

## CONSERVATION OF SPECIES AT RISK

### ISSUE STATEMENT

The Sierra Nevada is home to a wide variety of plants and wildlife, many of which are special status species (see Appendix B for a listing of special status species in the Sierra Nevada). There are 572 vertebrate species that inhabit the Sierra Nevada and Cascades region during some portion of their life cycles, including 61 fish species, 37 amphibians, 46 reptiles, 293 birds, and 135 mammals (California's Wildlife 2007). Eighty-eight plant communities and more than 3,500 plant species occur within this region (CWWR 1996). The California Floristic Province, which includes the Sierra Nevada, has been cited as a hotspot of biodiversity and important to the conservation of global biodiversity (Mittermeier et al. 1998). This diversity of flora and fauna reflects the diverse habitat types found in the Sierra, such as old growth forests, montane meadows, sagebrush scrub, mixed-conifer/hardwood forests, and riparian corridors.

Several major stressors have altered Sierran ecosystems from historical conditions, such as forest management activities including timber harvest, habitat fragmentation, excessive livestock grazing, aggressive fire suppression, human population growth and land development, illegal off-road vehicle use, disease, invasive species, and climate change.

A recent study that modeled climate change and its effects on California's flora determined that two-thirds of our state's endemic plant species will suffer an 80 percent reduction in geographic range by the end of the 21st century, and that the Sierra Nevada range would be particularly hard hit (Loarie et al. 2008). It is not likely that many plant species will be able to adapt in time to avoid extinction, given the tremendous reductions in suitable habitat and regeneration rates of rare species today. The study underscores the urgency to preserve and protect rare species and their habitats, use managed fire when appropriate and where species can

benefit, and replenish now depleted seed banks. Other climate change related threats include loss of habitat from increases in uncharacteristic fire and invasive species expansion.

The Forest Service has affirmed the relationship between native plant diversity and the viability of associated species. For example, in *Every Species Counts: Conserving Biological Diversity*, the agency acknowledges that "[t]he extinction of even a single plant species may result in the disappearance of up to 30 other species of plants and wildlife" (USDA Forest Service, 1993).

Wildlife faces harm from a broad range of threats that often include impacts on private lands that are intermixed with or adjacent to national forest lands of the region. With national forest land managers only able to control what occurs on federal lands, Forest Plan revisions must set the highest standards for ensuring persistence and recovery of special status species.

Past and current logging practices and altered fire regimes have greatly changed the developmental patterns of vegetation to the detriment of associated species and ecosystem functions (Franklin and Fites 1996, McKelvey et al. 1996). Habitat fragmentation is a major threat. Fragmented habitats are more vulnerable to many forms of ecological stress including fire and drought, which are more severe on forest edges (Laurance and Cochrane 2001). Degradation of mountain meadows and riparian vegetation has negatively impacted species that require such habitats. Introduction of non-native trout has caused declines in native aquatic species (California's Wildlife 2007).

In the past, a lack of landscape level planning of timber harvests led to an alarming loss of old forests on national forest lands (Ecological Society of America 2000). The Forest Service has come a long way since then. Indeed, the Pacific Northwest Region recently completed multi-scale species assessments in support of their forest plan revisions. These assessments were based on the principles of

science and integrated information on habitat use and vegetation to create new tools to aid species management. For species such as the American marten, which are sensitive to habitat loss and fragmentation, habitat connectivity was analyzed at the state, national forest and watershed scales. This science-based analysis will help national forests in Oregon address species habitat needs and risk factors in order to sustain populations. The Forest Service should engage scientists and other experts to create science-based assessments and tools to support the forest planning process and viable wildlife populations in the Sierra Nevada. An example of such an approach is the recent agreement among the Forest Service and conservation groups to undertake an independent peer-review of recently adopted management indicator species and monitoring plan.

Current management for most forest carnivores and raptors is inconsistent between national forests in the Sierra Nevada. Sufficient information on habitat use by forest carnivores and raptors exists to identify a management strategy designed to conserve and restore these species. The targeted forest carnivores are generally wide-ranging species that are dependent on late successional forest ecosystems for habitat (Verner et al. 1992, Graber 1996). Because of their mobility and requirement for unfragmented habitat, an integrated, rangewide strategy is needed to address their habitat needs. A managed reserve system that is linked by suitable dispersal habitat could be designed to meet the needs of forest carnivores and conserve and restore late successional old growth forests. Such a managed reserve would also contribute to the habitat needs of raptors, such as the California spotted owl, northern goshawk and great gray owl, by providing suitable foraging and/or nesting habitat.

