

Appendix E – Wildlife Species Viability

Introduction

The status of wildlife populations, as we currently understand their distribution on the Helena National Forest (HNF), and their habitats are examined in this section in order to address Forest Plan and Agency requirements that: (1) “viable populations of existing native and desirable non-native plant and animal species are maintained” (Forest Plan II/17) and (2) management activities do not cause a trend towards listing for species that have been identified as sensitive on the Region 1 Sensitive Species List.

Summary of Population Viability Status

Forest Service Region One defines a viable species as “consisting of self-sustaining populations that are well distributed throughout the species range.” Self-sustaining populations are “sufficiently large, and have sufficient genetic diversity to display the array of life history strategies and forms that will provide for their persistence and adaptability in the planning area over time” (Samson 2006). Table E- 1 summarizes the type of data available for each MIS and select sensitive species in the Project area. Ratings for other sensitive species not included in the following table can be found in the Wildlife Resource Report and Biological Evaluation.

Table E- 1. Primary Information Sources for Determining Population Viability of MIS and Sensitive Species in the Stonewall Project area and the HNF

Indicator/ Sensitive Species	Presence/ Absence Surveys by Protocol	Presence/ Absence Surveys Random	Intermittent Species Observations	Comprehensive Habitat Modeling	R1 Conservation Assessment	Habitat Surveys
Elk	X			X		X
Fisher	X			X	X	
Mule Deer	X			X		X
American Marten	X			X	X	
Northern Goshawk	X	X	X	X	X	X
Pileated Woodpecker	X	X	X	X	X	X
Hairy Woodpecker	X	X	X	X		X
Black-backed Woodpecker	X	X	X	X	X	X
Flammulated Owl	X			X	X	X

Viability ratings for elk and mule deer are based on annual tallies of individuals in the field, usually by MDFWP. Extensive data on suitable habitat is also available for elk and mule deer, through Forestwide habitat modeling and systematic field surveys. Ratings for goshawk and hairy woodpecker are based on wide-ranging, but less complete, population surveys in the field. This information is sufficient to indicate the general magnitude and distribution of populations in the project area and throughout the Forest Plan area. Availability of suitable habitat has been estimated through Forestwide habitat models, systematic habitat surveys, or both.

Ratings for marten and pileated woodpecker are more problematic. Population information comes primarily through tallies and mapping of fortuitous and, occasionally, targeted field observations. This demonstrates that the species continue to inhabit the planning area, if not the project area, and it provides a rough indication of how they are distributed. But it is a crude estimator of viability. Conversely, Forestwide habitat models and general field surveys provide a basis for assessing habitat sufficiency.

Based on discussion in the Northern Region Viability Protocol (Samson 1997), the Draft White Paper on Managing for Viable Populations (USDA 2001), and a review of the Northern Region Viability Committee Report (Samson 1997 Appendix B), the following qualitative rating system was applied to MIS populations and habitats as a means of assessing population viability (table E- 2).

Table E- 2. Rating system for MIS populations and viability

Rating	Population Distribution and Condition within Potential Habitat	Potential for Population Interaction and Colonization of Empty Habitat	Probability of Population Persistence over 50–100 years
5	Population widely distributed, robust, and resilient	Few limitations on population interactions	Very High: Population large, widespread, relatively stable, highly resilient
4	Population well distributed; variable population density	Some barriers to population interaction and habitat occupancy	High: Population widespread, resilient; no insurmountable decimating factors or habitat problems
3	Population may be widely but sporadically distributed; variable density within suitable patches	Barriers to interaction result in some persistently empty habitat blocks	Moderate: Population widely but sporadically distributed; key habitat may be limited or vulnerable; decimating factors a potential problem
2	Population segments localized; small but may be persistent	Population segments often isolated; limited routes for interaction and recolonization of empty habitat	Low: Population small, subject to stochastic effects; long-term availability of key habitat uncertain
1	Population segments localized, small, ephemeral	Population segments highly isolated; little possibility of interaction or recolonization of empty habitat	Very Low: Populations very small, habitat limited and unstable; highly vulnerable to stochastic effects

The ratings in table E- 3 apply to potential habitat for the HNF as a whole. In some cases, the project area contributes to maintaining viability of these populations but is not sufficient in and of itself to encompass or support a self-contained viable population or subpopulation. Given the lack of quantitative data, it is not possible to define a precise timeframe for probability of persistence. But, in general, it is intended to apply to the long term: the probability that the population would persist for 50–100 years within the Helena National Forest Plan Area (Samson 1997).

