# BOTANY REPORT
# For The
# FALLEN BEAR PROJECT

## Idaho Panhandle National Forest

## St. Joe Ranger District

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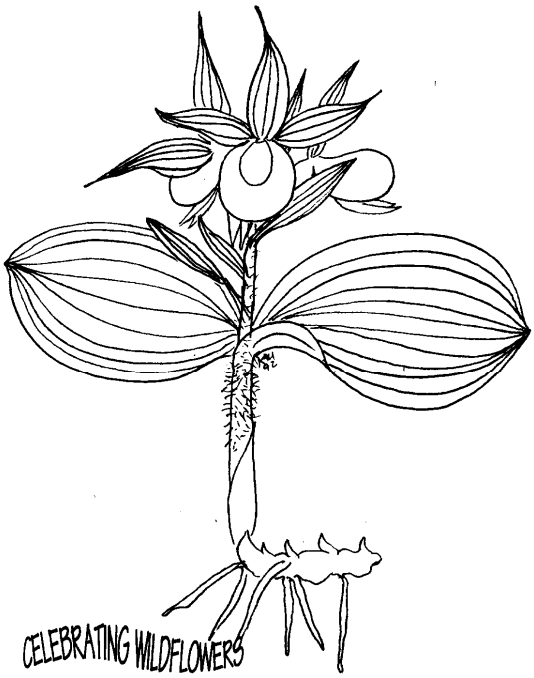


*Cypripedium fasciculatum*
**Clustered Lady's Slipper Orchid**

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**February 24, 2009**

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## Introduction

The purpose of this evaluation is to assess and describe potential effects of the Fallen Bear Project on Threatened, Endangered, and sensitive plant species and to determine whether any such species or habitat is likely to be affected by the proposed action. This evaluation was prepared in accordance with USDA Forest Service policy (FSM 26.70.32 & 2672.4).

The National Forest Management Act directs the Forest Service to review programs and activities to ensure that species do not become threatened or endangered as a result of Forest Service actions. Forest Service direction (FSM 2672.1-2672.43) requires that programs or activities be reviewed for potential effects on rare species and outlines policy, objectives and procedures. The Idaho Panhandle National Forest is directed by the forest plan to manage populations so as not to contribute to the need for listing under the Endangered Species Act (USDA 1987).

## ANALYSIS AREA and AFFECTED ENVIRONMENT

The project is located on the St. Joe Ranger District of the Idaho Panhandle National Forests. The Fallen Bear Project Area is located between Quartz Creek and Gold Creek north of the St. Joe River approximately 22 miles southeast of Avery, Idaho in Shoshone County in portions of Township 45 and 44 North; Range 7 and 8 East, Boise Meridian. The proposed activities are in Bruin, Haggerty, Shady, Stevens, and Tumbledown Creeks. The analysis area for botanical resources includes the entire project area and some TES plant locations along roadways to access the project area. The total project area is approximately 10,514 acres, all of which is National Forest System lands. Listed plant locations adjacent to the project area are also analyzed for potential impacts.

## Species and Habitat Descriptions

### Endangered Species

There are no federally listed Endangered plant species suspected to occur in the Idaho Panhandle National Forests.

### Threatened Plant Species

On February 11, 2009 the US Fish and Wildlife Service provided the Idaho Panhandle National Forests (IPNF) with the following list of plant species (FWS 1-9-09-SP-0035) which may be present in the Idaho Panhandle National Forest: water howellia (*Howellia aquatilis* A. Gray), and Spalding's catchfly (*Silene spaldingii* Wats.). 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 neither have been found.

**Water howellia** (*Howellia aquatilis*) - a member of the family Campanulaceae, has the potential to occur on the St. Joe Ranger District. According to the Conservation Strategy for *Howellia aquatilis* (USDA 1994), there are currently 110 known occurrences of the species; most occurrences are in Montana and Washington, with only one known occurrence in Idaho in Latah County. Water howellia occurred historically on the Forest, but is believed to have been extirpated.

Water howellia is an annual aquatic species restricted to small, seasonal, pothole ponds or the quiet water of abandoned river oxbows. It occurs at elevations from 10 feet in Washington to 4,420 feet in Montana. The species reproduces only by seed. Fall drying of the wetland is required for seed germination, while spring submergence is required for the growth and subsequent flowering (USFW 1996). Germination usually occurs in October, presuming the plant's habitat has dried sufficiently to expose the seeds to oxygen. Because of this restrictive habitat requirement, population numbers in a given year are directly influenced by the extent of pond draw-down at the end of the previous growing season (USDA 1994).

**Spalding's catchfly** (*Silene spaldingii*)- a member of the family Caryophyllaceae, is suspected to occur in the IPNF. It is currently known from 52 sites in west-central Idaho, northwestern Montana, eastern Oregon, eastern Washington, and British Columbia. The total number of individuals is around 16,500 (USDI 2001).

Spalding's catchfly is a long-lived perennial species, which reproduces only by seed (Lichthardt 1997). Individual plants often exhibit long periods of dormancy (one to three years) and may even experience dormancy within a growing season (Lesica 1997). Its habitat is in dry grassland habitats and grassland inclusions in ponderosa pine and Douglas-fir forest. Suitable habitat for this species is typically dominated by fescues (*Festuca* species), blue bunch wheat grass (*Pseudoroegneria spicata*), and other bunchgrasses, but also has a high density of forbs. Some sites may have large shrub thickets of *Symphoricapos albus*, *Physocarpus malvaceus*, or *Rosa* spp. Soil types on which it has been found include loam, silty loam, granitic, loamy basaltic, and loess (USDI 2000). Soils in its habitat are characterized as deep to moderately deep.