California's comprehensive wildlife conservation strategy, *California Wildlife: Conservation Challenges*, recommends that federal agencies partner with the state and work with local governments to secure sensitive habitats and key

habitat linkages (Wildlife Health Center, U.C. Davis 2007). This would include an inventory and evaluation of sensitive wildlife habitat and linkage areas, incorporation of habitat linkages and other identified key habitats into conservation plans, and adaptive management provisions to protect important wildlife linkages as they are identified; and creating partnerships with state and local land managers to prioritize and secure linkages and other priority habitats that are not currently protected. Furthermore, the state wildlife action plan recommends that federal, state and local agencies, along with nongovernmental organizations, support scientific studies to identify key wildlife habitat linkages throughout the state in an effort to address habitat fragmentation and avoid the loss of key wildlife corridors. The South Coast Missing Linkages Project<sup>1</sup> has identified key wildlife corridors in South Coast Region. A similar effort is needed in each region of the state, including the Sierra Nevada.

An ecosystem-based landscape conservation strategy should be a regional level responsibility to ensure scientifically credible designs are applied across jurisdictions rather than forest-by-forest strategies. As part of this effort, the agency should work to maintain wildlife viability across a larger biogeographical region by maintaining and restoring landscape connectivity and protecting core habitat. This must include requirements for monitoring of the status and trends in the conditions or characteristics of ecosystem diversity, including the conditions that support focal species and species of concern, as well as monitoring of the populations of focal species and species of concern. Monitoring of habitat cannot stand alone, but must be validated with actual population data in order to ensure that the Forest Service is achieving its species diversity and viability goals.

The Sierra Nevada provides a tremendous opportunity for the Forest Service to adopt a robust ecosystem-based, landscape level conservation strategy. National forests represent the majority of

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<sup>1</sup> See <http://www.scwildlands.org/projects/scml.aspx>

land in the Sierra Nevada. These forests must be managed with the goal of protecting rare plant and wildlife diversity and viability, as well as species' ability to adapt to changing environmental conditions. Land managers are responsible for sustaining native biodiversity and are obligated not to put any species at risk of extinction (Noon et al. 2009). In other words, they must manage in a way that benefits and sustains multiple species. This includes ensuring viability of special status species while keeping common species common. The Forest Service must act to reduce stressors that negatively affect plants and wildlife at multiple scales, identify species at risk, adopt specific conservation measures and fully implement recovery plan recommendations. If pursued diligently and executed properly, declining trends for species at risk will be reversed and viable wildlife and rare plant populations will flourish throughout the national forests of the Sierra Nevada.

#### **POLICY ACTIONS NEEDED**

##### ***Proposal for Revision to Forest Plan Direction***

**A. Desired Condition.** *The following statements represent the desired future condition of the landscape and may not reflect the current conditions.*

Desired Condition SAR-1. The distribution and abundance of native species and habitats is influenced by naturally occurring biophysical disturbances and changes in the ecosystem.

Desired Condition SAR-2. Human caused disturbances do not occur at a scale and frequency that adversely affects the viability of native species or the overall persistence and quality of habitats in the planning area.

Desired Condition SAR-3. Aquatic-riparian habitats and montane meadows have a high ecological function, include key structural attributes and support the expected aquatic-riparian dependent species.

Desired Condition SAR-4. High quality home ranges and dispersal habitat for forest carnivores, such as fisher, American marten, Sierra Nevada red fox, and wolverine, are distributed across the landscape in a pattern that allows the movement of these species and thereby facilitates breeding among individuals.

Desired Condition SAR-5. High quality habitat for raptors, such as California spotted owl and northern goshawk supports their preferred prey species as well as mature forests to support productive nest sites. Habitat of the California spotted owl continues to be linked with that of the northern spotted owl on the Lassen and Modoc national forests. Each of these species is well distributed throughout its historical range.

Desired Condition SAR-6. Species invasions, promoted through simplification and homogenization of forest habitats, are slowed and minimized through habitat improvement for specialists like the California spotted owl. Forest stands that have been highly modified from prehistoric conditions are restored to diverse old-growth forest status at sufficient levels to maintain species integrity and viability.

#### **B. Objectives**

Objective SAR-1. Region-wide consistency in the methods and criteria used to evaluate habitats of wildlife, fish, management indicator, sensitive, and threatened and endangered species during land and resource planning is achieved on each of the Sierra Nevada national forests.

Objective SAR-2. Management strategies are consistent among the national forests and based on current knowledge of the habitat needs for species of concern, including focal, sensitive, threatened and endangered species.

Objective SAR-3. Landscape analyses identify the variety of important wildlife attributes, including:

- Areas important for providing habitat connectivity
- Important structural complexity, including dead trees, snags and fallen logs
- Riparian and aquatic ecosystems
- Disturbance processes needed to maintain or develop habitat structures
- Concentrations of endemic species

These analyses evaluate existing conditions, identify opportunities to maintain or restore conditions, and set priorities for action to species with the highest risk of decline or threat.

