IV. THREATENED, ENDANGERED AND SENSITIVE PLANTS

Introduction

The Endangered Species Act (ESA) 1973, as amended (16 U.S.C. 1536(c), 50 CFR 402), requires that the Forest Service conserve endangered and threatened species. The National Forest Management Act (NFMA) and Forest Service policy direct that National Forest System (NFS) lands be managed to maintain populations of all existing native plant and animal species at or above minimum population levels. A minimum viable population consists of the number of individuals adequately distributed throughout their range necessary to perpetuate the existence of the species in natural, genetically stable, self-sustaining populations.

In accordance with section 7(c) of the Act, the U.S. Fish and Wildlife Service has determined that the following threatened or endangered listed species may be present on the Flathead National Forest (FNF): water howellia (*Howellia aquatilis*) and Spalding's catchfly (*Silene spaldingii*) (USDI Fish and Wildlife Service 2007). In addition, a letter was received on December 4, 2001 from R. Mark Wilson, Field Supervisor with the U.S. Fish and Wildlife Service, identifying these threatened, endangered and proposed species that may occur on the FNF. The letter states that the range of Spalding's catchfly includes the upper Flathead River System and that areas below 5,000 feet are considered within the range of water howellia.

In addition to plants protected under the ESA, the Forest Service identifies plant species for which population viability is a concern as "sensitive species" as designated by the Regional Forester ({FSM} 2670.44). Currently, 52 plant species are designated as sensitive on the Regional Forester's sensitive plant list for the Flathead National Forest. USDA Forest Service policy requires that activities conducted on NFS lands be reviewed for possible impacts to threatened, endangered, or sensitive (TES) species ({FSM} 2670.32). The Forest Service has no jurisdiction to protect habitat of sensitive plant species on private lands.

Information Sources

Data sources used for this analysis includes the Montana Natural Heritage Program's (MNHP) Element Occurrence Database; the FNF's Threatened, Endangered, and Sensitive Species (TES) Survey Atlas; and the FNF's TES Plant Location Database. These databases include data collected from field surveys conducted by FNF botanist, trained technicians, and other botanist contributing surveys and element occurrences to the MNHP. All other sources of information are cited in the text.

Surveys

Regional Forester's Sensitive Plants

A habitat suitability analysis was conducted to evaluate the potential for sensitive plants occurrences within the action area. Sensitive plants species are grouped in nine habitat guilds

(see Sensitive Plants Biological Evaluation, project files). For each proposed unit surveyed, known vegetation types, aerial photos, elevation ranges, and field surveys of the action area were considered in evaluating potential habitat for sensitive plants. 2005 aerial photos were used to assist in targeting potential sensitive plant areas that could be discerned from aerial photos (e.g., wetlands and rock outcrops). Surveys are conducted by walking through units using intuitive searches based on knowledge of potential habitat for sensitive plants and aerial photo interpretation. Surveys attempt to visit the varying habitat types and aspects for each unit. Where the surveyor considers habitat potential high, more time is spent searching for sensitive plants for that area. Whereas, less time is spent in other areas considered having less potential for sensitive plants. A complete species list of plants encountered is assembled for each area surveyed (some smaller units were combined into one survey area). All surveyors are trained and tested in the identification and habitat associations of the Flathead National Forest sensitive plants.

Surveys for sensitive plants within the Red Whale Project were conducted during the summer 2006 field season. Surveys were conducted from 8-24 August 2006 (for a total of 17 person days) across approximately 2536 acres of mechanical treatment units and 1370 acres of prescribed fire areas. All initially proposed treatment units and prescribed fire areas were evaluated for potential habitat and surveyed if there were potential for TES.

Approximately 1500 acres were not surveyed in 2006; these acres will be evaluated for survey needs and surveyed in 2007 if they are included in the final decision. If sensitive or threatened plant species are discovered during activities or 2007 surveys, contractual requirements provide for modification of the contract to avoid impacts and protect their habitat.

Spalding's catchfly

No populations are known from the Flathead National Forest, yet there are several nearby occurrences, including a historic location near Columbia Falls (approximately 61 miles south of the action area). This occurrence was recorded from a herbarium specimen dated 1894. A search was conducted in the area, but the plants have not been relocated since the original report (Schassberger 1988). It is likely that the valley floor grassland where this collection was made has been converted to agriculture or developed. Four other occurrences are between 10 and 15 air miles from Flathead National Forest lands.

