Sierra Forest Legacy
Protecting Sierra Nevada Forests and Communities

FRIENDS OF THE INYO
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Sierra Foothills Audubon

Forest Issues Group

California Native Plant Society

Mono Lake Committee

Center for Sierra Nevada Conservation

Defenders of Wildlife

The Wilderness Society

Sierra Club
Founded 1892

Western Watersheds Project

October 23, 2015

Plan Revision Team
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Sent via email: michaeldietl@fs.fed.us

Re: Comments on the preliminary draft monitoring program for the revised forest plans for the Inyo, Sequoia and Sierra national forests

To the Plan Revision Team:

We appreciate the opportunity to review and provide comment on the preliminary draft monitoring program. Our organizations are committed to the use of monitoring results to validate management strategies and inform the need to change management. Many of us have contributed to the creation of monitoring plans and have participated as stakeholders in various Forest Service projects (site specific and landscape level) attempting to implement adaptive management. Based on these experiences, we developed in 2012 recommendations on adaptive management and monitoring as a chapter in *National Forests in the Sierra Nevada: A Conservation Strategy*.[1] The chapter provides an overview of our thinking about the importance of monitoring to evaluate a variety of stressors including, changing environmental conditions and management actions such as fire suppression, logging, and grazing that have been identified threats to sensitive resources. We also provide recommendations on the elements of an adaptive management and monitoring program that we believe to be important to managing sensitive resources in today's setting of risk and uncertainty.

[1] Britting et al. 2012 (http://www.sierraforestlegacy.org/Resources/Conservation/Biodiversity/SN_Conservation_Strategy_web3-14-13.pdf)

Several of our organizations also participated in the development of an ecological monitoring plan for the Dinkey Collaborative Forest Landscape Restoration Project.[2] The development of the plan was led by Stan VanVelsor, The Wilderness Society, and supported by funding from the The Wilderness Society, National Forest Foundation, and Southern California Edison. The plan was developed over the course of a series of meetings and informed by a variety of science advisors. The plan was approved by a wide variety of stakeholders who are not always in agreement about the benefits of specific management actions on the forest ecosystem. The plan was developed based on the following principles that we believe to be relevant to the development of monitoring plans for the forest plans[3]:

> **Clear and compelling questions:** Clear and concise questions are critical because they determine the variables to be measured, sampling design, spatiotemporal extent of data collection and analysis, and utility of the results.
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> **Validity and Reliability:** The measurements taken should adhere to established protocols of experimental design, measurement accuracy, and analytical rigor established by the standards of science within each disciplinary area.
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> **Multiparty development and execution:** The plan should reflect a collaborative effort with input from a diverse array of stakeholders.
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> **Replication and experimental controls:** Replication of treatments within and across ecological sites, including untreated control sites, to facilitate greater learning about treatment effects.
>
> **Geospatial identification:** Monitoring data should be geospatially referenced.
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> **Integration of monitoring and treatment design:** Adaptive management is a vital part of assessing the effects of land management on ecosystems. Moreover, monitoring builds trust among the collaborative group and the public. Consequently, the incorporation of monitoring designs and information is considered fundamental to the planning and modification of ecological restoration treatments.
>
> **Transparency and accessibility:** Data collected from the monitoring program will be publicly available and accessible to stakeholders using an online data portal or other information system. The justification of future actions depends on open review, analysis, and input by all interested parties.
>
> **Integration:** The data collected during monitoring activities should be incorporated into Forest Service corporate databases, where possible, and applied to other examinations and analyses that support resource management by private landowners and state and local governments. Forest Service corporate data will be used to address monitoring questions when relevant and available.

[2] A social and economic monitoring plan for the DCFLRP is still under development.
[3] These principles were adapted from those presented in the DCFLRP ecological monitoring plan, p. 7-8.

The DCFLRP plan is a question driven monitoring plan that includes trigger points defined as "A predetermined value of an indicator that suggests a need to reevaluate, stop, or change management activities."[4] We believe that this comprehensive monitoring plan serves as a useful model for the monitoring programs being developed for the early adopter forests. Many of the questions, indicators and triggers in the DCFLRP plan are appropriate for a forest scale monitoring plan. The DCFLRP monitoring plan is attached to these comments (Attachment A).

Lastly, Sierra Forest Legacy and several partners supported the completion of the MIS White Paper with recommendations from scientists on wildlife monitoring relevant to forest planning as part of a settlement agreement with the Forest Service. Wayne Spencer, Conservation Biology Institute, led a panel of key wildlife research scientists in the examination of scalable, cost-effect wildlife monitoring strategies for the Sierra Nevada. We expect the MIS White Paper and recommendations to be fully considered in the forest planning process for these first three and the remaining national forests in the Sierra Nevada. Significant investment of time and funding ($100, 000 total with $40,000 contributed from conservation groups and $60,000 from the Forest Service) was supported this effort. The Forest Service needs to see that the MIS White Paper is completed so that it can serve the purpose for which it was commissioned – to provide the scientific basis for a credible and cost effective wildlife monitoring program for national forests in the Sierra Nevada.

The following are detailed comments on the preliminary draft monitoring programs for the revised plans on the Inyo, Sequoia and Sierra national forests. The first part of these comments covers overarching concerns we have about the programs being proposed and the second part addresses issues specific to each national forest program. We have also attached an annotated version of the draft monitoring program for the Sierra National Forest with additional comments (Attachment B).