**Sensitive Species**

Sensitive species, as determined by the Regional Forester (USDA 2004), 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. Currently, the St. Joe Ranger District recognizes 25 species as sensitive. One occurrence of *Cypripedium fasciculatum* (clustered lady's slipper) is known from previous surveys, District sensitive plant records, and Idaho Department of Fish and Game Conservation Data Center (ICDC) Element Occurrence records. This

occurrence is on the project boundary and outside of all proposed activities. Surveys were conducted in 2007 for the Fallen Bear Project, led by Blaze O. Baker and the TEAMS botany crew. No additional occurrences of sensitive plant where discovered. Any occurrences discovered prior to project implementation would have mitigation measures designed by the District Botanist to ensure that species and population viability are maintained (see Design Features).

**Species of Concern**

Species of concern, as determined by the Region One Planning Peer Group (Task Group 19 1997), are considered to be secure at the global, Regional, and state levels but may be at risk at the Forest planning level. There are currently 26 recognized species of concern on the St. Joe Ranger District. One occurrence of *Dodecatheon dentatum* (white shootingstar) and six occurrences of *Mimulus clivicola* (North Idaho monkeyflower) are known from previous surveys, District sensitive plant records, and Idaho Department of Fish and Game Conservation Data Center (ICDC) Element Occurrence records. All of the Species of Concern sites are outside of proposed activity areas, with four of the North Idaho monkeyflower sites occurring on the project boundary. Surveys were conducted in 2007 for the Fallen Bear Project, led by Blaze O. Baker and the TEAMS botany crew. These surveys discovered no other Species of Concern occurrences. Any occurrences discovered prior to project implementation would have mitigation measures designed by the District Botanist to ensure that species and population viability are maintained (see Design Features).

## METHODOLOGY

Threatened, Endangered, and Sensitive (TES) plant species can be assigned to one or more rare plant guilds, which are artificial groups based on similar habitat requirements and useful for the purpose of analysis (Mousseaux 1995). For the 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 sensitive species, but they can occur across all guilds and are not identifiable at a coarse scale. High-potential deciduous riparian, aquatic, and peatland habitats do not occur within proposed activity areas. High-potential dry forest and wet forest types within the Fallen Bear Project Area do not occur in the proposed activity areas. A complete description of all guilds is located in Appendix A

The District stand database indicates the amount of highly suitable rare plant habitat that may be present in the project area based on current information regarding preferred habitat and successional state for species within the different guilds. Known sensitive species sites were evaluated using District sensitive plant records, surveys, and Idaho Department of Fish and Game Conservation Data Center (ICDC 2006) Element Occurrence Records. On-the-ground visits were used to verify habitat suitability if potential habitat is indicated. In addition, site-specific information from timber stand examination records, aerial photographs, topographic position, personal knowledge, and professional judgment were used in analysis for Threatened plant species, Sensitive

species, and Species of Concern potential habitats. No Federally Listed Endangered plant**s** are suspected. If any sites are found in the future that are deemed necessary to ensure species and population viability against a potential trend towards federal listing, those sites would be protected.

The importance of a population is based on a variety of factors such as size of the population, number of known sites, ranking of the species, and sensitivity to disturbance. Cumulative effects to rare plant species and suitable habitat from proposed activities are generally described as very low, low, moderate, or high with the following definitions:

- **very low** = no measurable effect on individuals, populations or habitat
- **low** = individuals, populations and/or habitat not likely affected
- **moderate** = individuals and/or habitat may be affected, but populations would not be affected, and habitat capability would not over the long term be reduced below a level which could support sensitive plant species
- **high** = populations would likely be affected and/or habitat capability may over the long term be reduced below a level which could support sensitive plant species

## Historic and Existing Condition

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 the TSMRS database indicate a total of approximately 6,166 acres of high potential habitat within the project area (4,220 acres of moist forest, 288 acres of wet forest, 826 acres of dry forest, and 832 acres of subalpine). This equates to 58% of the project area. In addition, there are 1288 acres of *Silene spaldingii* habitat that were identified by a coarse filter, some of which falls into the above mentioned habitats.

Queries of the district stand database indicate that the only high-potential habitat occurring within areas of proposed activities is within the dry forest, sub-alpine, moist forest, and wet forest guilds. High-potential deciduous riparian, aquatic, and peatland habitats do not occur within project area.

Past and ongoing activities within the project area and on adjacent public and private lands have led to habitat modification and fragmentation. Road construction, timber sales, recreational use, vehicular traffic, mining, and natural events have all contributed to encroachment of weeds into the area and the reduction of native species diversity.

Past wildland fires (both natural and human caused), have also contributed to habitat change and the encroachment of weeds. Two large fire areas burned in 1910, 200 acres of the east Shady Creek area and over 600 acres of the Haggerty Creek drainage most likely lead to an increase of native species over time. However, these large intense fires and the associated activities may have contributed to the first establishment of weeds in the area. Data from 1940 to present (no data available for 1971-1973) show 25 fires of less than 10 acres. These fires due to suppression activities and size did little to increase species

diversity for native species. One 300+ acre fire occurred in the same time period. It, like the 1910 fire, would have improved native species diversity over time, but likely increased invasive weed species encroachment.

