Appendix L

Programmatic Biological Evaluation of Effects of the Noxious Weed Management Program On Lands Administered by the Salmon-Challis National Forest on U. S. Forest Service Sensitive Plant, Wildlife, and Fish Species November, 2002 Salmon-Challis National Forest Salmon, Idaho

APPENDIX L

Programmatic Biological Evaluation of the Effects of the Noxious Weed Management Program on Sensitive Species of the Salmon-Challis National Forest

I. Introduction

This Biological Evaluation (BE) describes the potential effects on U. S. Forest Service (Forest Service) sensitive plant, wildlife, and fish species from implementing the Noxious Weeds Management Program on lands administered by the Salmon-Challis National Forest (S-CNF). Potential impacts on federally listed, proposed, and candidate plant, wildlife, and fish species are addressed in a separate Biological Assessment (BA) that is being submitted to the U. S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). This BE summarizes information presented in the foregoing Environmental Impact Statement (EIS) and appendices that is relevant to those Forest Service sensitive species occurring on the S-CNF. To avoid unnecessary repetition, the reader is referred to sections of the EIS for additional detail on the Proposed Action (Chapter 2), the project area affected environment (Chapter 3), and the potential direct, indirect, and cumulative environmental consequences on resources from implementing the Proposed Action (Chapter 4). In addition, all references incorporated in this BE are included in Chapter 9 of the EIS. Appendix G of the EIS contains consultation letters from the USFWS on federally protected species that may be present in the S-CNF project area.

This BE, and its assessment of potential project effects on S-CNF sensitive species, is programmatic in nature because of the large size and diverse landscape of the S-CNF and the extent of noxious weed infestations present on the S-CNF. The project area covers more than 3 million acres on the S-CNF, excluding the Frank Church River of No Return Wilderness (FCRONW), and contains more than 66,000 acres of inventoried weed infestations at over 2,500 sites. Map 1-1 in Chapter 1 of the EIS shows the boundaries of the S-CNF and its location in Idaho. Map 3-1 in Chapter 3 of the EIS depicts noxious weed infestations on and near the S-CNF.

More than 40 weed species are considered in this analysis, including species designated as "noxious" by the State of Idaho and additional invasive species found on or near the S-CNF. Weed species that occur on the S-CNF are referred to as established invaders (9 species) or new invaders (15 species), while those that occur near the S-CNF are referred to as potential invaders (23 species). Table 2-1 in Chapter 2 of the EIS lists the common and scientific names of these species and their occurrence on the S-CNF by Ranger District. Consistent with project purpose and need described in *Section 1.C, Purpose and Need for Action*, the S-CNF proposes to implement an integrated series of weed treatment and non-treatment practices under the Proposed Action that would eradicate, reduce, and/or slow the spread of noxious

and invasive non-native populations of weeds on the S-CNF (*Section 2.C.1, Treatment Practices)*. Expeditious treatment can prevent further spread and expansion of existing weed infestations, and maintain and enhance native plant communities and the species dependent on them, including Forest Service sensitive species.

II. Description of Proposed Action

A. Weed Treatment Objectives and Priorities

The Proposed Action includes the use of aerial and ground-based herbicide applications plus mechanical, biological, controlled grazing, and combinations of these treatments to treat noxious weeds on the S-CNF. Treatment practices are described in *Section 2.C.1, Treatment Practice*s. The overall management objective of the Proposed Action is to maximize the treatment of noxious and invasive weeds throughout the S-CNF using an Integrated Weed Management (IWM) approach as quickly as reasonably possible to protect the forest and its resources. This strategy is a holistic, *systems* approach to weed management. It involves the use of the best available management techniques to limit the impact and spread of the weed. IWM typically includes strategies for awareness and education, early detection and proactive prevention of noxious weeds, the use of all treatment "tools" such as mechanical, biological, controlled grazing, and chemical management practices, followed by restoration and revegetation (cultural) (as appropriate) and monitoring of weed-impacted lands. The anticipated types, mix, and extent of treatment practices and the management objective associated with the Proposed Action are presented in *Section 2.D, Alternatives Analyzed in Detail*.

Weed treatment objectives under the Proposed Action of an IWM approach include eradication (elimination), control (reducing the population over time), and containment (preventing the population from spreading). *Section 2.C.2, Treatment Objectives, Priorities, and Criteria* contains complete descriptions of each objective. Weed treatment priorities would be directed to where they have the greatest potential for removing or minimizing the adverse effects of weeds on other S-CNF resource values. Treatment priorities, in descending order, are as follows:

1) Eradicate new populations of aggressive weeds
2) Control existing populations of aggressive weeds
3) Contain existing populations of aggressive weeds
4) Eradicate new populations of less aggressive weeds
5) Control existing populations of less aggressive weeds
6) Contain existing populations of less aggressive weeds

Levels of S-CNF funding, staffing, and other resource availability would ultimately determine the schedule for addressing and implementing treatment priorities. If funding and staffing levels are inadequate for full implementation of the IWM program, treatment at a specific weed site may be deferred. This is defined as a "custodial" action as shown in *Section 2.C.2, Treatment Objectives, Priorities, and Criteria*.

B. Weed Treatment Practices

The Proposed Action includes a full array of weed treatment and non-treatment practices: restoring and revegetating (where appropriate) sites; developing monitoring programs to follow treatment; implementing a broad range of mitigating Best Management Practices (BMPs) and Standard Operating Procedures (SOPs); employing a site-specific minimum tool approach; and following an adaptive strategy in managing future weed infestations see *Section 2.C.1, Treatment Practices* for detailed descriptions. Options for weed treatment that would be considered for use on a site-specific basis under the Proposed Action include a variety of mechanical, biological, controlled grazing, chemical (ground-based and aerial applications of herbicides), and combinations of these treatments. A number of non-treatment practices, which are a cornerstone of IWM programs, also would be carried out under the Proposed Action. These practices include proactive weed prevention programs; weed inventory and early detection; information and education programs; cooperative partnerships and coordination; and compliance with laws, orders, policies, and Forest Plans. *Section 2.C.1, Types of Herbicides* and *Appendix J, Characteristics of Herbicides Discussed for Chemical Treatment Options in this Environmental Impact Statement* contain detailed descriptions of herbicides that could potentially be used on the S-CNF. *Appendix A, USDA Forest Service, Region 4 Best Management Practices for Weed Prevention and Management* and *Appendix C, Possible Treatment Methods Available, Life Cycle, and Mode of Reproduction for Known Established, New, and Potential Invaders of Weed Species on or Adjacent to the Salmon-Challis National Forest* include extensive lists of management practices and mitigation measures that would be implemented as an integral part of the Proposed Action to avoid or minimize the potential for adverse effects on S-CNF resources.

C. Restoration and Monitoring

Restoration and monitoring of treatment areas are integral components of the IWM program. Site restoration objectives include revegetating areas with desired vegetation where weeds have been eradicated, controlled, or contained; preventing future weed infestations; and slowing expansion of existing adjacent weed infestations (see *Section 2.C.3, Restoration and Monitoring* for detailed information).