I. General Comments on the Monitoring Program

A. Broader-scale Monitoring Strategy Not Yet Defined

The Regional Forester is required to "develop a broader-scale monitoring strategy for plan monitoring questions that can best be answered at a geographic scale broader than one plan area." (26 CFR 219.12) The directives further clarify that:

> A broader-scale monitoring strategy should be developed to provide consistent and complementary information to answer questions common to two or more plan areas. Broader-scale monitoring should be developed where it would be more efficient than monitoring limited to an individual plan area to inform the management of resources, including testing relevant assumptions, tracking relevant changes, and measuring management effectiveness and progress toward achieving or maintaining desired conditions or objectives.

[4] *Measuring Progress: An Evaluation Guide for Ecosystem and Community-Based Projects* (www.snre.umich.edu/ecomgt/evaluation/templates.htm)

(FSH 1909.12, ch. 30, sec. 33.1) Many of the management issues confronting the three plan areas under consideration affect more than one plan area. This circumstance is affirmed by the draft programs themselves which have the same plan components and monitoring questions for the majority of the resource areas. These plan areas have the same management concerns related to a variety of issues including, meadow management, a number of at-risk species, fire as a beneficial disturbance process, and conservation of aquatic ecosystems.

The 2012 Rule also stipulates that all forest plans in the Sierra Nevada, regardless of the planning rule they were developed under, shall modify their plan monitoring program within 4 years of the publication of the planning rule. This direction means that the monitoring plans for all national forest in the Sierra Nevada must be revised by April 2016. To ensure that the monitoring systems for the Sierra Nevada bioregion are integrated and effective, we believe it is imperative that the Regional Forester develop the broader-scale monitoring strategy for the bioregion prior to or concurrently with the development of the plan-level monitoring programs for all of the Sierra Nevada forests.

The broader-scale monitoring strategy needs to be defined in advance of the forest specific monitoring programs so that the rational connection between the two programs is established and the efficacy of the forest monitoring program can be reviewed in light of the broader-scale strategy. We ask that you develop the broader-scale monitoring strategy now and circulate that with the next draft of the forest monitoring program for these three plan areas.

B. Best Available Science Information (BASI) Not Identified

We support the application of the BASI to the development of the monitoring plan. We see in your solicitation of comments that you ask that we provide science support for any recommendations we make about monitoring questions and indicators, yet we find no documentation of BASI in the preliminary draft monitoring plan.

The 2012 Rule states: "The responsible official shall document how the best available scientific information was used to inform the assessment, the plan decision, and the monitoring program as required in §§ 219.6(a)(3) and 219.14(a)(4). Such documentation must: Identify what information was determined to be the best available scientific information, explain the basis for that determination, and explain how the information was applied to the issues considered." It is difficult to provide meaningful comments on the monitoring program when scientific foundation of the program has not been defined. It is also a double standard to ask that commenters provide that information when your agency has failed to do so. This approach falls far short of the collaborative and transparent process for developing the monitoring program described in the 2012 Planning Rule and directives. We ask that citations to the scientific literature and a rationale for their application be included in the next drafts of the monitoring programs.

C. Plan Components Targeted for Monitoring

Many of the plan components referenced in the monitoring program use subjective terminology that has not been quantitatively defined. It will not be possible to judge achievement of or movement towards the desired conditions unless the characteristics are quantified. For example,

plan component "TERR-MONT-DC-01" refers to a "complex mosaic" and "seral stage patches" without providing information on the size distribution of patches or their distribution across the landscape. The desired patch sizes and their distribution in each forest type should be defined so that one can monitor this condition and judge whether or not the condition is being achieved. For most indicators listed, a numerical should be reflected in the associated plan component to allow evaluation of degree of achievement during a specific time period.

We also note that draft monitoring plans do not include objectives, standards or guidelines as plan components related to the monitoring questions. We believe that there should be other plan components related to these questions and their inclusion in future drafts will (hopefully) improve the specificity and clarity of the revised monitoring program.

D. Broader-scale Monitoring and Selection of Focal Species

As the result of a settlement agreement concerning the 2007 National Forests Management Indicator Species Amendment, the Forest Service convened an independent team of scientists to develop a set of recommendations for revising forest plan monitoring programs in accordance with the 2012 Planning Rule (MIS White Paper). According to the current draft of the report, the independent team of scientists developed recommendations for monitoring the effects of forest management on species and ecosystems that are "scientifically defensible, useful, and cost-effective…in light of current scientific understanding and changing regulatory contexts."

One of the recommendations of the MIS White Paper is to develop the broader-scale monitoring strategy (defined in the MIS White Paper as the "bioregional monitoring strategy") **before** the forest-level or local-level sampling designs. It is important to develop the broader-scale strategy first because it allows for a systematic random sampling approach to occur across the entire bioregion, which increases cost-effective implementation of the monitoring plan. Broad-scale systematic random sampling is also required to implement the "multi-species or omnibus sampling method" recommended in the MIS White Paper. Such a sampling method uses presence/absence surveys based on the existing FIA grid and occupancy modeling to determine patterns of co-occurrence among species and habitat conditions. The recommendation to develop the broader-scale plan first is consistent with the 2012 Rule's suggestion that the broader-scale strategy be coordinated and integrated with the plan-level monitoring programs.

The MIS White Paper also states that, "A defensible monitoring program requires an iterative process that includes development of specific, measurable objectives and identification of targets that answer specific questions relative to those objectives, specifically with regard to changes in habitat or ecological condition relative to a management action." In general, the desired conditions selected for monitoring terrestrial ecosystems and at-risk species in the preliminary draft monitoring plan do not include enough specificity or the identification of targets, making it difficult to develop a defensible monitoring program.

