THREATENED, ENDANGERED, PROPOSED, AND CANDIDATE SPECIES

Special management emphasis is given to species for which there is a viability concern. The Forest Service has a legal requirement to maintain or improve habitat conditions for Threatened, Endangered, and Proposed species under the Endangered Species Act. Administrative direction also exists to maintain or improve conditions for Candidate species for federal listing.

The U.S. Fish and Wildlife Service has not identified any critical habitat within the Forest for terrestrial species currently listed as threatened or endangered under the ESA. The NOAA Fisheries has identified critical habitat for chinook salmon. The Threatened, Endangered, Proposed, and Candidate species of the Payette National Forest, their locations, and important considerations for management are described in Table E-1.

Table E-1. Threatened, Endangered, Proposed, or Candidate Species for the Payette National Forest, as of December 2002

Type	Common Name	Status	Global Rank*	Habitat	Management Concerns
Mammal Species	Gray wolf	Experimental non-essential	G4	All PVGs	Threat of mortality
	Canada lynx	Threatened	G5	PVGs 3, 6, 7, 9, 10, 11	Vulnerability, prey availability during winter
	Northern Idaho ground squirrel	Threatened	G2	PVGs 3, 4, 5	Vulnerability, specific habitat needs
Bird Species	Bald eagle	Threatened	G4	Large trees near lakes, reservoirs or large streams	Nesting and roosting sites
Fish Species	Chinook salmon	Threatened	NA	Perennial streams	Sediment in spawning and rearing habitat
	Steelhead trout	Threatened	NA	Perennial streams	Sediment in spawning and rearing habitat
	Bull trout	Threatened	NA	Perennial streams	Sediment in spawning and rearing habitat, water temperature, habitat connectivity

*Global Rank is a system of ranking the range-wide status of species maintained by State Conservation Data Centers and Natural Heritage Programs throughout North America and several other countries. Numerical rankings range from G1 to G5, where G1 species are considered critically imperiled at the global scale, and G5 species are considered globally widespread, abundant, and secure, although there may be concerns for the viability of local populations. Many researchers believe that species ranked G1-G3 need special consideration or mitigation for management activities that may negatively affect their habitat because their long-term viability is currently a concern (Andelman et al. 2001).

NA = No available ranking from the Conservation Data Center

INTERMOUNTAIN REGION SENSITIVE SPECIES

Table E-2 shows the Intermountain Region Sensitive species that occur on the Payette National Forest. The Regional Forester's Sensitive Species List is evaluated annually to see if species need to be added or removed. The Regional Forester designates species as "Sensitive" because their population or habitats are trending downward, or because little information is available on their population or habitat trends. The primary purpose of the Sensitive species program is to conserve or restore habitat conditions for these species to prevent them from becoming federally listed under the ESA.

Table E-2. Intermountain Region Sensitive Species For the Payette National Forest, as of December 2002

Type	Common Name	Global Rank	Habitat	Management Concerns
Mammal Species	Wolverine	G4T4	All PVGs, high elevation	Vulnerability during denning
	Fisher	G5	PVGs 3, 4, 5, 6, 7, 8, 9, 10	Habitat fragmentation, snags and logs
	Townsend's big-eared bat	G4	Caves, mines, large trees	Vulnerability to disruption
	Spotted bat	G4	Caves, mines, large trees	Vulnerability to disruption
Bird Species	Northern Goshawk	G5	All PVGs, forested	Nesting territories and prey availability
	White-headed woodpecker	G4	PVGs 1, 2, 3, 5	Large snags, large trees, low tree density
	Northern three-toed woodpecker	G5	PVGs 3, 7, 8, 9, 10, 11	Sufficient snags
	Flammulated owl	G4	PVGs 1, 2, 3, 5, 7	Large snags and trees
	Boreal owl	G5	PVGs 3, 6, 7, 8, 9, 11	Sufficient large snags
	Great gray owl	G5	PVGs 9, 10	High-elevation forests with meadows
	Harlequin duck	G4	Large streams with forested riparian areas	Forested riparian areas
	Mountain quail	G5	Low-elevation shrubby riparian areas	Need low-elevation shrubby riparian areas
	Columbian sharp-tailed grouse*	G5T3	Native shrubland and grassland	Shrubby wintering areas
Fish Species	Westslope cutthroat trout	NA	Perennial streams	Sediment in spawning and rearing areas in headwater streams
Amphibian Species	Spotted Frog	G4Q	Riparian areas	Sufficient still or pond water

NA = No available ranking from the Conservation Data Center.