D. Minimum Tool and Adaptive Strategy

Invasive weed treatments will incorporate the use of the "minimum tool" concept. During planning, S-CNF managers will select for use the minimum necessary option(s) to accomplish the weed management objectives at a specific site. If all treatment options are equally effective in controlling a particular species or infestation, the method with the least impact would be used (see *Section 2.C.5, Minimum Tool*). Parameters considered when selecting minimum tools include species biology, infestation size, proximity to water and recreation sites, and extent of sensitive habitats adjacent to infestations.

An adaptive weed management strategy would be employed to determine appropriate future actions to treat new populations of weeds, expansion of existing weed infestations, or weed infestations that have not yet been inventoried. The adaptive strategy would also cover any new weed species that occur on the S-CNF; any new federal-, state-, or county-designated species of noxious weeds; and any non-designated nuisance weeds present on

the S-CNF. This adaptive strategy provides a basis for covering future weed treatments on the S-CNF (see *Section 2.C.4, Adaptive Strategy*).

E. Weed Treatment Acres, Sites, and Management Goals

Table 2-6 in Chapter 2 of the EIS summarizes the acres of weed infestations on the S-CNF that would be treated annually under the Proposed Action using various available treatment options. A total of approximately 18,000 acres of weed infestations would be treated each year, with approximately 15,000 of these acres treated using herbicides. The expected time frames and goals for accomplishing the Proposed Action management objective would vary depending on the extent and severity of weed infestations. As discussed in *Section 2.D.2.b, Proposed Action—Aerial and Ground-Based Herbicide Application Plus Mechanical, Biological, Controlled Grazing, and Combinations of Treatments*, known acres of weed infestations are considerably greater on the North Fork and Salmon-Cobalt Ranger Districts (primarily spotted knapweed infestations) than on the other five S-CNF Ranger Districts and may require more time to achieve weed management goals. The following management goals are proposed for the S-CNF Ranger Districts:

- Eradicate all new starts (less than 5 acres in size) of aggressive weeds.
- Reduce established infestations of aggressive weeds 5 to 25 acres in size by 75 to 100 percent.
- Reduce established infestations of aggressive weeds greater than 25 acres in size by 50 percent.
- Eradicate all new starts (less than 5 acres in size) of less aggressive weeds.
- Reduce infestations of less aggressive weeds greater than 5 acres in size by 50 percent.
- Implement site restoration and revegetation actions (where appropriate) and monitoring programs following treatment to reduce or eliminate the subsequent reinvasion of weeds and to measure the degree of treatment success.
- Employ the minimum tool approach and an adaptive strategy using the site-specific implementation process.

The period of weed treatment under the Proposed Action would continue until a change in weed conditions on the S-CNF becomes evident, consistent with the proposed weed management goals. Future, presently undefined weed infestations would be treated using the adaptive strategy approach. For purposes of analysis, it has been assumed that full funding would be available for implementing the Proposed Action to work toward achieving those goals.

III. Sensitive Species Descriptions, Effects, and Conservation Measures

Descriptions of Forest Service sensitive species, potential effects of the Proposed Action on these species, and conservation measures that would be implemented to avoid or minimize adverse effects are presented in the following text under the headings *Plants* and *Wildlife and*

Fish. Forest Service Manual (FSM) 2670.5 defines sensitive species as "those plant and animal species identified by a Regional Forester for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers, density, or habitat capability that reduce a species/existing distribution." In FSM 2670.22, management direction for sensitive species is, in part, to ensure that species do not become threatened or endangered because of Forest Service actions, and to maintain viable populations of all native species (U.S. Forest Service 1990a).

A. Plants

1. Descriptions

Table L-1 lists the common and scientific names of Forest Service Region 4 sensitive plant species known or suspected to occur on the S-CNF.

TABLE L-1
Sensitive Plant Species on the S-CNF

Scientific Name	Common Name	Habitat Association
Agoseris lackschewitzii	pink agoseris	Wet meadows with soil saturated through the growing season.
Astragalus amnis-amissi	Lost River milkvetch	Cracks in ledges of similar sites on near vertical limestone cliffs, and in talus at base of cliffs; mostly in moist shaded areas.
Astragalus aquilonius [ES]	Lemhi milkvetch	Shale and gravel banks.
Astragalus diversifolius	meadow milkvetch	Moist often alkaline soil.
Astragalus paysonii [ES]	Payson's milkvetch	Burned and other open, disturbed sites between elevation 7,160 and 9,600 ft.
Astragalus vexilliflexus var. *nubilus*	White Cloud's milkvetch	Dry open ridges in White Cloud Range.
Carex incurviformis var. *incurviformis*	maritime sedge	Alpine and subalpine moist tundra and wet rock ledges. Elevation 10,000 to 12,200 ft.
Collomia debilis var. *camporum*	flexible alpine collomia	Talus slopes at high elevations.
Cymopterus douglassii	Douglass' wavewing	Alpine and subalpine areas on open slopes, ridges, and summits in calcareous or dolomitic substrates.
Cymopterus ibapensis	Ibapah wavewing	Rocky, high elevation sites in this region of Idaho. (Central mountains.)
Draba densifolia apiculata	rockcress draba	Moist, gravelly alpine meadows and talus slopes, often on limestone-derived soils.
Draba trichocarpa	Stanley whitlow-grass	Steep slopes on granitic parent material.

TABLE L-1
Sensitive Plant Species on the S-CNF

Scientific Name	Common Name	Habitat Association
Eriogonum capistratum var. *welshii*	Welsh's buckwheat	Rocky volcanic slopes and gravelly clay or sedimentary barren flats with minimal vegetation consisting of scattered sagebrush and grasses.
Eriogonum meledonum	guardian buckwheat	Unstable scree slopes on granitic parent materials.
Halimolobus perplexa var. *lemhiensis* [ES]	puzzling halimolobus	Granitic substrates in open ponderosa pine and Douglas-fir.
Haploppus insecticruris [ES]	bugleg goldenweed	Sagebrush and grass meadow areas around elevation 5,000 to 6,000 ft.
Mimulus clivicola	bank monkeyflower	Moist aspects of open mineral soil on south aspects.
Oxytropis besseyi var. *salmonensis*	Challis crazyweed	Sagebrush and salt desert shrub in sandy washes or open slopes of rocky volcanic soil.
Penstemon lemhiensis [ES]	Lemhi penstemon	Grassland and open ponderosa pine forests between elevation 6,300 and 7,200 ft.
Physaria didymocarpa var. *lyrata* [ES]	Salmon twin bladderpod	Rocky, sparsely vegetated, south slopes. Bare ground and rock coverage (1 to 3 inches rock).
Poa abbreviata ssp. Marshii [ES]	Marsh's bluegrass	Alpine fell-fields.
Primula alcalina	alkali primrose	Wet, alkaline meadows; level benches adjacent to creeks or springs; benches with hummocky topography, where they are found only on the tops and sides of the hummocks.
Thelypodium repandum	wavy-leaf thelypody	Moderate to steep, unstable, generally southerly facing slopes of rocky, gravelly to cindery substrate derived from Challis volcanic and metamorphic rock. Associated vegetation is sparse (5 to 20% cover), and bare ground coverage is high.
Thlaspi idahoense var. *aileeniae* [ES]	Stanley thlaspi	Rocky, sandy flats with sagebrush or river gravel.
Xanthoparmelia idahoensis [ES]	Idaho range lichen	Mountain rangelands of central Idaho in sagebrush.