The MIS White paper also recommends that this broader-scale monitoring be used to identify Focal Species:

> For potential focal species indicated by their ecological roles, a second important criterion is their sensitivity to environmental stressors. A convenient way to organize this information is to create a matrix with habitat associations on one axis and stressors on another; then, based on the results of conceptual modeling, **select a small suite of species for each cell of the matrix whose population dynamics appear important to ecosystem function, are relatively easy to detect, and ideally include representatives from different trophic levels or ecosystem functions**. Next, determine which of these species can be adequately sampled using the MSIM and RIVPACPS approaches and which require supplemental approaches to meet monitoring objectives. Because the MSIM is designed to provide data on occupancy, adequacy in this context means that organisms are detected at high enough rates and with sufficient detection likelihoods to allow changes in occupancy patterns to be statistically robust. It also implies that occupancy is an appropriate measure of the specific monitoring objectives (as opposed to population size, for example).

(MIS White Paper)

The final MIS White Paper is scheduled to be completed sometime within the next few months. Before continuing to develop the plan-specific monitoring program, the Forest Service should develop a robust broader-scale monitoring strategy based on the recommendations of the MIS White Paper. This would then constitute one component of the broader-scale monitoring strategy that is directed under the 2012 planning rule. This broader-scale monitoring strategy should be the foundation on which the individual forests tier their respective monitoring programs and can be used to select Focal Species. Once the broader-scale monitoring strategy has been developed, all of the National Forests in the Sierra Nevada, including the early adopter forests, should determine if and what additional monitoring is necessary at the plan level and fill in the gaps accordingly. Such an approach would undoubtedly save significant time and resources to develop and implement.

E. Documenting the Selection of Focal Species

The directives state that "The Interdisciplinary Team must document the selection of focal species, monitoring questions, and indicators from the potential key ecosystem characteristics and possible focal species that have been identified for an ecosystem." (FSH 1909.12, ch. 30, 32.13c – Exhibit 01) An example of how the selection process could be documented is provided in the directives (32.13c – Exhibit 01). We ask that you use this approach to document the selection of focal species for the Inyo, Sierra and Sequoia forest plans. We also ask that when you release the next draft of the monitoring program you provide this documentation of the process used to identify focal species.

F. Reliance on Data Systems that Are Not Updated Frequently Enough

Judging the efficacy of an indicator requires consideration of the tools and systems available to collect and analyze the data. There are many indicators noted in the draft programs that rely on vegetation data, e.g., canopy cover, tree size, trees per acre, CWHR class. We are aware of two inventory systems now utilized by the Forest Service and others that could contribute

information to evaluate these indicators, but neither program provides information at a frequency relevant to the biennial review required by the 2012 planning rule.

A remotely sensed vegetation map (EVEG) is maintained by the Remote Sensing Lab. The current data sets for the southern Sierra Nevada are based on imagery dating from 2000 to 2008. There is a process applied to periodically update these layers. However, it remains unclear to us if the current updating process allows for the comparison over time of the various attributes reflected in the data set. As far as we are aware, a time series of vegetation maps at set intervals is not available at the present time. The indicators noted in the draft programs require that a baseline value be established and that subsequent updates to the baseline values reflect the processes and stressors affecting the landscape during the period of measurement. We know from our review of the management indicator species monitoring reports that changes in the manner in which vegetation data was collected in the EVEG program overtime made it impossible to directly compare baseline vegetation data to vegetative conditions at a time in the future. This issue needs to be resolved before adopting indicators that depend on this vegetation system.

We are also familiar with the Forest Inventory and Analysis program. This program collects inventory data at fixed plots with one plot per 6,000 acres. Approximately 10% of the plots are inventoried each year resulting in mixed ages for the inventory results. Our experience using this data indicates that the plot density is too low and the collection too infrequent to address monitoring questions at the forest and smaller scales on a schedule that is relevant to forest plan implementation. The MIS White Paper suggests that the monitoring program use the FIA grid as a foundation, but recognizes the spatial and temporal limits of the FIA system and suggests that increased sampling frequency and establishing additional sampling plots would likely be necessary for a robust monitoring program.

We believe it essential that at the same time the indicators are being identified, the approach to be used to collect that data needs to be identified.

G. Development of a Monitoring Guide

We see in the background information on the monitoring program that you intend to prepare a monitoring guide as suggested by the directives. We ask that you create this at the same time you are developing the Monitoring Program. Information in the draft guide will provide additional clarity to stakeholders who are reviewing the draft monitoring program about data collection methods, the use of existing data collection programs and frequency of monitoring. These additional details are essential to a thorough evaluation of the likelihood that the prosed monitoring program is effective and useful. We ask that you circulate a draft monitoring guide, even if only a partial guide, with the next draft of the monitoring program.

II. Comments Specific to Each National Forest

A. Watershed Conditions (all NFs)

The monitoring question should address specific watershed indicators. The focus should be on those indicators making the greatest contribution to risk and that can be affected (positively or negatively) by management actions. We are concerned about the quality of the data and use of the results derived from the Watershed Condition Framework evaluation process. We have been told repeatedly by Forest Service staff that the data used was of poor quality because adequate time to collect high quality information was not provided. Because of this, we are concerned that the data quality from the WCF process is poor to uncertain. We ask that data quality be considered in the selection of specific indicators from the WTC results and that indicators for which data quality is poor not be selected.

B. Terrestrial Ecosystems (all NFs)

1. Complex Early Seral Forests

We agree that monitoring questions to evaluate the development of CESF should be included in the monitoring program. The question proposed is relevant, but the associated plan component is not sufficiently defined to evaluate if it has been affected by management.