*Although there are no known occurrences of this species on the Forest, the close proximity of populations and habitat warrant consideration during project planning and implementation in some areas.

FOREST MANAGEMENT INDICATOR SPECIES

Table E-3 shows the Management Indicator Species (MIS) selected by the Payette National Forest. The primary reason that Management Indictor Species (MIS) are selected is because their populations are believed to indicate the effects of management activities. Other reasons are also considered (36 CFR 219.19(a)(1). By monitoring and assessing habitat conditions of MIS, managers can estimate effects on other species within similar habitats.

Table E-3. Management Indicator Species For the Payette National Forest

Type	Common Name	Global Ranking	Habitat	Management Concerns
Bird Species	Pileated Woodpecker	G4	PVGs 2-9	Sufficient large trees, snags, and down logs
	White-headed Woodpecker*	NA	PVGs 1, 2, 3, 5	Sufficient snags, and large trees with low crown density
Fish Species	Bull Trout	NA	Perennial Streams	Sediment in spawning and rearing areas, water temperature, habitat connectivity

*MIS for Management Areas 1, 2, 3, 5, 10 only.
NA = No available ranking from the Conservation Data Center.

CHANGES IN SOURCE HABITAT FOR SELECTED SPECIES

The Wisdom et al. (2000) analysis evaluated 91 wildlife species considered at risk within the Interior Columbia Basin Ecosystem Management (ICBEMP) area. This ICBEMP analysis divided the Columbia River Basin into 13 geographic units called Ecological Reporting Units (ERUs). The Payette National Forest lies almost entirely within ERU 13 (see Table E-4). Within each ERU, changes in source habitat from historic to current times were estimated, and risks factors to species or source habitat conservation were identified. Source habitat is defined as "those characteristics of macro vegetation that contribute to stationary or positive population growth" (Wisdom et al. 2000). A decrease in source habitat of greater than 20 percent was considered significant and a risk to that species long-term viability. Table E-4 shows the changes in source habitat that have occurred basin-wide and in ERU 13 for selected species in the Wisdom et al. (2000) analysis that are known or believed to occur on the Forest. Shading within the table highlights species' source habitats with a 20% or greater decrease from historical levels.

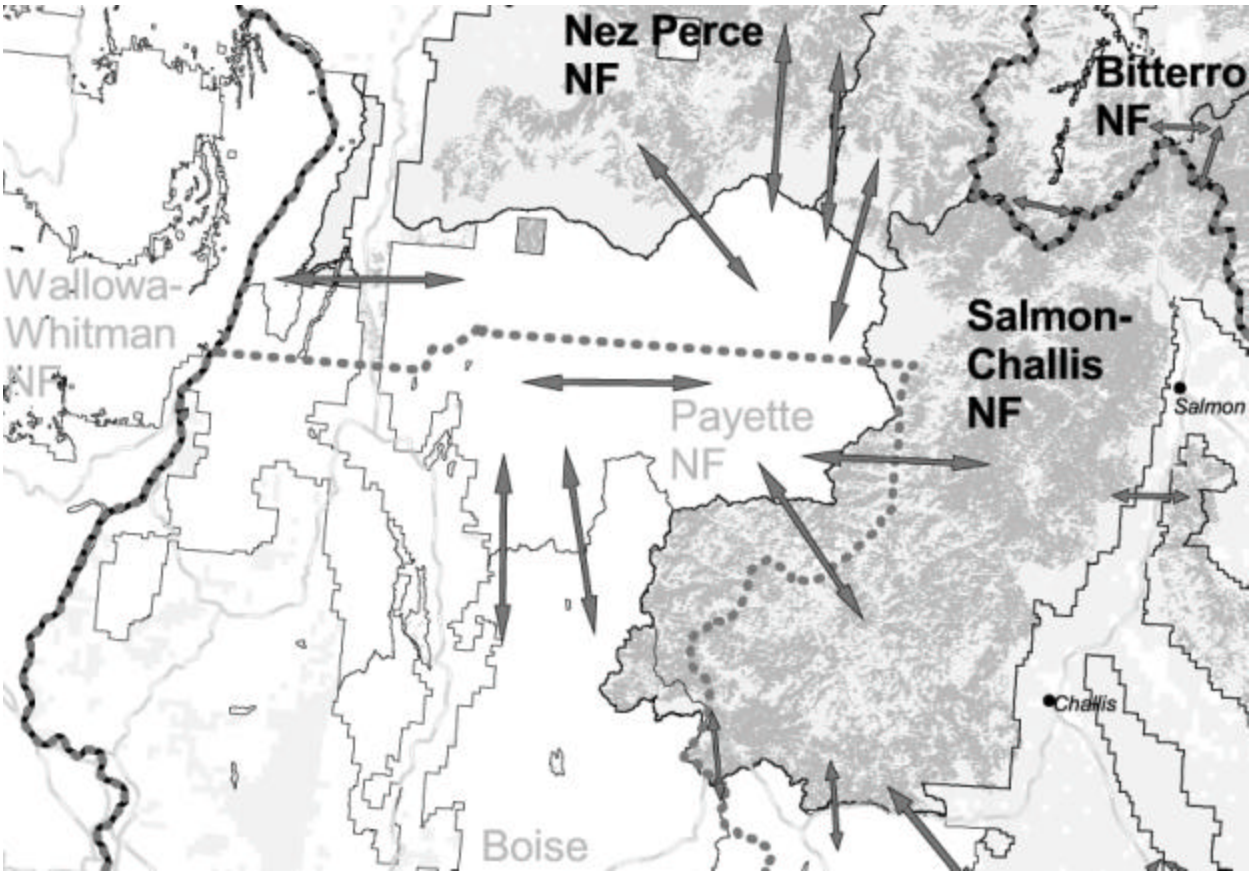
Table E-4. Changes In Source Habitat For Selected Wildlife Species That Occur within the Forest, Taken from Wisdom et al. 2000