[ES] = Species of early seral or disturbance regimes that are most likely to be negatively impacted by weed treatments.

Appendix H, Documented Occurrences of Sensitive Plants, Sensitive Wildlife, and Sensitive Fish by Ranger District and HUCs 4 and 5 on the Salmon-Challis National Forest of the EIS lists the occurrence of sensitive plant species on the S-CNF by Ranger District and Hydrologic Unit Codes (HUCs) 4 and 5. Twenty-five species listed in Table L-1 have been identified as sensitive by Forest Service Region 4 and are of special concern to the S-CNF, either because of known occurrences or known suitable habitat on the S-CNF. These species are as follows:

Pink Agoseris (*Agoseris lackschewitzii*). This species occurs in wet montane and subalpine meadows in the mountains of northwestern Wyoming, southwestern Montana, and adjacent Idaho. It flowers July to August. In Idaho, it has been found in Fremont and Lemhi Counties where it was growing either in open moist meadows with forbs, grasses, sedges, and rushes or in the ecotone between wet meadows and forests (Jankovsky-Jones 1999). When overstory trees are present they are usually subalpine fir, Engelmann spruce, whitebark pine (*Pinus albicaulis*), and Douglas-fir. Pink Agoseris is known to occur in Lemhi County in the Lemhi Range within the Mill Creek Basin. Associated species are tufted hairgrass, bistort (*Polygonum bistorta*), elephant's-head lousewort (*Pedicularis grounlandica*), and arrowleaf groundsel (*Senecio triangularis*) (NY Botanical Gardens Collection. Collected 1984. Specimen ID: 7047) (U.S. Forest Service 1990b).

Lost River milkvetch (*Astragalus amnis-amissi)*. This species is endemic to Custer and Butte Counties. It occurs on ledges and rock crevices of nearly vertical limestone cliffs and in talus at the base. It prefers moist, shaded microsites within these general habitats (NY Botanical Gardens Collection. Collected 1957. Specimen ID: 5308; U.S. Forest Service 1990b). This milkvetch blooms June to July.

Lemhi milkvetch (*Astragalus aquilonius)*. Lemhi milkvetch is endemic to east-central Idaho and occurs in Custer, Butte, and Lemhi Counties at lower elevations. It is found on unstable substrates, steep banks, sandy washes, and gullies within the shrub-steppe zone (U.S. Forest Service 1990a). This species blooms May to June.

Meadow milkvetch (*Astragalus diversifolius)*. This species is endemic to central Idaho and northern Utah with one historical report for the Green River Basin in western Wyoming. It occurs on moist, often alkaline meadows and in sagebrush valleys.

Payson's milkvetch (*Astragalus paysonii)*. Payson's milkvetch is a regional endemic known only from central and southeastern Idaho and southern Wyoming. This is a perennial species, which blooms July to August. It is a seral species that requires mineral soil (usually sandy soils with low cover of herbs and grasses) for establishment. These are the same conditions that generally favor weed invasion. Fire suppression (which is a factor in plant succession and canopy closure) may be decreasing the potential habitat for this species because it favors openings in stands of ponderosa pine, Douglas-fir, and sometimes lodgepole pine. All known locations of Payson's milkvetch are in disturbed areas, including recovering burns, clearcuts, trail edges, old skid trails, and road cuts.

After fires the potential for suitable habitat on the S-CNF for this species may increase. The characteristics of burn sites may give this species a higher potential for occurring in areas at risk from weed invasions.

White Cloud's milkvetch *(Astragalus vexilliflexus var. nubilus).* This species is found in dry, open ridges in the White Cloud Range.

Maritime sedge (*Carex incurviformis* var. *incurviformis)*. This sedge occurs in alpine and subalpine zones on moist tundra and wet rock ledges. It is a circumpolar species that is known from high elevation areas in Canada and south to Colorado and California.

Flexible alpine collomia (*Collomia debilis* var. *camporum)*. This species occurs on the North Fork of the Salmon River drainage in Idaho and in adjacent Montana. It inhabits stabilized talus slopes (Moseley 1992a).

Douglass' wavewing (*Cymopterus douglassii)*. This plant is known from Custer County in Idaho on the Lost River Ranger District at high elevations over 9,000 feet. It occurs in alpine and subalpine zones on open slopes, ridges, and summits with calcareous or dolomitic substrates and blooms from mid-June to August (U.S. Forest Service 1990a). In high mountain cirque terrain it is found on sites that are level, gravelly, and with evidence of frost heaving (Moseley 1992b).

Ibapah wavewing *(Cymopterus ibapensis).* This species occurs in rocky, high-elevation sites in the central mountain region of Idaho.

Rockcress draba (*Draba densifolia apiculata)*. This species occurs in moist, gravelly alpine meadows and on granitic talus slopes or rock crevices. This species usually prefers limestone-derived soils. It occurs at some high elevation sites in Wyoming, Utah, Montana, central Colorado, and Idaho.

Stanley whitlow-grass (*Draba trichocarpa)*. This species is endemic to Idaho and all known populations are restricted to granite outcroppings surrounding the floor of the Stanley Basin in south-central Idaho. It is found in sagebrush/Idaho fescue (*Artemisia arbuscula* ssp. *thermopola/Festuca idahoensis*) habitat type variation with a mosaic that includes mountain big sagebrush (Moseley and Mancuso 1990). On a majority of sites, it was found growing with guardian buckwheat (see listing below). Both of these species were found on gentle ridgelines that are relatively stable and on steep rock outcrops and scree slopes (Moseley and Mancuso 1993).

Welsh's buckwheat (*Eriogonum capistratum* var. *welshii)*. This species occupies rocky volcanic slopes. It is often associated with scattered sagebrush and grasses, usually at higher elevations.

Guardian buckwheat (*Eriogonum meledonum)*. This species is endemic to Custer County in central Idaho. It occurs on unstable scree slopes on granitic parent materials (U.S. Forest Service 1990a).

Puzzling halimolobos (*Halimolobus perplexa* var. *lemhiensis).* This regional endemic occurs in central Idaho in Custer, Valley, and Lemhi Counties. Like Payson's milkvetch, it is a seral species requiring disturbance and bare soil to become established. It inhabits gravelly or sandy slopes, roadcuts, and dredge tailings with granitic substrates (U.S. Forest Service 1990a). It also occurs on grassy slopes adjacent to rock outcrops in open ponderosa pine and Douglas-fir forests (U.S. Forest Service 1999c). Many areas of potential habitat for puzzling halimolobos exist within the S-CNF with characteristics similar to those preferred by weeds.