The complex early seral forests (CESF) desired condition chosen for monitoring (TERR-CES-DC-01) in the preliminary draft monitoring program does not meet the definition of a desired condition because it does not describe any ecological conditions toward which management of the land resources can be directed. The first sentence of this desired condition appears to be a definition of CESF, which is essentially a seral stage in forest development that occurs following disturbance. We find it puzzling that the monitoring question and associated indicators suggest that CESF patch size, patch density, and patch distribution are important ecological conditions to monitor, considering the CESF desired condition does not describe what is desired for CESF patch sizes, patch density, or patch distribution. In order to provide meaningful ecological information and enable the responsible official to determine if a change in plan components or other plan content is needed, such desired ecological conditions should be clearly defined. The second sentence suggests management action will be taken or not taken, something the directives suggest desired conditions do not do. As currently worded, the last sentence concerning aspen and oak sprouts describes a condition that will be met no matter what the conditions of aspen and oak sprouts are across that plan area. As such, this desired condition is not written in a manner that allows progress toward achievement to be determined.

Although the definition of CESF is not set in stone, an essential attribute is that CESF are forests that are allowed to naturally develop following disturbance, i.e., not salvage logged, have not been treated with herbicides to control native vegetation, and are not replanted (DellaSalla et al. 2014), because these activities reduce the complexity of the recovering forest (Swanson et al. 2011). We expect the forest plans to include this essential aspect of the definition of CESF.

To conform to the plan component definition of a desired condition in 36 CFR 2019.7(e)(1)(i), the desired condition(s) for CESF should describe the specific ecological characteristics of CESF in the plan area toward which management of the land and resources should be directed and the desired condition(s) should be described in terms that are specific enough to allow progress toward their achievement to be determined. It is also required that the interdisciplinary team consider the role of the natural range of variation (NRV) and, where appropriate, design plan components aimed at maintaining or restoring NRV of specific key ecosystem characteristics needed to promote ecosystem integrity in the plan area. We believe that NRV for CESF is a desired condition toward which management should be directed and is a key ecosystem characteristic needed to promote ecosystem integrity within the plan areas. As such, we developed a set of desired conditions for CESF based on NRV that meet the plan component definition of desired conditions and submitted them to you for inclusion in an alternative for the early adopter forest plans on February 23, 2015 (see Attachment C).

2. Old Forests

The proposed question focused on the distribution and density of large trees should reference "by forest type" and the indicators should be stratified by forest type. Stratifying this question by forest type is important since the stressors from management (e.g., fire suppression and logging) and climate change vary with elevation and forest type.

An additional question addressing "old forest areas" should be added to the program since large tree density and extent alone do not capture the characteristics of old forests. "Old forests" are defined by the integration of a variety of elements mentioned in the desired condition. Large trees alone are not reflective of the condition. We propose adding the following questions:

What proportion of the landscape, stratified by forest type, contains old forest areas?

What is the spatial distribution of old forest areas in the plan area?

Indicators for this would be proportion of area, and its location, with large trees and snags, and large downed logs interspersed with barren areas and areas dominated by herbaceous and shrub types. Stratifying this question by forest type is important for the same reasons noted above.

C. Aquatic Ecosystems (all NFs)

The proposed questions related to meadow function should include an evaluation of the condition of the shrubs and their age-class distribution. Grazing can alter the branching and shape of the shrubs such as willows and cause them to be unsuitable nesting and foraging habitat for willow flycatcher.

It is not clear if the proposed monitoring question related to hydrological function in meadows actually gets to the principle issue for many meadows – the reduction in hydrologic function of a meadow system due to management decisions. We ask that the following question be added to address this:

Is the hydrology function and wetness of the meadow within NRV for each specific meadow?

Human actions, e.g., roads, trails, fire suppression, grazing, have altered meadow hydrology and contributed to the drying of meadows. Going forward, the forest plans need to reverse these trends and the monitoring program needs to evaluate the forest plan's efficacy in doing so.

D. Focal Species (all NFs)

As described in our more general comments, the soon to be completed MIS White Paper will provide additional recommendations on a process that could be used to select focal species. The process to be recommended utilizes broader-scale monitoring and occupancy-habitat modeling to determine an appropriate suite of focal species to monitor for the targeted ecosystems. Campos et al. (2014) apply a similar approach to the selection of focal species for meadow ecosystems in the Sierra Nevada with a particular interest in the wet meadow types selected by willow flycatcher.

In the current draft programs, focal species have only been proposed for streams on the three forests and for sage grouse habitat on the Inyo National Forest. Additional species should be identified for other terrestrial ecosystems, including specific seral stages of conifer forests and meadow systems. As a general matter, we recommend that suites of focal species be selected, as was done in the draft program for stream systems, to best reflect the ecological integrity of the targeted ecosystem. Below we propose several specific focal species with a recommendation to identify additional species for each ecosystem type. We identified these species because of their close association with key characteristics, role as ecosystem engineers, and importance in the movement of energy through the system (e.g., predator-prey relationships). These species were also selected because they are responsive to stressors, such as fire suppression, logging, road and trail construction, and grazing that can be influenced by plan decisions, and climate change that can inform plan decisions.

Coniferous Forests: Mature and Old Forests

California spotted owl[5]: This is a species of conservation concern associated with desired conditions for old forests of forest types including ponderosa pine, mixed-conifer and red fir. Large old trees and snags, and large down wood, and dense canopied forests are associated with this species. Presence of this species is also positively associated with low and mixed severity fire, a desired process for this ecosystem. Monitoring for this species should include occupancy rates with targeted study areas assessing demographic rates and population health. This is similar to the monitoring we recommend in the at-risk species section below.

