



June 14, 2013

Regional Planning Team  
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**Sent via email: [sn\\_bioregional\\_assessment@fs.fed.us](mailto:sn_bioregional_assessment@fs.fed.us)**

**Re: Comments on the draft bioregional assessment**

To Members of the Regional Planning Team:

We appreciate that the Forest Service has recognized the need to develop a bioregional assessment to support the forest plan revision process in the Sierra Nevada. We also applaud your invitation for comments and discussion on early drafts of the assessment, the access provided to review and contribute information on the WIKI, and the hosting of numerous public meetings for stakeholders to provide feedback on the assessment. These are forward thinking actions that support the active collaboration that we very much support.

We are however very concerned that the draft bioregional assessment (dated May 17, 2013) does not provide the information necessary to conduct the required evaluation of the need to change the direction (for a variety of resources) in the existing forest plans. In the comments below, we provide an overview about what we view as the purpose of this bioregional assessment, an overview of concerns about the draft bioregional assessment, and detailed comments for each of the topic areas in the assessment.

**I. Need for the Bioregional Assessment**

The bioregional assessment should identify trends and conditions for resource areas that are best evaluated at the bioregional scale and for which management must be consistent throughout the region to maintain or restore the ecological integrity, as required by the planning rule. The assessment needs to be sufficiently comprehensive to provide the basis for determining the need to change direction in existing forest plans, including the regional direction adopted in the 2004 Amendment for achieving:

- Conservation of aquatic, riparian and meadow ecosystems and associated species
- Conservation of old forests and associated species, including California spotted owl, fisher, goshawk and Pacific marten
- Fire and fuels management

These resource areas were identified in prior forest plan amendments (i.e., in 1992, 2001 and 2004) as requiring strategies that were integrated across national forests in the Sierra Nevada. The prior forest plan amendments were responding to the urgent need to address these issues regionally because integrated strategies were necessary to meet conservation objectives and meet legal requirements for land management.

The new planning rule directs that the assessment evaluate “trends, and their sustainability and their **relationship to the land management plan** within the context of the broader landscape.” 36 CFR 219.5(a)(1). This means that the assessment should:

- Provide information on how the current land management plan contributes to trends and sustainability<sup>1</sup>;
- Draw on forest and regional monitoring, supported by the best available science; and
- Base projections of trend on outcomes under existing forest plans for the Sierra Nevada.

Because assessment in the new planning rule also requires evaluation within “the context of the broader landscape,” the bioregional assessment is the best and most efficient vehicle to provide that connection for the respective forest assessments. Because of this, the bioregional assessment also should:

- Provide the basis for determining the need to change the regional direction in existing forest plans;
- Inform development of the components of revised plans for those issues requiring regional integration; and
- Inform development of the monitoring plan with a focus on those issues that are best and most efficiently addressed with regionally integrated monitoring plans and strategies.

As discussed below, we find that the draft assessment did not provide sufficient information to meet the objectives above or adequately address the status and trends of resources critical to the region.

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<sup>1</sup> The rules on sustainability (36 CFR § 219.8) require plan components to maintain and restore ecological integrity (composition, structure, function and connectivity) of terrestrial and aquatic ecosystems while taking into account multiple factors spelled out in the rule. “Strong Sustainability” is also clarified in the National Report on Sustainable Forests—2010 (USDA Forest Service 2011) as being grounded in an ecologically sustainable forest landscape where sustainable social and economic activities arise from and do not degrade the environment in which those activities are embedded.

## II. Overview

The Planning Rule clearly delineates the required contents of the Assessment [36 CFR 219.6(b) (1-15)], and the WIKI process adheres to this format, with topic chapters corresponding to each of the fifteen required elements. The Bioregional Assessment, however, dispenses with this structure and instead organizes the assessment around five "FINDINGS" topic areas (Water Quality & Quantity, Fire Resilience, Sustainable Recreation, Ecological Integrity, and Community Resilience). While we recognize that cross-cutting themes emerged from the WIKI process, the decision to shift the structure of the assessment has resulted in a muddying, rather than the integration, of the information in the fifteen chapters. As a result, various drivers and stressors are discussed in different parts of each Findings section, with no attempt to describe how they connect, interact, or how the various stressors can be reduced through the elements of the forest plan. For instance, climate change in the water resources section is discussed under "Good Water Quality and Quantity," but climate change is not addressed under Biodiversity. **We ask that a clear and consistent outline be adopted in the revision.**

We also found that across all topic areas there was a lack of clarity about what was being assessed, what were the drivers or stressors affecting the attribute<sup>2</sup>, the indicators used to evaluate trend or condition, and the actual condition or trend. We ask that the revised bioregional assessment clearly identify for each resource or factor presented:

- A definition of the attribute being evaluated
- The indicator(s) used to evaluate trend or condition
- The stressors or drivers affecting this element, and
- A clear statement of trends and conditions

The revised assessment also should evaluate for each attribute how the regional direction in existing forest plans has contributed to the trend or condition and provide the factual basis for assessing the need to change this regional direction. This is especially important since the 2004 Framework decision authorized significant increases in land disturbing activities (e.g., road building, logging, grazing) compared to the 2001 Framework. **An evaluation of the actual and future potential consequences of the 2004 Framework on trends and conditions must be evaluated.**

We also note that many statements are contradicted by other information in the assessment, sometimes within the same topic area, which highlights either disagreement over trends and conditions, lack of coordination between authors or a lack of understanding of what is actually happening on the landscape. **We ask that you resolve these discrepancies in the next version of the assessment.**

Lastly, we found that there was a surprising absence of information about the status of species that are at risk and the known conflicts between these species and forest management actions. These resource conflicts are well known and numerous. They have been the focus of regional direction since the first forest plans were adopted in the Sierra Nevada and were significant

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<sup>2</sup> Attributes could be any ecologic, social or economic factor that forest plans might affect.

drivers in the subsequent region wide amendments to the forest plans in the Sierra Nevada. Stabilizing and reversing declining trends for at risk species are critical to meeting the direction in the planning rule to maintain or restore the ecological integrity of the landscape and to provide forest plans that are ecologically sustainable. Forest plans that do not adequately manage species at risk could lead to extirpation and the need to list multiple species as threatened or endangered, which runs counter to the clear obligation under the planning rule for the Forest Service to conserve candidate species and recover imperiled species on its lands. Thus, failing to address species at risk in a manner that is clear and comprehensive also has the potential to negatively affect the ability of the plan to contribute to economic and social sustainability. **We ask that this issue be more fully addresses since it cross-cutting and for species occurring on more than one national forest requires careful integration among forests.**

### **III. Five Topic Areas – specific comments**

#### **A. Water quality and quantity**

##### **1. What needs to be strengthened?**

##### **a. Characterizing wilderness**

The first paragraph under “Effects of Development” states:

The majority of National Forest System lands in the bio-region are not developed because of the vast amount of wilderness in the bio-region and other wildlands, however, conversion of forest land to developed uses, such as roads or camp grounds, often disrupts wetlands, and interferes with their ability to store, clean, and cool water, especially in flood or drought periods (Burns et al. 2005).

While the underlined statement highlights the negative impact of development, we find the characterization of “vast amount of Wilderness” misleading. Only 20% of National Forests lands in the Sierra Nevada are in designated Wilderness. There are approximately 2.3 million acres of Wilderness in the Sierra Nevada (Chapter 15 Wiki) and 11.5 million acres of National Forest land in the Sierra Nevada (Sierra Nevada Framework). Further, Wilderness Areas are not well distributed among the national forest or along elevation gradients. For instance, there is relatively little wilderness designated on the Tahoe National Forest, whereas significantly more area is reflected on national forest in the southern part of the bioregion. Wilderness is also largely in subalpine and alpine areas and little representation occurs in the low to mid elevations. We ask that the bioregional assessment be revised to reflect a more accurate statement about the amount of designated Wilderness and character.

##### **b. BMPs and the road system**

Under “Development and Increasing Use of Forest Land” the third paragraph states:

BMPs on National Forest System lands have been effective in preventing potential or adverse impacts to water quality more than 95% of the time (USFS 2009). BMPs for roads have been

effective 85% of the time, and 81% of the time for livestock grazing. Only 2% of the evaluations indicated significant adverse effects to water quality.

Additional information is available about the results of the effectiveness monitoring. Eight road BMPs measured in the 2013 Best Management Practices Monitoring Report were determined to be effective less than 85% of the time (average of 77% effective) including Road Stream Crossing BMP (62% effective), Road Surface, Drainage & Slope (67% effective) and Protection of Roads During Wet Periods (66% effective) (USFS 2013). The 2013 Report demonstrates a decrease in road BMP effectiveness from an 85% effectiveness rating in the 2009 Report to a 77% effectiveness rating in the 2013 Report. Additionally, BMPs are only implemented on roads that are maintained and over 80% of the roads on the forests are not maintained as needed due to inadequate funding (Road Accomplishment Reports for all national Forests for 2007). Consequently, the majority of roads are not being maintained to the standards necessary to reduce adverse impacts to water quality.

Based on this monitoring, we question the following conclusion in the “What did we learn?” section:

On forests, there is the potential for water quality problems. Implementation of best management practices appears to be effective in decreasing adverse water quality problems.

We ask that you revise this statement about effectiveness of BMPs to include the information above and acknowledge the decreasing effectiveness demonstrated by the BMP monitoring results and the Forest Service’s inability to adequately maintain a significant portion of the road system.

**c. Specific Text Proposed to Strengthen and Clarify the Text**

The following are specific edits to the text in the bioregional assessment that we propose be incorporated (text to add is in bold and underlined).

Paragraph 2 under “Effects of Development”:

This development includes road infrastructure on forest lands. **Considering the proportion of the landscape that they occupy, roads are a prevalent cause of hydrologic and geomorphic process alteration on NFS lands (USFS 2011b).** When roads and drainage features contribute flow directly to a natural water body, they become part of the drainage network and are connected hydrologically. These drainage systems may further increase connectivity if they deteriorate because of use, weather, or poor maintenance. **In addition, cut slopes can intercept transient hillslope groundwater (that is, subsurface stormflow) when the height of the cut slope exceeds the depth to the water table. This runoff is laterally redistributed and often concentrated along inside ditches or the running surface, where it is discharged to hillslopes below the road or trail prism or routed directly into streams. These hydrologic process and pathway alterations largely drive the water-quality impacts associated with roads (USFS 2011b).** Hydrologically disconnecting roads is an important practice for eliminating chronic water-quality impacts (USFS 2011b). As budgets tighten, and maintenance and closure efforts are constrained,

water quality issues with roads could increase. (See discussion of best management practices and the effect on water quality below.) **The deferred maintenance for road and trail infrastructure on Sierra Nevada forests exceeds several hundred million dollars. For example, deferred maintenance on the Sierra National Forest is approximately \$102 million, on the Sequoia National Forest deferred maintenance is approximately \$94 million and on the Inyo National Forest it is approximately \$29 million. (Sierra, Sequoia and Inyo Travel Management DEISs). Over the past several years the Forest Service has had funding to maintain approximately 20% of its road system to safety and environmental standards.**

**2. What is missing?**

**a. Contamination of streams and rivers by livestock**

Livestock use occurs on all national forest in the Sierra Nevada bioregion. Several recent studies have documented contamination that far exceeds safety standards established in state approved water quality plans (e.g., Meyers and Whited 2012). This consequence of grazing management is not addressed in the bioregional assessment. The bioregional assessment should evaluate the potential miles of stream affected and assess the likelihood of human contact to degraded stream conditions. The assessment should also evaluate the current direction in the forest plans and assess the effectiveness of the plans in controlling the degradation of water quality.

