Proposed Forest Plan Amendments

2011 Wildlife Conservation Strategy Phase 1: Forested Biological Community

Environmental Assessment

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Sawtooth National Forest

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Appendix 1

Conservation Concepts
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1. Conservation Concepts[1]

Fully disclosing the conservation concepts used in the Wildlife Conservation Strategy (WCS) and their purpose is important to Forest managers because the concepts provide (1) the scientific basis for predicting species and habitat responses to conditions where data are incomplete (e.g., locations, scales, management actions), including projections into the future (Miller et al. 2004); (2) benchmarks for evaluating and comparing outcomes of proposed management actions (MacNally et al. 2002); and (3) a framework for developing alternative management actions for habitat restoration (Palik et al. 1997; adapted from Schulte et al. 2006; Noon et al. 2009). Concepts used to support the WCS amendment and that promote desired representative, resilient, and redundant habitat patches across landscapes include the following:

1.1 Coarse Filter

The coarse-filter concept helps assess the conservation value of broad- or midscale ecosystems and landscapes throughout a bioregion (Noss 1987; Hunter 1991; Haufler 1999). The concept suggests that systematic conservation—including, where needed, restoration—of representative ecosystems and their inherent disturbance processes should conserve the vast majority of species without needing to consider each species individually. An adequate coarse-filter analysis requires understanding the distribution of habitats, the frequency and intensity of disturbance processes influencing those habitats, and the implication of human-induced changes on landscapes relative to historical landscape patterns and processes. This analysis can be used to chart a course for conserving and restoring these systems (Haufler et al. 1996; Samson et al. 2003).

Coarse-filter units of macrovegetation were developed for analysis using classification systems that considered groups or communities of vegetation appropriate for midscale planning. Macrovegetation was characterized using Potential Vegetation Groups (PVGs), tree size class, and canopy cover class. Current vegetation conditions and trends related to structure, function, and change were established using macrovegetation. Fire regimes were used to set context for macrovegetation within landscapes. Spatial patch and pattern by fire regime, described in Appendix A of the Forest Plan (USDA Forest Service 2011, Appendix 2), is used to address macrovegetation.

The coarse-filter concept ties directly to the following conservation principle identified in Chapter 1 of this environmental assessment (EA) and to proposed updates to Appendix E of the Forest Plan found in Appendix 2 of the EA (USDA Forest Service 2011):

- Species well distributed across their range are less susceptible to extinction than species confined to small portions of their range.

1.2 Mesofilter

In the Forest Plan this concept is considered in Appendix A (USDA Forest Service 2011, Appendix 2). A “mesofilter” lies conceptually between a coarse filter and fine filter. The core idea is that by conserving key habitat elements that are important to species but too fine to address through the coarse filter, many species will be protected without needing to consider them individually (Hunter 2005). Examples of the mesofilter concept in action include providing direction to conserve logs and snags, riparian vegetation, vernal pools, seeps, and rock outcrops. Mesofilter elements for the WCS amendment were identified through fine-filter assessments. Conservation of these elements was addressed in the Forest Plan in Appendices A (Vegetation), B (Aquatic Resources), and E (Terrestrial Wildlife Habitat). These elements include legacy trees, snags, logs as a subset of coarse woody debris, native shrub and herb communities, and vegetation in riparian areas and other wetlands.

1.3 Fine Filter

Fine-filter conservation addresses individual species that are assumed to be inadequately protected by coarse- and/or mesofilter conservation. Typically these species are threatened or endangered species listed under the Endangered Species Act or regionally sensitive species determined by the Intermountain Regional Forester. Species conservation is achieved by either protecting populations from direct, negative impacts or by conserving and restoring their habitat.

Within the WCS framework, species assessments were used to check the adequacy of the coarse-filter approach and determine which, if any, species' specific habitat needs may need to be addressed through a fine-filter approach (Haufler et al. 1996; Andelman et al. 2001; Noon et al. 2009). Where the coarse and/or mesofilters are determined to be inadequate, additional Forest Plan management direction (typically standards, guidelines, and/or specific monitoring requirements) was added. Additional management direction that has been added to supplement the coarse filter and mesofilter for threatened, endangered, proposed, and candidate (TEPC) species is located in the TEPC section of Chapter 3 of the Forest Plan. Additional direction for Region 4 sensitive species is located in the Wildlife Resources and Soil, Water, Riparian, and Aquatic Resources (for sensitive fish species) sections of Chapter 3 of the Forest Plan. Specific monitoring elements that have been added are located in Chapter 4 of the Forest Plan (USDA Forest Service 2011, Appendix 2.)

1.4 Reserves

Reserves are areas where the primary management objective is to protect or conserve existing ecosystems and populations from direct human modification (Noss and Cooperrider 1994). The concept focuses on designing and managing a system of reserves that will maintain native biota and historical disturbance processes. Within the WCS, "passive" management prescription categories (MPCs) address much of the reserve concept and include inventoried roadless areas (IRAs). These areas are of particular value to family 3 species (e.g., wolverine [*Gulo gulo luscus*]).