[5] See the petition Sierra Forest Legacy and Defenders of Wildlife submitted to US Fish and Wildlife Service for the science that supports these habitat associations and threats: http://www.sierraforestlegacy.org/Resources/Conservation/SierraNevadaWildlife/CaliforniaSpottedOwl/CSO%20CASPO-Petition%2019August%202015%20With%20Appendices.pdf

Pacific marten[6]: This is an at-risk species that meets the definition of a species of conservation concern. This species is associated with complex and older conifer forests above 6,000 feet and with a variety of forest types. Important habitat attributes include dense forests, large trees, snags and downed wood, interspersed with younger forests and, shrubs and herbaceous plant associations. Stressors from management include fire suppression, logging, and over-snow recreation. Loss of habitat as a result of climate change has been identified as another stressor for this species. Regional monitoring for this species has been underway for several years. The current program should be reevaluated to determine if the sampling density and locations are sufficient to inform management decisions. This is similar to the monitoring we recommend under in the at-risk species section below.

Coniferous Forests: Complex Early Seral

Black-backed Woodpecker[7]: This is an at-risk species that meets the definition of a species of conservation concern that is associated with desired conditions for complex early seral forests. Specifically this species is associated with dense patches of severely burned forests. Stressors include post-fire salvage logging and fire suppression. This species is of particular importance since it is one of the first woodpeckers to enter burned forests and provides cavities for secondary cavity nesters. The current program to monitor BBWO in association with green and burned forests should be continued. This is similar to the monitoring we recommend in the at-risk species section below.

Additional bird species associated with CESF: BBWO is an important species associated with CESF, but due factors that are not well understood may not always be in high numbers in CESFs (e.g., low population numbers have been noted in post-fire areas in the Rim Fire, yet other CESF associated birds are present. For this reason, additional bird species associated with CESF should be included in a suite of species to evaluate the condition of this ecosystem type. The monitoring data collected by Point Blue and Institute of Bird populations combined with the species-ecosystem assessment recommended in the MIS White Paper could be effectively combined to identify appropriate species.

Meadow Ecosystems

A suite of bird species to evaluate bird diversity: Campos et al. (2014) developed metrics, including a suite of focal bird species, to evaluate the success of meadow restoration projects. Ecosystem conditions important to the function of meadow systems including cover and size of various plant forms, watershed area and precipitation were correlated with the abundance of various species. We ask that you build on this approach, which we believe to be complementary to that recommended in the MIS White Paper to develop a suite of focal species for meadow ecosystems.

[6] See comments we submitted on the draft list of species of conservation concern for the science that supports these habitat associations and threats for Pacific marten.
[7] See comments we submitted on the draft list of species of conservation concern for the science that supports these habitat associations and threats for black-backed woodpecker.

We ask that you consider the information above and recommendations in the MIS White Paper and Campos et al. (2014) to develop suites of focal species for targeted terrestrial and meadow ecosystems.

The successful application of focal species to the monitoring of the revised plans requires the engagement of a variety of experts and other stakeholders. Early engagement in the selection process can reveal future cooperators and funding sources to support a robust program. We ask that you host focused workshops with scientists and key stakeholders to build on existing information and recommendations to provide a strong foundation for the monitoring of focal species in the early adopter and remaining forest plans in the Sierra Nevada.

E. Species At-Risk

1. California spotted owl (relevant to INF, SQF and SNF)

The preliminary draft monitoring plan indicates the only monitoring question specifically targeting California spotted owl will be, "What are the ecological conditions in protected activity centers (PACs)?" We agree it is important to maintain high quality habitat conditions within spotted owl activity centers. However, given the current protections afforded PACs, it is unclear how monitoring habitat changes only at this scale would provide meaningful ecological information and enable the responsible official to determine if a change in plan components or other plan content is needed. In fact, management activities that reduce habitat quality within PACs have been limited for over 20 years, yet the species has declined on all Forest Service-managed lands during that time (Conner et al. 2013; Tempel et al. 2014a). In addition, it does not appear that changes in habitat quality at the PAC-scale are being used to make changes to plan components involving activity centers in the new forest plans. Even if the protections afforded PACs were significantly reduced in the revised plans, limiting monitoring to the PAC-scale would still make it impossible to differentiate the effects of management activities at the PAC-scale from management activities occurring at larger scales.

While the activity center is an important habitat scale within which to maintain high canopy cover conditions, the best available science has consistently found that management effects at the territory scale (i.e., half the mean nearest neighbor distance; approximately 800 acres in the southern Sierra Nevada) are also associated with adverse effects to spotted owls. Seamans and Gutiérrez (2007) and Tempel et al. (2014b) found that reducing the amount of forest with dense cover (>70%) at the territory scale had significant negative effects on several important demographic parameters, including dispersal, colonization, territory extinction, and reproduction. In addition to the activity center and home range scales, the Forest Service's recently published Interim Recommendations for spotted owl management place significant emphasis on the territory scale (USDA Forest Service 2015). According to the IRs, "The territory scale serves an important ecological function in that it represents the core habitat and area requirements to support a single or paired owls, and as such it is typically defended and not shared between pairs of the same species." The IRs found that "Research from the central Sierra Nevada has provided strong evidence that maintaining 375 acres or more of habitat with ≥ 70% canopy cover within the territory has significant benefits in terms of occupancy and site fidelity." The best available

science suggests that monitoring of spotted owl habitat conditions occur at multiple scales (i.e., activity center, territory, home range). Given the Forest Service-wide population decline, it is also important that demographic parameters are monitored using a robust study design to determine the effects of management on species viability.

