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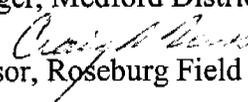
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Memorandum

To: District Manager, Medford District Office, Bureau of Land Management

From:  Field Supervisor, Roseburg Field Office, U.S. Fish and Wildlife Service

Subject: Effects of Proposed FY 2009-2013 Forest Management Activities on Federally Listed Species and Designated Critical Habitat

This responds to your August 29, 2008, request for the Fish and Wildlife Service's concurrence that the subject proposed action may affect, but is not likely to adversely affect, the following listed plant species: the endangered Gentner's fritillary (*Fritillaria gentneri*) (fritillary); endangered Cook's lomatium (*Lomatium cookii*) (lomatium); endangered large-flowered woolly meadowfoam (*Limnanthes floccosa* ssp. *grandiflora*) (meadowfoam), and endangered McDonald's rockcress (*Arabis macdonaldiana*) (rockcress). Your request was made in accordance with the implementing regulations for section 7 of the Endangered Species Act (16 U.S.C. 1536 *et seq.*) (Act), as amended, and was received in our office on September 2, 2008. Your request also included a Biological Assessment (Assessment).

This letter of concurrence is based on information provided in your Assessment and e-mail, phone, and in-person communication between Service and Medford District (District), Bureau of Land Management (BLM) staff.

Proposed Action

Table 1 describes activity types and descriptions of the proposed action that are determined to *may affect, but are not likely to adversely affect* the fritillary, lomatium, meadowfoam and rockcress.

Table 1. Project Actions

Project	Description
Timber harvest	Various levels of: regeneration harvest, commercial thinning, selective harvest, density management, commercial firewood, hazard tree removal, and opportunistic salvage.
Silviculture	Activities consisting, but not limited to, stand density management, conversion, fertilization, pruning, pre-commercial thinning of managed and natural stands, Port-Orford-cedar sanitation, riparian thinning, animal damage control (gopher trapping), and slash piling, and burning.
Special forest products	Christmas trees, firewood, bough and cone harvest, mushroom and lichen harvests, brush and bear grass cuttings, edible and medicinal plants, transplants, shakes, rails and poles, miscellaneous saw timber, and burls.
Watershed restoration	Culvert repair/replacement, road restoration or decommissioning, slope stabilization, habitat improvement projects, stream improvement projects, including tree lining/felling, down wood, and snag creation.
Fuels management	Fuel breaks, piling and prescribed burning, thinning, and brush treatments, including fuels activities within timber sales.
Recreation	Trail construction and maintenance, recreation permits (commercial and private), campground maintenance and development, facilities maintenance and development.
Livestock grazing	Allotment renewals, fence construction and maintenance, spring improvements and maintenance.
Road Maintenance/Construction	Maintenance, restoration or decommissioning, culvert replacement and repair, bridge maintenance and repair, and road re-alignment.
ROW Permits – Roads.	Discretionary Federal Land Policy and Management Act and Oregon and California Railroad Grant lands (O&C) road use permits, maintenance and new construction. Landings and other clearings associated with permits. Non-discretionary O&C permits (reciprocal permits) issued historically are not included.
Other ROW permits.	Waterlines, power lines and utilities ROW's maintenance and construction, non-linear ROW permits like communication towers, permitted events, and Minimum Impact permits (i.e. filming the Rogue river, equipment parking at gas-pipeline access points).
Mining and Quarry operations	Casual use, notice and plan level permits and operations, and commercial rock quarries on BLM lands.
Cultural resources	Gathering and archeological digs.
Weed Control	Manual, mechanical, biological, and chemical controls.
Recovery actions	Listed plant habitat restoration, burning, thinning, seed and bulb collection, growing, and out-planting.
Tracking and Monitoring	Vegetation (plot) monitoring for forest production, fuels, weed treatment, and listed plant demographic and research monitoring.

The following activities are not part of the proposed action and will require separate consultation at the individual project scale because their impacts are too variable to predict at a program scale:

- Off-highway vehicle authorizations
- Land exchange/realty actions
- Research projects with likely to adversely affect (LAA) potential
- Wildland fire including suppression activities
- Catastrophic insect and disease outbreak treatments (e.g. sudden oak death (SOD))
- Additional herbicide use tiering to the new vegetation treatment environmental assessment (USDI BLM 2007)

Action Area

The action area is defined in the implementing regulations for section 7 of the Act as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR 402). The action area includes all District lands and lands directly and indirectly affected by the proposed action.

Project Design Criteria

Project design criteria (PDC) are conservation measures that are part of the proposed action. The PDC, as described in the Assessment, modify prescriptions or activities with the intention of reducing impacts to listed plant species. PDC require protection of listed plant occurrences on the District from all adverse impacts. In addition, PDC may require pre-project ground surveys in suitable plant habitat for activities that are likely to adversely affect listed plants, changing the timing of the action to not affect the plant species during its growing season, establishing no-activity buffers around plant sites, or coordinating with the Service, with BLM staff, or with contractors to reduce project impacts.

Large-scale projects involving ground disturbance such as timber harvests, silviculture projects, new large-scale mine and quarry operations and planning, large ROW permits (such as oil and gas pipelines), and fuels reduction projects will require a two-year survey for the fritillary. All projects in the proposed action including smaller scale, minimum impact, and habitat restoration projects such as cultural resource projects, watershed restoration, small-scale ROW permits, small-scale notice level mine operations, and other habitat restoration projects require a one-year survey for all listed plant species in suitable habitat within their respective ranges.

PDC involving seasonal restrictions will be applied to minimal impact and non-ground disturbing vegetation management projects, as necessary, to eliminate potential above-ground impacts to known listed plant species.

Projects with a “may effect” determination, which are unable to incorporate PDC will be analyzed under separate consultation.

Exceptions to PDC are occasionally necessary, usually for ecological emergencies or safety reasons. Examples include emergency vegetation treatments to control new pathogenic fungi like Sudden Oak Death or eminent failure of a dam requiring immediate actions. Exceptions for other reasons may require reinitiation of consultation or amendments to the Assessment.

Effects of the Action

Direct Effects

Specific direct impacts to fritillary and lomatium could include damage to plant tissue, destruction of plants, and habitat loss through physical ground disturbance in suitable habitat. Meadowfoam and rockcress have no known occurrences on District lands and therefore are unlikely to be affected by ground disturbance activities. Ground disturbance includes soil compaction, soil horizon displacement, and geomorphic alteration. Activities described in the Assessment associated with ground disturbance include timber harvests (and associated construction activities), silviculture, miscellaneous special forest products, watershed restoration, fuels management and fire suppression, recreation, road maintenance and construction, ROW permits- roads, other ROW permits (telecommunication sites, power-lines, and research permits), mining and rock quarry operation, cultural resources, and recovery actions. The collection of some special forest products can cause harm to fritillary by digging up bulbs which may occur near burl-producing trees. Road maintenance operations may benefit listed plant habitat by creating more open edge habitat and allow more light to enter plant habitat.

Silviculture, fuels treatment and habitat restoration projects include thinning, fuels burning and tree planting activities. These activities could trample, burn, or out shade listed plants resulting in temporary or permanent harm to individual plants. Controlled broadcast and pile burns can reduce or kill listed plant species by high intensity heat. Spring burning can also prevent a plant from flowering and producing seed set for one season. Trees planted within listed plant occurrences could kill plants by out shading them and adversely modify suitable habitat.

Thinning of the tree canopy can also improve suitable listed plant habitat by increasing the light regime and available precipitation, and reduce fuel loads. This action can also benefit fritillary, lomatium, and rockcress (USDI FWS 1990; USDI FWS 2003; USDI FWS 2006). These activities likely mimic the role that wildfire historically played in these habitats by keeping the site more open. Tree or shrub growth in meadows and woodlands supporting fritillary, lomatium, and rockcress were most likely regulated by wildfire during the species' dormant season. Meadowfoam is not known to benefit from thinning; however, watershed and landform restoration and management activities that improve vernal pool habitat could benefit meadowfoam.

High concentrations of recreation use near listed plant occurrences can have adverse effects on listed plants. Soil compaction, incidental trampling and flower picking can, in time, lead to decreased individuals. The likelihood of the public trampling plants is low.

Cattle grazing can have effects to fritillary and lomatium by removal and damage to leaf tissue. Cattle can walk on and trample listed plants, reducing the year's reproductive potential. Fritillary is highly palatable to deer, and presumably cattle as well. Cattle can also browse down competing non-native plants that compete with the listed plants.

Weed control actions could directly harm or kill listed plant species. Listed plants can be killed or harmed by direct or nearby application of herbicides. Herbicide use near listed plant occurrences can apply chemicals intended for undesirable plant species onto listed plant tissue, causing large-scale die-offs.

Indirect Effects

Indirect effects from habitat disturbance can have adverse, neutral, or beneficial effects to plants; depending on the type, timing, intensity, and duration of the disturbance.

Ground disturbing activities from timber sales, fuels projects, ROW permits, watershed restoration, grazing projects etc., can facilitate the introduction and spread of noxious weeds such as yellow starthistle, Scotch broom, dyer's woad, and Canada thistle. Weeds can have an indirect effect by competing with listed plants for light, space, water, and nutrients. The washing of BLM, Forest Service, and contractor equipment and vehicles can reduce the spread, but does not control noxious weeds. Noxious weeds also can be introduced into areas of high use (trailheads, developed recreation sites) and can spread to other areas and compete with listed plants.

Road edge disturbance can facilitate the introduction and spread of weeds that can compete with listed plants however. In response, much of the federal weed treatment programs (hand-pulling and spot spray) are occurring along roads.

The PDC, as described in the Assessment, will assist in minimizing and avoiding the potential impacts from the above actions by identification and protection of all known listed plant sites. Large-scale projects such as timber harvest activities require pre-project surveys in suitable habitat for fritillary, lomatium, meadowfoam, and rockcress by qualified personnel during the appropriate season for all ground disturbing activities in the respective suitable habitats. Two-year surveys are required for fritillary in large-scale projects to increase detection. The PDC require avoidance of known listed plant occurrences for most ground disturbing projects.

Protection of existing plant occurrences is required for all new plan level mining and quarry proposals. Plan level mines and rock quarries will require listed plant surveys. The PDC ensure that notice level mining proposals avoid known listed plant occurrences.

Avoidance of direct threats to listed plants is accomplished by establishing no-construction buffers around known plant occurrences. A 25-foot buffer is the minimum buffer size. A minimum 100-foot buffer (with the exclusion of existing roads) will be established around listed plant occurrences restricting vehicle and heavy equipment entry. The PDC require slash piles and broadcast burns occur outside of 25-foot buffers around all known listed species occurrences. To reduce effects of tree out shading listed plants, the PDC require no trees will be planted within 75 buffer of listed plant occurrence. Plant occurrences will be protected from inadvertent impacts by work crews trampling across plants. Plant occurrences will be identified for the work crews with appropriate notices to ensure that the workers are aware of the population areas.

The PDC require seasonal restrictions as necessary to protect listed plant occurrences during some fuels treatment and habitat management projects. The PDC require that above-ground disturbance activities such as thinning and fuels management be modified to occur during the listed species dormant period, as necessary.