In 2000, aerial photos of the entire Flathead National Forest were reviewed by Maria Mantas (previous Forest Botanist) to locate large expanses of grassland with potential habitat for Spalding's catchfly. Grassland openings were delineated from aerial photos in areas along the North Fork of the Flathead River floodplain from the Canadian border to Polebridge and at Danaher, Horse Hill, and Bar Creek Meadows within the Bob Marshall Wilderness. Spalding's catchfly was not located during focused surveys for this species in the above areas. These grassland habitats were determined to be unsuitable (too high in elevation) for Spalding's catchfly.

In addition, no grassland habitat with potential for Spalding's catchfly was identified during 2006 field surveys or identified in aerial photos in the Red Whale Project area or prescribed fire areas.

Water howellia

Aerial photo interpretation and surveys for potential water howellia have been conducted since 1987. Several wetland ponds were identified in aerial photos and within the project area and were surveyed in 2006. Wetlands in project area were of low potential for water howellia. Water howellia was not detected during these surveys.

Analysis Area Description

The analysis area for this proposed project is based to the area of the project's influence/impacts on known occurrences or potential habitat for federally threatened/endangered and Regional Forester's sensitive plants within the project area. The project area includes all treatment units and road systems with activity related to this proposed project.

Spatial Bounds

Water howellia and Spalding's catchfly

The analysis area for this proposed project is based to the area of the project's influence/impacts on known occurrences or potential habitat Spalding's catchfly. Because there are no known or occurrences or potential habitat for water howellia or Spalding's catchfly within or near the proposed project area, the analysis area is confined to the project area.

Regional Forester's sensitive plants

There are two Regional Forester's sensitive plant occurrences, western moonwort (*Botrychium hesperium*) and peculiar moonwort (*Botrychium paradoxum*), known to occur near the project area. This species reproduces from resprout of perennial rootstock and by aerially dispersing spores. Dispersal of spores is limited to the immediate area, however some spores may be aerially transported for a long distance (e.g. miles) (Don Farrar, personal communication). Because, populations are primarily maintained from resprout of perennial rootstocks and short dispersal of spores, the analysis area for this species is limited to the project area.

For potentially occurring sensitive plants within the project area, the analysis area is confined to the project area due to the lack of currently known occurrences.

Temporal Bounds

The temporal bounds are 10-20 years after the decision is signed. Vegetation conditions would take approximately 10-20 years to return to more existing closed canopy and understory cover conditions following implementation of the thinning and burning treatments. During this time opening of the canopy and increased soil disturbance from thinning and ground activities may

increase the potential for weed establishment possibly resulting in competition with known or potentially occurring sensitive plant species.

Affected Environment/Existing Condition

Federally Listed Plants

The FWS Montana Field Office web page, currently list two species as threatened for the FNF: water howellia (*Howellia aquatilis*) and Spalding's catchfly (*Silene spaldingii*) (USDI Fish and Wildlife Service 2007). There are no documented occurrences for these two species in the Montana Natural Heritage Program (MNHP) rare plants database and FNF rare plants occurrences database. In addition, no habitat was located 2005 aerial photo or during 2006 field surveys throughout the project area.

Water howellia (Howellia aquatilis)

There are no known occurrences of water howellia within the project area based on MNHP and FNF rare plants databases. Water howellia is an aquatic plant restricted to small pothole ponds, or oxbows, long since isolated from the flowing surface waters of the adjacent river. In Montana, most water howellia occurrences are in glacially formed ponds surrounded by diverse coniferous forests. Several wetland ponds were identified in aerial photos and within the project area and were surveyed in 2006. Wetlands in project area were of low potential for water howellia. Water howellia was not detected during these surveys.

Water howellia occurrences are distributed throughout the Pacific Northwest in scattered clumps across Montana, Idaho, Washington, and California. There are 136 known occurrences known to Montana, all in the Swan Valley. Water howellia habitat has been subject to various management activities including dredging, draining, road construction, logging, and grazing (Shelly 1988, USDA 1997). Reed canarygrass (Phalaris arundinacea), an introduced species, also threatens populations across its range (Lesica 1997a).

Spalding's Catchfly (Silene spaldingii)

There are no known occurrences of Spalding's catchfly within the project area or within the Flathead National Forest, based on MNHP database and FNF sensitive plants database. In Montana, Spalding's catchfly, are associated with grasslands dominated by rough fescue (*Festuca scabrella*), bluebunch wheatgrass (*Elymus spicatus* or *Agropyron spicatum*), and/or Idaho fescue (*Festuca idahoensis*). These grasslands may have scattered ponderosa pine (*Pinus ponderosa*) trees forming an open canopy. Although there are numerous mountain grasslands on the Flathead National Forest with similar species composition, it appears that Spalding's catchfly prefers mesic sites within a matrix of drier grassland communities in the foothill and valley floor zones.