In addition to the questionable usefulness of monitoring habitat conditions only within 300-acre PACs, the definition of a PAC does not meet the definition of a desired condition. The stated desired condition for a PAC is to "encompass the best available 300-acres of habitat in as compact a unit as possible." As currently worded, this desired condition will be met no matter what the conditions are within the PAC. As such, this desired condition is not written in a manner that allows progress toward achievement to be determined. In contrast, an appropriately worded desired condition for an activity center would include a description of the characteristics of high quality spotted owl activity centers (i.e., forest structure, occupancy, reproduction, etc.) that management should focus on maintaining or achieving in order to ensure species viability.

As we have already discussed, the territory scale is of significant management importance to the species. We ask that a desired condition addressing spotted owl territories be added with a corresponding question about the extent to which desired condition is being met. The desired condition could be based on the following information from the IRs:

> Desired conditions for a 1000-ac territory are the following:
>
> - ≥ 40% (400 ac) with >70% canopy cover (or best available – see recommendation 3b)
> - Additional minimum of 300 acres (30%) with > 50% canopy cover
> - The remaining area (< 300 acres) should represent fine-scale mosaic (gaps and patches of 0.03-2.0 acres) of low, moderate, and high canopy cover that create heterogeneous conditions, that are in turn conducive to supporting suitable foraging habitat and an abundance of prey
> - The condition of the territory is a function of all lands that occur within the territory circle. Minimum habitat requirements all need to be met on NFS lands, but evaluations of the condition and quality of territories include all lands.
> - The number of occupied territories is stable to increasing.

The following monitoring questions should be added to the program:

> What proportion of the territories meet desired conditions?
>
> What proportion of the territories meet desired conditions and are occupied?

Indicators for these questions are the proportion of the territory with stated habitat characteristics and occupancy status.

2. Fisher (SNF and SQF)

Monitoring for fisher is limited to two questions focused on "target" habitat for fisher and the amount and distribution of black oaks. The following questions and indicators, recommended by

the Fisher Conservation Strategy (October 2015), should be included in the monitoring plan in order to evaluate the plans' ability to contribute to recovery of this species:

> Is the size and distribution of the fisher population increasing?
> Indicators: occupancy patterns from the regional monitoring program; number of suitable female home range units within each core area using the female home range template accounting system
>
> Do linkage areas support fisher movement?
> Indicators: amount and distribution of cover suitable for travel; number of safe road crossings; genetic analyses of hair samples for regional monitoring program to establish genetic mixing among subpopulations; occupancy patterns from regional monitoring program
>
> Is suitable denning habitat stable to increasing?
> Indicators: distribution of denning habitat estimated from denning model developed by Zielinski et al. (2010); distribution and abundance of large trees and snags in forest types occupied by fisher

3. Additional Species

We ask that monitoring questions be developed for several additional at-risk species: willow flycatcher, Yosemite toad, great gray owl, and sage grouse. Monitoring questions targeting these species is critical since these species are highly imperiled, have extremely low numbers of occurrences or numbers of individuals per occurrence and for which management actions such as logging, grazing, road and trail construction, and fire suppression are known stressors.

Willow flycatcher (INF, SNF and SQF): This species occurs in extreme low numbers within the plan areas, but in recent history was known to occur throughout the area. Campos et al. (2014) identified yellow warbler as having similar habitat associations as willow flycatcher. They recommend using this species as a proxy for evaluating the ability of a meadow system to support willow flycatcher. We ask that you include the following question to evaluate meadow conditions potentially suitable for willow flycatcher.

> Is the density of yellow warbler increasing in meadows historically occupied by willow flycatcher?

Monitoring of this species could be used in combination with a suite of meadow associated birds to both evaluate the ecological integrity of meadow systems and examine the improvements overtime in habitat conditions that may support willow flycatcher.

Yosemite toad and Sierra yellow-legged frog (INF, SNF and SQF): The revised forest plans are required to contribute to the recovery of all listed species. (36 CFR 219.9(b)). The plan should include plan components designed to contribute to recovery and monitoring questions to evaluate the contribution over time.

Are the population numbers increasing at each Yosemite toad and Sierra yellowed legged frog occurrence?

Are the number of occurrences of Yosemite toad and Sierra yellow-legged frog increasing?

Is the degree of wetness and hydrological function within NRV for meadows within the historic range of each species?

Is BMP 8.2 effective at limiting the presence of livestock in meadow habitat occupied developing Yosemite toads to less than 10% of this critical developmental period?

These were designed to address specific stressors identified in the programmatic biological opinion and the listing decision.

Great gray owl (SNF and SQF): Great grey owl is associated with large meadow systems in mid to upper elevations on national forest lands (Wu et al. 2015). Nesting generally occurs in large (mean = 39"; minimum about 24") conifers or hardwoods with the majority of nest trees within 800 feet of a meadow edge. Wu et al. (2015) recommend the recruitment and retention of about 1.7 snags per acre greater than 39" in diameter within 800 feet of target meadows. Loffland and Siegel 2012 also note that "This species forages by sitting and waiting on low perches over meadow vegetation. It frequently perches on the large branches that extend up from fallen trees that along the meadow edge." Based on these key habitat attributes, we ask that the following monitoring questions be included in the program.

How many large (>39" diameter) snags are recruited and maintained within 800 feet of meadow complexes of suitable size to support great gray owl?