Bugleg goldenweed (*Haploppus insecticruris)*. Known distribution for this species is south-central Idaho in Camas and Elmore Counties. It inhabits sagebrush and grass meadows at 5,000 to 6,000 feet in elevation and blooms in July and August (U.S. Forest Service 1990a).

Bank monkeyflower (*Mimulus clivicola)*. This plant is a regional endemic known from northern and west-central Idaho into northeastern Oregon. It is a small annual that

produces a showy pink flower that blooms from late May through mid-July. The general habitat is open ponderosa pine stands within mesic macroclimates (such as moist drainages). Specific habitat requirements are very restricted: southern aspects between 1,500 and 4,100 feet in elevation, in moist pockets of open mineral soil (such as a depressions in game trails) (Lorain 1993). There are no known occurrences on the S-CNF, but many areas of potential habitat. There is no way of knowing how much potential habitat meets the specific microsite requirements for this species.

Challis crazyweed (*Oxytropis besseyi* var. s*almonensis)*. This is a species of sagebrush and salt desert shrub habitat. It occurs in sandy washes and open slopes with rocky volcanic soils where it blooms June through July (U.S. Forest Service 1990a).

Lemhi penstemon (*Penstemon lemhiensis)*. This species is endemic to Lemhi County and adjacent counties in Montana. Its bright sky-blue flowers appear from June to July. This penstemon is an early seral species that requires bare soil to become established. It appears to be dependent on small-scale disturbances and has adapted to man-made disturbed sites, such as road cuts and fills and responds favorably after fire. It occurs in a variety of habitats, including dry grasslands, three-tipped sage/Idaho fescue and big sagebrush/needle-and-thread communities, mountain big sagebrush/bluebunch wheatgrass, open conifer ponderosa pine or Douglas-fir/grass lands, and ecotones between forest and shrub-steppe. It occurs at elevations from 3,200 to 8,100 feet (Moseley et al. 1990a, Moseley 1992a).

Since this species is widely adapted, there are many acres of apparently suitable habitat on the S-CNF. The characteristics of these potential sites give this species a high potential for occurring in areas that weeds also tend to prefer.

Salmon twin bladderpod (*Physaria didymocarpa* var. *lyrata)*. This perennial mustard is endemic to Idaho. Until the 1980s, it was known only from one location on BLM land at Williams Creek in the Salmon River Mountains, then three new populations were found on private and BLM land (Hitchcock 1964, Steele 1977, Steele 1981, Steele 1983). In 1990, a specific search of the Salmon National Forest found no populations of Salmon twin bladderpod (Moseley et al. 1990b). Suitable habitat is believed to occur at lower elevations, just outside the S-CNF boundary, on drainages with headwaters in the S-CNF. All known populations are near the boundary of the S-CNF.

This species is found on scablands, shale banks, talus slopes, and gravelly soil (U.S. Forest Service 1990a). It grows on steep south-facing slopes between 4,050 and 6,800 feet in the big sagebrush/bluebunch wheatgrass zone. It has been found growing on loose, but stable, substrate along roadcuts and other disturbance sites. It is generally found on sites with little plant cover (Moseley et al. 1990b). These are the same site characteristics that weeds tend to prefer.

Marsh's bluegrass (*Poa abbreviata* ssp. *Marshii)*. This dwarf grass is currently known from three states—Idaho, Nevada, and California. It grows on high alpine rocky slopes in scree and talus (Soreng 1991). These sites have short growing seasons and the possibility of heavy frosts at any time of the year. One known location in the Salmon River Basin of Idaho occurs within the Pahsimeroi Sub-basin.

Alkali primrose *(Primula alcalina).* This species is associated with wet, alkaline meadows; level benches adjacent to creeks or springs; and benches with hummocky topography, where they are found only on the tops and sides of the hummocks.

Wavy-leaf thelypody (*Thelypodium repandum).* This mustard is endemic to Custer County in central Idaho. It inhabits steep shale banks derived from volcanic and metamorphic rocks where it is associated with bunchgrasses and herbaceous perennials across a wide elevational range (4,900 to 7,000 feet). It blooms from May through September (U.S. Forest Service 1990a).

Stanley thlaspi (*Thlaspi idahoense* var. *aileeniae).* This mustard also is endemic to Custer County in central Idaho where it occurs on steep slopes on whitish sand among small rocks on sagebrush flats. It blooms from May to July (U.S. Forest Service 1990a).

Idaho range lichen (*Xanthoparmelia idahoensis).* Nothing more is known about this species than the information given in Table L-1.

2. Direct and Indirect Effects

Section 4.B.1, Vegetation Resources and Noxious Weeds, presents a detailed discussion of potential direct and indirect impacts on vegetation resources, including sensitive plants, on the S-CNF, resulting from the presence of noxious weeds and from the effects of treating noxious weeds. There are potential impacts to sensitive plant species within the S-CNF that occur in areas likely to be or that have already been invaded by noxious weeds. (See Table L-1 for those species that inhabit disturbed areas, early seral sites, or low moisture habitats.) Many of these sensitive plant species do not occur in areas with high potential for weed invasion, so treatment efforts would not impact those species. For those species that do occur in habitat with weeds, the use of either mechanical or chemical (herbicide) eradication methods for weed control may have detrimental impacts. Herbicides are not selective for specific forb species. All currently available herbicides that are capable of killing weeds can also kill sensitive plant species. Mechanical treatments that are focused on individual plants such as pulling or hoeing are less likely to harm sensitive plants, but mechanical treatments such as disking or plowing would be detrimental to sensitive plant populations.

The indirect effect with the most potentially detrimental outcome for sensitive plant species is not attempting or succeeding in efforts to curtail the spread of weeds on the S-CNF because the invasion of weeds compromises the integrity of native plant communities that support sensitive plants. The first impacts to sensitive plant species from not treating noxious weeds are likely to be to those species that inhabit disturbed areas, early seral sites, or low moisture habitats. The Proposed Action is designed to prevent this type of impact from occurring through the aggressive management and eradication, control, and containment of noxious weeds on the S-CNF.

Successful weed treatment may leave areas with little or no vegetation for a period of time. Foraging animals may move to other areas to find adequate forage, which could impact those areas with sensitive plant species to some degree. If livestock are moved from use areas where weed treatment is taking place onto use areas with sensitive plants, they may impact sensitive plants to a greater degree than normal.

3. Cumulative Effects

Cumulative effects on noxious weeds resulting from treatments under the Proposed Action together with coordinated weed management treatments on adjacent lands through the three Cooperative Weed Management Areas (CWMAs) are likely to be highly beneficial to native plant communities and sensitive plants. This benefit should be a direct result of increased success at halting the exponential spread of noxious weeds on the S-CNF through their widespread eradication, containment, and control, together with continued success on adjacent lands. Under the Proposed Action, the spread of weeds on the S-CNF and perhaps on those non-National Forest lands immediately adjacent to the S-CNF would be expected to decline. Potential cumulative adverse effects on native plant communities and sensitive plants may result from other activities or occurrences on the S-CNF. These include the potential effects from increased grazing pressure on treated and untreated use areas. Potential disturbance and localized losses of native vegetation from heavy recreational use, the construction, maintenance, and use of roads and trails, wild fires, and logging could also decrease the ability of native vegetation and sensitive plants to overcome the effects of possible herbicide drift or mechanical weed treatments. The effects of other activities on the S-CNF can add to the cumulative effect on sensitive plants if these activities occur and impact the same populations of sensitive plants as weed treatment, especially within a brief time period.