Species	Basin Wide Change	ERU 13 Change
Canada lynx	+ 14%	+ 12 %
Gray wolf	- 16 %	- 3 %
White-headed woodpecker	- 63 %	- 61%
Pygmy nuthatch	- 67 %	- 62 %
Lewis's Woodpecker, migrant	- 83 %	- 63 %
Flammulated owl	- 56 %	- 52 %
Northern goshawk, summer	- 43 %	- 7 %
American marten	- 38 %	+ 16 %
Fisher	- 20 %	+ 35 %
Black-backed woodpecker	- 34 %	+1 %
Wolverine	+ 33 %	+ 32 %
Mountain quail	+ 16 %	- 12 %
Bighorn sheep, winter	- 49 %	- 29 %
Bighorn sheep, summer	- 41 %	- 17 %
Vaux's swift	- 23 %	+ 51 %
Pileated woodpecker	- 21 %	+ 21 %
Northern three-toed woodpecker	+ 22 %	+ 77 %
Boreal owl	- 61 %	+ 1 %
Great gray owl	- 6 %	+ 31 %
Spotted bat	- 17 %	- 18 %
Townsend's big-eared bat	- 8 %	+ 20 %
Columbian sharp-tailed grouse, summer	- 45 %	- 56 %

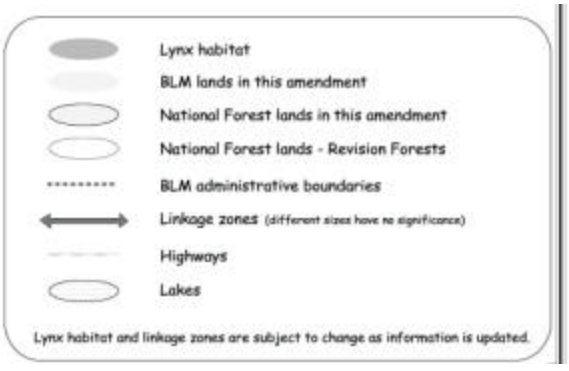
N/A = There were no available survey population records from for these species on FS administered lands within this ERU.

LYNX HABITAT LINKAGE ZONES

Figure E-1. Lynx Habitat Linkage Zones for the Payette National Forest
(From Northern Rockies Lynx Amendment Area mapping, as of September 2002)



The arrows on the map represent linkage zones.



MANAGEMENT STRATEGIES TO ADDRESS ELK VULNERABILITY TO MORTALITY, TRAVEL MANAGEMENT IMPACTS, AND SECURITY NEEDS

The following management strategies are intentionally broad and should be refined through coordination with State agencies, relative to population objectives, local field conditions, and experience with local elk populations. Land managers (biologists, planners, and line officers) should view these strategies as the foundation on which to implement elk habitat management under the Forest Plan (USDA Forest Service 1983). As there are many interacting variables, managers should evaluate each landscape on its own merits, taking into account hunter density and hunter use patterns in combination with access and forest vegetation (Weber et al. 1998). Christensen et al. (1993) provides a step-down process that can be used to coordinate Forest Plans with State strategic Plans.