No grassland habitat with potential for Spalding's catchfly was identified during 2006 field surveys or identified in aerial photos in the Red Whale Project area or prescribed fire areas.

Regional Forester's sensitive plants – known occurrences

Little is known about the historical condition for TES plants in the North Fork Flathead drainage. Botanical surveys that may have detected rare plants were not initiated in the area before the onset of the Forest's Botany Program in 1991.

There are 52 recognized Regional Forester's sensitive plants for the Flathead National Forest (see project file – Exhibit H-1). The MNHP rare plants database and FNF rare plants occurrences databases were queried to determine known occurrences within the Red Whale Project area. There are no sensitive plants documented in theses databases within treatment units or within prescribed fire areas. Two sensitive plant species, western moonwort (*Botrychium hesperium*) and peculiar moonwort (*Botrychium paradoxum*) are adjacent to treatment unit C near Ford Cabin along the North Fork Flathead River terrace (Table 3-18).

Table 3-18. Sensitive Plants Adjacent to the Project Area.

Species	Element Occurrence	Habitat Guilds								
		AQ	FM	OW	RP	CS	WF	UF	GF	AS
Botrychium hesperium	11				X			X	X	
Botrychium paradoxum	20								X	

AQ= Aquatic; FM= Fens and Fen Margins; OW = Other Wetlands (marshes, wet meadows); RP= Riparian; CS = Moist Cliffs, Seeps, and Talus Slopes; WF = Wet Coniferous Forest; UF = Upland Coniferous Forest; GF = Grasslands and Forest Openings; AS = Alpine and Subalpine.

Regional Forester's Sensitive Plants - Potential Occurrences

A habitat suitability analysis was conducted to evaluate the potential for additional sensitive plants occurrences within the action areas. Sensitive plants species were grouped in habitat guilds (see project file – Exhibit H-1 – Biological Evaluation). Known vegetation types and elevation ranges of the action area were considered in evaluating potential habitat for sensitive plants. The Red Whale Project action area contains habitat types for sensitive plants associated with riparian; other wetlands; moist cliffs, seeps & talus slopes; wet coniferous forest; upland coniferous forest; grasslands & forest openings; and alpine & subalpine habitat groups.

Environmental Consequences

Direct, Indirect and Cumulative Effects of No-Action Alternative 1

No action is proposed by this alternative. Therefore, there would be no direct short-term effects on any listed threatened or sensitive plant species or their habitats. Indirect or cumulative long-term effects would depend on natural disturbances such as fire or floods.

Direct and Indirect Effects Common to Alternatives 2, 3 and 4

Federally Listed Plant Species

Water howellia

No known occurrences of water howellia exist within the proposed project area, based on FNF occurrence records and Montana Natural Heritage database. The nearest known occurrences are located in the Swan Valley.

No direct, indirect, or cumulative effects to water howellia from this proposed project are expected, due to the lack of habitat and known occurrences of water howellia within the project area.

Spalding's catchfly

There are no known occurrences of Spalding's catchfly within the proposed project area or within the Flathead National Forest, based on FNF occurrence records and Montana Natural Heritage database. Spalding's catchfly is only known to occur in rough fescue dominated grasslands.

No direct, indirect, or cumulative effects to Spalding's catchfly from this proposed project are expected, due to the lack of known occurrences or suitable habitat within the project area.

Regional Forester's Sensitive Plants

Known Occurrences

There are no known occurrences of sensitive plant species within the treatment units.
Two sensitive plant species, western moonwort (*Botrychium hesperium*) and peculiar moonwort (*Botrychium paradoxum*) are adjacent to treatment unit C near Ford Cabin along the North Fork Flathead River terrace. Both species occurs to the east of Unit C and east of North Fork Road 486. Plants are dispersed in the meadow opening south of Ford Cabin. No direct effects to this occurrence are expected, as no activities are proposed for this area. In addition, no indirect effects are expected. Dust accumulation from increased traffic along Road 486 during hauling is not expected to affect plants, as plants are far enough away from the road and there is a line of vegetation along the east side of road that would hinder the dust from reaching the meadow.