**b. Degradation of meadow systems from historic and ongoing use (e.g., grazing, roads, OHV use)**

The bioregional assessment notes that historic and ongoing practices can result in meadow degradation, incision and uncharacteristic drying of meadow systems. The assessment also cites monitoring results that indicate over half of the meadows evaluated were incised (i.e., deep stream channels in the meadow would lead to premature drying of the meadow). The assessment however does not evaluate the efficacy of the forest plans in controlling or reversing such conditions. The assessment largely evades the issue by suggesting that it is difficult to determine what among many factors (e.g., grazing, OHV use, etc.) caused the damage.

The assessment also refers to an increasing trend in meadow condition (p. 19):

Overall, monitoring of meadows in active grazing allotments shows that conditions are improving over time (Weixelman 2013).

We requested a copy of Weixelman (2013) from Dave Weixelman. We were told that the report was not completed and would not be available until July or later. We ask that this reference be removed from the bioregional assessment if there is not report or data to support it. If data is available to support the statement, please make this publicly available.

**c. Assessment of aquatic biodiversity and stressors**

An evaluation of aquatic biodiversity, including an articulation of indicators, an evaluation of trends/conditions and an assessment of how current regional direction has affected trends and conditions is largely absent from the assessment. See comments in the section below on ecological integrity and biodiversity for additional feedback that is relevant to aquatic ecosystems.

**d. Assessment of how actions authorized in the 2004 forest plan amendment have affected water resources**

The 2004 authorized a significant increase in logging and land disturbance compared to the decision issued in 2001, yet there was little or no evaluation of the effects of this increased potential for activity on aquatic resources in the environmental documents supporting the 2004 decision. The bioregional assessment should address how increased activity has affected these resources, including a description of how 2004 Framework in the future would influence trends and conditions broadly, i.e., more road building, increased timber harvest (more and bigger trees) and increased grazing, and how this policy direction would interact with conditions on the ground to influence trends. The Forest Service has the capacity to develop basic information on conditions and trends related to roads and grazing, which would greatly improve the value of the document.

**e. Water rights**

Additionally, the water quantity section could be improved with a discussion of federally reserved water rights, including tribal water rights, the number of adjudicated river basins influenced by water flow off federal lands or the status of existing or upcoming adjudications. Also, it would be helpful to discuss how increasing demand for water (off the forest) affects water supply, quantity/quality and/or management of water on national forests.

**B. Fire resilience**

**1. What needs to be strengthened?**

**a. Ecological benefits of fire**

Fire is an essential process to support ecological integrity of the forests. The section focused on uncharacteristic fire while only briefly mentioning the need to reintroduce fire at the appropriate ecological levels. The ecological benefits of fire were not adequately addressed in the assessment. Actions to achieve fire resilience will need to focus on ecological value of fire to address the social and political constraints, which currently are barriers in achieving restoration through fire management in the Sierra. We recommend that ecological benefits of fire, such as nutrient cycling, surface fuel reduction, preparing seedbeds, and other cultural benefits (promoting gathering materials) be explicitly discussed in this section.

**b. Assessing trend for desirable and undesirable fires**

Two trends are discussed in the assessment, larger and more severe wildfires and decreased amounts of low to moderate severity fire. These trends head the discussion on “good” vs. “bad” fire; however, the emphasis throughout this chapter is on limiting and controlling large fires. Fire size should not be a trend; the trend should focus on fire effects and if the effects are within the natural range of variability. We suggest outlining “good” fire and “bad” fire within the section based on what is ecologically, culturally, and socially acceptable in the management of the national forests.

It is important to establish that there is a deficit of beneficial fire in the bioregion, but the use of this term in the assessment is confusing. Currently, there is a very large fire deficit based on our past land management policies. Correlating fire deficit to number of fires and size of fires suggesting the current trends are unacceptable is misleading, since the real concern is for those fires that have unacceptable outcomes. It is more appropriate to discuss the type of fire that would be considered ecological and culturally acceptable for the national forests, and considered within the natural range of variation. Ultimately, fire size should have little bearing on the acceptability of the fire. The focus should remain on the effects of both wildfire and prescribed fire to determine the ecological acceptability of the fire.

There is a brief mention of managing wildfires to restore fire to the ecosystem (p.37). With limited budgets and a fire deficit in the region it would benefit the forest planning effort to develop this idea more fully within the section. Managing wildfire has great potential to restore ecosystems that would otherwise be left untreated in the bioregion. It also provides an avenue to allow fire to restore lands that have previously been treated. North et al. (2012) concludes that actively managing fire will be key in tackling the large deficit of fire in the region.

**c. The role of fire in restoration and resilience**

The Planning Rule (2012) states, “Responsible officials will consider opportunities to restore fire adapted ecosystems and for landscape scale restoration” (Fed. Reg. Vol.77, p. 13). The need for fire to play a role in restoration of the bioregion is clearly missed in the assessment. The focus on suppression and control of uncharacteristic fire is only one consideration for fire management. This is indeed a need close to human communities; however, these same needs may be different in the general forest, wilderness, and other forest designations that do not directly affect infrastructure and people.

**d. Social constraints evaluated separately from ecological need for fire**

Increasing the pace and scale of fire management on the national forests has been met with a variety of social constraints that have limited the use of managed fire across the bioregion. Social constraints include: education and understanding of ecological need for more fire, air quality and health concerns, liability, fragmentation of land, and regional support to implement a robust fire program. These social constraints should be more clearly separated from the ecological need to use more fire to achieve fire resilience.



**e. Review of current fire management costs**

It is reported that costs have significantly increased in the region for wildland fire management (p. 37). After reviewing U.S. Forest Service All Service Receipts (USDA Forest Service 2012), it is not clear how increased spending in the bioregion is a result of wildland fire management. The document does not display a classification specific to wildland fire management for California. We suggest a more thoughtful evaluation of fire costs from suppression and managing fire (prescribed fire treatments and management of natural ignitions) should be undertaken. By identifying the costs of the different types of fire management the region will have a clearer picture of the trends in fire management and can look for ways to minimize the cost. This will be important for the region since it is clear that fire season is becoming extended throughout the bioregion.

**f. Economics of timber**

The bioregional assessment (p. 44) states,

The volume of timber harvested from Sierra Nevada national forests was 1.29 billion board feet in 1988, and 183.8 million board feet in 2010, 86% lower than in 1988 (Charnley and Long 2013).

The comparison used here is misleading. It is not ecologically appropriate to suggest that looking back to 1988 for the volume of timber extracted is sustainable in today's environment. The material that is most necessary to reduce in order to sustain and enhance the ecological integrity and support fire resilience is smaller diameter, ladder fuels that are overcrowding forests. Furthermore, one would expect board feet to decrease over time since we are no longer harvesting the largest and most fire resilient trees.

**g. General inconsistencies**

The bioregional assessment (p. 39) states: "Studies have found long term effects of large wildfires on wilderness vegetation." There was no citation to support this statement. Please provide a citation or remove the statement from the text.

**2. What is missing?**

**a. Using managed fire to achieve fire resilience and ecological integrity**

The bioregional assessment identifies fire as a key process necessary to sustain ecological integrity, but does not assess the extent to which the current forest plans allow for the use of managed fire to achieve ecological benefits. The existing deficit is of fires characterized by low to mixed severity. This needs to be evaluated in more detail. The ecological benefits of characteristic fire are not clearly described even though the absence of fire undermines the ecological integrity of this ecosystem. Actions to support managed fire for ecological benefit must be integrated across the region since successful implementation requires coordination across forest boundaries and with other local, state and federal agencies.

The assessment should also include an evaluation of the feasibility of using mechanical treatments to achieve the desired levels of resilience. We suspect that there is a significant amount of the landscape that would benefit from treatment, but due to a variety of operational limitations (e.g., steep slopes, vegetation types) mechanical treatment would not be feasible. Such areas may only be treatable with managed fire. This condition (i.e., what is available for mechanical verses prescribed fire or managed wildfire) should be evaluated when assessing the ability of the existing forest plans to increase resiliency across the landscape.

There are two recent strategies that will influence Region 5: the Region 5 Fuels Management Strategy 2013 and National Cohesive Strategy<sup>3</sup>. These documents outline the need for more fire and should be referenced in the bioregional assessment because they outline strategies in achieving fire resilience.

**b. Benefits of fire for ecosystem services**

The benefits to society of an ecosystem, i.e., ecosystem services, that effectively utilizes the regulating services provided by fire should be discussed. Effective use of managed fire can result in increased resilience to unplanned, uncharacteristic fire events, and potentially result in reduced costs of fire suppression and increased safety for people and a variety of forest assets.

**c. Collaborative groups**

The bioregional assessment should include a reference to the Prescribed Fire Councils (Northern California<sup>4</sup> and Southern Sierra<sup>5</sup>) which are tackling the social and political issues associated with applying more prescribed fire to the bioregion. Prescribed Fire Councils should be listed in the Importance of Collaboration section (p. 42).

**d. Probability of ignition, treatment effectiveness and monitoring**

Information on fire resilience does not appear to take into account the probability of the area burning (p. 34–36). For much of the bioregion the probability of ignition is very low to moderate (WIKI Chapter 3).

It is not clear whether the area treated since 1992 or 2001 was accounted for in the “resilience” calculations. Our understanding is that LANDFIRE data does not include treatment data. There is no mention of areas treated in the bioregion and if those treatments have been successful at providing increased fire resilience. There is also no mention of the monitoring of fire and fuels conditions in the assessment. We suggest including treatments from previous years and a monitoring plan for the future to evaluate what is working on the national forests and where improvements are needed.

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<sup>3</sup> [http://www.forestsandrangelands.gov/strategy/documents/rsc/west/WestRAP\\_Final20130416.pdf](http://www.forestsandrangelands.gov/strategy/documents/rsc/west/WestRAP_Final20130416.pdf)

<sup>4</sup> <http://www.norcalrxfirecouncil.org>

<sup>5</sup> <http://www.sosierrapfc.org>

## **e. Benefits of treatment**

The section on “What did we learn?” (p. 99) states:

Sound restoration work to retain and restore ecological resilience in the face of wildfire is being conducted; however, as wildland fires are becoming larger, more frequent and of greater severity, impacts from disturbances seem to be outpacing the benefits of this work.

There is no evidence presented to support the conclusion that wildfire has outpaced the benefits of treatments. Fire modeling and other tools could be used to assess the contributions that treatments and wildfire have made to improving resilience, but this has not been provided in the assessment. As noted above, accounting for the beneficial contributions of past wildfires will be critical to such an evaluation.