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. 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: Toward a Forest Ecosystem Approach: An Assessment for the St. Joe Area* page 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 which would have a risk to TES plants.

**Design Features**

The project would be implemented with the following resource protection measures:

**A.** If Threatened, Endangered, and Sensitive (TES) species are discovered during project implementation, the District Botanist would be notified so that measures could be taken to maintain population viability. Measures to protect population viability and habitat for all known and newly discovered occurrences would include altering or dropping proposed units from activity, modifying the proposed activity, or implementing buffers around plant occurrences. Provisions for protection of Endangered Species, and settlement for environmental cancellation would be included in all contracts.

# ALTERNATIVES

**Alternative A – No-Action Alternative**

This alternative proposes to maintain the existing level of management within the Fallen Bear Project Area. Fire suppression, road maintenance, installation of a bat gate at the Eureka mine, and recreation use would continue. It does not propose any new management. Known sites within the project area would continue to be outside of ground disturbing activities. Any new occurrence would fall under the above design feature.

## Cumulative Effects

Past and ongoing activities within the project area and on adjacent public and private lands have led to habitat modification and fragmentation. Road construction, timber sales, recreational use, vehicular traffic, mining, and natural events have all contributed to encroachment of weeds into the area and the reduction of native species diversity.

Current and reasonably foreseeable activities within the project area include firewood collection; recreational use of roads, trails, and dispersed sites; road and trail maintenance, installation of a bat gate at the Eureka mine, and fire suppression. These types of activities could result in new disturbed sites available for colonization by weeds, and they do offer the possibility of introduction of new species of weeds to the watershed. The effect of the No-Action Alternative is expected to result in a No Impact to TES plant species and their habitats.

## ALTERNATIVE B

### Timber Harvest

Timber harvest may directly eliminate individual plants or populations through physical disturbance and damage or eradicate soil mycorrhizae upon which many plant species depend. Some isolated individuals or occurrences may be impacted by activities. Often these individuals are part of a larger "meta-population" and are not deemed critical to population viability. Effects to TES plants from this project could occur indirectly. Canopy reduction could affect certain TES plants by changing light and moisture regimes. The effects threshold for canopy reduction has not been quantified for most TES plants, but is generally thought to be about 50 percent; below which effects could be minimal and above which effects could be evident. The higher the percent canopy removed, the greater the potential risk to TES plants in suitable habitat. The limited data and observations available indicate that many species in the moist and wet forest guilds are intolerant of major canopy removal (Lichthardt 1998; Greenlee 1997). Most of the high potential habitat to be harvested (Table 1) is in the moist forest guild with a minor component in the sub-alpine guild. All other plant guilds that exist in the Fallen Bear Project Area are outside of harvest units. Therefore those TES plants within the moist forest guild are at the greatest risk to possible effects from harvest activities. The risk to TES plant species varies with treatments types (see Table 2) and amount of ground being disturbed. For the Fallen Bear Project Area the highest risk to TES plants is by clearcut with reserves, followed by commercial thin at a moderate risk. Seedtree and shelterwood harvest could also have a high to moderate risk depending upon the amount of canopy retained.

**Table 1: Harvest with in High Potential Habitats for TES Plants Alternative B**

| Habitat Type | Acres | Harvest Method |
|---|---|---|
| Sub-alpine | 14 | Commercial Thinning |
| Moist | 155 | Commercial Thinning |
| Moist | 43 | Shelterwood |
| Moist | 41 | Seed Tree |
| Moist | 8 | Clear Cut with Reserve |
| **TOTAL** | **261** | |

Indirectly, changes in fuel loading, duff levels, moisture regime, light levels, soil movement within plant occurrences, and noxious weed invasion may impact TES plants and their habitat. Site preparation such as controlled burning or slash treatment associated

with post harvest activities could also affect TES plants or habitat. While timber harvest has the potential to adversely affect rare plants, it may not always do so. Effects vary according to species, harvest method, and harvest prescription.

**Table 2: Treatment Type in all Habitats**

| Treatment | Acres | % of Harvest |
|---|---|---|
| **Alternative B** | | |
| Shelterwood | 72 | 15 |
| Seed tree | 24 | 5 |
| Clearcut with reserve | 99 | 20 |
| Commercial Thin | 288 | 60 |
| **Alternative B Total** | **483** | **100** |
| **Alternative C** | | |
| Shelterwood | 44 | 15 |
| Seed tree | 24 | 8 |
| Clearcut with reserve | 44 | 15 |
| Commercial Thin | 181 | 62 |
| **Alternative C Total** | **293** | **100** |

Cable-skyline yarding poses a moderate to low risks depending on the amount of ground disturbance. Skyline yarding, unlike tractor skidding, has fewer indirect effects from compaction and repeated use of skid trails. Ground-based tractor skidding has the highest risk to TES plants due to direct physical impacts, soil compaction, and soil displacement. Table 3 displays the acres of each method per prescription. Alternative B would have 81% of the harvest done by skyline yarding, which results in less ground disturbance than cable methods. In addition indirect negative effects from further ground disturbance by ORVs would be less with skyline yarding than in traditional harvest methods as no skid trails would be created.