When a primary issue for land management is elk security and vulnerability, emphasis should be placed on process, content and implementation of information rather than on numerical standards (Christensen et al. 1993). As pointed out by Weber et al. (1998), "It does not seem feasible to assign threshold values to act as maximum road density or minimum patch size guidelines." Nonetheless, there is information on relative road densities, and security needs that can be used as guidance.

Where maintenance of elk habitat quality, security, and/or vulnerability has been determined to be an important management consideration, open road densities, location of open roads and trails, and off-road motorized use should be evaluated to determine effects (Thomas et al. 1988). Elk management goals and objectives should be clear before imposing travel restrictions (Lyon et al. 1985). Because the response of elk to open or closed roads does vary, decisions to construct or close roads should be evaluated on a case-by-case basis (Lyon et al. 1985, Frederick 1991).

Open road density and security quality are both important when considering elk security and vulnerability during the hunting season. See Figure E-2 for display of habitat effectiveness for elk at road densities up to six miles per square mile (Lyon 1983, Lyon et al. 1985, Christensen et al. 1993). The model assumes that existing habitat contains a satisfactory array of security that provides for elk (Lyon 1979). When security and forage is less than desired, the effects of roads may be greater than displayed. Motorized traffic evokes an avoidance response by elk. Habitat effectiveness increases as the miles of road per square mile decreases.

Where the agreed upon management objective is to allow a desired numbers of bull elk to escape harvest, options include: shortening the hunting season, increasing restrictions on hunters, or providing security areas for elk through access restrictions. A combination of these options may be required. Security areas should be of the size, shape, and arrangement to meet desired elk objective and hunting opportunities. Hiding areas and security are not interchangeable components of elk habitat (Lyon and Canfield 1991). Hiding areas may be a factor in security prior to the hunting season, but it does not automatically provide security during the hunting season.

Where the objective is to have long hunting seasons, and distribute the bull harvest over the entire hunting season and maintain a desired level of mature bulls in the post-hunting-season population, guidelines should be developed for retaining or managing for elk security. For example, one recommended approach is to retain 30 percent or more of an analysis area in nonlinear blocks of secure areas equal or greater than 250 acres and equal or greater than ½ mile from motorized access (Hillis et al. 1991, Lyon and Canfield 1991). However, the number, size, and location of areas retained should be determined through use of local information and application of up-to-date information to meet desired conditions.

When addressing big game security at the local level, elk selection for wallows and licks, travel corridors and routes, forage sites, and forest stringers should also be considered. Lyon et al. (1985) point out that security and shelter appear to be the most basic habitat requirements for elk. "Productive elk habitat cannot be evaluated in separate parts." During any season it is important that all recognized components of elk habitat be considered concurrently and be managed to meet desired outcomes.

Where needed to meet management objectives, vegetation around wallows, licks, travel corridors, created and natural openings, and forest stringers should be managed to maintain security (i.e. dense vegetation, or security areas). Vegetation screening in these areas should be provided and linked where feasible so that elk can make the expected use of these habitats. Vegetation should be managed around these components so that an individual is generally not observable as it makes use of, or travels through them. Specific site distances to provide security should be determined at the project level based on current elk reference sources and local knowledge of elk use. Generally, vegetation around licks or wallows should be two or more site distances as defined in the glossary. Forested vegetation around created and natural meadows should retain adequate vegetation density and stand size to provide for security. Integrity of forested stringers used as travel routes should be retained when necessary to meet desired elk objectives.

Elk winter range should be identified using current winter distribution surveys and habitat use, developed in cooperation with the Idaho Fish and Game Department and cooperators. Forested areas adjacent to winter foraging areas should maintain the vegetative integrity for elk (Lyons et al. 1985).

On winter ranges, modification of forested stands should be planned on a local basis. Primary emphasis is on maintaining adequate thermal and security to meet agreed upon elk management objectives. Forested vegetation should retain the ability following management to provide for continued use by elk to conserve energy and use available forage.