During fire suppression activities resource advisors and environmental specialists will coordinate with line officers and incident commanders to avoid and minimize impacts to known listed plant occurrences, but not at the expense of human safety. If discretionary impacts to listed plants are

anticipated to occur during fire suppression actions, the BLM will initiate emergency consultation with the Service.

No forest collections will be permitted within known listed plant occurrences. Burl collection will not occur within 100 feet of known occurrences of fritillary. When possible, collectors will be sent to areas that have negative clearance surveys. Permit holders will be provided listed plant species guides by BLM staff to further avoid impacts to plant species. Permit holders are required to replant any bulbs of any bulb-forming species that are found, during burl collection.

Pre-grazing allotments will be surveyed for fritillary and lomatium. Once identified, measures will be taken to protect listed plant occurrences. Known listed plant occurrences will be protected by changing the grazing size, timing, and boundaries, as required, reducing or avoiding effects from grazing.

Effects from weed treatments to listed plants will be reduced or negated, as described in the Assessment. Individual noxious weeds will be treated by hand-pulling, applying spot spray, wicking, and direct injection of herbicide near or within listed plant occurrences. One year pre-project surveys will be conducted in all suitable listed plant habitat areas. No herbicide spraying using broom sprays will be permitted within 75 feet of listed plant occurrences. A 25-foot buffer will be established around listed plant occurrences on non-roadsides areas, as appropriate. Areas will be reseeded with native plants as appropriate to the location, if necessary. The implementation of PDC for active weed treatment can have a long-term beneficial effect on both District lands and adjacent habitats by reducing competition in and adjacent to listed plant sites, while protecting occurrences from direct effects.

All listed plant collections and recovery actions will be coordinated with the Service, per the PDC. BLM staff will work with Service staff to develop monitoring plans to measure effectiveness of augmentation and reintroduction activities. All recovery actions are intended to enrich plant populations by restoring habitat, increasing species density or expanding species' populations within their ranges to bolster population viability and to promote pollinator interaction. These actions are anticipated to be beneficial to the listed species.

Concurrence

The Service concurs with the effects determination made by the District that the above proposed action, as detailed in the Assessment and in the description of the proposed action and effects section of this letter, *may affect, is not likely to adversely affect* the fritillary, lomatium, meadowfoam, and rockcress. This concurrence is based on the fact all projects, both individually and collectively will incorporate the PDC as described in the Assessment. Application of PDC will provide additional conservation benefits to smaller scale projects and recovery actions.

The Service reached these conclusions based on the following factors:

- Pre-project surveys for listed plant species will be conducted prior to all large-scale ground disturbing activities in suitable habitats. A two-year survey for the fritillary will greatly improve detection for large-scale projects.
- All known listed plant occurrences will be protected and avoided by ground disturbing machinery, heavy equipment, silviculture activities, special forest collections, recreation construction and maintenance activities, ROW permit projects, mining and quarry operations, road maintenance projects, recreation activities, and herbicide use.
- Known listed plant occurrences will be buffered from heavy equipment use, fuels reduction activities, herbicide spraying, road maintenance activities, and ROW permitted projects.
- Ground disturbing actions will not be undertaken in any known listed plant population except for small scale weed control projects and recovery activities.
- Projects that could harm listed plant species during growing season will be timed to occur during the listed plant species dormant season.
- Restoration actions as defined in the silviculture, fuels management, and weed control descriptions of the Assessment will improve habitat for the fritillary, lomatium, meadowfoam, and rockcress by reducing shading, competing vegetation, and reducing risk of high intensity fire.
- Recovery actions as defined in the Assessment will directly address recovery actions specified in the recovery plans for fritillary, lomatium, and meadowfoam (USDI FWS 2006, USDI FWS 2003).

Based on our review of your Assessment, we concur with the above finding for the reasons stated therein. However, please be advised that your Assessment does not address the effects of the proposed action on the following listed species and critical habitats that are known to occur in the action area and may be affected by the proposed action: the threatened northern spotted owl (*Strix occidentalis caurina*); the threatened marbled murrelet (*Brachyramphus marmoratus*); the threatened vernal pool fairy shrimp (*Branchinecta lynchi*); and critical habitat for the northern spotted owl, marbled murrelet, and the vernal pool fairy shrimp.

We recommend that you not proceed with the proposed action until any appropriate consultation has been completed relative to these species and critical habitats in accordance with the requirements of section 7 of the Act. Preparing an assessment that addresses the effects of the proposed action on these additional listed species and critical habitats will ensure full compliance by the District with the requirements of section 7 for the subject action. Once we receive the additional assessment, we will respond to any requests for concurrence or initiation of formal consultation.

If you have any questions or concerns about this consultation or the consultation process in general, please feel free to call Sam Friedman at (541) 957-3478 or me at (541) 957-3470.

cc: Mark Mousseaux, Medford District BLM, Medford, Oregon (e)
Bob Progulske, FWS-OFWO, Portland, Oregon (e)
Kate Norman, FWS-OFWO, Portland, Oregon (e)
Larry Salata, FWS-RO, Portland, Oregon (e)
Office Files FWS-OFWO, Portland, OR (e)

References

USDI BLM (Bureau of Land Management). 2007. Programmatic Environmental Impact Statement Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 states.

USDI FWS (U.S. Fish and Wildlife Service). 1990. McDonald's Rock-cress, (*Arabis macdonaldiana* Eastwood), Recovery Plan. U.S. Fish and Wildlife Service. Portland, Oregon. 40 pp.

USDI FWS (U.S. Fish and Wildlife Service). 2003. Recovery Plan for *Fritillaria gentneri* (Gentner's fritillary) U. S. Fish and Wildlife Service. Region 1. Portland, Oregon. viii + 89 pp.

USDI FWS (U.S. Fish and Wildlife Service). 2006. Draft Recovery Plan for Listed Species in the Rogue Valley Vernal Pool and Illinois Valley Wet Meadow Ecosystems. U. S. Fish and Wildlife Service. Region 1. Portland, Oregon. viii + 136 pp.

BIOLOGICAL ASSESSMENT

**FY 2009-2013 Programmatic Assessment
For Activities that May Affect the listed endangered plant species
Gentner's Fritillary, Cook's Lomatium, McDonald's rockcress,
and large-flowered wooly meadowfoam**

**Medford District of the Bureau of Land Management
Aug 28, 2008**

**Prepared by: Mark R. Mousseaux, Bureau of Land Management, Medford District (BLM);
in consultation with Sam Friedman, US Fish and Wildlife Service (FWS), Roseburg.**

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I. INTRODUCTION

This is a programmatic consultation of management activities on affected listed plant species, within lands managed by the Medford District of the Bureau of Land Management (BLM). Resources on the Medford BLM are described in the Medford District Bureau of Land Management Resource Management Plan (RMP) (USDI Bureau of Land Management 1994). This plan was amended by the Record of Decision (ROD) for Amendments to Planning Documents within the Range of the Northern Spotted Owl (USDA Forest Service and USDI Bureau of Land Management 1994), hereafter known as the Northwest Forest Plan (NWFP). This BA is also consistent with the draft Western Oregon proposed resource management plan (WOPR) which should be finalized in the fall of 2009. The area of consideration includes Medford BLM lands within the Rogue River sub-basin, Medford BLM lands in the Cow Creek drainage of the Umpqua sub-basin, and a small area in the Klamath River sub-basin drainage. These federal lands are under the jurisdiction of the Medford District, Bureau of Land Management, hereafter referred to as Medford.

The ownerships encompass public land on the Medford BLM District in Jackson, Josephine, Douglas, Coos, and Curry Counties (Medford BLM GIS, 2008). Most of the BLM-managed land is distributed in a checkerboard pattern consisting of alternating sections of public and private land.

The purpose of this biological assessment (BA) is to describe and evaluate the effects of proposed BLM management activities from Fiscal Year (FY) 2009 through FY 2013 on four listed endangered plant species and designated critical habitat to meet requirements of the Endangered Species Act of 1973, as amended (ESA). All the species addressed in this BA are listed as endangered: Gentner's fritillary (*Fritillaria gentneri*), Cook's Lomatium (*Lomatium cookii*), large-flowered woolly meadowfoam (*Limnanthes floccosa* ssp. *grandiflora*), and McDonald's rockcress (*Arabis macdonaldiana*). Critical habitat has not been designated for the listed plants to date in Southern Oregon.

Federally listed fish and wildlife are not included in this BA and will be addressed in separate BA's.

This BA was compiled jointly by members of the Level 1 team: Mark Mousseaux from the BLM and Sam Friedman from the FWS. Specialists from the BLM contributed to the content and analysis of this document. Much of the information was pulled from the previous programmatic BA (Medford BLM, 2003), however the environmental baseline and proposed action information was updated to reflect current information.

ACTION AREA

The action area has been defined (50 CFR 402) as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. For the purposes of this BA, the action area includes all lands managed by the Medford District BLM or all activities controlled by the Medford BLM that occur on non-federal lands (i.e. lands that a federal nexus exists). The Cascade Siskiyou National Monument completed a BA for the Monument EIS in 2006. A final letter of concurrence was received in November of 2006. While this BA includes

updated baseline data for Gentner's fritillary within the monument, consultation on actions occurring in the monument from 2006-2016 have already been consulted on and are not re-addressed here.

The proposed actions are located mostly within the Klamath Mountains Ecoregion and a lesser amount within the Western Cascades Ecoregion. The Klamath Mountains ecoregion of northwestern California and southwestern Oregon is one of the most distinctive and complex ecological zones in the United States. Its dramatic topography, complex fire history, extensive watercourses, often-abrupt climate changes create a region rich in natural beauty, diverse vegetation, and scientific value. The variability and richness of this region enhance its importance as an ecologically valuable tableau of endemic plant communities, eclectic geologic conditions, and rare plant habitats (TNC, 2004).

Natural plant community types within the Medford District are diverse. In the lower elevations Oregon white oak woodlands and grasslands, chaparral, scattered ponderosa pine, and Douglas-fir occur up to about 2,400 feet in the interior valleys. Above this on the Klamath mountain side of the valley a mixed evergreen zone dominated with Douglas-fir and madrone occur up to about 4,500 feet, and a mixed conifer zone on the Cascade side dominated by ponderosa pine, Douglas-fir, incense cedar, and white fir occur in more mesic sites. In both areas, dense, chaparral (sclerophyllous type) communities can occupy large patches of the landscape, composed primarily of wedge-leaf ceanothus (*Ceanothus cuneatus*) and manzanita (*Arctostaphylos* species). Above 4,500 feet is the white fir zone, grading into a Shasta red-fir zone up to timberline. The elevations of the Medford District range from 400 feet along the Rogue River near Mariel to 6,500 near Big Sugarloaf peak. The Medford BLM manages very little land above 6000 feet.