Do meadows with historic and current records of occupancy provide significant numbers of structures for perching?

Sage Grouse (SQF and INF)

The Obama administration recently released Records of Decision and approved land management plan amendments incorporating the latest scientific recommendations to conserve and recover greater sage-grouse on public lands across the West. The Sierra Nevada forests include current and historic range for the bi-state sage-grouse, a Distinct Population Segment of greater sage-grouse that occurs along the state border in east-central California and southwestern Nevada. The new planning direction describes the following desired habitat conditions and identifies management objectives that the Inyo and Sequoia national forests should use to develop the monitoring program for managing sagebrush habitat used by bi-state sage-grouse and other wildlife.

- All lands ecologically capable of producing sagebrush (but no less than 70 percent) with a minimum of 15 percent sagebrush cover or as consistent with specific ecological site conditions.

- Invasive annual grasses dominate less than 5 percent of the area within 4.0 miles of such leks.
- Perennial grass and forb height (including residual grasses) average of at least 7 inches in sage-grouse nesting and brood-rearing habitat.
- Preferred forbs are common with 5 to 10 species present in sage-grouse nesting and brood-rearing habitat.
- No conifers or tall structures within 1 mile of the center of sage-grouse leks, and conifer cover less than 5 percent of habitat within 4 miles of leks, excluding old trees, culturally significant, actively used by special status species, and old growth juniper stands.
- Anthropogenic activities and other disturbance, including wildfire, prescribed fire and vegetation treatments, affect three percent or less of essential (priority) sage-grouse habitat.
- Increasingly rare big sagebrush communities (used by sage-grouse, mule deer, and other wildlife in winter) are represented across the landscape.

(Bi-State Sage Grouse Action Plan 2012). Based on these desired conditions and our knowledge of sage grouse populations and habitat conditions in these plans areas, we ask that the following questions be included in the monitoring plan to evaluate the expectation that populations will stabilize and improve based on the recent agreements among land managers and other stakeholders.

> What is the height of perennial grasses and forbs (including residual grasses) in sage-grouse nesting and brood-rearing habitat?
>
> Have the population numbers of the White Mountain Population Management Unit (PMU) increased?
>
> What is the proportion of conifer cover within 1 mile and 4 miles of the center of the actual or predicted sage-grouse lek within the White Mountain PMU?

F. Climate Change and Other Stressors - Fire

We believe it essential to evaluate the function of fire as a beneficial disturbance process in the revised forest plans. The proposed question about fire managed for resource benefit is appropriate, but the indicators should be expanded to include the proportion of all severity classes. The second question focused on "natural fire regimes" should be reworded to include all fires and not just natural fires: "Are **fire regimes** within terrestrial ecosystems…" The indicators for this question should include fire size, proposition of fire area by fire severity, high severity patch size distribution. Fire return interval departure should not be included as an indicator unless the underlying data is updated with all fires – prescribed, unplanned ignitions managed for resource benefit, and wildfire.

Fire suppression acts as a stressor on the achievement of desired condition FIRE-FW-DC-03. Because of this, it is important to evaluate opportunities to manage fire for resource benefits that have been lost as a result of the decision to suppress the fire. We ask that the following questions be added to the monitoring program to evaluate this:

What is the proportion of natural ignitions managed for resource benefit?
Indicator: natural ignitions that are managed compared to natural ignitions suppressed

Is the extent of area affected by fire managed for resource benefit increasing?
Indicator: area of fire

This section also includes an indicator relating fire and warming climate. The question focuses on fires "becoming larger, more frequent, and more severe with warming conditions." We think this question is misguided since the plan intends fire occurrence to increase (in order for the system to become less departed) and in many cases the fire size should also increase (since suppression response often leads to small fire extent). We also find it odd to focus a question on effects of "warming climate" without also including an indicator to establish that for the period of observation, the climate actually is warming. By raising this issue, we are not questioning the observed warming trend in climate, rather we are questioning the ability to relate this to forest plan monitoring at 2, 5 10 and 15 year intervals. Also, the effects of warming must also be separated from the 7- to 15-year cycles of drought inherent to California in any evaluation of fire trends. We ask that you revise this question based on the comments above or eliminate it from the program.

III. Conclusion

Thank you for inviting comment on these early drafts of the monitoring programs for the three national forests in the southern Sierra Nevada. Collectively, our organizations have supported a variety of monitoring programs by funding scientists, support staff and other experts to design and conduct monitoring programs. We believe that monitoring is critical to the successful implementation of the revised forest plans. We also believe that multi-party development of these monitoring programs will be key to their ongoing success.

Please contact Sue Britting (britting@earthlink.net; (530) 295-8210) if you have questions about these comments.

Sincerely,

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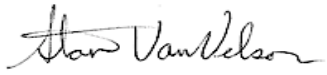

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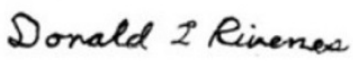

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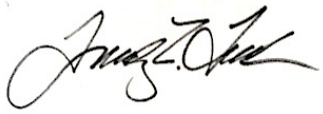

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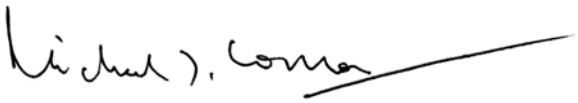

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Attachment A: Dinkey Ecological Monitoring Plan (November 21, 2013)

Attachment B: Annotated Preliminary Draft Monitoring Strategy for the Sierra National Forest

Attachment C: Coarse Filter Plan Components for Complex Early Seral Forests (CESF)

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The Center for Biological Diversity and Sierra Forest Legacy offer the following plan components to address conservation of complex early seral forests.