## **C. Ecological integrity**

### **1. What needs to be strengthened?**

The ecological integrity section begins with a good overview of the findings from the various recent papers on natural range of variation of the major Sierra ecosystem types. The section would benefit from a clearer articulation of the threats and stressors, and the effect of past forest plans in reducing those. Again, the effort to be cross-cutting has resulted in a fragmentation of the discussion. References to fisher, for instance, are scattered through the document, and a complete picture of this important species' habitat needs, trends, and vulnerabilities never emerges. Similarly, the connectivity discussion tries to touch on a number of other threats to the sage grouse (invasive species, alteration of fire regime), but also fails to give a comprehensive picture. The same is true for amphibians and aquatic species: they are touched on in both the Water section and the Ecological Integrity section, but never discussed fully. Finally, the threat of climate change to habitats and species, and its interaction with other stressors needs to be more fully explored.

The planning rule itself provides useful definitions that could be used to frame the evaluation of trends and conditions. The rule defines ecological integrity as:

The quality or condition of an ecosystem when its dominant ecological characteristics (for example, composition, structure, function, connectivity, and species composition and diversity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence.

(36 CFR 219.8) Thus, the identified aspects (i.e., composition, structure, function, connectivity, and species composition and diversity) provide a starting outline for the elements of ecological integrity that should be evaluated. As suggested in the “overview” section above, the following should be developed for each element: 1) a definition of the attribute being evaluated; 2) the indicator(s) used to evaluate trend or condition; 3) the stressors or drivers affecting this element; 4) a clear statement of trends and conditions; and 5) an evaluation of the regional direction in

existing forest plans that has contributed to the trend or condition to provide the factual basis for assessing the need change this regional direction.

## 2. What is missing?

### a. Declines and threats to species at risk including California spotted owl, fisher, Pacific marten, great grey owl, willow flycatcher, Yosemite toad, Sierra yellow-legged frog, bi-state sage grouse

The species noted above occur on more than one national forest and currently their populations are declining or their populations are small. Threats to these species from a variety of forest management practices are known. The bioregional assessment does not discuss the current trends of these and other at-risk species or the relationship between such trends and ongoing land management. Conservation strategies for each of these species are included within the forest plans, but the assessment does not evaluate whether or not those strategies were successful in achieving conservation.

For example, there has been a persistent population decline in California spotted owl on three study areas located on national forest lands during the past 20 years (Keane 2012). A stable to increasing population has been observed on national park lands during the same period of time. Given this declining trend on national forest lands, the assessment must evaluate if the strategies currently in the plan are providing for conservation. Conservation for this species requires regional integration since it is distributed across the bioregion and individuals move between national forests. Further, regional direction has been provided for this species since the first forest plans were developed in 1982.

The "fine-filter" discussion touches on several important rare habitat elements (large trees and snags, sunny gaps, and aspen groves). We believe that the "fine-filter" discussion should be broadened to include critically imperiled species that might not be "caught" by coarse filter habitat conservation measures, locally extirpated species in need of restoration, and species facing threats that occur independent of habitat condition, such as novel zoonotic diseases.

We believe that one cannot assess ecological integrity unless there is an evaluation of all species, including those that are vulnerable and at risk. Species and species groups interact in ways that affect the function of an ecosystem. For example, several of the species known to be at risk are significant predators and important to predator-prey cycles (e.g., fisher, Pacific marten and California spotted owl). Predator-prey cycles function to move energy through the system. Predation is also a population regulator for species that make up the prey base. If these predators were reduced in numbers or removed from the ecosystem, wildlife species composition would shift by their absence, and any regulating effect on prey species would be altered. Further, these higher level predators are also associated with complex mature forest and larger trees, which are in amounts on the landscape that are not within the natural range of variability. As such, these species may serve as focal species associated with this habitat type. Lastly, the species mentioned here need to be assessed in the bioregional assessment because they are wide ranging and occur on more than one national forest. The movement of individuals across landscapes and the genetic exchange that occurs contributes to population

stability and ecological integrity. Thus, failing to provide consistent and integrated approaches to conserving these species among national forests could lead to their extirpation or extinction.

Black-backed and other woodpeckers serve as another example of why an evaluation of species is essential to assessing ecological integrity. These woodpeckers are essentially engineers that provide cavities for secondary cavity nesters. A significant number of species utilize for nesting and denning the cavities made by woodpeckers. Also, woodpeckers are important to the movement of fungus from tree to tree and are beneficial to the spread of heart rot. Heart rot is a key decay process necessary for the formation of larger cavities that species such as fisher use. Trends for woodpeckers should be reported for the bioregion since some occupy ephemeral habitats (post-fire environments) or are sustained by dying trees which managers often seek to minimize. Thus, if there is insufficient tree mortality, the species composition and abundance of these important engineers may be negatively affected. A result could be that an insufficient number of primary cavities are created for secondary nesters.

Lastly, a comprehensive assessment of species was undertaken in developing the forest plan amendments for the Sierra Nevada in 2001 (USDA Forest Service 2001, Appendix R). The results from the 2001 assessment provide an important starting point in the assessment of species composition, trend and condition. For example, the results reported for vertebrate species that occur (generally) on more than one forest stated that:

The completed assessment resulted in a final distribution of 42 species in the High VG, 168 species in the Moderate VG, and 217 species in the Low VG (Tables R.3). Twenty-one (53%) of the High VG species are dependent on riparian/meadow and aquatic environments in the Sierra Nevada, whereas 13 (24%) are dependent on western foothills environments, and one (2%) is dependent on late seral/old-growth forest environments (Table R.3).

(FEIS Volume 4, Appendix R-17) A re-examination of these species after 12 years of forest management would provide an important comparison and should be combined with an evaluation of forest plan direction that may have affected the trends or conditions for these species.

**b. Benefit of roadless areas (RARE II and Citizen Roadless Areas) and wilderness to ecosystem health**

The contributions that roadless areas and wilderness make to ecological integrity and watershed health are not addressed in the assessment. As established by the Roadless Area Conservation Rule and the scientific literature that supports that decision, roadless areas provide a variety of ecosystems services like air and water filtration, climate regulation, and maintenance of biodiversity. They act as biological strongholds for populations of threatened and endangered species and provide large, relatively undisturbed landscapes that are important to the long-term survival of many at risk species. Roadless and wilderness areas also provide a means of adapting to climate change by reducing the adverse effects of change on ecosystem services. These protected areas provide undisturbed corridors and elevation gradients in an otherwise fragmented

landscape for species migration. They also provide valuable genetic reservoirs necessary for restoring a depleted biota.

The many social and economic benefits of roadless areas and wilderness were also not addressed in the assessment. Roughly 6 million people visit Forest Service-managed wilderness and roadless areas each year to enjoy high-quality non-motorized activities including hiking, camping, mountain biking, picnicking, wildlife viewing, hunting, fishing, cross-country skiing, swimming whitewater boating and viewing wildlife. These protected areas have a positive effect on local economies by creating revenue through recreation dollars, increasing property values, and providing invaluable ecosystem services to nearby cities. Recent studies of western counties and states have shown that population, income, and employment growth increased as the percentage of wilderness increased.

During the Assessment phase of planning, the Forest Service is required to identify and evaluate available information relevant to the plan area for existing designated areas (e.g., IRAs and Wilderness) located in the plan area and the potential need and opportunity for additional designated areas (e.g., Citizen Roadless Areas). Many of these roadless areas are shared among forests and the benefits that may provide to watershed health, wildlife connectivity, and ecological integrity extend beyond forest boundaries. For this reason, roadless areas should be evaluated and addressed in the bioregional assessment.

#### **D. Sustainable recreation**

##### **1. What's working and what needs to be strengthened?**

The document provides a very helpful overview of recreational preferences and economics in the Sierra Nevada. It is considerably more robust and comprehensive than the summary provided in the WIKI site a few months ago. Our one overarching observation is that it does not really address the issue of recreational sustainability – for instance, in terms of forest resources, facility conditions, settings and experiences, management capacity, and visitor satisfaction. Given that sustainable recreation is a prominent concept in the planning rule, it is important that the assessment, to the degree data is available, identify where recreation is currently not sustainable and the measures the agency is using to assess sustainability.

Because planning for sustainable recreation is somewhat uncharted territory, we recommend that the Forest Service refer to the [Recreation Planning Principles](#), developed by the [Society of Outdoor Recreation Planners](#) (SORP), the only professional association of outdoor recreation planners in the United States, as a basis for conducting recreation planning as part of the land management plan revision process. The principles reflect the combined thinking of outdoor recreation professionals throughout the country (see Attachment A).

#### *Specific Text Proposed to Strengthen and Clarify the Text*

The following are specific edits to the text in the bioregional assessment that we propose be incorporated (text to add is in bold and underlined):

Paragraph 6 under “Economic Opportunities for Communities”:

Declining federal budgets have the potential to result in a declining quality of condition for existing facilities, resulting in a lower quality of experience **and higher probability for environmental damage**. In 2006, the Forest Service undertook the Recreation Facility Analysis (RFA), to identify national forest recreation-site priorities and establish annual programs of work to reduce a mounting deferred maintenance backlog. At the time, that backlog stood at \$49,000,000 for national forests in the bio-region. During this same period, a small infusion of funding through the American Recovery and Reinvestment Act of 2009, and fees collected from the Land and Water Conservation Fund Act were used to do some recreation site improvement. These largely focused on addressing visitor-satisfaction comments from the National Visitor Use Monitoring (NVUM) surveys. Although these improvements improved conditions on specific sites, there was not enough funding to substantially reduce the backlog. Some forests in the bio-region used partnerships to get this work done; these efforts haven’t been enough to make a very big dent in the backlog (Chapter 9, WIKI). **It is also important to note that visitor satisfaction and reliable, safe access to recreational opportunities is dependent on a well maintained and functioning transportation infrastructure. If Maintenance Level 3-5 roads are not maintained to standard, those forest users that drive a standard passenger car will be unable to reach their favorite recreational site. The deferred maintenance for the transportation infrastructure on the Sierra Nevada exceeds several hundred million dollars. For example, deferred maintenance on the Sierra National Forest is approximately \$102 million, on the Sequoia National Forest deferred maintenance is approximately \$94 million, and on the Inyo National Forest it is approximately \$29 million. (Sierra, Sequoia and Inyo Travel Management DEISs).**

Paragraph 5 under 2004 “Sierra Nevada Framework”:

Each forest in the Sierra Nevada has completed a motorized travel management decision to implement the provisions of the 2005 Travel Management Rule (36 CFR Part 212, Subpart B). These decisions prohibited motor vehicle travel off designated National Forest Transportation System (NFTS) roads and motorized trails by the public except as allowed by permit or other authorization (excluding snowmobile use). They added unauthorized routes to the NFTS after careful study of which unauthorized routes made sense to adopt; made changes to existing NFTS roads including season of use and vehicle class changes; and road openings and closures were identified. **However, the Sierra Nevada forests chose not to complete Subpart A of the Travel Management Rule, which requires each forest to 1) identify the minimum road system needed for safe and efficient travel and for administration, utilization and protection of National Forest System lands; and 2) to identify the roads that are no longer needed to meet forest resource management objectives and that, therefore, should be decommissioned or considered for other uses.**

**The Regional Forester has directed each of the forests in the Sierra Nevada to complete the Travel Analysis Process (TAP) and Travel Analysis Report (TAR) (components of Subpart A) by September 30, 2013 (Regional Forester Memo 1920/7700). This will provide early adopter forests an opportunity to complete the TAP and TAR concurrently with the forest plan assessment to provide updated information on the forest’s transportation system. “The early adopters will possess detailed information on**

**their road systems along with an earlier understanding of key issues affecting each road” (USDA, Region 5 Travel Analysis Process: A Guidebook, July 2012).**

**2. What is missing?**

**a. Visitor Use Statistics**

The text provides qualitative rankings of the most popular activities on the Sierra Nevada national forests but not quantitative ones (page 47). We recommend that you remedy this by including percentages of visitor participating in recreational pursuits by main activity for each national forest.