The ecological diversity of communities and species of the Medford district is attributed to its physiographic setting at confluence of the Klamath and the Cascade ecoregions. The juxtaposition of these regions has led to a diverse array of species including species whose distributions are centered south into the Sierra's of California, east into the Great Basin, or north up the Cascades and the Coast range. A high rate of endemism also occurs, with numerous species occurring within the Klamath-Siskiyou

LAND OWNERSHIP

BLM-managed lands are predominantly intermingled with non-federal "private" lands. Human populations are centered on the cities of Medford, Grants Pass, Cave Junction and Ashland. For the 3,105,058 acres within the official boundary of the Medford BLM, 866,833 acres (27.9%) is BLM managed lands, 902,968 acres (29.1%) is other federal lands (predominately US Forest Service), 22,156 acres (0.72%) is owned by the State, County, or City municipalities, and 1,310,585 acres (42%) is private lands. Private forested lands managed for timber production will typically be harvested between 40 and 60 years of age, in accordance with State Forest Practices Act standards. Private lands are typically not expected to provide habitat for listed plants, as no federal or Oregon state laws protect listed plants on private lands. No inventories or protections for these species are required in the State of Oregon. An estimated 40% of the private lands have already been converted from natural woodlands, wetlands, and forests to other uses (pastures, woodlots, and urban centers) and likely no longer support listed plants. The conversion of intact suitable habitat in the low elevation woodlands and grasslands into pastures, vineyards, orchards, cities and home sites is increasing throughout the Rogue Valley as the population growth of the

valley increases. The Nature Conservancy has lands in the Agate Desert managed to benefit Cook's lomatium, and large-flowered wooly meadowfoam, under agreements with the Fish and Wildlife Service. Oregon Wildlands and the Southern Oregon Land Conservancy also own private wetland habitat within the Agate desert north of Medford, Oregon, containing populations of large flowered wooly meadowfoam. Federally listed plants do have protection on State public lands, including County and City public lands, under Oregon State laws (e.g. Jacksonville woodlands). Listed plants are protected by the Endangered Species Act on Federal lands.

II. PROPOSED ACTION

Proposed activities analyzed in this BA are for projects that occur from October 1, 2008 – September 30, 2013 (5 years). For the purposes of this BA, it is the signing of the decision document (decision notice, memo or record of decision) that identifies projects covered by this BA for listed plants. Surveys for and analysis of listed plants must be done prior to the decision and the effects of the action will be documented in the NEPA document (CE, EA, or EIS). Once the decision is signed, the clearance surveys for that project and those acres are valid, even if implementation does not occur immediately.

Project design criteria (PDC's) are conservation measures developed to reduce impacts to listed species. Mandatory PDC's listed in this BA are incorporated into all activities as integral to the proposed action. If PDC's cannot be incorporated, the project will not be in compliance with this BA and consultation with the FWS will be necessary for projects that May effect listed plants. Project design criteria are necessary for the BLM comply with their responsibilities to conserve listed species under the ESA Section 7 (a) (1) and Section 9 (a) (2). Additional discretionary PDC's may be proposed during the inter-disciplinary team process to further reduce effects of the proposed action.

This BA addresses activities over the next five years (FY 2009-2013) that will be implemented under the Medford District Resource Management Plans. The projects addressed in this BA are grouped into the general action categories described below. The predicted scope and amount of disturbance (acres, miles, number of projects, etc) of these activities are reported as an average annual amount, and a 5 year maximum.

PROJECT TYPES ADDRESSED UNDER THIS BA

A. **Tree harvest** includes various levels of: regeneration harvest, commercial thinning, selective harvest, density management, commercial firewood, hazard tree removal, stewardship harvest, and opportunistic salvage

B. **Silviculture** includes vegetation management activities consisting, but not limited to, stand density management, conversion, fertilization, pruning, pre-commercial thinning of managed and natural stands, Port-Orford-cedar sanitation, riparian thinning, animal damage control (gopher trapping), and slash piling, and burning.

C. **Special forest products** includes Christmas trees, firewood, bough and cone harvests, mushroom and lichens, brush and bear grass cuttings, edible and medicinal plants, transplants, shakes, rails and poles, and miscellaneous saw timber, and burls.

D. **Watershed restoration** includes culvert repair/replacement, road restoration or decommissioning, slope stabilization, habitat improvement projects, stream improvement projects, including tree lining/felling, down wood, and snag creation.

E. **Fuels management and Wildfire Suppression** includes fuel breaks, piling and prescribed burning, thinning, and brush treatments, including fuels activities within timber sales.

F. **Recreation** includes recreation permits (commercial and private), trail construction and maintenance, campground maintenance and development, facilities maintenance and development.

G. **Livestock grazing** includes allotment renewals, fence construction and maintenance, monitoring, spring improvements and maintenance.

H. **Road Maintenance/Construction** includes maintenance, restoration or decommissioning, culvert replacement and repair, bridge maintenance and repair, road re-alignment.

I. **ROW permits - Roads**. These road permits include discretionary "FLMPMA" and O&C road use permits, maintenance and new construction. This also includes non-linear features like landings associated with the permit. These do not include non-discretionary O&C permits (reciprocal permits) issued historically.

J. **Other ROW permits**. Includes waterlines, power lines and utilities ROW's maintenance and construction, non-linear ROW permits like communication towers, permitted events, and Minimum Impact permits (i.e. filming the Rogue river, equipment parking at gas-pipeline access points).

K. **Mining and Quarry Operations** include: casual use, notice and plan level permits and operations, and rock quarries on BLM lands.

L. **Cultural resources** including: gathering, archeological digs.

M. **Weed Control** includes: manual, mechanical, biological, and chemical controls.

N. **Recovery actions**, including listed plant habitat restoration, burning, thinning, seed and bulb collection, growing, and out-planting

O. **Tracking and Monitoring**: Includes vegetation (plot) monitoring for forest production, fuels, weed treatment, and listed plant demographic and research monitoring.

PROJECT TYPES NOT ADDRESSED UNDER THIS BA

The following activities may require separate consultation and are not covered under this BA. Impacts resulting from these activities are too variable to predict, or impacts too broad:

1. Recreational off-highway vehicle use including designating OHV areas.

2. Land Exchange/Realty Actions
3. Research projects with LAA potential (other than listed recovery actions)
4. Wildfire including suppression activities
5. Catastrophic Insect and Disease outbreak treatments (e.g. Sudden Oak Death (SOD))
6. New EA's for Herbicide use tiering to the new Vegetation Treatment using Herbicides (USDI, BLM, 2007)

PROJECT DESCRIPTIONS

The descriptions evaluate the significant impacts to listed plant species and habitat over the 5-year period of the BA resulting from implementing the RMP. The BLM practices adaptive management as described in the NWFP and in the draft Western Oregon Plan Revision. Adaptive management allows minor project variations to meet site-specific conditions or landscape objectives. Therefore, there may be minor deviations in the description of projects over the 5-year life span of this BA. This consultation will address these minor alterations in project activities if the following conditions are met:

- Project complies with the NWFP and will comply with the final Western Oregon proposed resource management plans (prmp) due to be signed in FY 2009.
- Project complies with the Medford RMP to which it is tiered.
- Impacts and extent of the project are within parameters of described activities in this BA.
- Minor deviations are reviewed by the Level 1 team to ensure impacts to listed species remain the same or less than those described within this BA
- Minimization measures proposed for the project are consistent with the intent and impacts of actions described in this BA
- All listed plant monitoring and any project impacts to listed plants are reported to FWS in annual monitoring reports

Separate consultation will be required to meet ESA compliance if the project cannot be revised to comply with this consultation.

Project activities are described in terms of type of activity, estimates of disturbance acres, extent, duration, and timing (Table 1). Determination of effects of these projects is displayed in Section VI of this document. The combined acres of habitat impacts are summarized and evaluated in the Effects section of this BA, without further repeating individual project descriptions. An estimate of the average acres per year and the total number of acres are shown for the five years (2009-2013). If action amounts exceed the 5 year maximum, reinitiating consultation with the FWS may be necessary; the level 1 team will evaluate this on a case by case basis. It may be that additional acres or amounts may not change the net affects or the affect call to the species such that formally reinitiating consultation is unnecessary.

Table 1. Project Activities and Disturbance Estimates			
Project category		Estimated scope on average (acres, lbs, cubic ft, etc) per year	Five year Maximums
A	All Tree harvest including stewardship, and salvage	Current Allowable Sale Quantity 57 million Board Feet, treating about 10,000 acres/yr Starting 2011 under the new prmp 100 million Board feet on an estimated 10,000 acres/yr	50,000 acres
B	Silviculture	Pre-commercial thinning – managed stands 3,100 acres/yr Pre-commercial thinning – natural stands 300 acres/yr Maintenance/protection (existing stands) 7,800 acres/yr Fertilization 1,800 acres/yr Pruning 1,300 acres/year Reforestation (planting) 1,400 acres/yr Maintenance/protection (new stands) 1,200 acres/yr	16,000 acres 1,500 acres 40,000 acres 10,000 acres 7,000 acres 8,000 acres 7,000 acres
C	Special Forest products	Boughs: 120,000 lbs/yr Christmas trees: 1,500 trees/yr Burls: 35,000 lbs/yr Edibles and Medicinal plants: 5,000 lbs/yr Floral greenery: 125,000 lbs/yr Mushrooms (morels, matsutake, chanterelles): 5,000 lbs/yr Whipstock/bolts/rails/fencing/post/poles: 900,000 cubic ft/yr Pulpwood/Roundwood/Sawtimber: 45,000 cubic ft/yr Fuelwood: 70,000 cubic feet/yr Mosses/Lichens: 500 lbs/yr Transplants 40 plants/yr Seeds/Cones: 1500 bushels/yr	600,000 lbs 7,500 trees 175,000 lbs 25,000 lbs 625,000 lbs 25,000 lbs 4,500,000 cf 225,000 cf 350,000 cf 2,500 lbs 200 plants 7,500 bushels
D	Watershed restoration	Meadow / flood plain restoration 50 acres/yr Stream structures 15/yr Culvert replacement/repair: 12 large fish passage culverts/yr; 50 cross culverts/yr Road obliteration 30 miles/yr ; Road closure 30 miles/yr General wildlife habitat enhancement/yr – Tree top blasting: 200 trees/yr, – Fungal inoculation: 50 acres/yr – Wildlife underburn: 500 acres/yr – brushing: 200 acres/yr	250 acres 75 structures 60 Large Fish Passage culverts/300 cross culverts 150 Miles each 1000 trees 250 acres 2500 acres 1000 acres
E	Fuels Management and Wildfire Suppression Activities	20,000 acres of mechanical or hand fuels reduction/yr; 15,000 acres of prescribed burning/yr; 250 acres/ yr of fuels reduction by private along property lines	100,000 acres 75,000 acres 1250 acres

