or in error

CITATION FROM STUDY Recreation Section 9.1 Page 12-

Increases in numbers of users and certain types of use may also affect the ecosystem and the health of recreationists. Padgett et al. (2008) reported that OHV use contributed to erosion on unpaved roads and trails and increased transport of fine dust particles, and they argued that elevated dust concentrations may reach unhealthful limits for riders during periods of heavy trail and road usage.

COMMENT-

The Padgett study was done in an “open” riding area, not a designated trail system of the type located in the Synthesis area. The effects on ecosystem and OHV riders health was based on dust caused by OHV use in a denuded, small (1700 acres) highly concentrated open riding area in Kentucky. The Science Synthesis area contains few if any open riding areas. The researchers describe their Kentucky study area as “*severely denuded and eroded hillsides, loss of leaf litter and topsoil, compacted soils, heavily disturbed and dead flora, and dust everywhere*”. The conclusions that the elevated dust levels from a denuded open riding area in Kentucky would pose an ecosystem problem or health risk to OHV riders would not apply to the use of dispersed trails in the Synthesis area.

The study was specifically about dust. The statement regarding OHV use causing increased erosion on unpaved roads was not supported by the study. The study actually evaluated aerial displacement of soil and did not address erosion. In addition, the soils in the Synthesis area are most likely different than those in Kentucky and may not exhibit the soil characteristics identified in the Kentucky study.

This citation should be removed from the Synthesis.

CITATION FROM STUDY Recreation Section 9.1 Page 12-

Managers of OHV use in California cited soil erosion and compaction as a primary ecological concern, as well (Chavez and Knap 2006).

COMMENT-

This study did not include all managers but was comprised of 45 managers and only 25 of them cited erosion and compactions as an issue and that was regarding Four Wheelers travelling Off Trail Travel, not normal OHV use. The above statement should be struck or modified to reflect how many managers and that the issue is with Four Wheeler off trail travel not OHV use.

CITATION FROM STUDY Recreation Section 9.1 Page 12-

The impacts of OHV use on wildlife have been the focus of some studies, though there is little published literature on the topic. Barton and Holmes (2007) identified impacts on breeding songbirds, and they reported greater nest desertion and abandonment in shrub nests < 100m from OHV trails than in nests > 100 m from trails. They suggested that OHV management would benefit from an understanding of the abundance and needs of nesting birds.

COMMENT-

However the above study by Barton and Holmes stated that the above was not statistically significant. Also the above study was done in a desert area and the species and habitat studied may not exist in the Sierra Forest area covered by the Science Synthesis. Since the researchers found this to be insignificant it should not be cited in the Science Synthesis.

CITATION FROM STUDY Forest Carnivores Section 7.1 Page 15-

Recreation

Recreation has the potential for significant impacts to marten populations, especially winter recreation that occurs in high-elevation mountain forests or subalpine zones. **The sound of engines from off-highway vehicles (OHVs) is presumed to be a disturbance**, but in winter, the use of snowmobiles can also have indirect effects by compacting the snow, permitting access to marten areas by competing carnivores that would not typically be able to traverse deep snow (Buskirk et al. 2000). **The only study to explore the effects of OHVs on martens in the Sierra Nevada found that marten occupancy at two study areas was unaffected by year-round OHV use (Zielinski et al. 2008).**

COMMENT-

Scientific studies should not make presumptions. In this case the studies show martens are unaffected by year round OHV use, so the statement that the sound of OHV engines is **presumed** to disturb Martens is **unsupported** and must be removed.

Therefore the Section 9.1 Page 13 which currently reads in a paragraph with negative comments on OHV use- Potential impacts on the marten are discussed in a separate chapter (see chapter on Forest Carnivores (7.1)).

Should be modified to read-

Studies found martens to be unaffected by year round OHV use. Potential impacts on the marten are discussed in a separate chapter (see chapter on Forest Carnivores (7.1)).