The text helpfully provides a breakdown of the home counties and states of visitors to the Sierra Nevada national forests. It would also be helpful to provide a sense of population and demographic trends in these locations.

On page 48, the text discusses trends in outdoor recreation nationally. If possible, we recommend that you provide information on changes in recreation preferences and activities in the Sierra Nevada region over time. You also say that recreation participation varies with gender, ethnicity, race, annual family income, place of residence and residence status, but you do not explain how it changes with these factors or, based on demographic trends, offer insights into future recreation participation.

On page 52, the text compares outcomes from the first and second rounds of NVUM surveying. We have been warned repeatedly by Forest Service statisticians not to compare NVUM reports because the statistical protocols changed between rounds. We ask that you double-check to make sure that comparing the reports is a sound approach.

We compliment you for acknowledging that visitor satisfaction data does not provide insight into the opinions of those who choose not to recreate in the national forests (page 52). In our experience, not considering the opinions of non-visitors is a recurring flaw in recreational data collection.

On page 53, the text states that a recent California study found that adventure sports will be increasingly important uses of recreational areas in California. Can you explain how this relates to recreational predictions on national forests specifically, and how these predicted increased compare to other types of recreational pursuits such as nature photography, hiking, wildlife watching, and learning?

**b. Resource impacts from recreation**

In regard to an assessment of the impacts of recreation on natural resources, the text states that it probably has an impact but its extent, scope, and magnitude are basically unknown. There is a robust body of research on the recreational impacts to wildlife and other natural resources. In addition, we would presume that the Forest Service in the Sierra Nevada forests may have conducted surveys of resources of concern and documented the impacts that recreational use is



having on them. We recommend that the text refer to relevant literature and any site specific data that has been collected.

**c. Inventory, location, type, and conditions of facilities and transportation infrastructure related to recreation**

The planning rule requires that the Forest Service identify and evaluate existing information relative to infrastructure, such as recreational facilities and transportation corridors (36 CFR 219.6(b)(11)). However, the text does not explain the number, types, locations, and conditions of recreational facilities in the assessment area beyond explaining that there is a maintenance backlog. In addition, the text does not discuss transportation infrastructure necessary for outdoor recreation on the forests (e.g., roads and trails). A well-maintained road system is fundamental for getting people to recreational destinations such as trailheads, ski areas, and boat launches, yet the chapter does not even mention the road system, nor discuss its attributes including miles, locations, maintenance levels, conditions, management issues (including resource impacts resulting from inadequate maintenance), costs, and financial backlog. Similarly, trails are the heart of the dispersed recreational system, and again the text does not provide information on the trail system. Information on the recreational roads and trails, including the sustainability of the road and trail system, is necessary to inform development of plan components in the plan revision stage.

**d. Recreational settings, opportunities, and conflict**

The text does not provide an overview of the types of settings and opportunities currently provided in the Sierra Nevada national forests. Without this information, it is very difficult to utilize recreational trend and preference data to determine appropriate plan components in the plan revision phase. We therefore recommend that the analysis provide a detailed description of the settings and opportunities provided under current management plans.

The text mentions that there is recreational conflict in the Sierra Nevada and that the Forest Service predicts it will only get worse. We recommend you add to this discussion by providing a brief literature review on ways to reduce conflict through management and planning. To this end, we refer you to Wildland CPR's Off-Road Vehicle Best Management Practices.<sup>6</sup>

**e. Existing recreational management tools**

The text does not offer information on existing recreational management tools that the Forest Service is using in the Sierra Nevada forests. For instance, we recommend that the text summarize which forests have recreational niche statements and what they are, which forests have conducted recreational facility assessments and what the results are, and which forests if any have developed recreational management plans.

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<sup>6</sup> See Switalski and Jones, 2012. *Off-road vehicle best management practices for forestlands: A review of scientific literature and guidance for managers*. Journal of Conservation Planning Vol 8 (2012) 12 – 24. <http://www.wildlandscpr.org/resources/road-vehicle-best-management-practices-forestlands-review-scientific-literature-and>.

**f. Looking beyond boundaries**

We think it would be helpful if you could include an assessment of the cross-boundary integration – or potential integration - of recreational settings/opportunities (e.g., coordinating with BLM, county open space systems). This should include consideration of public transportation access to National Forest recreational destinations.

**g. Scenic character**

We disagree with the approach of assessing scenic character based on people’s aesthetic preferences (e.g., large trees, herbaceous and smooth groundcover) and suggest that scenic character should be defined by the integrity of the natural landscape and its contribution to sense of place and measured by the degree to which the visual aesthetic is disrupted. This approach synchronizes with the definition of scenic character in the planning rule (36 CFR 219.19): “A combination of the physical, biological, and cultural images that gives an area its scenic identity and contributes to its sense of place. Scenic character provides a frame of reference from which to determine scenic attractiveness and to measure scenic integrity.”

For instance, if we asked people if they prefer a swamp or a meadow, most people will likely say a meadow. Does this mean, therefore, that a swamp has less scenic character than a meadow? Your approach suggests it does. Alternatively, our approach suggests that if both the meadow and swamp are in their natural condition and not visually disrupted by power lines and such, they both have scenic integrity and contribute to the particular sense of place of each.

We ask that you rethink the text on scenic character accordingly.

**h. Special uses**

We appreciate the discussion on special uses (page 55). If possible, it could be strengthened by providing more quantified data such as: number of visitors and days, breakdown of types of services provided (e.g., pack trips, bike races), and spatial distribution, as well as a discussion of relative supply and demand. In particular, we recommend that you include a discussion, including relevant data, on educational services provided under special use permits, whether there is demand for more educational permit days, and whether emphasizing educational special use access would have a meaningful impact on better connecting people, especially youth and underserved populations, to nature and the outdoors.

**i. Specific Recommendations to Strengthen and Clarify the Text**

The following are specific edits to the text in the bioregional assessment that we propose be incorporated (text to add is in bold and underlined).

Under the section “What Did We Learn?” and the Sustainable Recreation section, please include the following text:

**Because of the significant deferred maintenance backlog on the forest's transportation system and the ability of the forest to accomplish only 20% of their road maintenance needs on an annual basis, access for those forest users that drive a standard passenger car will be reduced.**

## E. Community resilience

### 1. What needs to be strengthened?

The Community Resilience chapter needs to address the connection between community resilience and measured benchmarks of ecological sustainability to support statements regarding the underlying reasons for cultural change occurring in resource-based forest communities. For example, did appeals and litigation lower timber harvests of the 1980's or was it the recognition by PSW research scientists and the Regional Forester in 1992 that the logging of old growth was unsustainable and resulted in risks to wildlife from what was a strongly "demand driven" economic model that led to excessive clear-cut logging and high-grading of timber on public lands? There were no lawsuits or appeals driving this change in the Sierra Nevada—the Forest Service made the decision to halt the logging of old growth and large trees on their own.

Also, there should be clearer statements regarding the degree to which the Forest Service is responsible for economic changes impacting rural communities. Factors such as recessions and a collapsed housing market point to larger national issues. Similarly, responsibility for fossil fuel driven climate impacts does not lie at the feet of the Forest Service. The assessment should acknowledge that increased drought and extended fire seasons may override all efforts to suppress or make resilient a landscape that burns naturally and may not be resolvable via changes in the forest plan, but only by aggressive reductions in the burning of fossil fuels. Historic drought periods and recent Sierra Nevada climate trends need to be clarified in the assessment in relation to community impacts and public expectations centered on forest management.<sup>7</sup>

If ecological restoration, ecological resilience, or ecological sustainability are to be more than the next iteration of management metaphors masking business as usual, then the Forest Service must be clear to the public about the ecological foundations of the "strong sustainability" that is described in the bioregional assessment.

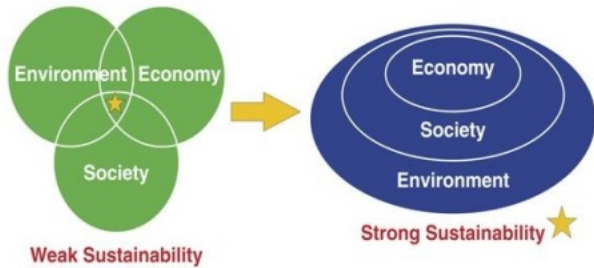
The National Report on Sustainable Forests—2010 (USDA Forest Service 2011) reframes the outdated "three-legged stool" model of sustainability by rationally embedding human economic and social activity within the context of a healthy environment. This vision is called "strong sustainability" and it places three primary components of human existence as within and arising from a sustainable environment. Human activity outside the three concentric circles is considered weak sustainability (i.e., not sustainable) and not part of the interconnected and interdependent benefits. "This updated model reflects the understanding that the environmental realm is the foundation of strong sustainability because the environment provides natural goods and services that cannot be obtained through any other means" (USDA Forest Service 2011, p. I-2).

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<sup>7</sup> <http://www.weather.com/news/drought/submerged-forest-sierra-drought-20120911>

## Triple Bottom Line

*Interconnected and Interdependent Benefits*



Source: Maureen Hart - Sustainable Measures

While the Forest Service cannot ensure social and economic sustainability it has a much greater role in managing national forest lands in an ecologically sustainable manner. Ecological sustainability must identify measures (indicators and thresholds) of composition, structure and function that track to quantifiable components of Sierra Nevada forests with clear objectives for managing these components to meet the needs of the present generation without compromising the needs of future generations (Callicot and Mumford 1997; Draft Bioregional Assessment, p. 11).

The Sustainability section of the Draft Bioregional Assessment needs to address species composition (population trends) and returning fire to the system as two primary factors related to ecosystem integrity and science-based management (North et al. 2012). Sustainable management models that fail to address species loss and fire (the stark absence of fire) as a key ecological process will not measure up to a strong sustainability model.

The Community Resilience section (p. 77), confuses the Forest Service's role of managing public land, i.e., with managed fire, with society's larger and more regional responsibility of maintain air quality. The ecological role that fire plays in the Sierra Nevada is not a choice that we can continue to suppress at tremendous economic, social and ecological costs. The trends associated with the economic and ecological costs of fire suppression need to be spelled out in the Assessment.