Table E- 3. MIS and sensitive species potential habitat on the HNF

Indicator/ Sensitive Species	Population Distribution Rating	Population Interaction Rating	Estimated Probability of Population Persistence	Comments
Elk	5	4	5	Elk populations on the HNF are robust. Habitat is ubiquitous. Barriers to movement are common, but no substantial blocks of elk habitat are isolated. In spite of local habitat problems, long-term viability of elk populations is not a concern.
Fisher	3	4	4	The project area is at the eastern range of fisher.

Indicator/ Sensitive Species	Population Distribution Rating	Population Interaction Rating	Estimated Probability of Population Persistence	Comments
				On the HNF fisher habitat is confined mainly to the western portion of the Forest. It is increasing as forests age, in those areas not affected by MPB. Primary habitat is interconnected by forested travel habitat. Population is widely distributed; numbers are unknown.
Mule Deer	5	4	5	Mule deer are widely distributed across the HNF. Habitat is ubiquitous. Barriers to movement are common, but no substantial blocks of mule deer habitat are isolated. In spite of local habitat problems, long-term viability of mule deer populations is not a concern.
American Marten	3	4	4	Marten habitat is patchy but widely distributed in the project area and the HNF. It is increasing as forests age in those areas not affected by mountain pine beetle. Primary habitat is interconnected by forested travel habitat. Population is widely distributed; numbers are unknown.
Northern Goshawk	4	4	4	Mountain pine beetle at the project and Forest scale is likely to reduce habitat. Goshawks are widespread on the HNF and appear well-distributed in forest habitat. Aging forest processes are likely to produce more suitable habitat than would be lost and reduced by fire and timber harvest over the long term in those areas not affected by MPB.
Pileated Woodpecker	2	2	2	Pileated woodpeckers are not common on the Forest; they are most likely at the edge of their range. Habitat is wide spread and abundant across the HNF.
Hairy Woodpecker	5	4	5	Hairy woodpeckers are common and well distributed in all forest habitats with insect-supporting trees and cavity potential on the HNF. Potential for suitable habitat persistence over the long term is excellent.
Black-backed Woodpecker	3	4	3	Occurs across the Forest in burned areas. Potential for suitable habitat over the long term is dependent upon fire frequency and intensity as well as insect outbreaks sufficient to provide a forage base.
Flammulated Owl	1	2	3	Habitat in the project area is declining due to mountain pine beetle and fire exclusion. Flammulated owls are present across the HNF as well as their habitat. Habitat is wide spread across the Forest in those areas not affected by MPB.

Samson (2005; 2006) in A Conservation Assessment of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, and Pileated Woodpecker in the Northern Region and USDA Forest Service Habitat Estimates For Maintaining Viable Populations of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, Pileated Woodpecker, American Marten, and Fisher (Samson 2005; Samson 2006) summarizes the status of viability for northern goshawks, black-backed woodpeckers, flammulated owls, pileated woodpeckers, fishers, and American martens.