Although the plan components below contemplate salvage operations in limited instances, this proposal should not be interpreted as a recommendation from our organizations to conduct salvage following disturbances. In addition, below we have attempted to address wildlife and vegetation with respect to conservation of post-disturbance landscapes, but have not addressed other resource concerns, e.g., soil resources, that could be adversely affected by salvage operations.

We designed an objective to provide for CESF in the first and second decade of the plans. We propose to set this accomplishment based the amounts of CESF expected based on achievement of desired conditions. If this approach is interesting to you, we would like to discuss how one would calculate this so a table noting the objective for each forest type could be included with this plan component.

The table below presents coarse filter plan components. Based on our assessment during the development of these components, we believe that fine filter plan components are necessary for a number of wildlife species that utilize CESF habitats, including black-backed woodpecker, California spotted owl, northern goshawk, and great grey owl. We are developing these fine filter components and plan to share those with you soon.

We also have begun thinking about the monitoring to accompany these components and will share additional thoughts about that after we develop the fine filters.

Plan Component (coarse filter)	**Proposed Language**
Definition	CESF is the stage of forest development following a disturbance in a mature forest that produces significant mortality, generally greater than 50 percent of the basal area. The death of overstory trees creates openings that allow other plants and tree seedlings to reoccupy the site. The CESF stage is characterized by high densities of snags, the development of shrub cover and other native post-disturbance vegetation, downed wood, and natural conifer regeneration. This stage is allowed to develop unassisted except for the use of prescribed fire.
Desired Condition	1) The percentage of the forested landscape that is complex early seral forest habitat is well distributed and within the range of natural variation for fire and other disturbance processes. Note: Ecosystem components for each forest type would be based on the best available science information.

Plan Component (coarse filter)	Proposed Language
	2) The percentage of post-fire areas composed of high severity and moderate severity burned forest is within the range of natural variation to provide complex early seral forest habitat and forest heterogeneity (not including plantations that burn at high severity). **Note:** Ecosystem components for each forest type would be based on the best available science information.
	3) High severity patch sizes and the percentage of the post-fire area composed of larger high severity patches is within the range of natural variation to provide a range of patch sizes that will support viable populations of wildlife that thrive in these habitats (i.e., black-backed woodpecker and other post-fire associated birds).
	4) The duration of CESF stage is moderated only by forest type, site conditions, and appropriate disturbance regimes, and results in a biologically diverse progression of forest development.
	5) Cavities for secondary cavity nesters are sufficiently abundant and well distributed to support birds and other animals that depend on them.
Objective	1) The total amount of complex early seral habitat for each forest type has increased by X percent over 10 years and X percent over 20 years. **Note:** Set values based on current condition and expected disturbance frequencies in the desired conditions for specific forest type.
	2) Fifty percent of the CESF created in the first decade of the plan will be treated with prescribed fire in the second decade of the plan and consistent with the fire regime for the forest type.
Standard	1) Except to address hazard trees, no salvage logging, herbicide use to reduce competition with conifer seedlings, or reforestation shall occur in areas that meet the desired conditions for complex early seral forest or are important to sustain wildlife.
	2) Except to address hazard trees, no trees with green needles shall be salvage logged. Note: This standard applies to all post-wildfire environments.
	5) Snags and other fuels may be managed in strategic areas identified specifically to provide for firefighter safety as part of a landscape-wide and long-term prescribed fire program.
	6) Outside of strategic areas identified specifically to provide for firefighter safety as part of a landscape-wide and long-term prescribed fire program, no standing dead trees shall be felled or downed wood shall be piled and burned or otherwise removed from areas that meet the desired conditions for CESF or are important to sustain wildlife.
Guideline	1) When salvage logging does occur after meeting desired conditions and accounting for wildlife needs, 20 percent of the area of each unit should be composed of snag retention patches to enhance structural complexity and biodiversity.

Plan Component (coarse filter)	Proposed Language
	2) Snag retention patches should be designed based on the following criteria: a. Vary the patch sizes from 0.5 acres to 10 acres; b. Shapes of patches should be variable, e.g., circular, elongated or connected stringers; and c. Intervening areas outside of patches would retain trees scattered throughout, specifically 8-10 non-commercial trees (10" to 18" dbh with the upper size determined by commercial value of the tree)
	3) Snag retention patches should be located based on the following criteria: a. Large (greater than 20 inches dbh) pre-fire snags present (e.g., look for the broken tops or hollows); b. Large fire killed (greater than 24 inches dbh) sugar pine, ponderosa pine, Douglas fir present, and followed by other species (in that order of priority); c. Very high density of medium sized snags (12 to 24 inches dbh); and d. Presence of vigorous natural herb/shrub/conifer regeneration.
	4) To address safety, tree falling should be limited to trees within 1.5 tree lengths of roads or other factors that trigger falling of hazard trees. Retain salvaged trees as down wood to meet desired conditions.
	5) Allow natural regeneration to occur within 2,000 feet of green forest.
	6) When necessary, management of competing shrubs in replanted areas should be limited to hand control.
	7) Beyond 2,000 feet and when natural regeneration is not occurring, reforestation should be designed to create founder forests with small planted areas (<2 acres) of variable shape within a larger (10-acre) unplanted area.
	8) When a wildfire or portions of a wildfire meet desired conditions, the Public Affairs Program should identify the benefits of disturbance to wildlife and biodiversity in press materials and on the forest's website.