CITATION FROM STUDY Recreation Section 9.1 Page 13-

Potential impacts on lizard populations were reported by Tull and Brussard (2007).

COMMENT-

This study was for impacts in open riding areas with concentrated use. During Travel Management the Forest Service implemented a ban on Cross Country OHV Travel and has provided few if any open riding areas. Therefore this study regarding open area impacts is not applicable to the Science Synthesis area with no open riding areas. Additionally the study is for one species of lizard which may not exist in the Synthesis coverage area. Also the lizard lives among rocky outcroppings which designated trails such as those within the coverage area would be unlikely to traverse.

This citation should be struck or failing that it should read-

Potential impacts on lizard populations in open riding areas, of which there are few if any in the coverage area of this study, were reported by Tull and Brussard (2007).

CITATION FROM STUDY Recreation Section 9.1 Page 13-

Although open acreage is reportedly most highly valued by OHV users, restricting travel to existing roads and trails has minimal economic impact and may meet resource protection mandates (Jakus et al. 2010).

COMMENT-

Open acreage is not most highly valued by OHV. The above study was for ATV's, not OHV's; in a Utah open riding area. It is not representative of the desires of OHV users on designated trail systems. The bold section of the above citation should be struck and replaced with the following to accurately describe the highest value of OHV users-

OHV Enthusiast Desires

OHV enthusiasts generally seek the same type of outdoor recreation experience as any other outdoor recreationist. OHV enthusiasts use their machines to access scenic vistas, view wildlife, access historical sites, take photos, and experience and enjoy the outdoor environment with family and friends. They also use the machines as tools to access hunting and fishing locations and to retrieve big game animals that have been harvested. In addition, OHV use allows the enthusiast to experience challenge, excitement, and a sense of adventure and accomplishment.

Crimmins, T.M., 2006. Management Guidelines for OHV Recreation. National Off-Highway Vehicle Conservation Council

CITATION FROM STUDY Recreation Section 9.1 Page 13-

However, in a statewide survey of managers with OHV management responsibilities, the vast majority of respondents had observed or received reports of use violations on closed roads or trails (Chavez and Knap 2006).

COMMENT-

This was not a statewide survey. It included only 45 managers where 73% of the managers found that four wheelers, not OHV's, had been going off trail. This survey did not find OHV violations on closed roads or trails.

The citation should be removed

CITATION FROM STUDY Recreation Section 9.1 Page 13-

Colby and Smith-Incer (2005) examined visitor values and economic impacts of riparian habitat preservation on the Kern River Preserve. They surveyed visitors to the preserve to explore willingness to pay for preservation. They reported an annual average of \$467,000 to \$616,000 per year in willingness to pay for preservation based on average payments and visitation levels. Furthermore, they found that visitor expenditures in the Kern Valley represent \$1.3 million in local business activity. Respondents indicated that failure to maintain and preserve the ecosystem would likely result in decisions to not visit the area at all, or to significantly reduce the number and length of their visits. These values highlight the preserve's importance to the local economy, and the fact that local economic benefit is dependent on continued protection and preservation. These findings are also helpful in demonstrating benefits of protection, and they offer an alternative perspective from those focused on the value of addressing increased demand for surface flow and ground water (though these demand issues are not directly applicable to the Kern River Preserve at present).

COMMENT-

This survey is based on a hypothetical threat in which streamflows and riparian habitat at the Kern River Preserve are threatened. The survey sample consisted of 254 visitors who offered a guess as to their willingness to pay based on this hypothetical threat. Their hypothetical donations were then multiplied to come up with a very wide range of \$467,000 to \$616,000 per year in hypothetical willingness to pay for preservation. This kind of fiction should not be included in a regional science synthesis study, especially when the synthesis has seen fit to ignore tens of millions in actual OHV funding and volunteer efforts, such as the value of tens of thousands of hours of volunteer labor on multiple use trails by OHV, mountain bike and horseriders, as well as the tens of millions of dollars which the Off Highway Motor Vehicle Recreation Division has provided in funding for actual Forest projects in the area.

