

BROADAXE RARE PLANT REPORT

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Introduction

Salvage harvest and its associated activities within the Broadaxe Project Area have the potential to impact Endangered, Threatened, Proposed and Sensitive plants. Effects on population viability from disturbance events (natural or human-caused) are hard to quantify with certainty for all Threatened, Endangered and Sensitive plant species and species of concern. Specific knowledge of population biology and species ecology is not yet known for several species, particularly the sensitive moonworts and certain orchids. Much of the current knowledge regarding Threatened, Endangered and Sensitive plant species is based on observational and even anecdotal information. Literature and monitoring reports for several species, including deerfern (Blake and Ebrahimi, 1992), Constance's bittercress and Henderson's sedge (Lichthardt, 1998; Lichthardt, 2000), and Idaho barren strawberry (Crawford, 1980), provide a greater understanding of the relationship of habitat disturbance to the integrity of species populations.

The risk of adverse effects on Threatened, Endangered and Sensitive plants from activities varies with treatment type, timing and extent of treatment, habitat suitability, and the species. Plant surveys and mitigation measures are designed to protect populations and suitable habitat. Activities with effects that could lead to loss of population viability or trend toward federal listing would have the highest risks associated with them. Other activities may impact individual plants but are not likely to adversely affect population viability and as such are low to moderate risk activities. Small changes in the light regime, moisture levels, or moderate soil disturbance can impact individuals or populations of species dependent on specific successional habitats, soil fungi (mycorrhizae) associations, or canopy closure. Observations and monitoring information indicate that some activities may have little, or even positive effects on some species, such as deerfern (Blake and Ebrahimi, 1992) and Constance's bittercress (Crawford, 1980).

The purpose of this analysis is to determine if proposed activities would adversely impact Threatened, Endangered and Sensitive plants that may occur in the Broadaxe Project Area, to insure that the alternatives do not contribute to the loss of rare plant population viability, and to insure compliance with Forest Service and other federal policies. This analysis discusses the current status and distribution of known rare plant populations and habitat within the analysis area and how proposed activities are expected to impact them.

Indicators used to measure effects on sensitive plants and suitable habitat are acres proposed for treatment and miles of road constructed in potential rare plant habitat.

Regulatory Framework

Protection of plant species deemed Threatened, Endangered, or Rare (Forest Service "sensitive") and protection for population viability is determined by federal legislation, regulations, policy, and direction. This regulatory framework includes the National Environmental Policy Act (1969); the Endangered Species Act (1973), as amended; the

National Forest Management Act (1976); Forest Service Manual 2672.1 - 2672.43; Idaho Panhandle National Forests, Forest Plan (USDA 1987, pgs. II-1, 18, 27, 28); and direction from the Washington Office and Regional Watershed, Wildlife, Fisheries, and Rare Plant program.

Analysis Area

The geographic scope of the cumulative effects analysis area for rare plant species in this project is the Broadaxe Project Area (approximately 3,355 acres, all of which is National Forest System lands). Geographic scope of potential effects (direct, indirect, and cumulative) is determined by a combination of factors including: geographic location, the scope of the proposed action, resources and species which may be present, consequences and scope of effects, and the ability to measure effects. The scope of the action and the potential for adverse effects determine the extent of analysis necessary. This analysis considers short and long-term management as it may affect known or suspected populations of Threatened, Endangered and Sensitive plant species as well as their potential habitat. Temporally, the effects of proposed activities on rare plants or their habitat will vary with activity. Small scale activities with limited ground disturbance may result in brief effects. Large-scale activities such as timber harvest may alter habitat characteristics: these effects may extend beyond the anticipated timing of activities.

Analysis Methods

Plant species can be assigned to one or more rare plant guilds, which are groups based on similar habitat requirements and are useful for the purpose of analysis (Mousseaux, 1995). For the St. Joe Ranger District, the rare plant guilds are: aquatic, deciduous riparian, peatlands, wet forest, moist forest, dry forest, and sub-alpine. Rock seeps and springs are another habitat that can support certain Threatened, Endangered and Sensitive species, but they can occur across all guilds and are not identifiable at a coarse scale. A complete description of all guilds is located in the project file (project file, P-1).

Based on current information regarding preferred habitat and successional state for species within the different guilds, the District TSMRS (Timber Stand Management Record System) database indicates the amount of highly suitable rare plant habitat that may be present in the project area for many of the guilds. In addition, site-specific information from timber stand examination records, aerial photographs, topographic position, existing habitat and survey information, personal knowledge and professional judgment were used in analysis. Evaluation of known sites for Threatened, Endangered and Sensitive and species of concern (SOC) plants was accomplished using St. Joe Ranger District sensitive plant records and Idaho Department of Fish and Game Conservation Data Center (ICDC) Element Occurrence records.