### 2. What is missing?

The Community Resilience chapter should spell out how moving management away from outputs and closer to measured ecological outcomes helps to stabilize the system and people's expectations about what system can provide to people verses the boom and bust cycle of past eras. Supporting a diversity of values and cultures (p. 78), while being a positive goal for most of California's population, has hastened cultural conflict and a loss of well-being for local residents and "amenity-migrants" in many rural communities. Also, many Southern Californian amenity migrants arrive with political values directly in opposition with public land management and public ownership or federal ownership of land in California. These conflicts are often divisive and strident and should be recognized as markedly different from those recent

immigrants seeking solitude, environmental quality, or ecological integrity. The idea of prescribing rights to who-got-here-first or who received the most votes in the recent election is not consistent with principles of science-based, ecological restoration.

Finally, whether discussing declining timber revenues (p. 92), declines in PILT and SRS programs or communities “dependent” upon natural resource jobs, there remains the not-so-subtle suggestion that rural residents are owed a disproportional share of outputs from public lands which are owned by all Americans. Many stakeholders reject this long-held concept on its face for a variety of reasons. The Bioregional Assessment should clearly state that federal lands belong to all Americans, not disproportionately to rural, nearby communities. There is no stated right of proximity in any Federal statute. Second, the Bioregional Assessment could do a better job of assigning value to all the amenities proximate to rural residents which are not within reach of most urban dwellers such as, two cords of firewood per/year for \$30.00; access to and knowledge of pristine fishing and hunting locations; clean and untreated water; and the likelihood of access to local resource-related jobs that are rarely offered or obtained by outside-community urban dwellers.

While the Bioregional Assessment attempted to quantify some benefits of proximity to federal land, the idea that the “Feds owe us for taking our land” remains problematic. The PILT and SRS programs have evolved during the Clinton Administration by disengaging county revenues from resources outputs but the idea remains like a skewed, welfare-state program serving a limited number of Americans with a fortunate zip code. No similar program exists for urban dwellers who pay the majority of taxes that support the Forest Service programs and projects that benefit rural residents almost exclusively. Interestingly, the Forest Service fuels reduction program targeting forest communities in the Wildland Urban Interface is a program focused predominately on rural homeowners living in fire-prone landscapes with fire prone dwellings built with little consideration of long-term costs of permanent fire protection. Restoration programs aimed at meadow and stream restoration, road maintenance, wildlife habitat enhancement, or invasive species removal often suffer low funding levels being drowned out by cries for community fire protection at the federal and state level.

The context of the population declines referenced in Bioregional Assessment (p. 80) from 2007-2009 was driven by events outside the landscape of the Sierra Nevada. The national economic crisis and the immediate impacts on housing and demand for wood products and the out-migration of local residents due to job loss and/or mortgage defaults were not related to Forest Service management decisions.

The statement (p. 82): “Increasing fire suppression activities as a result of the expected increase in the frequency and severity of wildfire in the Sierra Nevada” is speculative and suggests the Forest Service and society in general will fail to see the role and need for more managed fire as a key, and much less costly, management tool. This does not follow the Leadership Intent to increase pace and scale (See for example North et al. 2012).

The bioregional assessment (p. 83) states that “California Native Americans and their cultures are almost non-existent in the eyes of the American people and in terms of history and recognition by the federal government.” We ask that you also address what we view as a recent

trend in forest collaboration that is inclusive of Native cultures. In recent years with more on-going collaboration around forest management, the trend is toward increased understanding of Native American rights and culture by managers and stakeholders in the Sierra Nevada. Lastly, as written, this paragraph fails to recognize the indelible impact Native American culture has had on the broader American culture's imagination, art, history, diet, natural history knowledge, social structure models, social cooperation, song, dance, dress, and spirituality.

The bioregional assessment (p. 86) states: "A person who grows up in a rural community takes for granted fishing or hunting ..., picnics, swimming in a river or lake, or finding a job that depends on local forests or rangelands, or on recreation visitors." This statement is far too simplistic, and suggests a lack of deep respect and gratitude for the "gifts" offered by the amenities of rural living. This flawed statement is not indicative of a bioregional trend or social condition.

Timber harvesting declines since the 1980's were a result of the output-driven economic model of forest management at the time. While maintaining local capacity may be key to community welfare (p. 91), ecologically sustainable management actions with monitored results will build a new management model that will be more reliable and stable for the long term thus providing a more secure role for a restoration economy as part of the overall rural economic mix.

The existence of Federal and State hydropower projects (p.94) is an appropriate bioregional issue but the document should not only address "power to light homes and quality drinking water" but also the loss of far too many historic salmon runs, the over-appropriation of water for unsustainable development and water treatment costs to remove sediment and pollutants from what was pristine, free-flowing rivers throughout the Sierra Nevada.

The Grazing program in the Sierra Nevada runs contrary to the ecological restoration objectives stated by the Forest Service in Region 5. First, there is no historical ecological analog for cattle in the Sierra Nevada. The social-economic impacts of cattle grazing on Sierran streams and meadows cannot be ignored, nor can the impacts to wildlife such as willow flycatcher, Yosemite toad, Sierra Nevada and Mountain yellow-legged frogs as noted by the Forest Service (2001, 2004 Sierra Nevada Framework, U.S. Fish and Wildlife Service). Recently, (Meyers and Whited 2012) bacterial contamination has surfaced as a new threat to water quality and public health since cattle congregate in and near Sierran streams supplying a steady source of fecal contamination, including fecal coliform bacteria, into waters where the public drink and swim.

An issue for many people in the Sierra Nevada is the desire to know the Forest Service is managing wildlife resources to enhance populations and restore habitat. Social well-being for this "community", rural or urban, sees resilience of wildlife populations as a key indicator of unbiased decision making. Increased use of prescribed and managed wildfire is a signal that the Forest Service truly understands the role for re-established ecological processes as central to restoration. The Bioregional Assessment should identify this community of interest as focused on science-based management, the role of natural processes, community scale work, ecological integrity, a spiritual connection to the Earth, and the values of law, policy, regulation and justice.

The Bioregional Assessment (p. 97) claims that the one of the reasons the 2001 Framework was amended by the 2004 Framework was to reduce the risk of wildfires to communities in the wildland- urban interface. The 2001 Framework was constructed precisely to address community wildfire issues and included standards for treatment around areas near communities and structures. It also included standards to protect at-risk wildlife, aquatic resources, and old growth forests. The 2004 Framework amendment has placed species like the California spotted owl at increased risk of extinction (Keane 2012; Tempel and Gutierrez 2013) and led to nearly a decade of litigation and social conflict.

### 3. Specific Recommendations to Strengthen and Clarify the Text

The following are specific edits to the text in the bioregional assessment that we propose be incorporated (text to add is in bold and underlined):

In paragraph 3 under “Job Opportunities”, please include the following text:

**Investing in forest and watershed restoration projects by decommissioning unneeded roads would create good, green, family-wage jobs in rural America. According to a study by the University of Oregon, between 13-29 jobs would be created or retained and over \$2.1 million in total economic activity generated for every \$1 million invested on restoration (Moseley, Cassandra and Max Nielsen-Pincus, Economic Impact and Job Creation from Forest and Watershed Restoration: A Preliminary Assessment. Briefing Paper #14. Ecosystem Workforce Program. Institute for a Sustainable Environment. University of Oregon. Winter 2009.) The Collaborative Forest Landscape Restoration (CFLR) program is an example of how funding for ecological restoration generates economic value to rural communities. Since its inception in 2009, the 23 CFLR projects nationwide created and maintained an estimated 3,375 part and full-time jobs during 2011 and 4,574 part and full-time jobs during FY 2012 (2012 Report on the Collaborative Forest Landscape Restoration Program).**

## IV. Additional Comments

### A. Designated Areas

This section specifically addresses the “potential need and opportunity for additional designated areas,” which is one of the elements that the Forest Service is required to consider in a Forest Plan Assessment.<sup>8</sup> It is appropriate to look at this issue also at a bio-regional scale, as there is a broad level of interest in the issue, it is one of the 15 topic papers in the Living Assessment on the USFS Pacific Southwest Region “wiki” site, it is relevant and integral to regional ecological, economic, and social sustainability, it influences planning at the Forest level, and it is consistent with the Leadership Intent for Ecological Restoration and the 2012 Planning Rule. Currently the Draft Bio-Regional Assessment includes virtually no discussion of the potential opportunity and

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<sup>8</sup> 36 CFR 219.6(b)(15) states, “In the assessment for plan development or revision, the responsible official shall identify and evaluate existing information relevant to the plan area for the following... (15) Existing designated areas located in the plan area including wilderness and wild and scenic rivers and potential need and opportunity for additional designated areas.”

need for additional designated areas. In this section, we demonstrate that there is a potential opportunity and need for additional designated areas, including recommended wilderness, in the Sierra Nevada National Forests.

The opportunity lies in the fact that there are approximately 2,076,000 acres of (non-Wilderness) Inventoried Roadless Areas (IRAs) in the 11 national forests of the Sierra Nevada. Furthermore, the California Wilderness Coalition conducted a Citizens Wilderness Inventory (CWI) of roadless land in 2001 and identified additional un-inventoried roadless areas. Most of these agency-inventoried and citizen-inventoried roadless lands are not currently protected with a conservation designation specific to the ecological and social benefits they provide.

The need is apparent from the growing use of Wilderness and other designated areas by the public and from the polling data which show a strong desire by the people of California for additional designated areas. By designating additional conservation areas, we can provide more places for people to experience nature and wildness, and pursue outdoor nature-based activities. In addition, by conferring protective designations, including recommended wilderness, in the forest planning process, we can meet ecological needs. In particular, we can protect important habitats and species and connect conservation areas regionally to protect and enhance biodiversity and promote climate change adaptation.

This section is divided into two parts. The first addresses the potential ecological need and opportunity, and the second addresses the potential socio-economic need and opportunity. The 2012 Planning Rule requires the responsible official to “use the best available scientific information to inform the planning process....In doing so, the responsible official shall determine what information is the most accurate, reliable, and relevant to the issues being considered.”<sup>9</sup> The information we used to inform this section constitutes the best available science that we could find. We ask that you consider it as such, or explain why you are not considering it the best available science.

## **1. Potential Ecological Opportunity and Need for Additional Designated Areas**

In this section, we demonstrate that there is the opportunity to protect additional areas on the Sierra Nevada National Forests, and an ecological need to conserve biodiversity and natural systems.

### **a. Sierra Nevada National Forests have the opportunity for additional designated areas.**

The Bio-regional Assessment is missing a discussion of the opportunity for additional designated areas, including Wilderness, Research Natural Areas, Special Interest Areas, or new designations that respond to the needs and challenges of today.

There are approximately 2,076,000 acres of non-Wilderness Inventoried Roadless Areas (IRAs) in the 11 national forests of the Sierra Nevada (Britting et al. 2012). In addition, the California Wilderness Coalition conducted a Citizens Wilderness Inventory (CWI) of roadless land in 2001 and identified additional un-inventoried roadless areas. Many of these areas are suitable for

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<sup>9</sup> 36 CFR 219.3



Wilderness designation, and all of these areas should be evaluated for wilderness characteristics. The discussion of “opportunity” is entirely missing from the assessment.

There are also significant opportunities to designate new areas as Research Natural Areas, Special Interest Areas, or new designations. The opportunity for other types of designations, unfortunately, is also not discussed in the Bio-Regional Assessment.