Potential Occurrences

The Red Whale Project area contains habitat types for sensitive plants associated with riparian; other wetlands; moist cliffs, seeps & talus slopes; wet coniferous forest; upland coniferous forest; grasslands & forest openings; and alpine & subalpine habitat groups listed in Exhibit H-1, Biological Evaluation. Surveys conducted for this project were not complete surveys, instead, were focused intuitive surveys, targeting high potential habitats. Not all areas were visited, so that some occurrences may have been overlooked due to the incompleteness of the survey.

For those potentially occurring Regional Forester's sensitive plants associated with the habitat guilds (see project record, Exhibit H-1, Biological Evaluation), the direct, indirect, and cumulative effects for undetected occurrences are unknown and can only be speculative due to lack of known locations. Undetected occurrences may experience mechanical compaction, noxious weed competition/displacement, roadside dusting, and hydrology alteration due to thinning activities.

Any new occurrences located during 2007 surveys or project implementation will be evaluated for potential impacts and, if necessary, contracts or project plans would be modified to mitigate potential impacts.

Cumulative Effects

Past activities such as road construction/maintenance, timber extraction, fire suppression and exclusion, post-fire restoration activities, recreation, collection of forest products, and private sector development has occurred within the proposed Red Whale Project area. Past, present, and foreseeable actions within the action area (federal and nonfederal) of this project include timber harvesting, land development, prescribed fire and burning activities, road construction and maintenance, recreation, noxious weed control, collection of forest products, prescribed fire, and fire suppression. These actions may have historically affected Regional Forester's sensitive plants and may continue to have effects.

Timber Harvesting, Fire Suppression and Development

Timber extraction, road construction/maintenance, and associated infrastructure development may alter the hydrologic processes for sensitive plants of wetland-associated habitat groups (aquatic, fens and fen margins, riparian, and wet coniferous forest). Changes to the hydrologic processes at wetlands may result in both a decrease and increase of wetland water levels. Timber extraction and associated infrastructure development often decreases canopy cover and in consequence may decrease evapotranspiration rates of surrounding upland trees. This may result in increased inundation of wetlands from runoff. In addition, increased canopy openings near wetlands may increase evaporation of the wetlands, effectively reducing water levels earlier in the growing season.

For non-wetland associated sensitive plants, timber extraction often increases light level to the understory. This may be a beneficial effect for some rare sensitive plants, but may have adverse effects for other rare plants requiring greater canopy cover (e.g. clustered lady's-slipper). In many cases, timber harvest creates stand changes not unlike that of naturally occurring fires; however, the pattern and distribution of forest size classes has drastically shifted from patterns that were created under natural disturbance regimes. Today forest stands are far more fragmented in the landscape in reference to forest structure and size class. Additionally, harvesting and development activities may increase mineral soil and bare ground exposed creating areas more vulnerable to weed seed establishment, which may affect the integrity of sensitive plant habitats.

Effective fire suppression efforts since about the 1930s may contribute to the cumulative effects to sensitive plants. Fire suppression has created a denser understory condition in many un-harvested stands where historically, low intensity understory fires occurred regularly. The fires that have been eliminated from the understory played a role in reducing fuels and encroaching vegetation. Fire suppression resulting in closed-canopy may have effects of reduced light levels to sensitive plants in the understory. Additionally, fire suppression activities increase mineral soil and bare ground exposed and vulnerable to weed seed establishment, which may affect the integrity of sensitive plant habitat.

Prescribed Fire and Burning Activities

Potential occurrences in prescribed burn areas may be directly affected for a brief period due to burn over of the sites. Burning activities that occur after germination and prior to seed set for annual sensitive plants will possibly reduce population viability for annual plant populations. Perennial plants will also be subjected to burn over; however, rootstock will remain and may experience temporary temperature increases in the soil. These effects are expected to be of short duration and may indirectly benefit these plants. Understory prescribed fire and thinning of the canopy may stimulate the expansion of undetected populations by reducing competition and increase light penetration to the understory. Additionally, fire activities increase mineral soil and bare ground exposed and creating areas more vulnerable to weed seed establishment, which may affect the integrity of sensitive plant habitats.