F	Recreation	<p>Facility development – construction or reconstruction may impact 50 acres per year for BLM</p> <p>River Recreation Permits: 110 Commercial outfitter permits/yr, 1,100 private permits/yr, Misc. rec permits: 15 miscellaneous rec. permits/yr Maintenance: 100 trail miles 50 acres of campgrounds and other facilities 30 recreation projects/yr 10 miles of new trail construction/year;</p>	<p>300 acres</p> <p>550 permits 5,500 permits 75 permits 500 miles 250 acres 150 projects 50 miles</p>
G	Livestock Grazing	<p>Currently: 97 Cattle allotments on 352,000 acres with 13,416 AUMs; Proposed under the new proposed resource management plan, 55 allotments, on 217,000 acres with 11,118 AUM's..</p> <p>Range Improvements (10/yr)</p>	<p>n/a</p> <p>50 Improvements</p>
H	Roads maintenance/ construction	<p>500 miles of road maintenance/repair/yr. Construction up to 20 miles per year, including roads associated with timber harvest. Bridge construction associated with roads, 2/yr</p>	<p>2,500 miles 100 miles 10 bridges</p>
I	FLPMA ROW permits: Roads O&C Road Permits	<p>Existing roads – maintenance 240 miles/yr New Construction: 5 miles/yr</p> <p>O&C Linear construction: 4 miles/yr O&C Linear maintenance: 200 miles/yr O&C Non-linear construction: 5 acres/yr O&C Non-linear maintenance: 10 acres/yr</p>	<p>1200 miles 25 miles</p> <p>20 miles 1000 miles 25 acres 50 acres</p>
J	Other ROW Permits	<p>Maintenance of existing waterlines, power lines, and utilities: 156 miles/yr New construction of waterlines, power lines, and utilities: 27 miles/yr Maintenance of communication sites: 20 acres/yr Construction of communication sites: 8 acres/yr Non-Linear permits (e.g. events) 10 acres/yr Minimum Impact Permits (e.g. filming river, equipment parking, etc...) Linear: 4 miles/yr Non-linear: 5 acres/yr</p>	<p>780 miles</p> <p>135 miles 100 acres 40 acres 50 acres</p> <p>20 miles 25 acres</p>
K	Mining and Quarry Operations	<p>Notice-level operations, 10/yr, less than 5 acres each Plan-level operations, 2/yr less than 25 acres each Permits for rock from quarries, 70 permits/yr Expansion of existing and new rock quarries, 1/yr</p> <p>Mining reclamations 1/yr</p>	<p>250 acres 250 acres 350 permits 5 new quarries < 60 acres 5 reclamations < 60 acres</p>

L	Cultural Resources	1 excavations/yr Historic cemetery restoration	5 excavations < 5 acres 2 restorations < 5 acres
M	Weed control	Treat up to 5,000 acres per year on average, using a combination of manual, biological, and chemical (spot-spray) control methods	25,000 acres
N	Recovery Actions	Listed plant habitat thinning and burning, 20 acres/yr Seed/bulblet collection, 5 sites/yr Planting bulbs/seedlings 10 acres/yr	100 acres 25 sites 50 acres
O	Tracking and Monitoring	Vegetation and fuels monitoring - < 250 acres/yr Documenting and tracking all Listed plant occurrences located in project areas - < 50 acres/yr Annual monitoring of 50 Gentner's fritillary sites and 3 of the Cook's lomatium populations	1,250 acres 250 acres 250 acres

Detailed descriptions of these activities follow.

A. Tree Harvest

Tree harvest includes commercial and non-commercial removal of mature overstory and/or understory trees and can include regeneration harvest, seed-tree cuts, selective harvest, salvage, density management, commercial thinning, and individual tree removal. Commercial timber is generally classified as trees 8" or greater in diameter at breast height (dbh). Tree harvest also covers miscellaneous projects, including the removal of hazard trees for public safety, commercial firewood, stewardship sales, and opportunistic salvage sales. Opportunistic salvage sales result from blow-down (other than hazard trees), disease, or wildfires. Typically, a salvage project is less than a few hundred acres but can be as much as 10,000 acres for large wildfire salvages or catastrophic wind events.

Harvest can result in the removal of a few trees within a stand or can result in removal of all the trees. Openings may occur in an even or patchy distribution, depending on objectives of the treatment and constraints of the land use allocation. Trees are harvested by individual sawyers, or machine-mounted saws. Harvest includes the layout, marking, falling, limbing, yarding, and decking the trees to be removed from the site. In all cases but biomass removal, the limbs and needles/branches (slash) remain within the project area, and the bole of the harvested tree is removed. Sometimes the slash is lopped, scattered and allowed to decompose. In areas of heavier slash, it is piled and burned or in the case of regeneration harvests it may be broadcast burned (see Silviculture and Fuels below). Slash can also be removed and sold as Biomass, generally material less than 8 inches in diameter. Trees are yarded to landings by cable or skidded by tractors/skidder where they are decked. Helicopter logging involves picking the logs in bunches and taking to a designated landing to be loaded onto trucks. Soil disturbance from yarding and skidding in thinning and partial harvests is focused along corridors, which can make up between 7% of the area for skyline cable yarding, and 21% of the area for tractor logging (Landsberg, 2003, p. 29). Helicopter logging has shown deep disturbance on only 2% of the area, (Clayton, 1982, p.6). Higher levels of soil disturbance with ground methods tend to be focused in areas close to the landings and radiating outward.

Access to the timber sale involves the use of existing roads (see road maintenance) in areas where roads already occur, and can also involve the design and development of new roads. New roads involve the total removal of all vegetation along a corridor, creation of the road prism (cut, bench, and fill), grading, laying gravel, installing culverts and water bars, and stabilizing adjacent areas. Small temporary road spurs can be built off of existing roads to facilitate logging activities. These temporary roads are ripped (to reduce compaction) and revegetated after the sale. Trees removed from road prisms are often decked for inclusion in the timber sale, or could be sold in unrelated sales, or could occasionally be used on-site or off-site for watershed restoration, down wood supplementation, or in-stream structures.

The size of the harvest and the disturbance to the soil and understory vegetation in a project area is related to the intensity of activity. Regeneration harvest units, which remove the majority of trees, occur on fewer acres than density management or selective harvest, which removes fewer trees, maintains more residual trees, but covers more acres to obtain the same volume. Meadow Restoration can remove trees encroaching into meadows, thin brush, and sow native grasses.

Various types of thinning, density management, or selective harvest will occur if the harvest meets the objective as specified in Resource management Plan. Selective harvest techniques can result in project areas that often cover large acreages (several thousand acres), and contain stands with 120 – 140 feet of basal area per acre, 40 – 50 trees per acre, and average canopy coverage of 40-60 percent.

B. Silviculture Projects

Silviculture projects involve plantation maintenance and the removal of trees and shrubs to enhance growth, and can include pre-commercial thinning, maintenance brushing (release), prescribed burning for site preparation (see also fuels reduction), tree planting, Sanitation for Port-Orford-cedar to control *Phytophthora lateralis*, animal damage control, fertilization, and pruning. These projects can include non-commercial vegetation thinning done to benefit wildlife or rare plant species or habitat. Thinning work is usually done with hand crews, but mechanical thinning can occur. Most of the pre-commercial thinning acres occur in plantations (stands interplanted or planted following harvest). There are some ‘natural’ stands that are also thinned and are not technically plantations. Controlling gophers where they have been identified as a cause of plantation failure or unacceptable conifer stocking can occur using underground traps in holes and runs created by the gopher. Fertilizer is applied to accelerate growth of young trees or to improve native plant restoration. Fertilizer is applied at a rate of no more than 200 lbs of nitrogen per acre. Fertilizer is usually aerially applied, but is hand applied in some projects on small acres (e.g. grass seeding in meadow habitat improvement projects).

C. Special Forest Products

Special forest products consist of, but are not limited to the collection of boughs, Christmas trees, burls (madrone and maple), edible mushrooms, lichens, moss, brush and bear grass cuttings, edible and medicinal plants, whipstock (seedlings/cuttings of willow, aspen etc...), fence and corral rails, firewood, post and poles, pulpwood, roundwood and individual tree or incidental sawtimber sales. Most of these types of activities usually occur in areas less than a

couple of acres. The BLM issues about 600 permits a year for various products, plus an additional 1,200 Christmas tree permits per year. About 300 permits (nearly half) are for firewood. Individual trees blocking roads can be sold as a Special forest product. Pulpwood, roundwood and sawtimber permits (< \$2,500 in values ~ a log truck load), average about 55 permits a year, about 45,000 cubic feet a year (247,500 board feet or 4,500 bf per permit). On average about 50 permits a year are issued for fencing, post and poles, about 900,000 cubic feet per year (4.9MMBF) mostly small poles from already cleared timber sales or areas being pre-commercially thinned. About 6 permits a year are issued for edible and medicinal plants (mostly lichens), about 40 mushroom permits, and there are about 10 Burl permits issued per year.

These activities require personal and commercial use permits through the BLM. For activities designated as concentrated use (such as designated firewood cutting areas within sale areas), and for products like poles, habitat evaluations and plant surveys have already occurred following policy. Burl removal, and mushroom harvests are dispersed across the landscape. Edible plants, brush, floral, lichens and moss collections are species specific done by hand.

D. Watershed Restoration

Watershed restoration projects anticipated in the Medford District include: road decommissioning, storm proofing of roads (see road maintenance/decommissioning below), upslope erosion rehabilitation, riparian restoration, in-stream habitat improvement, large wood restoration, wildlife tree development, wildlife habitat restoration and enhancement (such as meadows), and prescribed burning (see fuels management). The installation and maintenance of culverts and bridges occurs across the landscape on the road system. Some blasting (such as snag creation) may occur with watershed restoration projects.

Roads no longer essential for forest management may be gated, closed or decommissioned (ripped, seeded or put back to natural contours). Roads with the potential to fail or deliver large amounts of sediment to stream segments may be decommissioned or closed or may be improved. Improvements include repairing road drainage facilities (culverts, drain dips, etc.) and surfacing (to reduce sediment). Restoration activities could include snag creation. Down wood development or placement could occur. Meadow restoration, fencing, native plant seeding and planting, and weed removal may occur to restore or repair healthy ecosystems. Restoration work may be required as the result of future wind, snowstorms, rain, and flooding. Expected activities and effects specific to roads are evaluated under road construction and maintenance (below), although road construction, restoration, maintenance, and drainage work is interdependent and interrelated to most BLM activities.

E. Fuels Management and Wildfire Suppression Activities

Lands on the Medford BLM have short natural fire return intervals, but years of fire suppression have resulted in habitat conditions much brushier and denser than occurred historically. Fuels management has three primary purposes: fuels reduction to reduce wildfire hazard, site preparation/slash reduction for improving conifer planting (see Silviculture above), and restoration of ecosystem function where wildfire has been suppressed. Fire can also be used as a tool for weed control if used at the right time under the correct conditions.

Fuels management includes manual and/or mechanical treatments using chainsaws or mechanical equipment, followed up with prescribed fire (pile burning or under-burns). Broadcast burning without pre-treatment (brush fields) can also occur. Mechanical treatment is designed to convert abnormally high amounts of shrubs and ladder fuels so that subsequent prescribed burning or wildfire won't be as severe. The material piled with manual treatment is usually burned once that material dries out. A small portion of the acres treated by mechanical equipment may also be later burned to remove treated material. Fuels treatments can alter the environment (humidity, shade, water and nutrient relations) for under story herbaceous plants. Some acres are treated in steps, such as pile construction in year 1 and pile burning in year 2. Piles will cover (on average) about 5% of an acre, and range from 25 to 50 sq feet per pile in conifer communities. In heavy fire suppressed brush fields, piles may cover 10% of an acre.

Prescribed fire use is dependent upon management objectives. The primary role of prescribed fire has traditionally been for site preparation and fuels reduction. Recently, natural fuels reduction and ecological "improvement" have become end goals of prescribed fire. Prescribed natural fire is not currently used on the Medford BLM. Prescribed burning is generally restricted to spring or a small window in the fall, due to risks of escapes, smoke concerns, and the weather. When successful understory treatments have been completed, and risks of escape are reduced, more burning during late summer or fall could be anticipated. Manual and mechanical treatments can occur at any time of the year. Natural and created fuel breaks across the landscape may be developed to help with the suppression of large-scale wildfires. In this case, treatment of fuels along a ridge or topographic break would occur to reduce the fuels and facilitate suppression activities. Fire line construction and blasting may occur as a tool to help create fire lines.