Figure E-2. Elk Habitat Effectiveness and Road Density (Lyon et al. 1985)

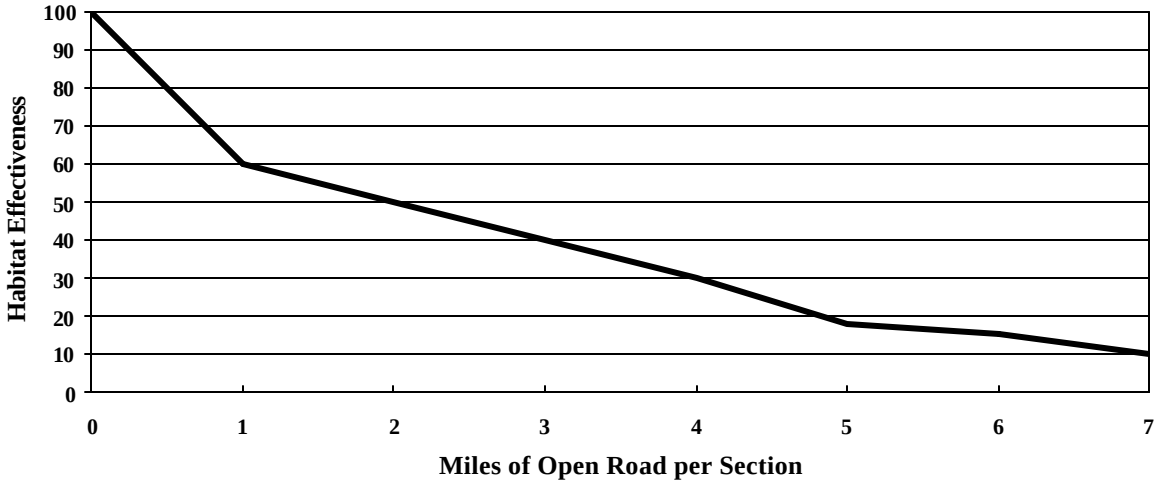
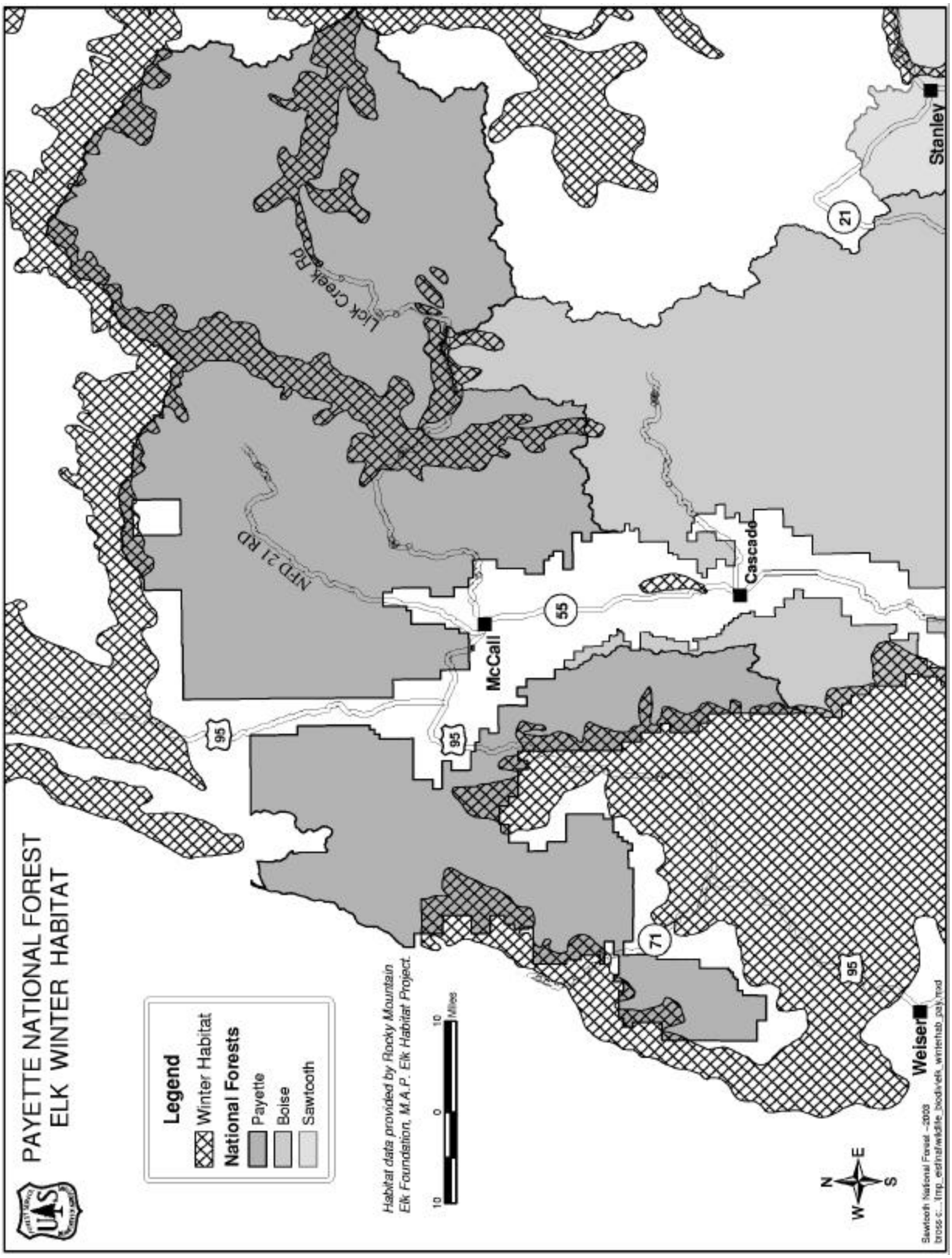