Roads

Past, present, and future maintenance of the roads have both adverse and positive cumulative effects on documented and potentially occurring roadside sensitive plant populations. Disturbance of roadsides may benefit those sensitive species that have a competitive edge in disturbed environments (Howell's gumweed, pink corydalis, Austin’s knotweed, and western moonwort) and temporarily adversely affect these populations until new seedlings establish in the openings. Maintenance of roads may increase traffic along these roads and thus increase potential for disturbance of plant populations adjacent to roads. Road construction and maintenance may also affect wetland habitats. It is possible that past (and future) road construction may have affected ground water and sediment flow in some wetlands. Increased siltation may result in shifts in the wetland vegetation composition, supporting emergent vegetation in place of submergent vegetation types (USDI 1996). Timber harvesting and development may also contribute to these same effects to wetland plants. Also, past road closures have positively affected potentially occurring plants by reducing the above affects and decrease the potential for weed seed dispersal.

Recreation

Trails and other areas frequented by recreationists may contribute to the cumulative effects to sensitive plants. Trail construction/maintenance near wetlands may affect sensitive wetland plants by increased siltation into wetlands or the dispersal of noxious weed seeds from human vectors. However, most recreationists are reluctant to tread in the mucky waters of wetlands.

Non-wetland plants may experience cumulative effects of trampling and collecting from dispersed recreation.

Forest Products: Personal Use Firewood Cutting, Christmas Tree Harvesting, Post and Poles, Bough and Cone Collection, Huckleberry Picking

Public use of forest products may contribute to the cumulative effects to sensitive plants. While obtaining forest products, trampling and collecting of sensitive plants could occur. The Red Whale Project area has a large amount of private land and poor access to National Forest lands, which may limit the amount of these activities and their subsequent effects.

Chemical Control of Noxious Weeds

Sensitive plants adjacent to areas of chemical weed control may be at risk of exposure to chemicals used in weed control. However, on the Flathead National Forest, sensitive plant surveys are conducted for each site (not previously treated) before any chemical control treatments, as required by the Flathead National Forest Noxious Weed and Invasive Weed Control Decision Notice and Finding of No Significant Impact (USDA Forest Service 2000a and 2000b). With the exception of some sensitive plants that occur in "disturbed" or early successional environments (Howell's gumweed, pink corydalis, Austin's knotweed, and western moonwort), noxious weeds do not persist with rare plants due to differing habitat requirements. Weed control on State and private lands may have adverse effects to plant viability for these plants that occupy disturbed habitats that may favor weed establishment.

Spread of noxious weeds resulting from past vegetation management, recreation, road construction, and this proposed project has the greatest potential for cumulative effects on potentially occurring sensitive plant populations. Weed control and monitoring are incorporated in the design criteria for this project.

Summary of Effects

The proposed Red Whale Project is expected to have no direct or indirect effects on known occurrences of federally threatened and endangered or Regional Forester's sensitive plants, as there are no known occurrences in the project area. The cumulative effects on unknown occurrences can only be speculative due to lack of known locations.

Regulatory Framework and Consistency

Threatened or endangered status affords a species and its habitat special protection from adverse effects resulting from federally authorized or funded projects. It is the responsibility of the Forest Service to design activities that contribute to the recovery of listed species in accordance with recovery plans developed as directed by the Endangered Species Act (ESA) (50 CFR part 402). The Flathead National Forest's Amendment 20 to the Forest Plan provides for conservation measures to ensure the protection of water howellia. Amendment 21 to the Forest Plan has a goal to "provide sufficient habitat to promote the recovery of threatened and endangered species and conserve the ecosystems upon which they depend."

Federal laws and direction applicable to sensitive species include the National Forest Management Act (NFMA 1976) and Forest Service Manual 2670. Amendment 21 to the Forest Plan has standards to conduct analyses to review programs and activities, to determine their potential effect on sensitive species, and to prepare a Biological Evaluation (BE). It also states "adverse impacts to sensitive species or their habitats should be avoided. If impacts cannot be avoided, the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole will be analyzed. Project decisions will not result in loss of species viability or create significant trends towards federal listing." Future conservation strategies for each species will present direction on maintaining habitat diversity and managing for population viability, as required by the NFMA and Forest Plan Amendment 21. The Forest Service is bound by Federal statutes (ESA, NFMA Act), regulations (USDA 9500-4) and agency policy (FSM 2670) to conserve biological diversity on NFS lands. A goal in Forest Plan Amendment 21 is to "ensure that Forest Service actions do not contribute to the loss of viability of native species."

All Alternatives of this proposed project would meet the direction of Forest Service Manual 2670.3 (sensitive plant species) and are consistent with the Forest Plan direction for sensitive plants. In addition, the proposed project is also in compliance with ESA and Flathead National Forest LRMP Amendments 20 and 21, with respect to federally listed plants.