Small scale clearing along property lines next to private homes can occur through BLM permits. In this case the BLM authorizes the private landowner to treat along the property line (and onto BLM) to create a fuel break to meet county standards for fire protection for safety. This usually is less than 100 feet along the property line.

F. Recreation

Recreation management includes trail construction and maintenance, campground and physical facilities maintenance, boat landing maintenance, observation decks and guard rails, signing, foot bridges, and commercial and private permits for rafting and boating, and other recreation activities (e.g. on road bicycle and motorcycle races). Heavy equipment use during construction could remove vegetation and disturb soil in contraction activities. Heavy recreation use can trample vegetation in and around recreation sites and along trails. Trees may be felled in developed areas or along trails where public safety is a concern (this is generally an annual activity).

G. Livestock Grazing

The BLM has 97 free-range allotments identified in the RMP covering 352,000 acres, of which 35 are currently vacant (106,064 acres). This includes seven active and 2 vacant allotments on 49,424 acres within the Cascade Siskiyou National Monument comprised of 2,714 animal unit months (AUM's) Vacant allotments are still valid allotments that could be applied for and

utilized within the next few years, although this is unlikely. The total AUM's on the existing allotments is 13,416 cow-calf pairs, including 2,714 AUM's in the Cascade Siskiyou National Monument. Two small allotments totaling 164 acres and 185 AUMs are administered by the Bureau of Reclamation at Emigrant Lake. Under the proposed resource management plan (WOPR) grazing would be reduced to 55 allotments, on 217,000 acres, with 11,118 AUM's... Under the new plan, vacant allotments would be cancelled.

In any given year an allotment can be in "non-use," depending on the permit holder's needs, the market, or cooperative agreements between the BLM and the permit holder on rangeland health issues and forage recovery. Allotments range in size from 40 acres, with 3 AUMs to 35, 471 acres with 2,694 AUMs authorized. All of the grazing occurs within the Cascade Siskiyou National Monument, and in the Ashland and Butte Falls Resource areas. No grazing occurs with in the western portions of the district in the Grants Pass and Glendale Resource areas.

Grazing effects within the Cascade Siskiyou National Monument were already analyzed and consulted on under the Cascade Siskiyou National Monument Resource management Plan EIS and Record of Decision (CSNM, 2008), and a CSNM Biological Assessment (2006).

Recently, rangeland health assessments in the CSNM found most of the allotments to not be compatible with the objects of biological interest and not meeting the Rangeland Health Standards. These allotments will be modified (change in use, AUM's, timing, fencing, etc...), or cancelled before next seasons grazing season.

Actions to improve allotments can occur in any year and could include fence building (barbed wire, high tensile lay-down, pole) and fence repair, cattle-guards, water impoundments (spring boxes, stock tanks, ditching, pipes) and repairs, swing gates across riparian zones, and riparian and forage enhancement (*e.g.* grass seeding, shrub plantings). No more than a dozen improvement projects are likely in any year given current funding trends. Most of those involve the maintenance of existing improvements (fences, cattle guards and spring boxes). No ground disturbance or surface vegetation removal would occur without plant and wildlife surveys or evaluation for habitat of listed species. Prior to the 10 year permit renewal of allotments, evaluations for listed species will occur.

H. Road Maintenance/construction

Road construction involves ground disturbance, removal of vegetation, heavy equipment, occasional blasting, and is tied to tree harvest, recreation, and several other project categories. Road maintenance consists of grading, brushing, culvert maintenance and repair, installing and repairing water bars, minor resurfacing, and occasional hazard tree removal or minor re-routing. The maintenance or construction of culverts and bridges can occur along roads (see watershed restoration). The BLM maintains roads on a schedule, but also respond to unanticipated repairs due to weather, accident, or landslide. Most activity is limited to short periods of time (*i.e.*, one or two passes with a grader). Road grading generally affects the ditch and a few feet or so of the cut-slope; some loose material is spilled over the fill-slope. Maintenance brushing generally entails mechanically cutting brush down to less than a foot high within four feet of the edge of road tread. Brush more than four feet from the edge of the road tread is not treated. Some blasting may be required with road projects removing unstable portions of the cut-slope, often at rock faces.

Road decommissioning is usually tied to Watershed Restoration and covers activities that reduce or eliminate traffic use on the road by installing gates, barriers, rocks, ripping the tread, pulling culverts, and seeding grass and herbs. Full obliteration of the road returns the road back to natural contour levels using excavators. Full obliteration also can remove intact vegetation along the top of the cut slope to create a stable slope.

I. ROW permits - Roads

Private landowners are required to obtain Rights-of-Way Permits to build or use roads across BLM managed land. These ROW permits are usually authorized under the Federal Land Policy and Management Act of 1976 and are often referred to as FLPMA permits. For the purpose of this BA, private lands refer to privately-owned or other government non-federal parcels, located as in holdings or adjoining property through which access is granted across federally managed lands. Maintenance of the road also can be included in these permits.

The BLM also issues O&C Rights-of-Way permits for commercial purposes and/or to haul commercial products on BLM maintained road systems if these permits are not already in place. Road construction and/or maintenance can be part of these permits, as well as non-linear features like landings or turn-around areas. Federal discretion to influence the implementation of recovery efforts for threatened or endangered species may be limited or non-existent where certain pre-existing Road Use or Reciprocal Right-of-Way agreements exist between private landowners and the BLM. Many older existing road activities in the Action Area are already covered by reciprocal rights of ways with private parties and the BLM no longer has discretion. Section 9 prohibitions (ESA) are the responsibility of the applicant in situations when federal discretion is not retained, however this does not apply to plants (only vertebrates). This BA does not address non-discretionary activities. All new O&C permits issues are subject to ESA and NEPA analysis and the BLM can stipulate PDC's to reduce or negate impacts.

Road building (construction or reconstruction) will be authorized on BLM land under the terms of individual FLPMA or O&C road permits. Road construction, maintenance, and restoration activities were described under road maintenance/construction above.

On 30 January 2003, a new multi-agency Road Use Permit policy (*Application of the Endangered Species Act to proposals for access to non-federal lands across lands administered by the Bureau of Land Management and the Forest Service*) was instituted. The Bureau of Land Management, Forest Service (FS), Fish and Wildlife Service, and NOAA (National Oceanic and Atmospheric Administration) Fisheries are signatories to this policy. The provisions of this agreement apply only when a BLM right-of-way grant is required for the reconstruction or construction of a road, for either private or commercial purposes (see O&C permits below), to secure access to a parcel of non-federal land. The key components of the interagency agreement are:

- The agreement applies to grants of rights-of-way across BLM and/or public lands administered by the FS under their respective authorities, for purposes of access to non-federal lands.
- The “proposed federal action” to which the agreement applies is the authorization for

- access across federal land and subsequent activities on federal land – it does not include any actions on non-federal lands.
- The agreement clarifies that the FS and BLM will not include terms and conditions in access authorizations that will regulate activities on non-federal land.
 - At the applicant's discretion, the agreement provides applicants an option to include the effects of those activities that will be facilitated by the proposed access and conducted on the applicant's non-federal lands as part of a federal agency ESA consultation on the access application.
 - The agreement applies to applications for new authorizations for access that are processed by the BLM after January 30, 2003.

J. Other Rights-of-Way permits, Water and power lines, utilities, communication sites, events, and minimum impact permits.

The BLM authorize ROW's and permits for various uses of federal land for private and commercial utilities, water and power lines, public works, canals, dams, non-profit and commercial gatherings, cell or radio towers, group gatherings, etc. Construction or maintenance of power lines, pipe lines, or cellular towers can result in the removal of vegetation and soil disturbance. Other permitted activities (e.g. Native American gatherings, festivals, and other group events) can have affects to vegetation from trampling and camping. These permits are discretionary and the BLM can re-route activity locations and stipulate PDC's to reduce or negate impacts. Minimum impact permits are ones given where there is minimal or no impact (e.g. Equipment parking for Electric tower maintenance on previously disturbed ROW).

K. Mining and Quarry Operations

For mining activities on BLM-managed land, causing surface disturbance on 5 acres or less, and removing less than 1,000 tons operators, operators must submit a Notice of Intent (NOI) and get approval from the BLM. Under the mining regulations (43 CFR, 3809) the BLM must respond to these 'Notice level plans' within 15 days. Existing listed plant sites can be mitigated and protected to prevent "Unnecessary or undue degradation", but there is little discretion to survey for populations that 'might' be present, unless the BLM has definitive and documented reason to believe that the species is there and show degradation will occur (Diane Parry, 2008). A few special exceptions apply, for instance, any mining activities within Areas of Critical Environmental Concern (ACEC's), or areas known to contain proposed or listed species are required to have a Plan of Operations (POO) rather than a notice level plan. (BLM Manual Section 3809.11 part C (6)).

Operators have to file a Plan of Operations (POO's) for activities that remove more than 1,000 tons of material, which are on more than 5 acres. POO's also require NEPA (usually an environmental assessment) and can take a year ort more allowing for a survey window of suitable habitat. POO's are required to comply with the ESA, and the operator must take such action as necessary to prevent adverse impacts to listed species.

Each year many small-scale suction dredge operations are conducted on BLM. The BLM calls this 'causal use' and does not issue permits for dredges less than 4 inches in diameter, or for

mining by hand without motorized equipment Few miners are likely to notify the BLM of their intent to operate, since regulations authorize most small-scale, low impact operations such as these, and do not require notification or approval. All activity is assumed to be within the channel and no vegetation affects should occur. Recreational gold panning is not a regulated activity and the public is not required to get a permit.

Larger-scale dredging or surface operations are likely and the operator will provide a Notice of Intent or a Plan of Operations. Where actions are likely to significantly affect surface resources, a Plan of Operations will be required and site-specific NEPA and consultation will result.

Most rock crushing operations take place in existing quarries. BLM can authorize an increase in quarry boundaries, removing intact vegetation to expand quarries. Standard operations include drilling which takes approximately 2-3 weeks, blasting which is quick (less than one minute) but may extend over several days, and crushing which takes 2-3 weeks. The creation of new quarries is infrequent; usually the BLM expands existing quarries. These actions can disturb existing vegetation.

Permits are also issued for personal and commercial landscape rock, which is removed from previously disturbed areas (old quarries). These activities do not disturb existing vegetation.

L. Cultural Resources

Cultural activities could involve one to several-person crews digging and excavating historical and archeological areas. Generally, this is handwork, and has minimal impacts to existing vegetation. Often BLM excavations are documenting looting, areas that have already been disturbed. Occasional heavy equipment might be used to restore artifacts or historic places or to install protective barriers or fences around sensitive items. Restoration of historic graveyards would include rebuilding fences, righting stones, and removing over grown vegetation.

M. Weed control

Noxious weeds, as defined by the State of Oregon are the only targets for weed treatment. Weed control treatments include manual methods like mechanical brushing or mowing, sawing, hand-pulling, mulching, digging, grubbing, steaming, burning, seeding, or the introduction of biological control insects. Vehicle and ground crews walk through infested areas spraying or hand pulling weeds. Weed control usually is done with backpack sprayers using select herbicides, but can occur from low-mounted truck booms or ATV-mounted sprayers. The use of wicks instead of sprays is used to control application on specific plants and minimize incidental spray to adjacent vegetation. Herbicide spraying using aerial methods is not authorized. The selected herbicides used by the Medford District of the BLM are: Glyphosate, 2-4-D, Pichloram, and Dicamba (Medford District Weed Environmental Assessment, 1998). Most herbicide treatments for noxious weeds use Glyphosate, and are formulations made for use around water (i.e. non-ionic surfactants).