4. Conservation Measures

Conservation measures for sensitive plant species will consist of all of the BMPs and mitigation measures described for the Proposed Action in Chapter 2 and *Appendix A, USDA Forest Service, Region 4 Best Management Practices for Weed Prevention and Management* of the EIS. All of these BMPs and mitigation measures will be implemented as an integral part of the Proposed Action to avoid or minimize the potential for adverse impacts on sensitive plants. Areas with potential populations of sensitive species will be assessed prior to weed treatment. If necessary, surveys will be performed to locate populations of sensitive plants and hand weed removal or herbicide buffers will be implemented to clear weeds from those sites. Sensitive populations will be buffered from herbicide spraying by a no spray zone recommended by the manufacturer and/or by the Forest Service. If needed and appropriate, the treatment site will be reseeded to native vegetation once weeds are eradicated. If possible, sensitive plant species may be used in the seeding mix. These and other examples of BMPs and mitigation measures for vegetation resources and sensitive plants were summarized in *Section 4.B.1, Vegetation Resources and Noxious Weeds* of the EIS as follows: all aerial treatment areas will be assessed or field surveyed for sensitive plants prior to initial spraying; a 300-foot buffer zone flagged, mapped, and reviewed with the pilot will be maintained around sensitive plant populations for aerial herbicide applications; revegetation of any site within the treatment area with substantial soil disturbance or with inadequate native vegetation onsite to naturally reseed the area; equipment will be cleaned before entering S-CNF sites and before leaving weed treatment sites; no chemical will be applied directly to sensitive plant species during spot treatments and a 100-foot buffer will be maintained around known sensitive plant populations during broadcast treatments; and all weeds that are mechanically or hand excavated after flower bud stage will be bagged and properly disposed. In addition, the Proposed Action incorporates use of a site-specific implementation process, decision tree, a minimum tool approach, and an adaptive strategy,

which are described in Chapter 2 of the EIS. These management tools are designed to consider site-specific resource conditions, including sensitive plant species, that result in the selection of a treatment method that achieves weed management goals with the least impact to S-CNF resources.

B. Wildlife and Fish

1. Descriptions

The S-CNF project area contains suitable habitat for 13 current and 3 proposed Forest Service Region 4 sensitive wildlife and fish species. Table L-2 lists the common and scientific names of these species, together with their state and Forest Service protected status. They are represented by 4 mammal, 9 bird, 2 fish, and 1 amphibian species. Habitat requirements and existing environments on the S-CNF for these species are described in the following text.

TABLE L-2
Sensitive Wildlife and Fish Species on the S-CNF

Scientific Name	Common Name	State Status	USFS Region 4 Status	Notes
Mammals				
Corynorhinus townsendii	Townsend's big-eared bat	S2	S	
Euderma maculatum	spotted bat	S2	S	
Martes pennanti	fisher	S1	S	
Gulo gulo	wolverine	S2	S	
Birds				
Accipiter gentilis	Northern goshawk		S	
Aegolius funereus	boreal owl	S2	S	
Falco peregrinus anatum	American peregrine falcon	S2	S	Delisted, monitoring recommended.
Falco columbarius	merlin	S2N	PS	
Histrionicus histrionicus	harlequin duck		S	
Otus flammeolus	flammulated owl		S	
Picoides tridactylus	three-toed woodpecker	S2	S	
Sitta pygmaea	pygmy nuthatch	S3	PS	
Stix nebulosa	great gray owl		S	
Fish				

TABLE L-2
Sensitive Wildlife and Fish Species on the S-CNF

Scientific Name	Common Name	State Status	USFS Region 4 Status	Notes
Oncorhynchus clarki lewisi	*westslope cutthroat trout*	S2	S	
Acipenser transmontanus	white sturgeon	S1	PS	
Amphibians				
Rana luteiventris	Columbia spotted frog		S	

a. Mammals

Townsend's Big-eared Bat. This bat inhabits a variety of habitats from desert shrub to deciduous and coniferous forests at a wide range of elevations. In Idaho, some individuals likely migrate to hibernal sites to overwinter and disperse to forested areas during summer when the sexes separate (Pierson et al. 1999). Other individuals found near Lake Pend Oreille seem to use the same mine during both summer and winter. In Lemhi County, this species has been captured in numerous mist net and harp trap surveys of abandoned mine adits. Hollow cavities in large trees or snags may constitute an important undocumented resource for maternity colonies of this species. Their diet consists mainly of moths in the family Noctuidae with lesser amounts of beetles, flies, and other insects.

Spotted Bat. The spotted bat is very uncommon in central Idaho, but is distributed across a wide range of habitats in the western mountain region from desert scrub to open ponderosa pine forests. This species usually occurs in rough, rocky, semi-arid to arid landscapes and roosts in cliff faces and rock crevices (Genter and Jurist 1995). This species is solitary in nature, and the female bears one young each year in late spring. Its diet consists almost exclusively of medium-sized moths, beetles, and caddisflies. Foraging has been observed in forest openings, particularly ponderosa pine forests, pinyon juniper woodlands, large riverine/riparian habitats, riparian habitat associated with small to mid-sized streams in narrow canyons, wetlands, meadows, and old agricultural fields. In Idaho, populations occur in the central and southwestern corner of the state (Doering and Keller 1998). One unvouchered record for the Salmon River in Nez Perce County exists, and a juvenile was caught and released during a mist net survey in the Middle East Fork of the Salmon River in 1998. Two vouchered specimens have been collected in Idaho; the remaining records are from acoustic recordings.

Fisher. In the Pacific Northwest, the distribution of this species coincides with the habitat occupied by snowshoe hares, especially Douglas-fir forests. Fishers are generalized predators that eat a wide variety of birds, mammals, fruit, and carrion. The fisher is known as a predator of porcupines, but snowshoe hares are the most common prey (Ingles 1965, Powell and Zielinski 1994). Fishers avoid non-forested areas, especially in winter (Coulter 1966, Earle 1978, Jones 1991, Jones and Garton 1994, Kelly 1977). In the S-CNF, this species has been noted in the Pistol Lake area and the North Fork of the Salmon River drainage.