Figure E-3. Elk Winter Habitat



REFERENCES

Andelman, Sandy J., Steve Beissinger, Jean Fitts Cochrane, Leah Gerber, Paola Gomez-Priego, Craig Groves, Jon Haufler, Richard Holthausen, Danny Lee, Lynn Maguire, Barry Noon, Katherine Ralls, Helen Regan, 2001, *Scientific Standards for Conducting Viability Assessments Under the National Forest Management Act: Report and Recommendations of the NCEAS Working Group*, National Center for Ecological Analysis and Synthesis

Christensen, Alan G., L. Jack Lyon, and James W. Unsworth, 1993, *Elk Management in the Northern Region: Considerations in Forest Plan Updates or Revisions*, USDA Forest Service, Intermountain Research Station, General Technical Report INT-303

Frederick, Glenn P., 1991, *Effects of Forest Roads on Grizzly Bears, Elk and Gray Wolves: A Literature Review*, USDA Forest Service, Kootenai National Forest, Libby, Montana, pg. 30

Hillis, J. Michael, Michael J. Thompson, Jodie E. Canfield, L. Jack Lyon, C. Les Marcum, Patricia M. Dolan, David W. McCleerey, 1991, *Defining Elk Security: The Hillis Paradigm*, Proceedings: Elk Vulnerability Symposium, Montana State University, Bozeman, Montana, April 10-12, 1991

Lyon, L. Jack, 1979, Habitat Effectiveness for Elk as Influenced by Roads and Cover, *Journal of Forestry*, pp. 658-660

Lyon, L. Jack, 1983, Road Density Models Describing Habitat Effectiveness for Elk, *Journal of Forestry*, Vol. 81, No. 9, pp. 592-595

Lyon, L. Jack, Terry N. Lonner, John P. Weigand, C. Les Marcum, W. Daniel Edge, Jack D. Jones, David W. McCleerey, and Lorin L. Hicks, 1985, *Coordinating Elk and Timber Management*, Final Report of the Montana Cooperative Elk-Logging Study, 1970-1985

Lyon, L. Jack, and Jodie E. Canfield, 1991, *Habitat Selections by Rocky Mountain Elk Under Hunting Season Stress*, Proceedings: Elk Vulnerability Symposium, Montana State University, Bozeman, Montana, April 10-12, 1991

Thomas, Jack Ward, Donavin A. Leckenby, L. Jack Lyon, Lorin L. Hicks, and C. Les Marcum, 1988, *Integrated Management of Timber-Elk-Cattle: Interior Forests of Western North America*, USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-225

USDA Forest Service, 1983, *Elk-Timber Relationships of West-Central Idaho*

Weber, Keith R., C. Les Marcum, Milo G. Burcham, L. Jack Lyon, 1998, *Landscape Influences on Elk Vulnerability to Hunting*, Idaho State University, Pocatello, Idaho

Wisdom, Michael J., Richard S. Holthausen, Barbara C. Wales, Christina D. Hargis, Victoria A. Saab, Danny C. Lee, Wendel J. Hann, Terrell D. Rich, Mary M. Rowland, Wally J. Murphy, and Michelle R. Eames, 2000*, Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-Scale Trends and Management Implications, Volumes 1, 2, and 3,* USDA Forest Service, Pacific Northwest Research Station, and USDI Bureau of Land Management, General Technical Report PNW-GTR-485