The Kern River Preserve survey then determined the value of visitation to the local economy of \$1.3 million by asking visitors what they thought it cost them to visit. The researchers then multiplied this anecdotal number by 1.75 for an average of \$187 per person per visit, however in the same year the Sequoia National Forest adjacent to the Kern River Preserve determined that an average of \$77 per person per visit for hiking, not \$187. The Kern Preserve researchers then multiplied the inflated \$187 per person by 6000 to 8000 anecdotal visitors to come up with \$1.3 million. This figure is clearly inflated as it represents a very large portion of the Sequoia estimated \$3 million per year for all other forms of recreation in the area per the NVUM.

If the Kern Preserve has such high visitation and if the visitors are so willing to pay then why are the buildings at the Kern River Preserve in need of paint and repair? Why are the museum displays covered in dust and in disrepair? Why did they have to let one of only two employees go due to lack of funding? The citation on the Kern River Preserve should be struck and replaced with actual funding from the OHMVR and actual volunteerism values.

ADDENDUM-Additional Information

As requested below is additional information with references which need to be incorporated in the Science Synthesis in the Recreation, Economic and others sections. In order to save your staff time we have provided it in a format that could possibly be inserted directly into the Science Synthesis in addition to or to replace current sections.

RECREATION AND TOURISM ARE VITAL TO MOST RURAL COMMUNITIES: This is true for virtually all rural communities but especially important to counties with high percentages of public land. Actions by public agencies to reduce or limit access to recreation on public lands have a direct impact on the local economy. Limiting access by closing roads, campgrounds, RV parking, and trails impact the surrounding communities. *(Hurniston 2010)*

More than 140 million Americans make outdoor recreation a priority in their daily lives – and they prove it with their wallets. Each year, Americans spend \$646 billion on outdoor recreation. *(Overlooked Economic Giant, Outdoor Industry Association 2012)*

How much recreationists annually spend on their sport

Camping	\$143,383,731,298
Off Roding/Motorcycling	\$109,021,547,334
Water Sports	\$86,197,498,227
Bicycling	\$81,320,945,871
Snow Sports	\$53,047,209,901
Fishing	\$35,467,821,965
Wildlife Viewing	\$33,322,175,371
Hunting	\$23,162,636,239

(Overlooked Economic Giant, Outdoor Industry Association 2012)

All recreational pursuits contributes some degree of environmental degradation. (Marion & Wimpey 2007) However, Wilson and Seney (1994) 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.

Regarding Eagles it was 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. (Spahr 1990) "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.

Over the years there has been much speculation as to the impacts of noise on wildlife. Studies of effects of human intrusion on animals often find profound impacts. As a result, it is commonly assumed that the impacts of OHV noise are equally as damaging. Research has shown that, while noise is initially startling, animals generally adapt very well under most circumstances. Long term effects to animals, particularly big game animals, are negligible. Much of the same research has shown that animals are more frightened by humans on foot than they are by OHVs. (Wernex, J., 1994)

A study commissioned by the Federal Highway Administration and performed by the U.S. Forest Service (Ward, Cupal, et al, 1976) near Laramie, Wyoming, found that elk were likely to remain lying down and unconcerned when a trailbike rode by as close as 15 yards. Conversely, the elk took flight virtually every time a human walked within 20-100 yards. (Wernex, J., 1994)

Another study commissioned by the California Department of Parks & Recreation (Jones & Stokes Associates, Inc. 1991) found similar results. No significant variation was found in the activity and foraging patterns of mule deer due to differing levels of OHV use. (Wernex, J., 1994)

Research commissioned by the Maine Department of Parks & Recreation (Anderson & Mason, Unity College, 1991) found that ATV use in Mt. Blue State Park had no significant effect on wildlife. Control areas were set up to compare ATV and non-ATV disturbances for several animal groups, including deer and birds. (Wernex, J., 1994)