**Table 3. Approximate Acres by Harvest Method**

| Harvest Method | Acres | % of Harvest |
|---|---|---|
| **Prescription B:** | | |
| Skyline system | 392 | 81 |
| Tractor | 91 | 19 |
| **Alternative B total** | **483** | |
| | | |
| **Prescription C:** | | |
| Skyline system | 248 | 85 |
| Tractor | 45 | 15 |
| **Alternative C total** | **293** | |

If new threatened, endangered, or sensitive species are discovered during project implementation, the district Botanist would be notified so that measures could be taken to maintain population viability. Measures to protect population viability and habitat for all known and newly discovered occurrences would include altering or dropping proposed

units from activity, modifying the proposed activity, or implementing buffers around plant occurrences. Contract provisions for protection of Endangered Species, and settlement for environmental cancellation would be included in all contracts.

**Timber Stand Improvement (TSI)**

Timber Stand Improvement (TSI) activities include pre-commercial thinning 775 acres to improve the growing conditions of the selected trees by eliminating competition for light and nutrients, and 777 acres of white pine pruning. Timber stand improvements may directly eliminate individual plants through physical disturbance and damage or eradicate soil mycorrhizae upon which many plant species depend. Some isolated individuals or occurrences may be impacted by activities. Often these individuals are part of a larger "meta-population" and are not deemed critical to population viability. Precommercial thinning would generally occur in areas with low probability of providing habitat for sensitive species. While it is possible that undetected individuals of *Botrychium* sp. could be impacted, no other sensitive species is expected to occur in such habitat. Effects to *Botrychium* species would likely be restricted to damage of seasonal, above-ground vegetation.

Pruning and thinning may have indirect effects though changes to light and moisture regimes. The effects threshold for canopy reduction has not been quantified for most TES plants, but is generally thought to be about 50 percent; above which effects could be evident and below which effects could be minimal. Noxious weeds are particularly adept at colonizing disturbed areas where light levels have increased. Most pre-commercial thinning and pruning would be done by hand and would have a low amount of further disturbance. TSI may also indirectly improve habitat for rare plants by decreasing fuel loads for high intensity fire and increasing the over health of a stand. TSI is a moderate to low risk for TES plant species. If TES species are found in the affected areas plant sites will be flagged and buffered.

**Mistletoe Units**

Approximately 161 acres of trees infected with dwarf mistletoe (*Arceuthobium* sp.) would be girdled in order to slow the spread of dwarf mistletoe on the acres treated. Some of the western larch seed-trees (less than 100 trees), best suited for producing future cavity habitat, would be inoculated with heartrot decay fungus to improve wildlife habitat. As this treatment would be done by hand work, little to no ground disturbance would occur. Treating mistletoe is unlikely to **a**ffect TES plant species and is considered to have a very low risk to TES plants. Overtime this treatment would lead to an increase in forest health. Therefore any effect on TES plants are their habitats would be considered beneficial.

**Tree Planting**

Conifer seedlings would be planted on approximately 195 acres in areas proposed for regeneration harvest. Plantings would be done by hand with minimal ground disturbance. Re-planting with native tree species assists in the stabilization of soils. Tree planting also reduces the available habitat for non-native invasive species. Due to the low amount of ground disturbance and the reduction of potential habitat for invasive species spread tree

planting is of no risk to TES plants. Any effect on TES plants are their habitats would be considered beneficial.

**Biomass Removal**

Biomass removal for the St. Maries School District Fuels to Schools Project would be a by-product of the proposed fuel treatment. This activity would occur on sites which would be disturbed by harvest and fuel treatments. Effects of biomass removal are considered under effects of timber harvest and fuel treatment and would have no additional risks to TES species.

**Pocket Gopher Control**

Baiting may be done to control pocket gophers on up to 195 acres in areas proposed for regeneration harvests if needed to protect regeneration. Baiting would include placing either 0.5% strychnine treated oats or 2.0% zinc phosphide oats into pocket gopher tunnels by hand. This treatment would protect both natural and artificial regeneration from pocket gopher damage during establishment. An initial treatment would be followed by additional treatments, if needed, to minimize losses in the regeneration and meet stocking objectives. Available research shows no significant quantity of strychnine or zinc uptake in plants where similar treatments have taken place (see Botany Biological Evaluation/Assessment for Pocket Gopher Control 2008-2018). Due to the low amount of ground disturbance and lack of effect from the chemicals there is a very low risk to TES plants.

**Fuel Treatments**

Fuels on approximately 468 acres within the Fallen Bear Project Ares would be treated after timber harvest. Fuel treatments may have direct effects through physical disturbance. Machine piling of slash in suitable TES plant habitats can range from a low to high risk of effect due to the direct physical disturbance and the concentration of heat under the piles. However, many of these areas would be disturbed during harvest activities prior to fuel treatments.

Lopping and yarding tops within 200 feet of roads would have a low risk for affecting TES plants as these treatments result in a low amount of ground disturbance.

Grapple piling with pile burning and underburning treatments would have a low risk for adversely affecting TES plant species as long as slash piles are not placed directly on a TES plant occurrence. An indirect effect may result from the addition of nitrogen to the soil, temporarily increasing plant growth, following an underburn. Low or even mixed severity fire in suitable TES plant habitat can be beneficial to certain TES plants, yet detrimental to others depending upon a variety of factors like fire intensity, the ability of the species to survive the event, and competition in early successional habitat.