Wolverine. This rare mammal is distributed circumpolarly from the 38th parallel north, with populations in the Colorado Rocky Mountains and California Sierra Nevada dropping below this latitude (Banci 1994). This species feeds on small animals, snowshoe hare, porcupines, and marmots, as well as on carrion. They are found in inaccessible areas of mountain ranges in central Idaho and are believed to be distributed mainly in the Selkirk Mountains and the Sawtooth Mountain-Smokey Mountain complex (Groves 1988), but are also known to occur in the Salmon River Mountains and the Beaverhead Mountains.

b. Birds

Northern Goshawk. This accipiter is a forest habitat generalist that uses a variety of forest types, ages, structural conditions, and successional stages. It feeds on birds and small mammals (Johnsgard 1990, Reynolds et al. 1992). During nesting, goshawks select mature forest consisting of a combination of old, tall trees with intermediate canopy coverage and small open areas within the forest for foraging. This species occurs in many areas on the S-CNF, such as the Salmon River Mountains and the Lemhi Mountains.

Boreal Owl. This owl inhabits spruce-fir forests in Montana, Idaho, and northern Wyoming (Hayward et al. 1993). They require cavities for nesting and feed primarily on small mammals, especially southern red-backed voles (*Clethrionomys gapperi*). Spruce-fir is the preferred species but cavities have been found in Douglas-fir, lodgepole, aspen, and high elevation ponderosa pine (Hayward and Verner 1994). Boreal owls inhabit mature and older forest stands and need forest management and timber harvest systems that will retain snags and forest structure. Boreal owls are present within the North Fork and Salmon/Cobalt Ranger Districts.

Peregrine Falcon. Populations of this bird were considered to have sufficiently recovered so that the USFWS removed it from the Endangered Species List on August 20, 1999. This falcon feeds on a variety of smaller birds often associated with riparian habitats that are usually captured on-the-wing. This species nests mainly on cliffs, rarely in trees, and usually near water. Breeding peregrine falcons are most likely to be disturbed by activities taking place near their nest (Herbert and Herbert 1969, Ellis 1982). This species is known to nest in Lemhi County but not on the S-CNF.

Merlin. This falcon summers in a variety of habitats, including forest edges, farmland, and urban areas. It winters on coastal lowlands, prairies, and marshes. For nesting, it uses abandoned nests from other birds, a cavity in a tree or cliff, or even on the ground. The merlin preys mainly on small birds of the ground and low vegetation (such as larks, swallows, finches) small mammals, lizards, snakes, and insects (Stokes and Stokes 1996).

Harlequin Duck. This sea duck, which winters along both coasts, breeds along inland streams. On the West coast, this species breeds and summers inland from the coastal mountains of Alaska to California, and along the northern Rocky Mountains to Yellowstone (Bellrose 1980). This riparian species prefers stretches of streams with mature and old growth forests. Aquatic insect larvae are the preferred diet for juveniles and for adults during the breeding season (Cassirer and Groves 1994). In Idaho, nest sites include cavities in trees and cliff faces (Cassirer et al. 1993). Adult females show fidelity to nest sites, but radio-tagged harlequins have used new nest sites after a nest failure the previous year (Cassirer et al. 1993, Wallen and Groves 1989). This species is only known to occur on the S-CNF during seasonal migrations.

Flammulated Owl. This tiny, insectivorous owl is a neotropical migrant that breeds in the mountains of the western U.S. and winters in the Southwest U.S., Mexico, and Central America. Summer breeding sites are mainly in ponderosa pine and Jeffrey pine (*Pinus jeffreyi*) (Verner 1994). Preferred nesting sites are in forests with old ponderosa pine mixed with Douglas-fir (Linkhart et al. 1995). This owl is known to breed in several areas on the S-CNF in mature ponderosa pine and Douglas-fir forest.

Three-toed Woodpecker. This rare woodpecker eats predominantly insects. Approximately 75 percent of its diet is insects such as wood-boring beetles, grubs, weevils, ants, other beetles, and spiders. Besides insects, it also feeds on berries and other small fruits, acorns, and nuts (Stokes and Stokes 1996). It often forages on fire-killed trees for insects (Hutto 1995). Post-fire conditions are important to this species for both feeding and nesting purposes. This species is known to utilize burned areas across the S-CNF.

Pygmy Nuthatch. This bird is a year-long inhabitant of ponderosa pine forests from low to high elevations (10,000 feet). They will also use other species of pine. Pygmy nuthatches forage on branches, outermost twigs, pine cones, and tree trunks for wasps, ants, spittle insects, beetles, moths, caterpillars, grasshoppers, spiders, and pine seeds. This nuthatch usually excavates its own nest cavity in pine, but occasionally will use abandoned woodpecker holes (Stokes and Stokes 1996).

Great Gray Owl. This owl builds open nests in large trees in heavy forest canopy (Bull and Henjum 1990). They forage in more open forest sites with heavy grass ground cover, where they perch in snags or live trees to hunt. They prey upon relatively small prey, mostly small rodents such as voles (Microtus spp.) (Duncan and Hayward 1994). This owl has been found at higher elevations throughout the S-CNF.

c. Fish

Westslope Cutthroat Trout. Westslope cutthroat trout is listed as a sensitive species by the Forest Service and as a priority species of special concern by the State of Idaho because of habitat degradation and declines of genetically pure populations (IDFG 2001). This species is widely distributed throughout the S-CNF (see *Appendix H, Documented Occurrences of Plants, Sensitive Wildlife, Sensitive Fish by Ranger District and HUCs 4 and 5 on the Salmon-Challis National Forest* of the EIS for distribution information by Ranger District and HUCs 4 and 5). However, like bull trout, it is largely dependent on high-quality habitat for survival, including cold water, numerous deep pools, and stream beds that are relatively free of sediment (Quigley and Arbelbide 1997). The strongest populations of Westslope cutthroat trout occur in watersheds less influenced by roads or land management practices. Stocked non-native species of cutthroat and rainbow trout can also adversely affect Westslope cutthroat trout by hybridization. Migratory populations of this species are most significantly affected by the loss of viable habitat (Quigley and Arbelbide 1997).

White Sturgeon. The Snake River population of this species (*Acipenser transmontanus*) has been identified by the USFWS and the State of Idaho as a species of concern. This species is proposed for sensitive status by the Forest Service in Region 4. It has been adversely affected by hydropower projects through migration barriers and population fragmentation (Quigley and Arbelbide 1997) and by overfishing (IDFG 2001). The Snake River population of white sturgeon occurs in the Snake River and in the mainstem Salmon River upstream to Clayton. This large, long-lived, bottom-oriented species is associated with large cool rivers (Simpson

and Wallace 1978). It spawns in late spring/early summer over a rocky bottom in swift current near rapids. White sturgeon may not reach sexual maturity and spawn until 10 to 15 years of age. The largest sturgeon recorded from Idaho was a 1,500-pound fish caught in 1898 on a set line in the Snake River near Weiser (Simpson and Wallace 1978).

d. Amphibians

Columbia Spotted Frog. The Columbia spotted frog (*Rana luteiventris/R. pretiosa*) is a Forest Service sensitive species. It is highly aquatic and lives in or near permanent bodies of water, including lakes, ponds, slow streams, and marshes. It prefers areas with thick algae and sparse emergent vegetation, but sometimes hides under decaying vegetation. This frog is usually found in non-woody wetland habitats (sedges, rushes, and grasses). In the northern part of its range where snow and ice accumulate, spotted frogs are inactive during the winter and most hibernate and aestivate. The Columbia subspecies of the spotted frog is distributed over a wide range of altitudes, and in Washington has been found from approximately 1,700 to 3,100 feet above sea level (Leonard et al. 1993). There are many known occurrences of this species on the S-CNF (see *Appendix H, Documented Occurrences of Plants, Sensitive Wildlife, Sensitive Fish by Ranger District and HUCs 4 and 5 on the Salmon-Challis National Forest*).