- The six species considered in this analysis are ‘secure’ or ‘apparently secure’ in terms of persistence (NatureServe 2011).
- Below (and not above) a threshold of 20–30 percent of habitat amounts, effects of fragmentation (i.e., patch size and isolation) are suggested to have a negative impact on species persistence. Effects of habitat fragmentation on birds are described to be less in the western United States in comparison to those reported in seminal and numerous studies in the Midwest and east.
- No indication exists that forested ecosystems in the Northern Region have reached the 20–30 percent threshold of historic. Forested systems in the Northern Region are more extensive than in historic (approximately 1800) times (Hessburg and Agee 2003; Hessburg et al. 2005).
- Comparison of habitat required for a species-specific minimum viable population to that available indicates well-distributed habitat in far excess to that needed, given the natural distribution of species and their habitats as mapped by the Montana Natural Heritage Program, Idaho Birdnet, and the scientific literature.
- Regionwide habitat modeling for the American marten is restricted by the unavailability of sample-based information on large down woody debris and the variability evident in habitat use by martens. Site-specific models for the American marten may need to be adjusted to include resting site and nest site information (based on point observation data) which may or may not influence habitat amount estimates.

Habitat Analysis and Conclusions

Samson (2006) (updated USDA 2008) identifies critical thresholds needed to maintain population viability for selected species within the Northern Region of the Forest Service (table E- 4). Estimates derived from the Helena National Forest Intensified Grid Summary Database (June 2013) indicate that habitat for these selected species exceeds the critical thresholds identified by Samson. The models used to generate estimates are based on Samson (2005, 2006) and USDA (2008).

Table E- 4. Summary¹ of Habitat Thresholds (acres) to Maintain Minimum Viable Populations for Six Species in Northern Region on the HNF compared with Existing Conditions and Post-treatment Conditions Associated with Alternatives 2 and 4 (Based on Intensified Grid Data)

Species	Critical Habitat Thresholds from Samson (2006)	Current Habitat Estimates for the HNF based on Intensified Grid Data
Northern Goshawk	133,436 ² (nesting and foraging)	361,963 (nesting and foraging)
Black-backed Woodpecker	29,405	108,399 ³
Flammulated Owl	8,895	25,231
Pileated Woodpecker	91,923 ²	193,112
American Marten	3,459	293,064
Fisher	74,378	199,905 (summer and winter)

¹ Current habitat estimates are based on the HNF Summary Database (June 2013 Data).

² Samson (2006) critical habitat thresholds for goshawks and pileated woodpeckers does not distinguish between nesting or foraging habitat but rather provides total habitat estimates based on the respective species’ needs at the home range scale which includes both nesting and foraging habitat.

³ Estimates of black-backed woodpecker habitat are based on data contained in the the 2012 internal report *Geospatial Post-Burn Habitat Analysis – Helena National Forest*. That report indicates that there are 103,699 acres of forest within the Helena National Forest that burned between 1999 and 2010. An additional 4,700 acres have burned since 2010 (Source: Fire History spatial data located electronically at T:\FS\Reference\GIS\r01_hel\LayerFile) totaling 108,399 acres of burned forest created between 1999 and present. (Some of these burned areas may no longer provide black-backed woodpecker habitat, however.) Samson’s (2006) habitat estimates include both insect and fire-created habitats. Therefore the figures reported as black-backed woodpecker habitat on the Helena National forest underestimate the available habitat as described by Samson (2006).

Project impacts to the aforementioned species' habitats are expected to be. Therefore, habitat would remain abundant and widespread Forestwide. Viability for these species appears sound and would remain so upon implementation of proposed treatments.

Viability for other sensitive and MIS species (e.g. wolverine, elk and mule deer, hairy woodpeckers, Townsend's big-eared bats, boreal toads, and wolves) also appears sound although critical thresholds have not been identified. The size of the proposed project area is much smaller than an average wolverine home range. Elk and mule deer habitat is abundant and well-distributed across the Forest and viability is largely determined through hunting quotas, which are outside the scope of this project. Hairy woodpeckers use similar habitats as black-backed woodpeckers as well as unburned forests. Given the widespread availability of forage habitat—i.e., acres infested with mountain pine beetle—and subsequent increases in nesting habitat associated with insect-related tree mortality, abundant habitat exists Forestwide for hairy woodpeckers. Project impacts on these species are also minimal or non-existent.

References

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