Fuel treatments in this project would all occur on areas that would be previously disturbed due to harvest activities. Some fuel treatments may have an indirect effect to TES plants by increasing the risk of noxious weed infestation (see discussion in the weeds report). Overall, these secondary treatment would have a low to moderate risk to adversely affecting TES plants.

**Road Reconstruction, Storage, and Decommissioning**

Approximately 18.7 miles of road on National Forest System lands would be reconstructed to provide access for timber harvest in Alternatives B. Reconstruction of existing roads to prepare them for safe timber hauling may result in a shift in accessibility from high clearance vehicles only to passenger car access. Fewer miles may be reconstructed depending on hauling needs. Reconstruction may include clearing, installation of drain dips and culverts, grading, dust abatement, and resurfacing. The indirect effects of road reconstruction would be an increase in the potential for the introduction and expansion of weed species, especially into previously inaccessible areas, with increased access. Overall improvements on the existing road bed would have a very low risk for TES plant species.

Currently there are 15.7 miles of open roads in the project area. Alternative B would reduce the miles of open roads to 5.4 miles. Decrease of access is discussed below under each type of restrictions.

Prescription A (gate) and prescription B (barrier) roads maintain the road bed, while having a footprint of disturbance at the gate or barrier site. Some motorized traffic may be reduced, however ATV, stock, bicycle, and pedestrian access would still persist. Changing to Road Management Prescriptions A and B would have a low risk to TES plant species because these areas have been previously disturbed and would still retain some access at a reduced rate. A slight benefit would occur in the reduction of noxious weed vectors into potential TES plant habitats.

Approximately 25 miles of road would be put into Prescription C (long-term storage). Long-term storage may eliminate motorized access while still permitting stock, bicycle, and pedestrian access. The reductions in vehicular access would result in a decreased potential for weed transport. Changing to Road Management Prescription C would have a low risk to TES plant species because these areas have been previously disturbed and would still retain some access at a reduced rate. A slight benefit would occur in the reduction of noxious weed vectors into potential TES plant habitats.

Recontouring of about 32 miles of roads by decommissioning (Prescription D) would eliminate all types of future access and would have a short-term increase in disturbed soil outside of the existing disturbed road surface. Over the long term there would be a reduction of weed risk as those re-contoured roads re-vegetate and the weed vectors that once utilized the roads are eliminated.

Storage and decommissioning of roads, while having some ground disturbance associated with the activity is considered to have a very low risk to TES plants species due to the areas being previously disturbed and the reduced potential for further disturbance and weed spread over time.

Roads that are not open prior to the action alternative, but would be used for activities during the sale, would be gated during the sale activities to limit access not pertinent to the sale.

Together decommissioning and road storage may have a beneficial effect on TES plants and their habitats by a slight reduction in disturbance to potential habitats.

### New Road Construction

Approximately 2.8 miles of new road construction on National Forest System lands would be necessary to implement the envisioned timber harvesting systems. When timber harvest and associated activities are complete the newly constructed roads (2.8 miles) would be put into Road Management Prescription C (long-term storage). Road construction miles would impact previously undisturbed ground. Construction would include clearing, installation of drain dips, culverts, grading, surfacing, and dust abatement. The indirect effects of road construction would be an increase in the potential for the introduction and expansion of weed species, especially into newly accessible areas, and disturbance of established seed beds and soil. Approximately 1.7 miles is in high potential habitat for the moist forest guild with 0.2 miles in the sub-alpine guild. New road construction may directly eliminate individual plants or populations through physical disturbance and damage or eradicate soil mycorrhizae upon which many plant species depend. Indirectly, changes in fuel loading, duff levels, moisture regime, and light levels may impact TES plants and their habitat. Ground disturbance to create a new road bed would have a high to moderate risk for TES plant species dependent upon habitat types.

## Cumulative Effects

Past and ongoing activities within the project area and on other lands have led to habitat modification and fragmentation in and around the project area. Road construction, timber sales, recreational use, vehicular traffic, mining, and natural events have all contributed to encroachment of weeds into the area and the reduction of native species diversity. Current and reasonably foreseeable activities within the project area include firewood collection; recreational use of roads, trails, and dispersed sites; road and trail maintenance, closing a mine tunnel with a bat-friendly gate, and fire suppression. These types of activities could result in new disturbed sites available for colonization by weeds, and they do offer the possibility of introduction of new species of weeds to the watershed. There would be no direct impact to TES plants; however indirectly, because of the potential risk of weeds there would be an increased risk to TES. Therefore, because the risk of weeds is slightly higher for Alternative B, the risk to TES would be slightly higher with Alternative B. For the “Impacts” on individual species refer to the Determinations of Effects section of this report.

## ALTERNATIVE C

### Timber Harvest

Timber harvest may directly eliminate individual plants or populations through physical disturbance and damage or eradicate soil mycorrhizae upon which many plant species depend. Some isolated individuals or occurrences may be impacted by activities. Often these individuals are part of a larger “meta-population” and are not deemed critical to

population viability. Canopy reduction could affect certain TES plants by changing light and moisture regimes. The effects threshold for canopy reduction has not been quantified for most TES plants, but is generally thought to be about 50 percent; below which effects could be minimal and above which effects could be evident. The higher the percent canopy removed, the greater the potential risk to TES plants in suitable habitat. The limited data and observations available indicate that many species in the moist and wet forest guilds are intolerant of major canopy removal (Lichthardt 1998; Greenlee 1997). All of the high potential habitat (275 acres) to be harvested is in the moist forest guild. All other plant guilds that exist in the Fallen Bear Project Area for Alternative C are outside of harvest units. The risk to TES plant species varies with treatments types, harvest methods, and amount of ground being disturbed. For Alternative C the highest risk to TES plants is by clearcut with reserves, followed by commercial thin at a moderate risk. Seedtree would have a moderate to high risk depending upon the amount of canopy retained. Shelterwood harvesting would have a very low risk to TES plants as no acres would be harvested in high potential habitat.