2. Direct and Indirect Effects

Section 4.B.2, Aquatic Resources and *Section 4.B.3, Wildlife Resources,* of the EIS present detailed discussions of potential direct and indirect impacts on aquatic and wildlife resources, including sensitive fish and wildlife species on the S-CNF resulting from the presence of noxious weeds and from the effects of treating noxious weeds. Results are presented in the following text.

a. Wildlife

The description of wildlife source habitats and associated species in *Section 3.C.3, Wildlife Resources,* in Chapter 3 of the EIS and the analysis of potential impacts on these species' habitat in *Section 4.B.3, Wildlife Resources* covered all of the sensitive mammal, bird, and amphibian species listed in Table L-2. The impact analysis for the Proposed Action concluded that wildlife habitat effects include loss and degradation of habitat quality or quantity due to current and potential future weed infestation on the S-CNF and, to a lesser extent, increased fire risk. Habitat effects would occur over a long term and reflect the projected rate of weed spread on the S-CNF and the expected success of weed treatment under the Proposed Action. Disturbance effects include displacement of wildlife because of increased human activity during weed treatment and land rehabilitation and would be of short-term duration. Disturbance threats are directly related to the anticipated levels of human activity and the varying sensitivity of different wildlife species to human disturbance. The wildlife analysis concluded that the long-term benefits to all of the wildlife source habitats and sensitive wildlife species on the S-CNF from implementing the Proposed Action would be high. Other potential effects such as wildlife mortality from herbicide ingestion have been determined to be insignificant (see discussion under the Proposed Action in *Section 4.B.3, Wildlife Resources* of the EIS).

There are reports that some synthetic chemicals (such as DDT and some pesticides) released into the environment may disrupt normal endocrine function in a variety of wildlife, altering physiological and behavioral function (U.S. EPA 1997). It is unknown whether

herbicides that mimic plant growth hormones have this effect on wildlife and their endocrine systems, primarily because information is not available (Safe et al. 2000). In addition, many other factors disturb growth, reproduction, and survival. Wildlife can be subject to a number of different stressors (such as habitat loss, competition, food availability, and disease) that may affect the same endocrine markers used to evaluate the effect of endocrine disrupters (Safe et al. 2002; WHO 2002). Thus, the relationship between adverse hormonal effects in wildlife and endocrine disruption remains speculative (WHO 2002).

b. Fish

The potential for adverse direct and indirect effects on aquatic and riparian habitat and sensitive species resulting from noxious weeds on the S-CNF would progressively decline under the Proposed Action. The Proposed Action includes a blend of weed treatment methods designed to aggressively eradicate, control, and contain weed species on the S-CNF and to reclaim disturbed areas where appropriate following treatment. The likelihood of increased erosion, surface runoff, and sediment delivery to drainages, possibly resulting in riparian and instream habitat degradation and impacts to sensitive aquatic resources, would decline as weed-infested areas are treated and reclaimed. This would result in improved aquatic and riparian habitat conditions and reduced threats to all aquatic species on the S-CNF compared to existing conditions. Benefits may be greatest in the northern portion of the S-CNF where substantial reductions in spotted knapweed infestations could potentially benefit aquatic habitat and numerous aquatic species. Benefits would be especially important to salmonids with narrow habitat requirements of clean, cold, connected, and well-oxygenated water with complex habitat, such as westslope cutthroat trout as well as the federally listed bull trout, and the Snake River steelhead, spring/summer chinook salmon, and sockeye salmon. Benefits from the Proposed Action could contribute to the recovery and well-being of these sensitive and protected fish species. Riparian benefits expected under the Proposed Action would be especially important to amphibians such as the Columbia spotted frog, western toad, and long-toed salamander.

Four worst-case situations involving the use of herbicides to treat weeds on the S-CNF and the potential effects on aquatic resources are analyzed in *Section 4.B.2, Aquatic Resources*, of the EIS. The analyses include the inadvertent entry of herbicides into aquatic ecosystems through surface runoff (six worst-case scenarios are examined), leaching through soils, accidental spills, and wind drift. These four situations are generally regarded as worst-case examples because of the extensive list of BMPs and mitigation measures described in Chapter 2 of the EIS that would be implemented as integral parts of the Proposed Action to avoid or minimize the potential for worst-case adverse effects to occur. Results of those analyses indicate that it is unlikely that any of the worst-case situations analyzed, including the northern S-CNF where some weed infestations are severe and the central and southern S-CNF where weed infestations are much less extensive, would occur because of the implementation of BMPs and mitigation measures, and use of a site-specific implementation process, decision tree, a minimum tool approach, and an adaptive strategy. If worst-case conditions did occur, the scenarios involving herbicide runoff and leaching of herbicides would not be expected to result in adverse impacts on populations of aquatic resources, including fish, invertebrates, and amphibians. Potential short-term impacts on aquatic and riparian resources could occur if there was an accidental spill of a relatively toxic herbicide in a small drainage. Resultant effects may be localized depending on various factors, including the volume of spill and dilution by the receiving water. Adherence to BMPs and

mitigation measures would reduce the likelihood of such a spill occurring, plus they would minimize or avoid the potential occurrence of wind-drift-related impacts on aquatic resources and amphibians.

3. Cumulative Effects

a. Wildlife

Cumulative effects of weed treatments under the Proposed Action combined with treatment effects of the three CWMAs would result in long-term benefits to sensitive wildlife species because of greater levels of weed control and eradication, slower weed population spread, and less total weed-infested acreage compared to existing conditions. This would result in cumulatively improved habitat conditions for sensitive wildlife on and off the S-CNF. New weeds that have invaded the S-CNF from adjacent lands would likely be eradicated, and invasion of adjacent lands by weeds presently occurring on the S-CNF would be curtailed as weed populations are controlled or eradicated. This cumulative effect would beneficially affect sensitive wildlife and their habitat both on and off the S-CNF. Beneficial cumulative effects on sensitive wildlife and their habitat may be greatest in the northern portion of the S-CNF and on adjacent non-National Forest lands because of opportunities for the eradication and control of extensive spotted knapweed infestations. There would be some cumulative disturbance of wildlife from the combined effects of weed treatment and other ongoing S-CNF activities, such as recreation, especially in heavily roaded areas.

b. Fish

Cumulative effects on noxious weeds resulting from treatments under the Proposed Action combined with treatments under the three CWMAs would result in benefits to aquatic habitat and resources compared to existing conditions through the widespread eradication, control, and containment of noxious weeds. The CWMAs and the S-CNF weed management program would cumulatively be expected to result in increased levels of weed treatment success. Under the Proposed Action, weed infestation on the S-CNF would progressively decline. This would reflect the eradication, control, and/or containment of new weeds that have invaded the S-CNF from adjacent lands covered by the CWMAs, and increased success in preventing weeds presently occurring on the S-CNF from invading adjacent lands. This particular benefit may directly contribute to a decline of weeds on adjacent non-National Forest land.