Historically, it appears that wildlife disturbances attributed to OHV use have been overstated. Unusually high levels of OHV use, however, may have an effect on certain sensitive species, especially during reproductive stages. Where this occurs, short term seasonal closure may be a practical solution. (Wernex, J., 1994)

A true American tradition, fishing remains a popular recreational activity. It is a family-friendly activity that inspires Americans to get up and get outside. (*Outdoor Foundation-Special Report on Boating & Fishing 2012*)

Sport Fishing generates vital conservation benefits for our nation's waters and fish. Since the passage of the 1950 Federal Aid in Sport Fish Restoration Act, anglers have paid a federal excise tax on fishing tackle. In 1985 those taxes were expanded to include the federal excise tax on motorboat fuel in what is now known as the Sport Fish Restoration and Boating Trust Fund. These tax revenues are distributed annually to state fish and wildlife agencies to help fund projects and programs that directly benefit fish, habitat and, ultimately, anglers and other recreational water enthusiasts. In 2010 alone, the excise tax on sportfishing tackle amounted to \$390 million. Along with the \$657 million contributed by anglers through fishing license fees and \$403 million in private donations, anglers generated \$1.45 billion for fisheries conservation efforts. (Southwick Associates 2012)

Of the more than 594 million boating outings taken in 2011, almost 38 percent of them included fishing. Although participation in boating was down slightly from 18.1 percent in 2010 to 17.8 percent in 2011, the average number of outings per boater increased. On average, each boating participant made 14 annual outings in 2011, compared to 13.2 outings in 2010. The total number of boating outings increased from 560.2 million outings to 594.2 million outings. (*Outdoor Foundation-Special Report on Boating & Fishing 2012*)

Hunting has been an integral part of the American experience since its beginning, and to the millions of people who still practice the rich tradition, it provides a powerful connection to the outdoors, as well as to family and friends who share a passion for the sport. Hunting provides a view to the outdoors like no other activity, requiring enthusiasts to become intimately knowledgeable of the land and game they hunt, as well as how the two interact with each other. For that reason it's no surprise that hunters are our country's most ardent conservationists, supplying 7.2 billion since 1937 in funding, as well as on-the-ground effort to protect and improve critical habitat and wildlife for current and future generations to enjoy. (Southwick Associates 2012)

Trail-riding is one of the most popular recreational uses of horses; riders use an extensive network of multi-use trails (accessible to a wide array of users including hikers as well as horse, ATV, and mountain bike riders) on both public and private lands. In general, equestrian trail-riding differs from other activities that make use of trails because of the care and logistics associated with the transportation, feeding, and watering of horses. (Blackwell 2009)

Horseback organizations such as Backcountry Horseman of California (BCHC) are dedicated to improve and promote the use, care and development of California backcountry trails, campsites, streams and meadows and to advocate good trail manners. BCHC members have volunteered 1,028,291 hours to backcountry trail and facilities maintenance totaling more than \$14 million dollars. A primary purpose of BCHC is to support or oppose new proposals, plans and restrictions as related to the interests of horseman. (Amicus Brief 2012 High Sierra Hikers VS Dept of Interior)

BCHC also has an educational arm to promote policies of Leave No Trace ("LNT"). According to the Center for Outdoor Activity, "Leave No Trace is a national and international program designed to assist outdoor enthusiasts with their decisions about how to reduce their impacts when they hike, camp, picnic, snowshoe, run, bike, hunt, paddle, ride horses, fish, ski or climb. The program strives to educate all those who enjoy the outdoors about the nature of their recreational impacts as well as techniques to prevent and minimize such impacts." See <http://lnt.org/programs/index.php>. BCHC has 8 LNT Master Educators and 20 LNT Trainers who offer their services, free of charge, to teach LNT principles to the general public. BCHC is working with the Regional NFS offices on Mare Island, Vallejo, California to develop a program to work with young teens in the heart of urban areas teaching LNT practices before those teens venture out into public lands. (Amicus Brief 2012 High Sierra Hikers VS Dept of Interior)