The Sierra Nevada National Forests have wild areas of state-wide significance. In 2000, Aplet et al. (2000) applied a wildness index to map wildness at the scale of the contiguous United States. Grounded in the understanding that wildness is present in varying degrees in all lands as a function of the relative freedom and naturalness of the place, Aplet’s wildness index is based on aggregated values for six attributes: solitude, remoteness, uncontrolled processes, natural composition, unaltered structure, and pollution. Although there are a number of wildness indices, the value of Aplet’s wildness index is that it enables a consistent comparison of wildness values across a region and across the country and can point out the larger places with wildness values and the potential to connect them (Aplet et al. 2000).

When we look at the wildness map developed by Aplet et al. in the region of the Sierra Nevada National Forests, we see that the area has very high wildness values compared to the rest of the state. In addition, we can see that regionally the wild lands within the Sierra Nevada are important pieces in a larger network of wild lands that connect to the Cascade Range, the Transverse Ranges, and the Great Basin and California Deserts.

**b. Protecting undeveloped areas on the Sierra Nevada National Forests fills the need to protect habitats, biodiversity, and enhance climate change adaption in the bio-region.**

Undeveloped natural lands provide numerous ecological benefits. They contribute to biodiversity, enhance ecosystem representation, and facilitate connectivity (Loucks et al. 2003; USDA 2001; Crist and Wilmer 2002; Wilcove 1990; The Wilderness Society 2004; Strittholt and Dellasala 2001; DeVelice and Martin 2001), and provide high quality or undisturbed water, soil and air (Anderson et al. 2012; Dellasalla et al. 2011). They also can serve as ecological baselines to help us better understand our impacts to other landscapes (Manage 1997).

Forest Service roadless lands, in particular, are heralded for the conservation values they provide. These are described at length in the preamble of the Roadless Area Conservation Rule (RACR)<sup>10</sup> as well as in the Final Environmental Impact Statement (FEIS) for the RACR<sup>11</sup>, and include: high quality or undisturbed soil, water, and air; sources of public drinking water; diversity of plant and animal communities; habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land; primitive, semi-primitive non- motorized, and semi-primitive motorized classes of dispersed recreation; reference landscapes; natural appearing landscapes with high scenic quality; traditional cultural properties and sacred sites; and other locally identified unique characteristics (e.g., include

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<sup>10</sup> Federal Register .Vol. 66, No. 9. January 12, 2001. Pages 3245-3247.

<sup>11</sup> Final Environmental Impact Statement, Vol. 1, 3–3 to 3–7

uncommon geological formations, unique wetland complexes, exceptional hunting and fishing opportunities).

In addition to the description of the value of roadless lands to the conservation of biodiversity in the FEIS, numerous articles in the scientific literature recognize the contribution of roadless and undeveloped lands for biodiversity, connectivity, and conservation reserve networks. For example, Loucks et al. (2003) examined the potential contributions of roadless areas to the conservation of biodiversity, and found that more than 25% of IRAs are located in globally or regionally outstanding ecoregions and that 77% of IRAs have the potential to conserve threatened, endangered, or imperiled species. Arcese and Sinclari (1997) highlighted the contribution that IRAs could make toward building a representative network of conservation reserves in the United States, finding that protecting these areas as reserves would expand ecoregional representation, increase the area of reserves at lower elevations, and increase the number of areas large enough to provide refugia for species needing large tracts relatively undisturbed by people. Crist and Wilmer (2002) looked at the ecological value of roadless lands in the Northern Rockies and found that protection of national forest roadless areas, when added to existing federal conservation lands in the study area, would 1) increase the representation of virtually all land cover types on conservation lands at both the regional and ecosystem scales, some by more than 100%; 2) help protect rare, species-rich, and often-declining vegetation communities; and 3) connect conservation units to create bigger and more cohesive habitat “patches.”

Roadless lands also are responsible for higher quality water and watersheds. Anderson et al. (2012) assessed the relationship of watershed condition and land management status and found a strong spatial association between watershed health and protective designations. Dellasalla et al. (2011) found that undeveloped and roadless watersheds are important for supplying downstream users with high-quality drinking water, and developing these watersheds comes at significant costs associated with declining water quality and availability. The authors recommend a light-touch ecological footprint to sustain the many values that derive from roadless areas including healthy watersheds.

The Forest Service, National Park Service, and US Fish and Wildlife Service recognize that protecting and connecting undeveloped areas is an important action agencies can take to enhance climate change adaptation. For example, the Forest Service National Roadmap for Responding to Climate Change (2011) establishes that increasing connectivity and reducing fragmentation are short and long term actions the Forest Service should take to facilitate adaptation to climate change.<sup>12</sup> The National Park Service also identifies connectivity as a key factor for climate change adaptation along with establishing “blocks of natural landscape large enough to be resilient to large-scale disturbances and long-term changes” and other factors. The agency states that: “The success of adaptation strategies will be enhanced by taking a broad approach that identifies connections and barriers across the landscape. Networks of protected areas within a larger mixed landscape can provide the highest level of resilience to climate change.”<sup>13</sup>

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<sup>12</sup> Forest Service, 2011. *National Roadmap for Responding to Climate Change*. US Department of Agriculture. FS-957b. Page 26.

<sup>13</sup> National Park Service. *Climate Change Response Program Brief*. <http://www.nature.nps.gov/climatechange/adaptationplanning.cfm>. Also see: National Park Service, 2010. *Climate*

Similarly, the US Fish and Wildlife Service's National Fish and Wildlife Adaptation Strategy calls for creating an ecologically-connected network of conservation areas.<sup>14</sup>

The Bio-Regional Assessment lacks a discussion of the contribution of designated areas to ecological integrity and sustainability, the opportunity to designate areas to contribute to these goals, and the current condition and trends of designated areas with respect to the goals of connecting currently protected areas, representing a full range of habitat types, and representing a full range of elevational and latitudinal gradients.

## **2. Potential Socio-Economic Need and Opportunity for Additional Designated Areas**

In addition to its ecological values, protected areas, including wilderness, are important because they contribute to people's social and economic well-being. In this part, we examine the social and economic case for additional wilderness and designated areas. We review recent trends in recreation, population growth, and public values, and discuss the economic contribution associated with wilderness, designated areas, and land conservation.

### **a. Public Opinion Shows a Need for More Wilderness.**

Surveys consistently show that American's value wilderness and generally favor the designation of additional wilderness. For instance,

- In chapter 7 of Cordell's (2005) *Multiple Values of Wilderness* that addresses the social values of wilderness, Schuster et al. looked at survey results at the national, regional, and state levels and found that: (a) overall there is consensus across groups within the American population that there is not enough wilderness, regardless of how the data are stratified; (b) residents support designating more wilderness in their state of residence; and (c) Americans are willing to make unspecified monetary tradeoffs to gain additional wilderness.
- As of 2006-2007, more than two-thirds of American citizens (67 percent) nationally support the designation of additional wilderness in their home state (Cordell 2008a).<sup>15</sup>

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*Change Response Strategy.* [http://www.nature.nps.gov/climatechange/docs/NPS\\_CCRS.pdf](http://www.nature.nps.gov/climatechange/docs/NPS_CCRS.pdf). Objective 6.3 is to "Collaborate to develop cross-jurisdictional conservation plans to protect and restore connectivity and other landscape-scale components of resilience."

<sup>14</sup> See <http://www.wildlifeadaptationstrategy.gov/pdf/NFWPCAS-Chapter-3.pdf>. Pages 55- 59. The first goal and related strategies are:

Goal 1: Conserve habitat to support healthy fish, wildlife, and plant populations and ecosystem functions in a changing climate.

Strategy 1.1: identify areas for an ecologically-connected network of terrestrial, freshwater, coastal, and marine conservation areas that are likely to be resilient to climate change and to support a broad range of fish, wildlife, and plants under changed conditions.

Strategy 1.2: Secure appropriate conservation status on areas identified in Strategy 1.1 to complete an ecologically-connected network of public and private conservation areas that will be resilient to climate change and support a broad range of species under changed conditions.

Strategy 1.4: Conserve, restore, and as appropriate and practicable, establish new ecological connections among conservation areas to facilitate fish, wildlife, and plant migration, range shifts, and other transitions caused by climate change.

- As of 2001, the majority of Americans feel that the current percentage of the National Forest System designated as wilderness is not enough (Scott 2003).<sup>16</sup>
- Over half of Americans (almost 51%) indicated there is not enough wilderness. Only 4% expressed the opinion that there is too much (Cordell 2008a).<sup>17</sup>
- American's are willing to accept higher costs for electricity, gasoline, and other consumer products to have more wilderness lands designated and to have higher quality air over and near wilderness (Scott 2003).

Specific to California, in an August 2001 poll of Californians by *Fairbank, Maslin, Maullin & Associates*<sup>18</sup> nearly three-quarters of respondents (72%) said they would support designating more land in California as Wilderness (and protecting more Wild Rivers), with fewer than one quarter (22%) opposing. The degree of support was “relatively intense”, with 52% strongly supporting more Wilderness, while only 12% voiced strong opposition.

When informed that 14% of all land in California is already officially designated as Wilderness, their support was even stronger. They were asked their views on a proposal to designate an additional 4% (4 million acres) as Wilderness—along with Wild Rivers—with a summary of all the restrictions and benefits of Wilderness. With this information, voters in California gave “overwhelming” support for adding 4 million more acres to the Wilderness Preservation System in the state (77%), with little opposition (16%).

In further analysis, the *Fairbank* found that there is no major demographic group or geographic group in California in which a majority of those polled oppose additional designation of Wilderness and Wild Rivers.

**b. Participation in outdoor, nature-based recreation is steady or on the rise.**

Recreational surveys show that Americans are participating in increasing numbers in recreational pursuits that natural areas such as wilderness provide. According to Cordell (2008a), both the total number of Americans and the total number of days annually in which we participate in

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<sup>15</sup> When asked how they felt about designating more of the federal lands as Wilderness in their home state, 67 percent of National Survey on Recreation and the Environment (NSRE) respondents indicated they somewhat or strongly favor more.

<sup>16</sup> Question: “Currently, 18% of the land in the United States’ national forests is permanently protected from logging and other development. Do you think the U.S. has too much permanently protected areas in the national forests, not enough protected areas in the national forest, or the right amount of permanently protected areas in the national forests, or aren’t you sure about that?” N=1,000 likely voters.

<sup>17</sup> NSRE respondents were asked their opinions about whether they saw the amount of federal land now designated as Wilderness as too little, about right, or too much. Over half in 2006-2007 (almost 51%) indicated there is not enough Wilderness, and 35% indicated the amount is about right. Only 4% expressed the opinion that there is already too much.

<sup>18</sup> Found at

[http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Youth\\_voting/wilderness\\_mandate\\_2004.pdf](http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Youth_voting/wilderness_mandate_2004.pdf)

nature-based recreation have grown since 1994. In particular, viewing, photographing, and studying nature (e.g., wildlife and birds), have grown strongly; primitive camping and backpacking days increased 12% and 24%, respectively, between 2000 and 2008 (Cordell 2008a).