Regional direction (Leonard, 1992) states that the need for and extent of field reconnaissance should be commensurate with the risk associated with the project and species involved, and the level of knowledge already in hand. Before any action alternative would be implemented, field surveys would be conducted in all areas slated for project activities that contain high potential suitable habitat. A general survey would be conducted, with more time being spent in special habitats. A species list would be compiled on all surveys of all species encountered. For difficult taxa such as mosses and

lichens, the lists may be abbreviated and focus on possible rare species. If any rare plant individuals are found, intensive searches would be conducted within the area. Species presence is assumed for all highly suitable habitats and field surveys either validate or negate presence. Any occurrences that are deemed necessary to ensure species and population viability against a potential trend towards federal listing would be protected. The importance of a population is based on a variety of factors such as size of population, number of known sites, ranking, and sensitivity to disturbance. These practices are assumed to be an effective conservation strategy. Some isolated individuals or occurrences, not deemed critical to population viability, may be impacted by activities. Occurrences discovered prior to project implementation would have mitigation measures designed by the District Botanist to ensure that species and population viability are maintained.

All necessary field surveys for this project were conducted in 2004. All survey reports are located in the project file (project file, P-2). Very few previous surveys were conducted in the project area, and they were associated with small projects such as road decommissioning or placement of fish structures.

Affected Environment

Historic Condition

Little is known regarding the historical occurrence, abundance, and distribution of rare plants and their habitats across the analysis area. An assessment of the forest ecosystem for the St. Joe Ranger District estimated that over 20% of the geographic area had the potential to support plant species that are now of special concern (USDA 1997, Integration of Forest Planning into Ecosystem Management, pg. 53).

Historically, stand replacing disturbance patterns in the St. Joe sub-basin were large and dominated by wildfire (USDA 1997, Integration of Forest Planning into Ecosystem Management, pgs. 41-55). Currently in the project area, timber harvest and associated roads are the dominant stand replacing disturbance pattern. As a result habitat fragmentation has increased, and the size of mature/old forests and forest patch size and diversity have declined.

Existing Condition

Currently, vegetative conditions across the St. Joe sub-basin are characterized by smaller patch sizes created by more uniform disturbances than would be found historically due to the predominance of human-caused disturbance regimes (USDA 1997, Integration of Forest Planning into Ecosystem Management, pgs. 14, 41-43, 51). As a result, vegetative diversity and specialized habitats have declined over historic conditions. Riparian areas also suffered more severe and common disturbances resulting in major declines in natural plant communities and habitat complexity (USDA 1997, Integration of Forest Planning into Ecosystem Management, pgs. 14, 25-26, 49-50, 54-55). In the St. Joe sub-basin, nearly 60% of riparian communities have experienced intensive habitat modification. Riparian communities that contained habitat for rare plant elements are estimated to have declined by approximately 68% across the sub-basin, resulting in decreased geographic connectivity and isolation of rare plants.

Currently habitat types on the St. Joe Ranger District that have been heavily modified and/or are in short supply (dry forest w/ large trees, riparian and wet and moist forest habitats) compared to historical conditions are the same habitats where most rare plant species can be found. However, the majority of the remaining riparian and cedar wet and moist forest habitats to be found across the district are expected to remain stable due to mitigation requirements (USDA 1997, Integration of Forest Planning into Ecosystem Management, pg. 54). Stable trends are also predicted for subalpine habitats, which have remained nearly intact. Although xeric sites are also predicted to remain stable, they are often highly vulnerable to noxious weed invasion.

Within the analysis area, changes to the character of the watershed have only occurred fairly recently and were primarily caused by timber harvest and associated activities as well as fire. Timber harvest along with associated road construction began in earnest in the 1960s and peaked in the 1970s. With the construction of roads and trails, recreation has increased in the area. Large-scale burns occurred in 1910 and 1968.

The sub-basins of northern Idaho contain varied and diverse habitats and plant communities. Of the estimated 1,200 to 1,500 plant species known or thought to occur here, about ten percent are considered rare or uncommon. Coarse filter queries of TSMRS indicate a total of approximately 610 acres of high potential habitat within the project area (34 acres of moist forest and 574 acres of subalpine). This equates to 18% of the project area. No acres of *Silene spaldingii* habitat were identified by a coarse filter. Project activities are restricted to only the subalpine guild and encompass approximately 300 acres of high potential rare plant habitat (project file, table and map, P-3).