-NEED INFO RE OHV, MOUNTAIN BIKE, FISHING, HUNTING AND OTHER VOLUNTEER HOURS

Mountain biking is still a relatively new activity whose environmental impact and contribution to trail degradation is poorly understood. As with all recreational pursuits, it is clear that mountain biking contributes some degree of environmental degradation. In the absence of adequate research, land and trail managers have frequently been cautious, implementing restrictive regulations in some instances (Edger 1997). Surveys of managers have shown that they frequently perceive mountain biking to be a substantial contributor to trail degradation but lack scientific studies or monitoring data to substantiate such concerns (Chavez and others 1993; Schuett 1997).

While land managers have long been concerned about the environmental impacts of mountain biking, there are still very few good studies published in peer-reviewed journals. White and others (2006) and Hendricks (1997) note that the majority of mountain biking research has focused on social issues, such as conflicts between trail

users. As a consequence, the ecological effects of mountain biking on trails and natural resources remain poorly understood. (Marion, J. 2007)

OHV use is widely recognized now as one of the fastest growing outdoor activities. From 1982 to 2000-01, driving motor vehicles 'off-road' became one of the fastest growing activities in the country, growing in number of participants over 12 years old by more than 100 percent with over 51 million people enjoying OHV recreation. (Cordell et al. 2005)

OHV recreation is a dispersed recreation activity. OHV enthusiasts generally seek the same type of outdoor recreation experience as any other outdoor recreationist. OHV enthusiasts use their machines to access scenic vistas, view wildlife, access historical sites, take photos, and experience and enjoy the outdoor environment with family and friends. They also use the machines as tools to access hunting and fishing locations and to retrieve big game animals that have been harvested. In addition, OHV use allows the enthusiast to experience challenge, excitement, and a sense of adventure and accomplishment. (Crimmins, T.M., 2006) Three of the most common reasons given for trail riding are enjoying nature, escaping the structured existence of urban living and the physical challenge of it all. (Wernex, J., 1994).

The use of off-highway vehicles such as 4X4 vehicles, dirt bikes, all terrain vehicles (ATVs), and snowmobiles has been occurring on national forest land since the 1920s. In many cases, the use predated the national forest's acquisition of that land. Initially, these vehicles did not represent a major recreation use or industry. OHV trails/areas generally were not planned or designed, but developed through use. (USDA Forest Service 1996-National Off-Highway Vehicle Activity Review)

The increased popularity and widespread use of OHVs on Federal lands in the 1960s and 1970s prompted the development of a unified Federal policy for such use. Executive Order 11644 was issued in February 1972 to establish policies and provide for procedures to control and direct the use of OHVs on Federal lands so as to (1) protect the resources of those lands, (2) promote the safety of all users of those lands, and (3) minimize conflicts among the various uses of those lands. The executive order also closed wilderness and primitive areas to OHV use. (USDA Forest Service 1996-National Off-Highway Vehicle Activity Review)

Executive Order 1189 was issued in May 1977. It strengthened protection of the lands by authorizing Agency heads to (1) close areas or trails to OHVs causing considerable adverse effects and (2) designate zones of use to identify specific areas and trails in which the use of OHVs may or may not occur. (USDA Forest Service 1996-National Off-Highway Vehicle Activity Review)

In all cases, the degree of successfully managed OHV areas/trails appears to be associated with the amount of line officer involvement, an employee "champion," the presence/involvement of a local organized club/organization, and ample riding opportunity and challenge. (USDA Forest Service 1996-National Off-Highway Vehicle Activity Review)

Cooperators such as States, organizations, and volunteers are being aggressively pursued and utilized. Such outside involvement accounts for approximately 70 percent of most OHV management programs. Some early forest land management plans (LMPs) did not address OHV use and were later "retrofitted" to acknowledge OHV use as an issue. OHV use was not commonly evaluated as part of travel access management. Most LMPs that did address OHV use and did not fully recognize or anticipated the demand and resulting conflicts. (USDA Forest Service 1996-National Off-Highway Vehicle Activity Review)