Objective SAR-4. Sierra Nevada national forests' management principles include the restoration and maintenance of connectivity in the forest landscape; habitat diversity across the forest landscape; structural complexity in forest stands, including dead trees, snags and fallen logs; and the integrity of riparian and aquatic ecosystems.

Objective SAR-5. Improved habitat quality and connectivity has resulted in the spread of fisher northward from the southern Sierra. Through this dispersal process, the fisher population on the southern forests is no longer isolated from populations in the Klamath Region and beyond.

Objective SAR-6. Habitat and population monitoring of special status species is undertaken as specified in science-based monitoring plans, and management direction adapts to the results acquired by monitoring efforts. If monitoring indicates uncertainty with regard to management effects on a protected species, management actions and plans should be revised with a more conservative approach until effects are known.

Objective SAR-7. Species are selected for monitoring which maintain significant life-cycle functions on federal lands and their dependence of

national forest lands is documented in the forest plan record.

### **C. Standards**

#### ***General Standards***

Standard SAR-1. Forest Service planners adhere to population viability objectives unless and until they have made a scientific determination that conditions beyond Forest Service authority make it impossible to maintain a population's viability.

Standard SAR-1. Complete surveys in suitable habitat for threatened, endangered or sensitive species prior to making management decisions for site-specific activities that may affect such suitable habitat.

Standard SAR-3. Vegetation management projects must specifically define how the project design will support the disturbance regimes that create habitat conditions for species dependent on snags, logs, burned landscapes, frequent fire, etc. for their persistence.

Standard SAR-4. Ground disturbing projects affecting species at risk in all allocations except Community Zone (CZ) must be designed to improve habitat conditions or improve the likelihood of species persistence.

Standard SAR-5. Implement conservation measures identified in Appendix A for the noted species.

#### ***Species Specific Standards and Conservation Measures***

Species specific standards and conservation measures are present in Appendix A for the species listed in Table IV E-1.

Table IV E-1. Species for which conservation measures have been designed and are presented in Appendix A.

Species Group	Common Name	Scientific Name
Fish	California golden trout	<i>Oncorhynchus mykiss aguabonita</i>
	Eagle Lake rainbow trout	<i>Oncorhynchus mykiss aquilarum</i>
	Goose Lake redband trout	<i>Oncorhynchus mykiss subsp</i>
	Hardhead	<i>Mylopharodon conocephalus</i>
	Kern brook lamprey	<i>Lampetra hubbsi</i>
	Lahontan cutthroat trout	<i>Oncorhynchus clarki henshawi</i>
	Mountain sucker	<i>Catostomus platyrhynchus</i>
	Owens speckled dace.	<i>Rinichthys osculus. subsp</i>
Introduced aquatic	American bullfrog	<i>Lithobates catesbeianus</i>
	Bluegill	<i>Lepomis macrochirus</i>
	New Zealand mudsnail	<i>Potamopyrgus antipodarum</i>
	Quagga mussel	<i>Dreissena rostriformis bugensis</i>
Amphibians	Mountain yellow-legged frog	<i>Rana sierrae and R. muscosa</i>
	Yosemite toad	<i>Bufo canorus</i>
Mammals	Black bear	<i>Ursus americanus californiensis</i>
	Pacific fisher	<i>Martes pennanti</i>
	American marten	<i>Martes americana</i>
	Wolverine	<i>Gulo gulo</i>
Birds	Black-backed woodpecker	<i>Picoides arcticus</i>
	California spotted owl	<i>Strix occidentalis occidentalis</i>
	Great gray owl	<i>Strix nebulosa</i>
	Northern goshawk	<i>Accipiter gentilis</i>
	Pileated woodpecker	<i>Dryocopus pileatus</i>
	Willow flycatcher	<i>Empidonax traillii</i>

Table IV E-2. Species for which conservation measures will be developed and presented in the electronic version of Appendix A posted on [www.sierraforestlegacy.org](http://www.sierraforestlegacy.org) by June 2013.

Scientific Name	Common Name	Reason for Inclusion
<i>Centrocercus urophasianus</i>	Greater sage grouse	Species at risk

### D. Regionwide Land Allocations

The following land allocations have been defined for species at risk. See Appendix A for the standards that apply to each land allocation.

Table IV E-3. Land allocations for species at risk.