**Table 4: Harvest with in High Potential Habitats in Alternative C**

| Habitat Type | Acres | Harvest Method |
|---|---|---|
| Moist | 9 | Clear Cut with Reserve |
| Moist | 98 | Commercial Thinning |
| Moist | 0 | Shelterwood |
| Moist | 17 | Seed Tree |

Cable-skyline yarding poses a moderate to low risks depending on the amount of ground disturbance. Skyline yarding, unlike tractor skidding, has fewer indirect effects from compaction and repeated use of skid trails. Ground-based tractor skidding has the highest risk to TES plants due to direct physical impacts, soil compaction, and soil displacement. Alternative C would have 85% of the harvest done by skyline yarding, which results in less ground disturbance than cable methods. In addition indirect negative effects from further ground disturbance by ORVs would be less with skyline yarding than in traditional harvest methods because no skid trails are created.

Indirectly, changes in fuel loading, duff levels, moisture regime, and light levels may impact TES plants and their habitat. Site preparation such as controlled burning or slash treatment associated with post harvest activities could also affect TES plants or habitat. While timber harvest has the potential to adversely affect rare plants, it may not always do so. Effects vary according to species, harvest method, and harvest prescription.

Alternative C would harvest 293 acres of timber. This is 190 fewer acres than Alternative B. Also, Alternative C proposes 4% more acres of skyline yarding and 4% fewer acres of tractor skidding than Alternative B. Therefore the associated ground disturbance with these activities is less in Alternative C. Alternative C proposes a lower risk to TES plant species and their habitats as compared to Alternative B.

If new threatened, endangered, or sensitive species are discovered during project implementation, the district Botanist would be notified so that measures could be taken to

maintain population viability. Measures to protect population viability and habitat for all known and newly discovered occurrences would include dropping parts or all of proposed units from activity, modifying the proposed activity, or implementing buffers around plant occurrences. Provisions for protection of Endangered Species, and settlement for environmental cancellation would be included in any subsequent timber sale contracts.

**Timber Stand Improvement (TSI)**
Proposed TSI work is the same in Alternative C as Alternative B. See discussion under Alternative B.

**Mistletoe Units**
Proposed mistletoe work is the same in Alternative C as Alternative B. See discussion under Alternative B.

**Tree Planting**
Proposed tree planting is the same in Alternative C as Alternative B except that only 112 acres would be planted in Alternative C. See discussion under Alternative B.

**Biomass Removal**
Biomass removal for the St. Maries School District Fuels to Schools Project would be a by-product of the proposed fuel treatment. This activity would occur on sites which would be disturbed by harvest and fuel treatments. Effects of biomass removal are considered under effects of timber harvest and fuel treatment and would have no additional risks to TES species.

**Pocket Gopher Control**

Proposed pocket gopher control is the same in Alternative C as Alternative B except that only 112 acres would possibly be treated in Alternative C. See discussion under Alternative B.

**Fuel Treatments**

Fuels on approximately 312 acres would be treated after timber harvest under Alternative C. Fuel treatments may have direct effects through physical disturbance. Machine piling of slash in suitable TES plant habitats can range from a low to high risk of effects due to the direct physical disturbance and the concentration of heat under the piles. Many of these areas would be disturbed during harvest activities prior to fuel treatments.

Fuel treatments may have direct effects through physical disturbance. Machine piling of slash in suitable TES plant habitats can range from a low to high risk of effect due to the direct physical disturbance and the concentration of heat under the piles. However, many of these areas would be disturbed during harvest activities prior to fuel treatments.

Lopping and yarding tops within 200 feet of roads would have a low risk for affecting TES plants as these treatments result in a low amount of ground disturbance.

Grapple piling with pile burning and underburning treatments would have a low risk for adversely affecting TES plant species as long as slash piles are not placed directly on a

TES plant occurrence. An indirect effect may result from the addition of nitrogen to the soil, temporarily increasing plant growth, following an underburn. Low-, or even mixed-, severity fire in suitable TES plant habitat can be beneficial to certain TES plants, yet detrimental to others depending upon a variety of factors like fire intensity, the ability of the species to survive the event, and competition in early successional habitat.

Fuel treatments in this project would all occur on areas that would be previously disturbed due to harvest activities. Some fuel treatments may have an indirect effect to TES plants by increasing the risk of noxious weed infestation (see discussion in the weeds report). Overall, these secondary treatment would have a low to moderate risk to adversely affecting TES plants. The overall risk is less in Alternative C because Alternative C would treat 189 fewer acres than Alternative B.