Existing trails/areas were generally not planned, designed, nor constructed for OHV activities. Many areas that provided for trails/areas did not incorporate enough miles or enough challenge to adequately accommodate the OHV user. This has contributed to OHV management problems by not dispersing the use and not providing the full spectrum of challenge levels (easy through most difficult). This practice often resulted in resource damage as a result of over use and development of new trails that do not exist on inventory records. *(USDA Forest Service 1996-National Off-Highway Vehicle Activity Review)*

Off-highway vehicle use was not adequately incorporated into standards and guidelines or monitoring plans. As a result, most forests are working to catch-up with planning by closing or relocating trails/areas where unacceptable damage or excessive conflict exists. *(USDA Forest Service 1996-National Off-Highway Vehicle Activity Review)*

Functional staff and in some cases members of the management team did not necessarily embrace OHV as an appropriate use. Such instances often resulted in significant delays and major intrusions into customer service and high levels of controversy with user and other members of the public. *(USDA Forest Service 1996-National Off-Highway Vehicle Activity Review)*

Some areas were observed where user satisfaction is not being met. Sufficient miles of trails and roads do not exist. Critics have restricted OHV opportunities. Internally, some specialist have established unrealistic constraints limiting OHV opportunities. *(USDA Forest Service 1996-National Off-Highway Vehicle Activity Review)*

Monitoring of OHV impacts was being accomplished on some national forests. While studies themselves have not resulted in additional OHV opportunities, there have been limited studies which have focused on possible impacts from OHV recreation. These studies have not demonstrated the need for additional OHV restrictions. On-going OHV planning efforts are addressing the current statewide planning issues, which include the need for long distance touring opportunities, and the need to connect riding areas in a coordinated statewide trail system. *(USDA Forest Service 1996-National Off-Highway Vehicle Activity Review)*

Many Forest Service personnel who do not accept OHV as a legitimate use of National Forest land, become barriers to managing an effective OHV program. *(USDA Forest Service 1996-National Off-Highway Vehicle Activity Review)*

The Region has developed a high level of dependence on State OHV funding. In many cases the district OHV programs are 75% to 90% funded by State OHV Grants, This has resulted in several problems. There is a general assumption that it is a State responsibility to fund OHV management on the National Forest. When in fact; OHV management including funding, is a Forest Service responsibility. The amount: of Forest Service funds committed to the OHV program has been reduced because State funds are available. This is not consistent with State policy regarding the use of State funds to supplement OHV costs rather than supplanting FS costs. *(USDA Forest Service 1996-National Off-Highway Vehicle Activity Review)*

Based on Recreation Visitor Day (RVD) data and appropriate mileage for each type of trail experience, it is estimated that OHV trails should make up a minimum of 64 percent of a forest trail system. Exclusive use trails for equestrian, hiking, and bicycling should make up a maximum of 17 percent, 15 percent and four percent of the trail system, respectively. *(Cordell NSRE 1999)*

From 1980 to 2012 OHV enthusiasts have provided over \$170 million directly to the California National Forests for trail maintenance, environmental work, education and law enforcement through their self funded OHV registration Green Sticker program. (OHMVR funding report 2012)

Their OHV Green Sticker fund also provided approximately \$12 million in funding to the Forest Service to plan OHV designated routes on 19 National forest lands throughout California during the Travel Management process which reduced environmental recreation impacts. (OHMVR Route Designation Report)