Land Allocation	Definition	Management Objective
Protected Activity Center (PACs)	Designation around known nesting sites for California spotted owl (300 acres), northern goshawk (200 acres), and great gray owl (50-200 acres). Inclusion in the PAC of the area within 300 feet of human structures is avoided.	Provide habitat conditions to support successful reproduction. Treatments of PACs, when allowed, must be monitored to assess effects to target species.
Home Range Core Area (HRCAs)	Area around California spotted owl nest site and including the PAC. Size ranges from 600 acres to 2,400 acres depending on location in the Sierra Nevada.	Maintain high quality foraging and nesting habitat. Retain greater than 70% canopy cover in close proximity (up to ½ mile distance) to the PAC or nest stand.
Forest Carnivore Den Sites	Den site buffer (700 acres for fisher; 100 acres for marten) designated around known maternal or natal dens.	Limit disturbance during denning (limited operating period). Retain habitat conditions that support denning, such as over-fisher cover, large down wood, complex understory, and snags. Limit management actions to the reduction of surface and ladder fuels to meet fuel objectives.
Yosemite Toad (YT)	Habitat around sites with YT including wet meadows with standing water and saturated soils, streams, springs, important upland habitat, and habitat identified as “essential habitat” in the conservation assessment for the Yosemite toad.	Provide habitat conditions to support successful reproduction, migration and persistence. Maintain hydrologic function of meadow system. Limit human uses in areas not currently in excellent condition.
Willow Flycatcher: Occupied and Emphasis (WF)	<b>Occupied habitats</b> are meadows or riparian sites with documented willow flycatcher.  <b>Emphasis habitat</b> is defined as meadows larger than 15 acres that have standing water on June 1 and a deciduous shrub component.	Provide habitat conditions to support successful reproduction and persistence. Limit human uses in areas not currently in excellent condition. Maintain hydrologic function of meadow system.

***Recommended Actions at the National Forest Level Not Directly Addressed in the Forest Plan***

- The Forest Service, in conjunction with state and local agencies and nongovernmental organizations, should support scientific studies to identify key wildlife habitat linkages throughout the state in an effort to address habitat fragmentation and avoid the loss of key wildlife corridors.
- Partnerships with state and local land managers should be created to prioritize and secure linkages and other priority habitats that are not currently protected.

***Recommendations for New Regional Direction or Policy***

- Ecosystem-based landscape conservation strategies should be a regional level responsibility to ensure that scientifically credible designs are applied across jurisdictions rather than forest-by-forest strategies. The Regional Office should adopt a conservation strategy for the Sierra Nevada region that emphasizes how to address habitat connectivity among the national forests in the revision process and provides direction, oversight and resources for restoration and enhancement of wildlife migration corridors that cross individual forest boundaries.
- Specific objectives and standards for focal species, sensitive species, species of conservation concern, and threatened and endangered species are included in each Forest Plan.
- Sensitive species lists should be reviewed and updated by independent scientists. This information should be integrated into the bioregional assessment and reviewed every five years.

- Focus research efforts on the status of late-succession/old forest-dependent species not adequately monitored by the breeding bird survey approach including: spotted owl, goshawk, flammulated owl, Northern pygmy owl, long-eared owl, Northern saw-whet owl, Vaux's swift, red-naped sapsucker, black-backed woodpecker, willow flycatcher, chestnut-backed chickadee, and varied thrush (Siegel and DeSante 1999).

***Additional Recommendations***

- The State of California should provide scientific and planning assistance and financial incentives to local governments to develop and implement regional multi-species conservation plans for all of the rapidly developing areas of the Sierra Nevada and Cascades.
- The Sierra Nevada Conservancy should develop a program, closely coordinated with federal, state and local wildlife conservation planning efforts, that prioritizes areas for acquisition and easements based on the needs of wildlife.
- In areas where substantial development is projected, the state and federal land management and wildlife agencies should identify and protect from development those critical wildlife migration or dispersal corridors that cross ownership boundaries and county jurisdictions.
- Public forest lands should be managed to maintain healthy ecosystems and wildlife diversity, including thinning to restore fire-resilient and diverse habitats and reducing the risk of ecologically uncharacteristic wildfire. State and federal forest managers and wildlife agencies should work cooperatively to develop a vision for the future forest condition in cooperation with other experts from the science community.

- State and federal forest managers and state and federal wildlife managers should cooperatively develop timber-harvest cumulative-impact standards, including limitations on clearcutting, for each watershed or group of adjacent watersheds of the Sierra, Cascades and Modoc regions to protect aquatic ecosystems and conserve wildlife habitat.
- State and federal wildlife agencies and federal land managers should jointly develop and implement grazing strategies for the Sierra Nevada and Cascades Region to reduce or eliminate livestock grazing on sensitive habitats to restore the condition of meadow, riparian, aspen and aquatic habitats.

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