This cumulative effect could potentially benefit aquatic and riparian habitat and a range of protected and sensitive species through reduced erosion and sediment delivery to drainages. Beneficial cumulative effects on aquatic resources may be greatest in the northern portion of the S-CNF and on adjacent non-National Forest lands because of extensive spotted knapweed infestations that would be aggressively managed. No adverse downstream cumulative effects on non-National Forest land would be expected from worst-case situations involving herbicide runoff or leaching because of the extremely low concentrations. There is the potential for downstream adverse effects on aquatic and riparian resources and sensitive species if a herbicide spill or wind-drift-related impact occurred close to Forest Service boundaries. Increased flows proceeding downstream would further dilute the herbicide. Weed management BMPs and mitigation measures described previously are designed to prevent these types of impacts from occurring.

Additional cumulative effects on aquatic resources associated with other ongoing activities on the S-CNF would occur under the Proposed Action. These cumulative effects include the potential for erosion and sediment delivery from road and trail-related construction and maintenance activities, livestock grazing along drainages, and recreational activities adjacent to drainages. Also, cumulative effects on aquatic resources from weed treatment activities under the Proposed Action potentially include short-term increases in erosion and sediment delivery to drainages caused by more extensive mechanical treatments (soil disturbance) and chemical treatments (creation of barren ground from weed removal) than under existing conditions. These areas would be subject to erosion until native vegetation becomes re-established, after which time erosion and sediment delivery should be less than when weeds were present and provide correspondingly greater benefits than under the No Action Alternative. This would represent an overall long-term cumulative benefit to aquatic habitat and resources. Finally, there is the possibility of herbicide application in adjacent areas (S-CNF and CWMA) and possible cumulative effects on aquatic resources. However, the CWMA efforts are coordinated with the management agencies to avoid multiple treatments within a defined geologic location. In addition, all such applications would be in accordance with EPA label guidelines, which are designed to protect aquatic organisms.

The Forest Service (2001d) discussed the potential for two additional types of cumulative effects on aquatic organisms in northern Idaho from herbicide application. These are the potential for the bioconcentration of herbicides in aquatic organisms and the possibility of synergistic, combined effects on aquatic organisms when several herbicides are present. For bioconcentration to occur, a pollutant must be present in a high concentration for an extended period of time, the organism must be exposed to the pollutant, and the pollutant must have a high resistance to breakdown or excretion by the organism to allow a sufficient uptake period that would result in an elevated bioconcentration. The Forest Service (2001a) concluded that the risk of bioconcentration would be low because of the relatively small amount and timing of herbicide application. The risk of herbicide bioconcentration in aquatic organisms on the S-CNF also would be expected to be low because of the extremely low concentrations of herbicides that aquatic organisms would be briefly exposed to during even a worst-case situation. In addition, the herbicides that could be used to treat spotted knapweed on the S-CNF do not bioaccumulate in fish and/or have very little persistence in the environment (Information Ventures, Inc. 2002).

The Forest Service (2001a) concluded that no synergistic effects from herbicide application would occur. This was because: 1) the EPA currently supports an additive model in predicting synergistic effects, 2) relatively small amounts of herbicides would be applied, and 3) where more than one herbicide is applied the amount of each chemical applied would typically be reduced. This same rationale and conclusion regarding the potential for synergistic effects on aquatic resources also applies to the S-CNF. In addition, because the chances of multiple different herbicide activities taking place in the same drainage on the same day are unlikely, the potential for cumulative synergistic effects on aquatic organisms, including sensitive species, on the S-CNF would be minimal.

4. Conservation Measures

Conservation measures for sensitive wildlife and fish species will consist of all of the BMPs and mitigation measures described for the Proposed Action in Chapter 2 and *Appendix A, USDA Forest Service, Region 4 Best Management Practices for Weed Prevention and Management*

of the EIS, the same as described for sensitive plants. A total of 52 management practices and mitigation measures address weed prevention and management BMPs and the proper application of herbicides, including 20 measures specifically directed at the proper aerial application of herbicides. All of these BMPs and mitigation measures will be implemented as an integral part of the Proposed Action to avoid or minimize the potential for adverse impacts on sensitive plants. Many of the same examples of BMPs and mitigation measures that were described for sensitive plants also serve to protect sensitive wildlife and fish. Examples include compliance with all State and Federal laws and agency guidelines during herbicide application; application of herbicides in accordance with EPA registration label requirements and restrictions; use of a 50-foot no spray buffer zone for broadcast or "block" applications and use of a 15-foot buffer for spot applications along all flowing water streams and ponded water bodies (reduced buffer zones will be considered when using label-approved aquatic formulations [e.g., aquatic 2,4-D]); no spraying of herbicides when wind velocity exceeds 10 mph, or within 50 feet of open water when wind velocity exceeds 5 mph; use of label-approved aquatic formulations near open water; and BMPs and mitigation measures described in the preceding discussions in this section regarding accidental spills of herbicides and wind drift during aerial application. This includes a 300-foot no-treatment buffer zone on all fish-bearing streams, lakes, and ponds and a 100-foot no-treatment buffer zone on non-fish-bearing waters during aerial herbicide application. A BMP specifically directed at wildlife is the use of weed-specific herbicides on big game winter range to minimize impacts to winter forage. In addition to these measures, the Proposed Action incorporates use of a site-specific implementation process, decision tree, a minimum tool approach, and an adaptive strategy, which were described in Chapter 2. These management tools are designed to consider site-specific resource conditions that result in the selection of a treatment method that achieves weed management goals with the least impact to S-CNF resources, including sensitive wildlife and fish species.

IV. Determinations

Based on the foregoing analyses of potential effects of the Proposed Action on sensitive plants, wildlife, and fish occurring on the S-CNF and supporting information contained in the EIS, and assuming implementation of all BMPs and mitigation measures described in Chapter 2 and *Appendix A, USDA Forest Service, Region 4 Best Management Practices for Weed Prevention and Management* of the EIS as an integral part of the Proposed Action, it is determined that the Proposed Action results in a determination of **No Impact** or **May Impact Individuals or Habitat, But Not Likely to Lead to a Trend Toward Federal Listing or Reduced Viability for the Species** for sensitive plants, wildlife, and fish on the S-CNF. The determinations of No Impact and Not Likely to Lead to Listing are the same determinations that were described for westslope cutthroat trout in two BAs/BEs prepared by the Forest Service for non-chemical and chemical treatment of noxious weeds on the S-CNF during the year 2002. Implementation of the Proposed Action is expected to have an overall, long-term beneficial effect on sensitive plants, wildlife, and fish on the S-CNF.