The BLM is currently working on a State-wide EIS that will allow the use of additional chemicals. The Medford district will do a step-down EA tiered to this EIS and consultation on the new local Medford BLM EA will occur at a later time. This BA only addresses activities

covered under the existing 1998 EA.

Treatments occur during the period of the year the targeted weeds are most susceptible to a particular treatment. The listed noxious weeds that are of most concern in the basin are: Scotch Broom, Yellow Starthistle, Puncture vine, Himalayan blackberry, Rush Skeleton weed, Dyers Woad, Purple loosestrife, Japanese knotweed, Canada thistle, and Meadow knapweed. There are over 20 other listed noxious weeds that have been found on the district and other new non-native weed species are being discovered in the sub-basin every year. As new species are found, they will be treated within the life of this BA.

N. Recovery Actions

There are recovery plans for Gentner's fritillary (USDI, FWS 2003), and draft Recovery plans (USDI, FWS 2006) for Cook's Lomatium and large-flowered woolly meadowfoam. Critical habitat designation for these two species is due in 2009, and the USFWS proposed final recovery plan is forthcoming (Friedman, 2008). The recovery plan for McDonald's rockcress only addressed actions in California, and augmentation of McDonald's rockcress onto lands managed by the Medford BLM is not part of the recovery plan.

The Gentner's fritillary and Cook's Lomatium recovery plans primarily use seed and bulb collection, out growing (in greenhouses) and out-planting of bulbs and seedlings to increase (augment) existing population sizes and create new populations in management areas. A collection permit and a Biological assessment from the US Fish and Wildlife Service to collect material were issued in 2006 (USFWS, 2006). The recovery plan also addressed meadow restoration (encroaching vegetation removal) for Cook's lomatium habitat, and the use of fire as a tool to restore habitat.

O. Tracking and Monitoring

Vegetation monitoring on BLM occurs for timber inventory, grazing allotments, riparian vegetation monitoring associated with hydrology, fuels monitoring, weed and rare plant monitoring. Most monitoring is non-destructive, involving fixed or random plots collecting data on the abundance and composition of the vegetation. Some involves the removal and weighing of biomass samples, and collection of samples of vegetation for identification. Monitoring is done by botanists, ecologists, range conservationists, foresters, or inventory contractors that are familiar with the vegetation and federally listed species.

Tracking and monitoring of activities and listed species are critical to determine if plans are properly implemented. Existing monitoring efforts include: demographic monitoring of Gentner's fritillary (Pickett Creek) and annually monitoring of 59 of the Gentner's fritillary sites, and demographic monitoring of Cook's lomatium at three locations in the Illinois valley. The BLM verifies all new sites found within project areas, and attempts to monitor buffered sites within project areas, however annual appropriations influence how much monitoring occurs.

III. PROJECT DESIGN CRITERIA

Project Design Criteria (**PDC's**) are conservation measures incorporated into a project to minimize or avoid affects to endangered plants. A listed plant survey protocol (below) is included as a PDC. The PDC's may include modifying the prescription or activity method, changing the timing of the action, establishing no activity buffers around plant sites, or dropping the portions of units. Additional discretionary PDC's can be proposed during the inter-disciplinary team process to further reduce effects.

Should new information arise that significantly changes impacts to federally listed threatened or endangered species, the BLM has the discretion to halt and modify all projects, anywhere in the process.

In an emergency to protect public safety, PDC's may be waived at the discretion of the decision-maker, if necessary. The FWS will be notified of all such occurrences, and the level 1 team will determine if emergency consultation is required and to adjust environmental baselines if necessary. The BLM will be prudent in evaluating public safety deviations. They will attempt to predict potential problems (such as road failures) such that remedies can occur during times and using methods that minimize impacts to the extent possible. In the event emergency consultation is initiated, the BLM will act prudently and efficiently to complete or close consultation in a timely manner, preferably within 6 months or less of the emergency action.

All PDC's are required and must be incorporated in all projects to reduce adverse affects (LAA) to listed species, unless a specific exemption is mentioned. In all cases, effects determinations for projects have been made using the required PDC's. The goal is to reduce the detrimental effects of any projects which "may affect" any endangered plant species. Projects with a may effect determination unable to incorporate mandatory PDC's will be analyzed under separate consultation and will not be covered under this programmatic.

Additional recommended PDC's may be proposed by the ID team botanists for individual projects to further reduce effects. These recommendations are discretionary; but can be incorporated in projects where appropriate to further reduce adverse affects.

For project decisions already made following the 2004-2008 BA/BO, regardless of implementation state, incorporation of any new PDC's found in this BA is not required. In those cases, PDC's in place under the previous consultation will apply. Any updated PDC's found in this BA will be incorporated into new decisions after September 30, 2008.

The FWS has agreed to a one year grace period for projects that need a two year survey for Gentner's fritillary. Decisions for those project types will need a two year survey starting in 2010.

Listed Plant Survey Protocol

The following protocol is required for project clearances in suitable habitat. Surveys are not required in areas that are unsuitable to support any of the listed species; these would be "no effect" projects. Surveys are not required for projects that the scope, scale, timing, or intensity is

such that there would be ‘no effect’ to any listed species, as determined and documented by the project Botanist. If no plants are found in surveys, then it is assumed that the area is cleared.

- **Qualifications:** Surveys will be conducted by trained, qualified individuals (i.e. Botanists) familiar with the listed species genera and related species (look-a-likes), the habitats and ecology of the listed species.
- **Timing:** Surveys must be conducted in the right time of year, during the growing, flowering and fruiting season. Surveys for Gentner’s fritillary must be done during the flowering season, depending on the elevation. Surveys not performed during the right time of year can not be used to evaluate presence or absence of the listed species, but can be used to evaluate the suitability of the habitat to support the species.
- **Frequency:**
 - Single season surveys in suitable habitat for ground/habitat disturbing projects are adequate to document the presence of populations of Cook’s lomatium, large flowered wooly meadowfoam, and McDonald’s rockcress.
 - Each survey is valid for a ten year interval (planning window).
 - Single season surveys in suitable habitat for ground/habitat disturbing projects for Gentner’s fritillary are adequate for projects that are small in scope and scale, that have a low likelihood of presence, or a low probability of impact (see project types below).
 - The presence of patches of vegetative Fritillary plants (non-flowering) in a 1st year survey are recommended to trigger a 2nd year survey to determine if the species is Gentner’s fritillary or the more common Scarlet fritillary (*Fritillaria recurva*), or other mitigation measures to protect the population could occur (buffers, seasonal restrictions, monitoring etc...). See general PDC’s.
 - Surveys of unsuitable habitat for listed plants is not required
 - Two year surveys in suitable habitat are required for Gentner’s fritillary for larger scale projects (see project type below).
 - For *Fritillaria gentneri*, the two year surveys do not have to be concurrent, but there must be two surveys within a ten year interval. If surveys are not concurrent, they are recommended to be within 5 years of each other.
- **Intensity:** The level of survey intensity varies based on whether the survey will be conducted *at, near, or well away* from an occupied site, or highly suitable habitat.
 - For Cook’s lomatium, large flowered wooly meadowfoam, McDonald’s rockcress, and one year Gentner’s fritillary surveys, the ‘intuitive’ controlled rare plant methodology will be employed (USDI, 1996). Surveys shall be completed by walking routes which cover a representative (80%) cross section of all major topographic features (slopes, draws, benches, ridges, etc.) and suitable habitats within the survey unit. When areas of highly suitable habitat or existing populations are encountered, a more thorough and intensive examination is made with nearly 100% of the area examined.
 - For 2 year Gentner’s fritillary surveys, the 1st year survey examines all suitable habitat (like above), and all known sites. All flowering plants and population patches with vegetative leaves are documented (indeterminate sites). The areas of high habitat suitability and indeterminate sites are the focus of the 2nd year survey. If no flowering plants are documented, then the area is documented as cleared.

- **Project types and 2 year Gentner's fritillary survey protocol:**

The following are project types that the 2 year survey protocol of suitable Gentner's fritillary habitat is required.

- Tree harvest including stewardship projects. Does not include small sales sold under the Special Forest Products or salvage sales for wildfires or catastrophic events like windstorms or tornado's (1 year survey adequate for these actions).
- Fuels management projects, except small scale fuels clearing of property lines on BLM as part of private land clearing
- Livestock grazing renewals
- New rock quarries
- New construction of large inter-regional commercial power lines and pipelines (does not include local utilities or lines for private homes)
- Pre-commercially thinning of natural stands (not plantations)

There is a one year grace period (2009) for these projects; decisions signed by 2010 must have completed a 2 year survey prior to the decision.

For all other project types, single year Gentner's fritillary surveys following the survey protocol in suitable habitat are adequate, if the action has the potential to affect the species. Actions that are determined to be a 'no affect' do not have to be surveyed. The need for two year surveys for small projects are thought to be impractical and unlikely to increase the number of populations found because of the type of project, scope, and scale of the disturbance from the activity.

GENERAL and SPECIFIC PDC's

Unless otherwise noted below, for activities in suitable habitat, qualified botany personnel must survey for and document occurrences of any listed endangered plant species following the listed plant protocol. This must occur prior to signing a decision notice or memo for an action. Effects of the action will be documented in the NEPA document (CE, EA, or EIS). Once the decision is signed, the clearance surveys for that project and those acres are valid, even if implementation does not occur immediately. Surveys of suitable habitat are valid for ten (10) years following the year of survey. If new species are federally listed, and were previously surveyed for as BLM special status species, then those surveys are also good for 10 years.

Suitable habitat and dormancy periods for the four species are defined in Section IV. See Appendix A for maps that show the range of each species. Projects within these ranges, if they could affect any listed plant species, must be surveyed. Surveys do not need to occur outside the range of the species. Certain activities are allowed within occupied habitat during the dormancy period, if the resulting habitat is deemed neutral or beneficial to the species. If the project area does not contain suitable habitat (as determined by the project botanist) for any of the endangered plants, then surveys for the listed plants are not required.

Plant sites (occurrences) must be identified on the ground using standard location protocols utilized by the agencies (GPS coordinates, ribbon, paint, signs etc.). In project areas where actions are occurring, an occupied polygon (this may be a single plant in a 1 meter square) is

usually buffered to reduce or negate effects from habitat and ground-disturbing activities. Other design features that reduce effects (seasonal restrictions, method of activity, etc.) are listed below.

Buffer sizes can vary by project type. Listed below are *minimum* distances used to protect the occupied site from various activities. For certain activities buffers can be larger, depending on site-specific recommendations made to the line officer from the project Botanist. Buffers are a set distance that extends from the perimeter or the hypothetical polygon boundary of a "population." For example, for a single plant, a buffer would extend a certain distance from that point. For a cluster of plants in a defined population, the buffer would extend from a polygon that delineates the colony. In cases where there is a string of colony's or patches, separated by less than a few hundred feet, in suitable habitat, this might all be delineated as a single population on the ground and buffered accordingly.