Threatened Plant Species

No known sites of federally listed plants occur on the Idaho Panhandle National Forest. The USDI Fish and Wildlife Service lists three species as Threatened that may occur on the St. Joe Ranger District (USDI 2005, Biannual Forest Wide Species List). A Threatened species is any that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Water howellia (*Howellia aquatilis*) and Spalding's catchfly (*Silene spaldingii*) are suspected on the St. Joe Ranger District. This means that these species are believed to have potential to occur, but to date have not been found. Detailed descriptions of each species and their habitats are located in the project file (project file, P-4).

Water howellia (*Howellia aquatilis*) occurred historically in the Idaho Panhandle but is believed to have been extirpated. It is an annual aquatic species restricted to small, seasonal, pothole ponds or the quiet water of abandoned river oxbows that dry up each season. Because of this restrictive habitat requirement, population numbers in a given year are directly influenced by the extent of pond drawdown at the end of the previous growing season (USDA 1994, Conservation Strategy *Howellia aquatilis*) and are susceptible to changes in hydrology and annual weather conditions.

Spalding's catchfly (*Silene spaldingii*) is suspected to occur in the IPNF. Its habitat is in dry grassland habitats and grassland inclusions in ponderosa pine and Douglas-fir forest.

Sensitive Plant Species

Sensitive species, as determined by the US Forest Service, Northern Region Regional Forester (USDA 2004 Regional Forester's Sensitive Plant List), are those for which population viability is a concern. This can be indicated by a current or predicted downward trend in population numbers or suitable habitat, which would reduce the species' existing distribution. Twenty-four of these species are known or thought to occur on the St. Joe Ranger District (project file, P-5). Of these species, only one (*Triantha occidentalis* spp. *brevistyla*) might be found in subalpine habitats. It is, however, restricted to peatlands which do not occur in the project area. Additional information on these species is located in the project file (project file, P-1). There are no known occurrences of sensitive species within the project area (ICDC 2004).

Species of Concern

Along with Threatened, Endangered, and Sensitive plants, the Idaho Panhandle National Forest also tracks 23 forest species of concern, five of which have the potential to be within the project area (project file, P-6). These species are considered to be secure at the global, regional, and state levels, but may be at risk at the forest planning level. While biological evaluations are not required to address species of concern, they are addressed in effects analysis (as required by the National Forest Management Act) when viability within the planning unit is an issue. No known sites of species of concern occur within the project area (ICDC 2004).

Environmental Consequences

No Action

Direct and Indirect Effects

There are no known direct effects from the No-Action Alternative. Increasing fuel loads over time may indirectly increase risk to Threatened, Endangered and Sensitive plants and habitat due to an increase in risk of wildfire. The possible increase in high-intensity fires could have an array of effects on Threatened, Endangered and Sensitive plant species, ranging from beneficial to detrimental, depending on factors like fire intensity, the ability of the species to survive the event, and competition in early successional habitat. The ability to analyze these effects for all sensitive plant species is limited given our current knowledge.

Stand-replacing fires were an important part of ecosystem processes in northern Idaho prior to the beginning of effective suppression efforts in the 1930s. While not much is known about the historic condition of rare plant communities, it is evident that with the decrease in the quality and amount of highly suitable habitats and the increase in fragmentation due to human activities, the ability of rare plants to re-colonize following disturbance has been reduced.

Cumulative Effects

With no action, susceptibility of the landscape to high intensity, stand-replacing wildfire may increase due to increased fuel loading. Such fires could have detrimental effects on rare species. However, the time scale of such events is unpredictable. In addition, no habitat for T & E species and no rare plants were found during surveys. Therefore, for

listed species, this alternative would have **no effect**, and for sensitive plant species/guilds this alternative would have **no impact**.

Past activities on federal lands including fire, road construction, and timber harvest have likely affected rare plant populations and habitat. All proposed and future ground disturbing activities on National Forest System lands, except wildfire suppression, are evaluated through surveys and biological assessments/evaluations for their impact on Threatened, Endangered and Sensitive plant species.

Proposed Action

Direct and Indirect Effects

Deciduous riparian, aquatic, wet, dry and moist forests, and peatland habitats do not occur within proposed activity areas. Therefore, there would be no direct or indirect effects on these habitats and their associated rare species.

The effects to rare plants from project activities are difficult to quantify as they vary depending upon species, initial habitat character and condition, and degree of disturbance. In addition, although ground disturbing activities may pose a risk to rare plants and their habitats in the immediate time frame, those risks may be offset by mitigation measures, a reduction in risks to habitat, and by an improvement in habitat conditions in the long term.