**Road Reconstruction, Storage, and Decommissioning**

Approximately 7.3 miles of road would be reconstructed to provide access for timber harvest in Alternatives C. Alternative C includes 10.6 fewer miles of reconstruction than Alternative B. Reconstruction of existing roads to prepare them for timber hauling may result in a shift in accessibility from high clearance vehicles only to passenger car access. Fewer miles may be reconstructed depending on hauling needs. Reconstruction may include clearing, the installation of drain dips and culverts, grading, dust abatement, and resurfacing. The indirect effects of road reconstruction would be an increase in the potential for the introduction and expansion of weed species, especially into previously inaccessible areas, with increased access. Overall improvements on the existing road bed would have a very low risk for TES plant species.

Currently there are 15.8 miles of open roads in the project area. Alternative C would reduce the miles of open roads to 5.4 miles. Decrease of access is discussed below under each type of restrictions.

Prescription A (gate) and Prescription B (barrier) roads maintain the road bed, while having a footprint of disturbance at the gate or barrier site. Some motorized traffic may be reduced; however ATV, stock, bicycle, and pedestrian access would still persist. Changing road management prescriptions to Prescription A and B would have a low risk to TES plant species because these areas have been previously disturbed and would have reduced access. A slight benefit would occur from the reduction of noxious weed vectors into potential TES plant habitats.

Approximately 37.5 miles of road would be put into Prescription C (long-term storage). Long-term storage is intended to eliminate motorized access while still permitting stock, bicycle, and pedestrian access. This would reduce opportunities for weed spread in the long-term. Alternative C adds 12.1 more miles to long-term storage than Alternative B. Changing to Road Management Prescription C would have a low risk to TES plant species because these areas have been previously disturbed and access would be reduced. A slight benefit would occur from the reduction of noxious weed vectors into potential TES plant habitats.

Decommissioning about 32.2 miles of roads (Prescription D) would eliminate all types of future access and would have a short-term increase in disturbed soil outside of the existing disturbed road surface. Over the long term there would be a reduction of weed risk as those decommissioned roads re-vegetate and the weed vectors are eliminated. Decommissioning roads is considered to have a very low risk to TES plants species even though it has some ground disturbance because the areas were previously disturbed and the potential for further disturbance and weed spread would be reduced over time. Both action alternatives have the same miles of road decommissioning.

Roads that are not open prior to the action alternative, but would be used for activities during the sale, would be gated during the sale activities to limit access not pertinent to the sale.

Together decommissioning and road storage may have a beneficial effect on TES plants and their habitats by a slight reduction in disturbance to potential habitats.

**Road Construction**

Alternative C includes up to 0.8 miles of new road construction which is two miles less than that proposed in Alternative B. When timber harvest and associated activities are complete the newly constructed roads would be put into Road Management Prescription C (long-term storage). Road construction would impact previously undisturbed ground. Construction would include installation of drain dips, culverts, grading, clearing, surfacing, and dust abatement. The indirect effects of road construction would be an increase in the potential for the introduction and expansion of weed species, especially into newly accessible areas, and disturbance of established seed beds. New road construction may directly eliminate individual plants or populations through physical disturbance and damage or eradicate soil mycorrhizae upon which many plant species depend. Indirectly, changes in fuel loading, duff levels, moisture regime, and light levels may impact TES plants and their habitat. Ground disturbance to create a new road bed would have a high to low risk for TES plant species dependent upon habitat types.

## Cumulative Effects

Past and ongoing activities within the project area and on adjacent public and private lands have led to habitat modification and fragmentation. Road construction, timber sales, recreational use, vehicular traffic, mining, and natural events have all contributed to encroachment of weeds into the area and the reduction of native species diversity. Current and reasonably foreseeable activities within the project area include firewood collection; recreational use of roads, trails, and dispersed sites; road and trail maintenance, closing a mine tunnel with a bat-friendly gate, and fire suppression. These types of activities could result in new disturbed sites available for colonization by weeds, and they do offer the possibility of introduction of new species of weeds to the watershed. There would be no direct impact to TES plants. The risk of weeds is slightly lower for Alternative C than in Alternative B, therefore the risk to TES would be slightly lower with Alternative C.

## DETERMINATION OF EFFECTS

### Listed Species

Botanical field surveys were conducted in 2007 for the Fallen Bear Project by Blaze O. Baker and the TEAMS botany crew. Based on pre-field survey interpretive work and field surveys *Howellia aquatilis* is not suspected to occur and has not been found in the Fallen Bear Project Area. Potential habitat for Spalding's catchfly was surveyed by the TEAMS botany crew, and no plants were found.

**Listed Species**

| Species | No Effect | May Effect: Not Likely to Adversely Effect | May Effect: Likely to Adversely Effect | Beneficial Effect |
|---|---|---|---|---|
| Water howellia | X | | | |
| Spalding's catchfly | X | | | |

### Sensitive Species

One occurrence of, *Cypripedium fasciculatum*, clustered lady's slipper is known within the analysis area. All sites are outside of activity areas and would not be directly impacted. No new sensitive species occurrences were found during surveys.