The reserve concept ties directly to the following conservation principle identified in Chapter 1 of the EA and to proposed updates to Appendix E of the Forest Plan found in Appendix 2 of the EA (USDA Forest Service 2011):

- Blocks of habitat that are in areas where direct and indirect effects of human disturbance are low are more likely to provide all elements of a species' source environment than areas where it is not.

1.5 Matrix Management

Species and their habitats need to be addressed at appropriate spatial scales. Lindenmayer et al. (2008) recognized that no single scale can sufficiently address the matrix of habitats and habitat elements necessary for any species. Management requisites for species should be addressed at scales spanning the individual home range to the species geographical range, and the context of habitat resilience, redundancy, and representation needs to be articulated at these various scales (Johnson 1980).

Matrix-based conservation emphasizes that biodiversity and ecological function can be sustained in working landscapes, though attention must be given to maintaining habitat across the full range of spatial scales, from “logs to landscapes” (Lindenmayer and Franklin 2002). While reserves are an important part of matrix management, equal emphasis is placed on managing nonreserve areas embedded within the “matrix” by sustaining important ecosystem structures, processes, and patterns.

Within the alternatives considered in this amendment process, matrix management is reflected through the mix of management prescription category (MPC) allocations within alternative strategies being considered. The relationship created between the desired conditions, the resource management objectives, and emphasis within the various MPC allocations provides the framework from which ecosystem structure, processes, and patterns would be sustained across landscapes.

1.6 Emulating Natural Disturbances

The fundamental idea behind this concept is that species have evolved within historical disturbance regimes and will be better able to cope with human-induced disturbances if the ecosystems they depend on closely resemble those in which they evolved (Hunter 1990; Landres et al. 1999). Designing forest management activities so that their outcome resembles conditions that would occur from historical disturbances in terms of tree size class, canopy cover, species composition, spatial patch and pattern, and processes is an example of emulating natural disturbances (Perera et al. 2004). These various vegetation elements and disturbance processes we are to emulate are addressed in Appendix A of the Forest Plan (USDA Forest Service 2011, Appendix 2):

1.7 Diversity Begets Diversity

This concept proposes that a diversity of ecosystem conditions will provide habitat for a diverse array of species (Harris 1984; Hunter 1990) and that complex and heterogeneous conditions are sought at all spatial scales. For example, a landscape covered by a patchwork of young and old forests, both coniferous and deciduous, is expected to provide habitat for far more species than any one of these forests would alone. Management actions that contribute to achieving desired or functioning conditions described in Appendices A and B of the Forest Plan address this concept (USDA Forest Service 2011, Appendix 2).

1.8 Patchworks

Landscapes are arrangements of distinct, interacting patches (Forman 1995). The patchwork concept suggests that the size and pattern of patches are strong predictors of biodiversity (i.e., patches can be optimally arranged to conserve biodiversity) and species persistence on landscapes. The relationships between habitat fragmentation and habitat loss influence landscape biodiversity and the threshold for species persistence on those landscapes (Fahrig 2003). Fire regimes are used in Appendix A of the Forest Plan to set the context for spatial patch and pattern of patchworks across landscapes (USDA Forest Service 2011, Appendix 2).

The patchwork concept ties directly to the following conservation principles identified in Chapter 1 of the EA and to proposed updates to Appendix E of the Forest Plan found in Appendix 2 of the EA (USDA Forest Service 2011):

- Habitat in contiguous blocks is better than fragmented habitat.
- Large blocks of habitat containing large populations of species are superior to small blocks of habitat containing few individuals.

1.9 Networks

Landscapes are viewed as at least partially consisting of highly interconnected features (Forman 1995), and the network properties of connectivity and hierarchy are useful predictors of biodiversity. Conserving habitat connectivity is a critical component of ensuring species dispersal, habitat colonization, and persistence. Habitat networks are relevant for movement of wildlife and plants and have been particularly useful for understanding riverine and riparian systems. Networks are a key element of the Aquatic Conservation Strategy (ACS) and, as such, an integrated component of the WCS. The WCS also attempts to address networks through habitat maintenance and restoration priorities described in the Vegetation and Wildlife Restoration Strategy detailed in Appendices A and E. (USDA Forest Service 2011, Appendix 2).

The network concept ties directly to the following conservation principles identified in Chapter 1 of the EA and to proposed updates to Appendix E of the Forest Plan found in Appendix 2 of the EA (USDA Forest Service 2011):

- Habitat in contiguous blocks is better than fragmented habitat.
- Blocks of habitat close together are better than blocks far apart.
- Interconnected blocks of fragmented habitat are better than isolated blocks, and dispersing individuals travel more readily through habitat resembling that preferred by the species in question.

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