In addition, a significant percentage of Americans participate in outdoor recreation. For instance,

- Across the country, an estimated 35% of Americans, both urban and rural residents, participated in birding between 2004 and 2007 (Cordell 2008b)
- More than 90 million U.S. residents participated in some form of wildlife-related recreation in 2011. Participation is up 3% from five years earlier. The number of American's who hunted or fished rose from 33.9 million in 2006 to 37.4 million in 2011. (USFWS 2011)

Americans take between 16 and 35 million trips to wilderness each year on their own or with a guide to hike, backpack, camp, climb mountains, ride horses, ski, raft, canoe, take pictures, view wildlife, or stargaze (Cordell 2005).

#### **c. Wilderness visitation is predicted to continue growing.**

The number of days Americans visited wilderness and other primitive areas increased 12% between 2000 and 2008. The number of participants visiting a wilderness area increased 3% in the same time period (Cordell 2008). Bowker predicts that population growth in expanding cities in the West and Southwest in particular will result in increased use in wildernesses in the vicinity (Bowker et al. 2006). It can also be expected that population increases in the communities adjacent to the National Forests will occur because of their attractiveness in terms of the availability of quality outdoor recreation experiences, clean air and water, and a natural setting (USDA 2005).

#### **d. Economics Benefits of Protected Public Lands**

Based on a wealth of existing rigorous and scientifically validated research, the general rule is that there is a neutral-to-positive relationship between the presence and extent of wilderness and other protected areas on one hand and the economic performance of local economies and the economic benefits available to nearby residents on the other . Here are just a few examples from this body of research:

- Protected public lands can and do play an important role in stimulating local economic growth, especially when combined with access to markets and an educated workforce, and are associated with some of the fastest growing communities in the West (Rasker 2006 and Rasker et al. 2009).
- Wilderness designation enhances nearby private property value (Phillips 2004).
- Wilderness and conservation lands are associated with rapid population, income, and employment growth relative to non-wilderness counties (Lorah and Southwick 2003; Lewis, Hunt and Plantinga 2002).
- There is no evidence of job losses associated with wilderness and no evidence that counties more dependent on logging, mining, oil and gas suffered job losses as a result of

wilderness designation in 250 non-urban counties in the Rocky Mountains (Duffy-Deno 1998).

The Bio-Regional Assessment currently does not adequately address the socio-economic need for more designated areas in the Sierra Nevada National Forests, nor does it address the current conditions or trends with respect to designated areas and socio-economic sustainability.

## V. Conclusion

We appreciate the opportunity to provide feedback on the draft bioregional assessment. We view the forest plan revision process as the best venue to achieve conservation of national forest lands in the Sierra Nevada and look forward to working with you and others to develop plans that maintain and restore the ecological integrity of this landscape.

If you have questions about these comments and wish to discuss further, please contact Sue Britting ([britting@earthlink.net](mailto:britting@earthlink.net); 530-295-8210).

Sincerely,



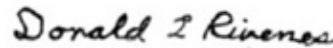
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## Literature Cited

Anderson, H. Mike et al, 2012. Watershed Health in Wilderness, Roadless, and Roaded Areas of the National Forest System. The Wilderness Society, Washington DC.

<http://wilderness.org/resource/watershed-health-wilderness-roadless-and-roaded-areas-national-forest-system>

Aplet, G. H., M. Wilbert, and P. Morton. 2005. "Wilderness Attributes and the State of the National Wilderness Preservation System" in *The Multiple Values of Wilderness*. State College, PA: Venture Publishing, Inc.

Arcese and Sinclari, 1997. "The Role of Protected Areas as Ecological Baselines." *The Journal of Wildlife Management*, Vol. 61, No. 3, pp. 587-602.

Berrens, R., J. Talberth, J. Thacher, M. Hand. 2006. *Economic and Community Benefits of Protecting New Mexico's Inventoried Roadless Areas*. Sante Fe, NM: Center for Sustainable Economy. 69 pp. Available online at [http://www.sustainable-economy.org/main/send\\_client\\_files?f=Final%2520Report.pdf](http://www.sustainable-economy.org/main/send_client_files?f=Final%2520Report.pdf).

Bowker, J.M., et al. 2006. Wilderness and Primitive Area Recreation Participation and Consumption: An Examination of Demographic and Spatial Factors. *Journal of Agricultural and Applied Economics*, 38,2 (August 2006):317-326. Available online at: <http://ageconsearch.umn.edu/bitstream/43765/2/317.pdf>

Britting, S., Brown, E., Drew, M., Esch, B., Evans, S. Flick, P., Hatch, J., Henson, R., Morgan, D., Parker, V., Purdy, S., Rivenes, D., Silvas-Bellanca, K., Thomas, C. and VanVelsor, S. 2012. *National Forests in the Sierra Nevada: A Conservation Strategy*. Sierra Forest Legacy. August 27, 2012. Available at: <http://www.sierraforestlegacy.org>

Callicott, J.B. and Mumford, K. 1997. Ecological sustainability as a conservation concept. *Conservation Biology* 11(1): 32-40.

Cole, D. N. 1995. *Trends in Wilderness Visitors and Visits: Boundaries Waters Canoe Area, Shining Rock, and Desolation Canyon Wildernesses*. Research Paper INT-RP-483. Ogden, UT: USDA, Forest Service, Intermountain Research Station. Available online at: <http://leopold.wilderness.net/pubs/273.pdf>.

Cordell, H. K., Beltz, C. J., & Green, G. T. 2008. Nature-based Outdoor Recreation Trends and Wilderness. *International Journal of Wilderness*, 14(2), 7-9, 13. Available online at: [http://www.srs.fs.fed.us/pubs/ja/ja\\_cordell022.pdf](http://www.srs.fs.fed.us/pubs/ja/ja_cordell022.pdf).

Cordell, K. H., Betz C. J., Fly, M. J., Mou, S., Green, G. T. 2008. *How Do Americans View Wilderness: A Wilderness Research Report in the IRIS Series*. Available online at <http://warnell.forestry.uga.edu/nrrt/nsre/IRISWild/IrisWild1rptR.pdf>.



Cordell, K. H., Eubanks, T. L., Betz, C. J., Green G. T., Stephens, B., Mou, S. 2008. American Birders – Their Numbers and Outdoor Activity Profiles. A Recreation Research Report in the IRIS Series. Available online at <http://warnell.forestry.uga.edu/nrrt/nsre/IRISRec/IrisRec2rpt.pdf>.

Cordell, H. K., Bergstrom, J. C. & Bowker, J. M. 2005. The Multiple Values of Wilderness. State College, PA: Venture Publishing, Inc.

Cordell, H. K., 2004. Outdoor Recreation for 21<sup>st</sup> Century America, A Report to the Nation: The National Survey on Recreation and the Environment. Venture Publishing, Inc. State College, PA. Crist and Wilmer, 2002. “Roadless Areas: The Missing Link in Conservation.” The Wilderness Society.

DellaSala, D., J. Karr, and D. Olson. Roadless areas and clean water. Journal of Soil and Water Conservation, vol. 66, no. 3. May/June 2011.

DeVelice and Martin, 2001. “Assessing the Extent to which Roadless Areas Complement the Conservation of Biological Diversity.” Ecological Applications. 11(4), 2001, pp. 1008-1018.

Duffy-Deno, K. 1998. The Effect of Federal Wilderness on County Growth in the Intermountain Western United States. Journal of Regional Science, 38(1): 109-136.

Keane, J. 2012. California Spotted Owl: Scientific Considerations for Forest Planning. In: Long, Jonathan; Skinner, Carl; North, Malcolm; Winter, Pat; Zielinski, Bill; Hunsaker, Carolyn; Collins, Brandon; Keane, John; Lake, Frank; Wright, Jessica; Moghaddas, Emily; Jardine, Angela; Hubbert, Ken; Pope, Karen; Bytnerowicz, Andrzej; Fenn, Mark; Busse, Matt; Charnley, Susan; Patterson, Trista; Quinn-Davidson, Lenya; Safford, Hugh; chapter authors and Synthesis team members. Bottoms, Rick; Hayes, Jane; team coordination and review. Meyer, Marc; Herbst, David; Matthews, Kathleen; additional contributors. USDA Forest Service Pacific Southwest Research Station. 2013. Science synthesis to promote resilience of social-ecological systems in the Sierra Nevada and southern Cascades. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 504 p.

Lewis, D.J., G.L. Hunt and A.J. Plantinga. 2002. Public Land Conservation and Employment Growth in the Northern Forest Region. Land Economics 78(2): 245-259. Available online at [http://www.umaine.edu/mafes/elec\\_pubs/miscpubs/mp748.pdf](http://www.umaine.edu/mafes/elec_pubs/miscpubs/mp748.pdf).

Lorah, P., & Southwick, R. 2003. Environmental protection, population change, and economic development in the rural western United States. Population and Environment 24(3): 255–272. Available online at <http://www.southwickassociates.com/wp-content/uploads/2011/10/Env-prot-pop-change-in-western-us-RLPAreas.pdf>.

Loucks et al, 2003. “USDA Forest Service Roadless Areas: Potential Biodiversity Conservation Reserves.” Conservation Ecology 7(2): 5. [http://www. Consecol.org/vol7/iss2/art5](http://www.Consecol.org/vol7/iss2/art5).

Meyers, L. Whited, B. 2012. The Impact of Cattle Grazing in High Elevation Sierra Nevada Mountain Meadows over Widely Variable Annual Climatic Conditions. *Journal of Environmental Protection* 3: 823-837.

Miller, Brian et al., “The Importance of Large Carnivores to Healthy Ecosystems,” *Endangered Species Update* Vol. 18 (2001). An excellent overview of research showing top-down regulation by large carnivores. <http://www.rewilding.org/MillerCarnivore.pdf>.

North, M.; Collins, B.M.; Stephens, S. 2012. Using fire to increase the scale, benefits, and future maintenance of fuels treatments. *Journal of Forestry* 110(7), 392-401.

Phillips, S. 2004. Windfalls for Wilderness: Land Protection and Land Value in the Green Mountains. Ph.D. Dissertation. Virginia Polytechnic Institute and State University, Blacksburg, VA. Available online at [http://www.wilderness.net/library/documents/Phillips\\_2-33.pdf](http://www.wilderness.net/library/documents/Phillips_2-33.pdf).

Rasker, R. 2006. An exploration into the economic impact of industrial development versus conservation on western public lands. *Society & Natural Resources*, 19(3): 191–207.

Rasker, R., P.H. Gude, J.A. Gude, & J. van den Noort. 2009. The Economic Importance of Air Travel in High-Amenity Rural Areas. *Journal of Rural Studies* 25: 343-353. Available online at [http://headwaterseconomics.org/3wests/Rasker\\_et\\_al\\_2009\\_Three\\_Wests.pdf](http://headwaterseconomics.org/3wests/Rasker_et_al_2009_Three_Wests.pdf).

Scott, D. W. 2003. A comprehensive review of recent public opinion research: A mandate to protect America’s wilderness. Washington, DC: Campaign for America’s Wilderness. Available online at [http://www.pewtrusts.org/our\\_work\\_report\\_detail.aspx?id=19224](http://www.pewtrusts.org/our_work_report_detail.aspx?id=19224). Survey by Mellman Group, April 2001. As cited in Schuster R. M., et al. Chapter 7: The Social Value of Wilderness in Cordell K. H., et al. (2005) in Cordell et al. *The Multiple Values of Wilderness* (2005).