**St. Joe Sensitive Plants by Rare Plant Habitat Guild**
(revised August 2007)*

| Species | Common Name | Habitat Guild | Effects |
|---|---|---|---|
| *Asplenium trichomanes* | maidenhair spleenwort | rock seeps in Moist/Wet Forest | NI |
| *Blechnum spicant* | deerfern | Moist/Wet Forest | NI |
| *Botrychium ascendens* | upswept moonwort | Wet Forest | NI |
| *Botrychium crenulatum* | dainty moonwort | Wet Forest | NI |
| *Botrychium lanceolatum* | triangle moonwort | Wet Forest/Moist Forest | NI |
| *Botrychium lineare* | Slender moonwort | Moist Forest | NI |
| *Botrychium minganense* | Mingan moonwort | Wet Forest/Moist Forest | NI |
| *Botrychium montanum* | western goblin | Wet Forest | NI |
| *Botrychium paradoxum* | paradox moonwort | Wet Forest/Moist Forest | NI |
| *Botrychium pedunculosum* | stalked moonwort | Wet Forest | NI |
| *Botrychium pinnatum* | northwestern moonwort | Wet Forest/Moist Forest | NI |
| *Botrychium simplex* | least moonwort | Wet Forest/Moist Forest | NI |

| | | | |
|---|---|---|---|
| *Buxbaumia aphylla* | leafless bug-on-a-stick moss | Wet Forest/Moist Forest | NI |
| *Buxbaumia viridis* | Green bug-on-a-stick moss | Wet Forest/Moist Forest | NI |
| *Cardamine constancei* | Constance's bittercress | Deciduous Riparian/Moist/Wet Forest | NI |
| *Cypripedium fasciculatum* | clustered lady's slipper | Moist/Wet/Dry Forest | NI |
| *Grindelia howellii* | Howell's gumweed | Dry Forest (St. Joe, basalt breaklands) | NI |
| *Gimmia brittoniae* | Britton's Grimmia | Rock outcrops in Moist Forest | NI |
| *Hookeria lucens* | clear moss | Wet Forest | NI |
| *Mimulus alsinoides* | chickweed monkeyflower | rock cliffs/seeps in Wet/Moist/Dry Forest | NI |
| *Rhizomnium nudum* | Naked Mnium | Wet/Moist Forest | NI |
| *Thelypteris nevadensis* | Sierra woodfern | Wet Forest Seeps | NI |
| *Triantha occidentalis spp brevistyla* | sticky asphodel | Subalpine Peatlands (St. Joe?) | NI |
| *Waldsteinia idahoensis* | Idaho barren strawberry | Moist and Wet Forest | NI |

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

## Species of Concern

Sites of *Dodecatheon dentatum* and *Mimulus clivicola,* where previously known within the analysis area. All sites are outside of activity areas and will not be directly impacted. No new occurrences where found during surveys.

**St. Joe Species of Concern***

| Species | Common Name | Habitat Guild | Effects |
|---|---|---|---|
| *Astragalus bourgovii* | Bourgeau's milkvetch | Subalpine | NI |
| *Calochortus nitidus* | broad-fruit mariposa lily | Dry Forest, Palouse Soils | NI |
| *Carex californica* | California sedge | Subalpine | NI |
| *Carex hendersonii* | Henderson's sedge | Moist/Wet Forest | NI |
| *Cetraria sepincola* | eyed ruffle lichen | Deciduous Riparian, Peatland | NI |
| *Cetraria subalpina* | Iceland-moss lichen | Subalpine | NI |
| *Cladonia imbricarica* | imbricate lichen | Wet Forest | NI |
| *Cladonia transcendens* | transcending reindeer lichen | Wet Forest | NI |
| *Collema curtisporum* | Short-spored jelly lichen | Deciduous riparian | NI |
| *Collema furfuraceum* | scurffy jelly lichen | Deciduous Riparian | NI |
| *Corydalis caseana spp hastata* | Case's fitweed | Wet Forest (St. Maries, North Fk Clearwater) | NI |

| | | | |
|---|---|---|---|
| *Dodecatheon dentatum* | white-flowered shooting star | Wet Forest | NI |
| *Eburophyton austiniae* | phantom orchid | Moist/Wet Forest | NI |
| *Lobaria hallii* | Hall's lung wort | Deciduous Riparian | NI |
| *Ludwigia polycarpa* | many-fruit false-loosestrife | Peatland/aquatic | NI |
| *Mimulus clivicola* | bank monkeyflower | Dry Forests | NI |
| *Orobanche pinorum* | Pine broomrape | Dry Forest | NI |
| *Romanzoffia sitchensis* | Sitka mistmaiden | Subalpine | NI |
| *Platanthera orbiculata* | round-leaved orchid | Moist/Wet Forest | NI |
| *Pilophorus acicularis* | Devil's matchstick lichen | Wet Forests | NI |
| *Ribes sanguineum* | red-flowered current | Moist forest | NI |
| *Sedum rupicolum* | lance-leaved sedum | Subalpine | NI |
| *Sphaerophorus globosus* | Christmas tree lichen | Wet Forest | NI |
| *Tauschia tenuissima* | Lieberg's tauschia | Dry/Moist Forest, meadows | NI |
| *Trientalis latifolia* | western starflower | Deciduous Riparian/Moist/Wet Forest | NI |
| *Vallisneria americana* | wild celery | Aquatic | NI |

* As directed by the Species of Concern Protocol (Region One Planning Peer Group, Task Group 19, March 1997), species of concern are considered to be secure at the global, Regional and state levels, but may be at risk at the Forest planning level. Species on this list will be surveyed for, documented and reported when found, and addressed in environmental documents (per NFMA) when viability within the planning unit is an issue.

## Forest Plan Consistency

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). Alternatives would meet the intent of the Forest Plan with implementation of design features, and the review and collection of data within the project area. Alternatives would also meet the intent of the Endangered Species Act and the National Forest Management Act.

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