If indeterminate vegetative leaves are found after a protocol survey (1 or 2 year), while the area is deemed cleared, if the botanist determines that there is a high likelihood that the plants could be Gentner's fritillary based on the proximity of other populations and/or the suitability and condition of the habitat, then the following discretionary PDC's are recommended to be implemented:

- Buffering patches of vegetative plants or
- Changing the prescription or timing of the action to reduce any potential impact and/or
- Monitoring of the site during and after the action (identified in the NEPA document)

Annually, as new populations are documented, any occurrence and monitoring information will be reported to the FWS.

Tree Harvest - PDC's

- Two year surveys required for Gentner's fritillary following the protocol for Timber sales. Salvage sales and incidental tree harvest under permit only require a 1 year survey in suitable habitat.
- Buffer sizes: a minimum of 25 feet from the population boundary (a site, or the outer edge of a polygon encompassing the population). No harvest activity within the buffer.
- No heavy equipment, skidders, yarders, etc., within 75 feet of a buffer (100 feet from the occurrence).
- No tree falling into or yarding through buffered sites.
- No tree planting within 75 feet of the edge of the buffer (100 feet from occurrence), so as to maintain edge and more open habitat.
- Do not locate anchor trees within known sites. This includes anchor trees on Federal land requested by private landowners.
- Construction of new landings should be at least 300 feet from known sites. Use of a previously existing landing is allowed if the location of the plant(s) is more than 100 feet away (see fuels section). Logging use of existing landings within 100 feet of an occurrence is not allowed (*i.e.*, landings sometimes grow through a sale, and are a source for new noxious weed populations, and burning of landing slash piles often kill

surrounding vegetation).

- Proposed logging road locations, including temporary haul roads, must be surveyed and populations protected by a minimum 100-foot buffer. Use of existing roads within 100 feet of an occurrence is allowed (see road maintenance section).
- Hazard trees. No surveys are required for hazard trees that are documented as a safety hazard in campsites, trailheads, roadsides, property lines, power line corridors, etc. For known plant sites, when possible, coordinate with the local botanists to develop any site-specific measures to reduce effects (e.g. directional falling).
- Commercial thinning, oak woodland and riparian thinning, and wildlife habitat improvement projects; Buffer sizes for thinning: a minimum of 25 feet from the population boundary. For these actions, buffers can be treated manually during the dormancy period. Directional falling of trees out of the buffer will occur with minimum soil disturbance. No cable yarding or skidding through buffers. For *Fritillaria gentneri*, a minimum 40 percent canopy is retained from trees and shrubs (plant level canopy cover). If the existing canopy cover is below 40 percent, no treatment allowed in buffered occurrences. There is no canopy minimum for *Lomatium cookii*. No vehicles or heavy equipment in buffered occurrences.

Silviculture (includes non-commercial vegetation management) – PDC's

See separate heading for PDC's related to prescribed burning. No additional surveys required if a documented plant surveys occurred within ten years of a previous treatment (i.e. timber sale).

- Precommercial thinning of natural stands (not plantations) requires 2 years surveys, and follows all other Silviculture PDC's. All other silviculture actions require a 1 year survey
- Buffer sizes for Silvicultural treatments are a minimum of 25 feet from the occurrence boundary unless otherwise stated.
- Precommercial thinning (chainsaws) and hand brushing through buffered occurrences are allowed if during the dormancy period. For *Fritillaria gentneri*, 40 percent combined canopy coverage of trees and shrubs must be retained. If the canopy cover is less than 40 percent, then treatment of the buffer is not needed. There is no canopy minimum for *Lomatium cookii*.
- Cut material must be piled outside of the buffers. If the material is to be burned, no piles in the buffer and piles must be 25ft from the buffer edge
- Mechanical thinning/mechanical brushing. 100-foot buffers required no vehicles or heavy equipment within buffered occurrence (hand treatment allowed within the buffer, as previously described).
- Tree planting, hand scalping, mulching, shade cards, netting: Most areas to be planted have been previously surveyed. If a documented plant survey has not occurred within 10 years, (e.g. wildfire planting), surveys and 25-foot buffers of sites required. No tree planting in or within 75 feet of the buffer edge, (100 feet from occurrence) so as to maintain more open habitat. No mechanical scalping within 100 feet of an occurrence.
- Hand Pruning: allowed through buffered sites, material must be piled outside of buffer.
- Gopher trapping: No trapping within existing or buffered occurrences. No surveys necessary.
- For all activities in existing Tree Improvement test plantations, and seed orchards: No

surveys necessary.

- Fertilizer application: No fertilization within 50 feet of existing occurrences. No surveys necessary.
- Open meadow, oak woodland, grassland restoration/enhancement. Known occurrences can be treated (burning, hand brush/tree removal, sowing adapted native grass etc.) during the dormancy period if the net result improves habitat for the species (a long term beneficial effect identified in NEPA). No heavy equipment (dozers, slashbusters, excavators etc.) within known sites. Known sites will be protected by 100-foot buffers from heavy equipment. One year surveys are adequate for these enhancement actions.
- Port-Orford-cedar Root Disease (POCRD) Disease Sanitation Treatments. Surveys of suitable habitat prior to the decision, and documentation of sites is required. If occurrences found, site-specific mitigation may be developed by the project Botanist (*i.e.* directional falling, change in prescription, burning mitigation, buffers) to minimize effects, but is not required. It is unknown if *Fritillaria* bulblets or Cook's lomatium plants could be infected with POCRD that would prevent "rescue" and transplanting into adjacent suitable habitat.

Special Forest Products – PDC's

- Native plant or material collections (medicinal, floral, shrubs, roots, etc.) will not occur within known sites for listed species, except under special circumstances (see research below). When possible, in un-surveyed or undesignated areas, permit holders will be provided information on what the listed species looks like (pictures), and written instructions will be given to avoid collection. Permitted activities must conform to the Cites agreement (Cites, 1973).
- Where possible, send collectors to areas that already have negative clearance surveys for listed plants. Surveys of Special Forest Products collection areas for listed species are not required.
- Firewood Permits: No firewood permit gathering allowed within known occurrences. Road segments close to known occurrences may need to be closed to prevent incidental impacts. No surveys required
- Burls (madrone, oak, maple etc...). No harvest of madrone burls within 100 feet of known occurrences. Where possible, send collectors to areas that already have negative clearance surveys for listed plants. When possible, provide the permit holder with information on the habitat, and a picture of the Gentner's fritillary plants and bulbs. For *Fritillaria gentneri*, if bulbs are found while excavating burls, they must be replanted. Surveys of collection areas for listed species are not required.

Watershed Restoration Projects - PDC's

- One year surveys required for watershed restoration projects in suitable habitat
- Culverts: If within suitable habitat, and if intact, native habitat is disturbed, these areas must be surveyed, and populations protected by site-specific mitigation. If the footprint of disturbance for construction or replacement is not new, then no survey is required.
- Bridge construction (see Roads/Engineering section).

- Buffer sizes: a minimum of 25 feet from the population boundary (a site, or the outer edge of a polygon encompassing the population). No activity within the buffer.
- If equipment corridors for in stream work pass through suitable habitat, surveys and buffering of occurrences by 100 foot buffer required. No heavy equipment in known population buffers.
- No riparian or tree planting within 75 feet of the edge of the buffer (100 feet from occurrence), so as to maintain edge and more open habitat.
- No tree falling into or yarding through buffered sites

Fuels Management, Prescribed Fire, Wildfire – PDC’s

Public and Fire firefighter safety must be taken into account at all times when using the PDC’s for fuels. If implementation of PDC’s might cause safety risks, line officers can over turn PDC’s and respond to the safety threat. The level 1 team will determine if adverse affects have resulted from the suspension of PDC’s that will trigger the need for emergency consultation.

Private lands

Projects on Private lands, either through the National Fire Plan or other initiatives are not covered in this BA. The exception is where the BLM authorizes treatment (by private cooperators) along property lines (100 feet or so onto BLM) to protect structures on private lands to meet county requirements for fire safety protection.

- If possible, these actions should receive a one year survey of suitable habitat. These surveys are good for 10 years.
- If no survey is possible, then the treatment must occur during the dormancy period, all material is cut by hand, removed, and disposed of on private lands.

Prescribed Fire - PDC’s

Includes fuels treatment within commercial timber sales, fuel density reductions in woodlands, brush fields, and meadow edges. If treatments are within an area that was surveyed within ten years, no additional surveys needed; buffering known sites is required

- 2 year surveys are required within suitable habitat for Gentner’s fritillary following the survey protocol with the exception that areas to be broadcast burned for habitat enhancement for Gentner’s fritillary, only require a 1 year survey.
- Broadcast burning: allowed to burn through buffered occurrences during the dormancy period following fuel reduction treatments.
- Buffer sizes for fuels treatments are a minimum of 25 feet from the occurrence boundary.
- Hand slashing (Chain saw, brush saw) through buffers is allowed if done during the dormancy period. For *Fritillaria gentneri*, minimum canopy coverage of 40 percent of trees and shrubs is retained. If the canopy is already less than 40 percent, no treatment in the buffer is needed. There is no canopy minimum for Cook’s lomatium, large-flowered wooly meadowfoam or McDonald’s rockcress.
- Cut material must be removed and piled outside the buffered occurrence.
- Hand pile and burning: no hand piles in the buffer and piles must be 25ft from the buffer edge.
- Burning of commercial harvest landing slash piles cannot occur within 100 feet of an

occurrence.

- Mechanical treatments. 100-foot buffers required no vehicles or heavy equipment within buffered occurrence (hand treatment allowed within the buffer as previously described).

Fuels reduction – PDC’s

If treatments are within an area that was surveyed within ten years, no additional surveys needed; buffering known sites is required

- 2 year surveys are required within suitable habitat for Gentner’s fritillary following the survey protocol with the exception that areas to be broadcast burned for habitat enhancement for Gentner’s fritillary, only require a 1 year survey.
- Buffer sizes for Fuels reduction are a minimum of 25 feet from the occurrence boundary.
- Manual slashing (chainsaws) and brushing through buffered occurrences are allowed if during the dormancy period. For *Fritillaria gentneri*, 40 percent combined canopy coverage of trees and shrubs must be retained. If the canopy cover is less than 40 percent, then treatment of the buffer is not needed. There is no canopy minimum for Cook’s lomatium, large-flowered wooly meadowfoam or McDonald’s rockcress.
- No mechanical equipment in buffers.
- Cut material must be piled outside of the buffers. If the material is to be burned, no piles in the buffer and piles must be 25ft from the buffer edge.
- Mechanical thinning/brushing (e.g. tracked vehicles). 100-foot buffers required and no vehicles or heavy equipment within buffered occurrence (hand treatment only allowed within the buffer, as previously described).

Wildfire and Suppression actions – PDC’s

- Resource Advisors/Environmental Specialists will advise Line Officers and Incident Commanders to minimize impact to listed species and their habitat during suppression activities.
- Information on species and habitat location will be available to fire staff through maps showing areas of concerns (readily accessible through GIS). With this information, fire staff can determine possible needs during initial attack, if the behavior of the fire dictates the need for emergency fire suppression action.
- Resource specialists, resource advisers, advisors/environmental specialists will give biological input to personnel in charge of fire suppression activities. The resource advisor/environmental specialist will work for the Line Officer and with the Incident Commander to relay biological concerns.
- Whenever possible, protect known sites of any listed species from high intensity fire, but not at the expense of human safety
- Update Resource Information Book annually; incorporate new sites as soon as possible
- Coordinate with the level 1 team who will contact the FWS as soon as possible to inform them of impacts to listed species. The BLM will do emergency consultation if necessary as soon as possible following the event (ESA Consultation Handbook, March, 1998).