Nothing government agencies can do goes further toward managing trailbike use than developing adequate mileage of high quality trails. The concept of Trail Capacity may be used to express the physical ability of a trail to withstand use or the rate at which a trail incurs wear that eventually results in the need for maintenance or replacement. In the case of trailbikes or all terrain vehicles, unwarranted trail closure has caused a self-fulfilling prophecy of trail damage that leads to trail damage. After the closure there are fewer trails available to support a growing population of motorized recreationists, and overuse begins to take its toll. (*Wernex, J., 1994*) Many members of the OHV community have discovered that some agencies apply standards to motorized trails that are not just different, but inequitable, hypocritical or downright dishonest. It is sometimes found that little concern is displayed for severely damaged trails in designated wilderness when the same trail would be closed if it were in an area open to motorized use. (*Wernex, J., 1994*)

Attached is a bibliography containing some of the studies cited her as well as numerous other OHV related documents which will be of use for the Science Synthesis. The bibliography was prepared for the USFS San Dimas Tech & Dev Center by Dr Roger Poff

DOCUMENTS CITED:

Hurniston 2010-USDA –Jobs, Economic Development and Sustainable Communities

Outdoor Industry Association 2012-Overlooked Economic Giant

Outdoor Foundation-Special Report on Boating & Fishing 2012

Southwick Associates2012, Sportfishing in America: An Economic Force for Conservation. Southwick Associates for the American Sportfishing Association under a U.S. Fish and Wildlife Service Sport Fish Restoration grant (F12AP00137,VA M-26-R) awarded by the Association of Fish and Wildlife Agencies, 2012.

Southwick Associates2012, Hunting in America: An Economic Force for Conservation. Southwick Associates for the National Shooting Sports Foundation in partnership with the Association of Fish and Wildlife Agencies, 2012

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

Sprung, Gary, "Natural Resource Impacts of Mountain Biking," International Mountain Bicycling Association. (2004)

Marion & Wimpey 2007, Environmental Impacts of Mountain Biking: Science Review and Best Practices

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

Melanie Blackwell 2009-Recreational Demand for Equestrian Trail-Riding

Amicus Brief 2012 High Sierra Hikers VS Dept of Interior

Marion, J. (2007), Environmental Impacts of Mountain Biking: Science Review and Best Practices

Edger, C. O. (1997). Mountain biking and Marin Municipal Water District watershed. Trends 34 3: 5.

Chavez, D., P. Winter, et al. (1993). Recreational mountain biking: A management perspective. Journal of Park and Recreation Administration 11 1: 7.

Schuett, M. A. (1997). State park directors' perceptions of mountain biking. Environmental Management 21(2): 239-246.

White, D. D., M. T. Waskey, et al. (2006). A comparative study of impacts to mountain bike trails in five common ecological regions of the Southwestern U.S. Journal of Park and Recreation Administration 24(2): 20

Hendricks, W. W. (1997). Mountain bike management and research: An introduction. Trends, 34(3), 2-4

Cordell et al. 2005-Off-Highway Vehicle Recreation in the United States, Regions and States: A National Report from the National Survey on Recreation and the Environment (NSRE), p. 6

Crimmins, T.M., 2006. Management Guidelines for OHV Recreation. National Off-Highway Vehicle Conservation Council

Jones and Stokes and Associates, Inc. Rock Creek Off-Road Vehicle Deer Study, USDA Forest Service, Eldorado National Forest, California Department of Fish and Game and California Department of Parks and Recreation, 1991.

Ward, A.L. and Cupal, J.J. (1980) Telemetered heart rate of three elk and effected by activity and human disturbance. US Forest Service, FT Collins Colorado.

Anderson,E., Mason,P. & Holmes, E. (1989) Blue Mtn. Experimental Trail. ME, Unity College 1-39

Wernex, J., 1994. Off-Highway Motorcycle and ATV Trails: Guidelines for Design, Maintenance and User Satisfaction, 2nd Ed. American Motorcyclist Association

USDA Forest Service 1996- National Off-Highway Vehicle Activity Review, File Code: 1410/2350

Cordell 1999- National Survey on Recreation and the Environment-Chap 5 Outdoor Recreation ParticipationTrends

OHMVR funding report 2012

OHMVR Route Designation Report