Salvage harvest would impact about 300 acres of high potential rare plant habitat in the subalpine guild.

About one mile of road construction is proposed. Road construction is contained within harvest units and is located entirely in subalpine habitat. Road construction in high potential rare plant habitat poses a high risk to Threatened, Endangered and Sensitive species due to the amount of ground disturbance involved. On average, 5.6 acres of ground are disturbed for every mile of road constructed or reconstructed (project file, P-7). This road is temporary and would be decommissioned after harvest activities end. This activity is not expected to pose a risk to rare plant species or habitat. Plant surveys conducted within the stands in September 2004 revealed no listed species and little potential overall for the habitat to support our rare species. (project file, P-8).

All areas scheduled for ground disturbing activities that have a possibility for adverse effects within high potential habitat were surveyed for Threatened, Endangered and Sensitive species in 2004. No habitat exists for either water howellia or Spalding's catchfly therefore there would be **no effect** to these species. Surveys did not reveal good habitat for sensitive species or species of concern, and no populations were discovered. Therefore, there will be **no impact** to species of the subalpine guild.

In the event that any Threatened, Endangered and Sensitive plant populations are found prior to project implementation, the District Botanist would implement mitigation measures to protect population viability.

Cumulative Effects

The cumulative effects area for Threatened, Endangered and Sensitive plants and highly suitable habitat is the project area. Past activities including fire, fire exclusion, road construction, timber harvest, introduction of invasive species, and recreational use may have affected habitat in the area. However, subalpine habitats have remained fairly intact across the St. Joe Ranger District (USDA 1997, Integration of Forest Planning into Ecosystem Management, pg. 54) and are expected to remain so.

Design features would be applied to protect Threatened, Endangered and Sensitive plant species and viability for any populations discovered prior to project implementation on National Forest System lands. Current and future activities such as road building, timber harvest, burning, and recreation result in habitat modification. However, population viability would be addressed through mitigation of activities that may impact rare plants.

The cumulative effects on Threatened, Endangered and Sensitive plants from activities in the proposed action would add to cumulative effects by impacting high potential plant habitat. Only six plant species on the St. Joe Ranger District rare plant list occur in the subalpine habitat, and all but one (*Carex californica*, a species of concern) occur in specialized, often rocky habitats that would not have trees and so would not be affected by harvest activities. Surveys were conducted and habitat was found to be poor or lacking and no plants were found. However, intuitive surveys cannot guarantee absolute success in finding rare plants 100% of the time. For this reason it is possible that project activities may still contribute to cumulative effects.

Conclusions

Table B Conclusion of Effects for Sensitive Species Habitat Guilds

Alternative	Effect	Dry	Moist	Wet	Subalpine	Deciduous Riparian	Aquatic
No Action	NI	x	x	x	x	x	x
	MI						
	WI						
	BI						
Proposed Action	NI	x	x	x	x	x	x
	MI						
	WI						
	BI						

NI- No Impact

MI- May impact individuals or habitat but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species.

WI- Will Impact individuals or habitat with a consequence that the action may contribute to a trend toward federal listing or cause a loss of viability to the population or species.

BI- Beneficial Impact

Table C Conclusion of Effects for Threatened and Endangered Listed Species

Alternative	Effect	Water howellia	Spalding's catchfly
No Action	NE	x	x
	NLAA		

	LAA		
	BE		
Proposed Action	NE	x	x
	NLAA		
	LAA		
	BE		

NE- No Effect

NLAA- May Affect Not Likely to Adversely Affect

LAA-May Affect Likely to Adversely Affect

BE- Beneficial Effect

Consistency with Forest Plan and Other Regulatory Direction

The Forest Plan states one management goal as "manage habitat to maintain populations of identified sensitive species of animals and plants" (Forest Plan, II-1). A Forest Plan standard for sensitive species is to "manage the habitat of species listed on the Regional Sensitive Species List to prevent further declines in populations which could lead to Federal listing under the Endangered Species Act" (Forest Plan, II-28). The Forest Plan also identifies the need to "Determine the status and distribution of Threatened, Endangered, and Rare (sensitive) plants on the IPNF" (Forest Plan, II-18). The proposed action, with requirements for surveys and implementation of mitigation measures, would meet the intent of the Forest Plan. The No-Action Alternative would also meet the intent of the Forest Plan.

The proposed action would also meet the intent of the Endangered Species Act and the National Forest Management Act.