Steed, B.C., R.M. Yonk, and R. Simmons. 2011. The economic costs of wilderness, *Environmental Trends* Issue Brief. San Francisco: Pacific Research Institute. June 2007. 7 pp. Available online at: <http://www.environmentaltrends.org/fileadmin/pri/documents/2011/brief062011.pdf>.

Tempel, D. J. and Gutierrez, R. J. 2013. Relation between occupancy and abundance for a terrestrial species, the California spotted owl. *Conservation Biology* (*in press*):1-9.

Terborgh, John et al. 1999. “The Role of Top Carnivores in Regulating Terrestrial Ecosystems,” Chapter 3 in *Continental Conservation: Scientific Foundations of Regional Reserve Networks* edited by Michael E. Soulé and John Terborgh (Island Press 1999).

U.S. Census Bureau. 2005. Population Division, Interim State Population Projections, 2005. Available online at <http://www.census.gov/population/projections/data/state/projectionsagesex.html>.

U.S. Fish and Wildlife Service. 2011. National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. Washington, D.C.: U.S. Fish and Wildlife Service. Available online at [http://wsfrprograms.fws.gov/Subpages/NationalSurvey/2011\\_Survey.htm](http://wsfrprograms.fws.gov/Subpages/NationalSurvey/2011_Survey.htm).

USDA Forest Service 2001. Sierra Nevada Forest Plan Amendment. Final Environmental Impact Statement. Pacific Southwest Region. USDA Forest Service.

USDA Forest Service 2011. National Report on Sustainable Forests—2010. FS-979 June 2011.

USDA Forest Service 2012. National Forest Statement of Receipts (ASR-13-2) for Fiscal Year 2011.

## Attachment A

### **Society of Outdoor Recreation Professionals Planning Principles**<sup>19</sup>

#### **Definition of Recreation Resource Planning**

Recreation resource planning is the application of analytical tools to a systematic and deliberate process of decision making about the future management of recreation resources and recreation opportunities. Recreation planning is a rational systematic decision-making process, and as such it is a fundamental tool that deters our human tendencies to make decisions based on predisposition, bias, inadequate analysis, group-think, insular perspective, resistance to change, and excessive self-confidence. It results in decisions that are more effective, efficient, fair, reasoned, and defensible.

#### **General Precepts**

1. **Recreation Resource Planners:** Recreation resource planners are professionals and should have a university degree in recreation resource planning, urban or regional planning, landscape architecture, or a closely related field. Professional experience and professional certification (e.g., NRPA, AICP) may also fulfill this educational standard.
2. **Sound Professional Judgment:** The standard for decision making in recreation planning is sound professional judgment, defined as a reasonable decision that has given full and fair consideration to all of the appropriate information, that is based on principled and reasoned analysis and the best available science and expertise, and that complies with applicable laws.
3. **A Contract with the Recreating Public:** A recreation plan is a contract with the recreating public and affected stakeholders that transcends any one person or administration, and as such should be detailed, unambiguous, and provide for accountability.
4. **Represent the Public Interest:** Recreation resource planning is a collaborative public process that deters the bias of special interests, political intervention, or incremental unplanned decision making.
5. **Recreation Resources:** Recreation resources are those features in a setting that define a person's experience, such as the natural and cultural resources, special values attached to an area, facilities, infrastructure, personnel, and management regulations and actions.
6. **Recreation Opportunities:** Recreation planners plan for recreation opportunities, defined as an occasion for a person to participate in a specific recreation activity in a particular outdoor setting in order to enjoy a desired recreation experience and gain the healthy benefits that accrue.
7. **Recreation:** The occasion of a person to participate in a specific recreation activity in a particular outdoor setting in order to enjoy a desired recreation experience and gain the healthy benefits that accrue. (Note---the historic term of "recreation" has largely been replaced by the phrase "recreation opportunity" as defined above).
8. **Recreation Benefits:** Recreation resource planning should promote the environmental, human and community wellness benefits that accrue from recreation participation such as improved physical and mental health, family cohesion, civility, social integration, child

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<sup>19</sup> <http://www.recpro.org/planning-principles>

development, economic stimulation, work productivity, resource stewardship, and conservation ethic.

9. Recreation Diversity: Because there is no “average” recreationist, it is important to plan for and maintain a spectrum of diverse recreation opportunities.
10. Systems Approach: Recreation resource planners must consider how their resources fit into a larger regional system, how their potential recreation alternatives might contribute to regional recreation diversity, and how their opportunities can be linked to larger systems.
11. Recreation Justice: Recreation resource planning helps to ensure that all people have an opportunity to enjoy our great outdoors without prejudice of race, ethnicity, age, wealth, gender, beliefs, or abilities. Planning should also ensure that Treaty rights and the rights of aboriginal publics are fairly considered.
12. Recreation Allocation: Recreation resource planning requires recreation allocation decisions because not all types and amounts of people or activities can be accommodated in a particular setting at one time.
13. Recreation Compatibility: Some recreation uses are not compatible with other uses, and recreation planners have the responsibility to determine what, if any, uses should be permitted, and where those activities should be permitted. Strong preferences for specific recreation settings lead to competition for recreation resources among different user types. Conflict is also generated by how each user group perceives the others’ actions and values.
14. Recreation Niche: Because not all people can be accommodated in all places, recreation planning helps to focus on the special values and resources of a setting and to define the special niche within the larger spectrum of recreation opportunities.
15. Visitor Capacity: Visitor capacity is the prescribed number, or supply, of available visitor opportunities that will be accommodated in a specific location and specific time.
16. Resource Sustainability: Whereas natural and cultural resources define an outdoor recreation setting, it is fundamental that recreation resource planning and plans address how to integrate recreation use so as to harmonize with, protect, enhance, and sustain these important resources.
17. Reduction of Impact: Recreation planning should proactively consider ways to minimize and mitigate potential social and environmental impacts.
18. Recreation Stewardship: Recreation planning should consider how to best design, manage, and interpret settings so as to foster public appreciation, understanding, respect, behaviors, and partnerships that contribute to the stewardship of an area’s natural and cultural resources, and special values.
19. Resource Caretakers: Recreation planners also have a responsibility to consider how plans and decisions will affect the kind of resource legacy will be left to the next generation.

### **Principles for the Planning Process**

1. A Process: While the specific terms and steps in a recreation planning process often vary across institutions, all recreation resource planning in some manner includes:
  - o Identification of public issues, management concerns, opportunities, and threats through collaborative stakeholder involvement.

- Establishment of planning and decision criteria for evaluating and selecting the preferred alternative.
  - Inventory of resources, the current situation, and the best available science and information.
  - Formulation of alternatives which address the significant issues and concerns.
  - Evaluation of the consequences, benefits, and affects of each proposed alternative.
  - Selection of a preferred alternative based upon a full and reasoned analysis.
  - Implementation and monitoring.
  - Plan adaptation or revision.
2. Legally Sufficient: Recreation resource planning is framed by various local, state, and federal laws and regulations, with the most significant and historic direction provided by the National Environmental Policy Act (1969) and its attendant Council on Environmental Quality regulations.
  3. Judicial Doctrine: Good recreation planning is based upon the important judicial principles of being principled, reasoned, reasonable, sufficient, full, fair, and preponderance of the information.
  4. Planning Considerations: An adequate recreation resource planning process and plan must address all of the significant public issues, management concerns, opportunities, and threats that are identified in the early stages of the planning process. Issues, concerns, opportunities and threats that are not deemed significant, do not need to be addressed in the plan.
  5. Planning Inputs: Recreation resource planning requires the consideration of many inputs such as an inventory of existing plans and policies, current type and amount of recreation use (supply and demand), recreation trends, public issues, management concerns, regional supply of recreation opportunities, visitor and stakeholder preferences, economic impact of recreation participation, best available science, environmental conditions, and available information from recreation and resource monitoring.
  6. Recreation Resource Publics: Recreation resource planning must try to engage and hear from all the diverse publics who value the recreation resource. The easily recognizable publics are often labeled visitors, local business, land owners and communities, but there may also be equally important publics who vicariously value the resource, some who have been displaced by past unacceptable conditions, some who do not have the ability to attend meetings, or some who live across the country but equally share in the ownership of the public resource.
  7. Collaboration: The meaningful engagement and exchange with the public is essential throughout the planning process. Collaboration results in a clearer definition of public values, more creative alternatives, more reasoned and reasonable decisions, and a constituency that becomes better informed and committed to the plan and its implementation.
  8. Science-Informed Planning: It is both a legal requirement and professional imperative to duly consider the best available science and expertise in the planning process and the plan's implementation.
  9. Comprehensive and Integrated: Recreation planning should consider other significant natural and cultural resources, uses, demands, and values in an integrated and comprehensive fashion. Functional planning, whereby one resource is planned for in a

vacuum from other resources, is not appropriate and contrary to comprehensive and integrated planning.

10. Clear Management Alternatives: Recreation alternatives must be clear, comprehensive, and provide a reasonable range of choices for public consideration. Each alternative can be contrasted by its proposed objectives, desired future conditions, desired recreation experiences, facilities, management strategies and actions, quality standards, visitor capacities, economic value, projected budget requirements, and monitoring program.
11. Rigorous Analysis: The analytical stage in a planning process is the evaluation of alternatives whereby the alternatives should be sharply contrasted, and the pros and cons are rigorously evaluated so the reasons for and against each alternative become clear.

### **Principles for the Plan**

1. The Document: The effectiveness and utility of a plan is in part a function of its clarity, brevity, layout, and design. Materials used in the planning process should be retained in the administrative record, but the final approved document should be a valuable desktop working document.
2. Resource Management Prescription: The output of a recreation resource planning process is a management prescription for an area that includes such information as goals, objectives, desired future conditions, desired recreation experiences, facilities, management strategies and actions, quality standards, visitor capacities, a monitoring program, and budgetary needs.
3. Budgetary Tool: An effective recreation plan should include the projected budgetary needs to implement the plan. In this way the plan is a tool to prepare and justify annual budgets, for allocating budgets, and to guide annual work priorities, and facilitate the scheduling and sequencing of projects.

### **Principles for Implementation**

1. Implementing Partnerships: The successful implementation of a plan should involve collaboration with stakeholders, government agencies, partnerships, and alliances with communities, special interests groups, and the private sector.
2. Institutional Accountability: The responsible official charged with implementing the plan should periodically evaluate and report to the public on progress and accomplishments to date, factors affecting the plan's implementation, and changes pending or made to the approved plan.
3. Plan Adaptability: A recreation resource plan should be adaptive to new science, information, uses, technology, trends, conditions, and other circumstances of importance. Any proposed change should be subject to the same level of deliberate analysis and public collaboration as went into the original decision.
4. Review and Revision: Given the significant and ongoing changes in our society and the recreation industry, it would be reasonable that recreation plans be formally reviewed and updated every 5-10 years.

*These principles were developed by the Board of Directors of the National Association of Recreation Resource Planners, with input solicited from more than 1000 recreation planning professionals, and approved by the Board for distribution in April 2009.*