Recreation Management Projects – PDC’s

- For new trails, new campgrounds including campground expansion, new recreation facilities (buildings, toilets, parking lots) – 1 year surveys of suitable habitat prior to the

decision, identify sites, and protect occupied habitat using 100 foot buffers.

- For recreation maintenance activities, trail maintenance, hand-brushing, as well as signing and post-holes: site specific measures to protect known occurrences will be developed by the project botanist. No surveys required.
- If damage is occurring to occupied habitat for any listed plant from recreation, including unauthorized OHV use, the BLM must develop plans in cooperation with the FWS, to mitigate the effects and protect populations. This may include, but is not limited to, fencing, signage, re-routing traffic, augmentation to increase population sizes, increased law enforcement presence, and increased monitoring.

Livestock Grazing – PDC’s

If grazing utilization does not occur at existing plant sites, then no protection is needed, but periodic monitoring is required. Protection measures may include: changing the timing of release or the grazing system, fencing small populations, or modifying the allotment boundaries.

Reinitiation of consultation may be needed if protection measures are not implemented.

- Existing grazing: protect known occurrences if utilization is occurring within the site. Monitoring of utilized sites is required.
- New allotments and allotment renewals: Allotments can be renewed on a single year basis until survey requirements are met. Survey suitable habitat following 2 yr protocol prior to the ten-year allotment renewals, identify sites, and implement protection measures following the survey protocols. Protection measures may include measures like: changing the timing of release or the type of grazing system, fencing small populations, or modifying the allotment boundaries. Grazing during the dormant season is allowed.
- Construction of range improvements requires a 1 year survey of suitable habitat if the action may affect listed plants.
- Maintenance of existing improvements, fences, pump-chances etc... do not require surveys; known locations will be protected.
- Augmenting existing or creating new listed populations under recovery actions within allotments is subject to consultation with the permittee and the FWS.

BLM road maintenance, construction

Road and Bridge Construction

- For new construction, one year surveys of suitable habitat along the proposed corridor or location prior to the decision, identify sites, and protect occurrences using 100 foot minimum buffers. A one year survey is adequate. Re-route road prisms to protect populations. For Cook’s lomatium, insure that road construction does not affect the local hydrology of meadows.
- For road construction accessing private lands, address Interrelated and Interdependent effects if the action meets the ‘But for’ test (Endangered Species Act Consultation handbook, 2002). Reasonable alternative access means there is no I & I.
- Coordination with the FWS will occur when protecting known occurrences from road construction actions...

Maintenance

- Road maintenance of open existing roads: blading, rocking, ditching, mowing, culvert replacement, brushing etc. Protect known sites from maintenance activities that could affect populations, using site-specific mitigation such as no treatment zones. No surveys required.

Decommissioning

Road decommissioning, ripping & seeding, pulling culverts, within the existing road prism. No surveys required. For road obliteration, (involving disturbance outside the road prism in intact natural habitat), one year survey of suitable habitat required, and buffering of any occurrences.

FLPMA and O&C Road Permits – PDC’s

Non-discretionary Road-Use-Permits do not require consultation or NEPA and are not addressed in this BA.

FLMMA Permits and O&C permits - Roads

- For Road Right of Ways (ROW’s) on existing roads including maintenance, no surveys of the existing road prism are necessary.
Road maintenance of open existing roads: blading, rocking, ditching, mowing, culvert replacement, brushing etc. Protect any known sites from maintenance activities that could affect populations, using site-specific mitigation such as no treatment zones.
- The issuance of a ROW permit on an existing road is not an interconnected and interdependent action requiring consultation for any action on private lands. See 10 March 2003 2670 memo *Endangered Species Act and Access to Nonfederal Lands across National Forest System Land* and 30 March 2003 interagency agreement *Application of the Endangered Species Act to proposals for access to non-federal lands across lands administered by the Bureau of Land Management and the Forest Service*.
- New construction: survey suitable habitat along the proposed corridor and protect occurrences using 100 foot minimum buffers, no disturbance within the buffer. A one year survey is adequate. This includes construction of non-linear features (landings) covered under an FLPMA or O&C permit. Re-route road prisms to protect populations. For Cook’s lomatium, insure that road construction does not affect the local hydrology of meadows. For road construction accessing private lands, address Interrelated and Interdependent effects if the action meets the ‘But for’ test (Endangered Species Act Consultation handbook, 2002). Reasonable alternative access means there is no I & I.
- Coordination with the FWS will occur when protecting known occurrences from road construction actions.

Other ROW Permits

Maintenance

- For maintenance of existing permitted ROW’s, including but not limited to linear features like waterlines, power lines, and utilities, and non-linear features like communication sites, facilities, etc, no surveys are necessary.
- Protect known sites. This includes protecting known sites from service vehicles.

Construction

- For new construction of linear and non-linear features, in suitable habitat, one year surveys required following protocol.
- Protect occurrences using 100 foot minimum buffers, no disturbance within the buffer. Re-route linear features (pipelines etc.) away from occupied habitat.
- Interrelated and interdependent effects to listed plants from construction activities occurring across federal lands will be addressed in the specific NEPA document, if appropriate.

Other Miscellaneous Permits

- For permitted actions that disturb suitable habitat and could affect listed plants, surveys and protection of listed plant sites will occur.

Minimum Impact permits

- No surveys are necessary for minimum impact permits; protect known sites as necessary

Mining Operations and Quarry Development**For new plan level mining operations**

- 1 year surveys of suitable habitat prior to action in suitable habitat required.
- Protection of existing occurrences is required. The BLM and FWS will work together with the applicant to insure the protection of occurrences.

For new notice level mining operations

- Protection of existing occurrences is required. The BLM and FWS will work together with the applicant to insure the protection of occurrences. No surveys required.

Rock Quarries

- For existing rock quarries, no surveys required.
- For creation of new rock quarries requires 2 year surveys in suitable habitat. Expansions of existing rock quarries into intact suitable habitat require a one year survey prior to the decision. Identification of sites and protection of occurrences using 100 foot minimum buffers is required. No equipment or blasting within the buffer.

Cultural Resources Projects

- Survey suitable habitat in areas to be excavated following survey protocol
- Restoration of already looted sites; no surveys necessary.
- Protect existing occurrences

Weed Control

Roadside weed control:

- Protect known listed plant sites from direct chemical application. Hand pulling, low pressure controlled spot spray, wicking, direct injection, within occurrences allowed only on individual weeds. No spraying of listed plants.
- No boom spraying across known listed plant sites
- Provide contractors with information (pictures, descriptions) so as to identify the plants.
- No pre-disturbance surveys required within existing road prisms.

Non-roadside weed control:

- One year surveys of suitable habitat, identification of occurrences, and 25-foot buffers required off the road beds. If surveys all ready done within 10 years, no surveys required.
- Provide contractors with information (pictures, descriptions) so as to identify the plants.
- Protect known sites. Listed plant populations that have threats from weed s will be a primary target for treatment
- Hand pulling, herbicide wicking, direct injection, or low pressure spot spraying with herbicides is allowed within occurrences, but only on individual weeds.
- No ATV boom spraying allowed within 75 feet of buffered occurrences.
- Reseed buffers with native forbs/grasses appropriate for the location, if necessary.

Recovery Actions

Research or recovery collections

- The collection of listed plants (seeds, bulbs and plants) is allowed on Federal lands if the holder has obtained a collection permit from the FWS and coordinated with the BLM. Collections must be for the purposes of research, or part of recovery actions (e.g. bulb collection of Gentner's fritillary). The permits and activities will be reported to the FWS.

Augmentation of existing populations or creation of new populations

- For out planting new plants into existing populations to increase size, or for creating new populations of listed species the BLM Botanists will work with FWS and other BLM programs to identify new locations and to develop a monitoring plan to measure effectiveness.

Habitat restoration: weeding/burning/thinning vegetation management.

- For actions to restore habitat, the BLM will work with the FWS to develop a restoration plan

Exceptions to PDC's

Exceptions to PDC's are occasionally necessary, usually for ecological emergency's or safety reasons. An example would be emergency vegetation treatments to control new pathogenic fungi like Sudden Oak Death, or eminent failure of a dam requiring immediate actions. Exceptions for

other reasons may require reinitiation of consultation or amendments to this BA. Involvement by the level 1 team to determine if emergency consultation or reinitiation is necessary is required.

IV. ENVIRONMENTAL BASELINE

Listed plant habitat was not addressed in the NWFP, but is addressed in the proposed resource management plan (WOPR). The habitat for the four listed plants is not generally associated with late successional conifer forests, although the listed lily Gentner's lily (*Fritillaria gentneri*), can occur on the edges or within inclusions of conifers, madrone, and Oregon white-oak in otherwise mature conifer forests. The way the BLM has delineated stand polygons, many stands containing Gentner's fritillary are coded as "Commercial Forest Lands".

A. COOK'S LOMATIUM (*Lomatium cookii*) – Endangered – Documented

A perennial forb in the carrot family (*Apiaceae*), Cook's lomatium grows 1.5 to 5 decimeters (dm) (6 to 20 in) tall, from a slender, twisted taproot. Leaves are smooth, finely dissected, and strictly basal (growing directly above the taproot on the ground, not along the stems). One to four groups of clustered, pale yellow flowers produce boat-shaped fruits 8 to 13 mm (0.3 to 0.5 in.) long with thickened margins. The taproot can often branch at ground level to produce multiple stems. The branching taproot distinguishes Cook's lomatium from Bradshaw's lomatium (*L. bradshawii*) that is indigenous to wet prairies from southern Willamette Valley, Oregon to southwest Washington, and foothill lomatium (*L. humile*) that is found in vernal pools in northern California (Kagan 1986). Recent genetic research has shown Cook's lomatium to be most closely related to Bradshaw's lomatium.

Cook's lomatium was listed as a candidate for listing in 1990 and the State of Oregon listed it as State Endangered in 1995. In May 2000, it was proposed for listing (Federal Register 65:30941-30951, May 15, 2000), and the comment period was re-opened in January of 2002. It was listed as federally endangered in November of 2002 (Federal Register 67:68004-68015, November 7, 2002). Critical habitat was not designated.

The distribution of the plant is disjunct; it was originally discovered in 1981 in the Agate Desert, Jackson County, Oregon, on the edge of vernal pools, and subsequently described by J. Kagan in 1986. At this site just north of the Medford airport, 13 occurrences exist within the historical flood plain of the Rogue River on non-federal land. Additional populations were found in 1988 about 40-air miles to the southwest in the Illinois River valley in seasonally wet grassy meadows, in and adjacent to oak woodlands and serpentine influenced meadow and shrub habitats. Thirty-three (33) occurrences are now known in the areas of Reeves creek, Fry Gulch, Indian Hill, Rough and Ready Creek, Woodcock Creek, and in the French Flat Area of Critical Environmental Concern (ACEC) in the Illinois River valley, mostly on federal lands. The most northerly occurrence in the Illinois valley is near Selma. The largest is at French Flat ACEC which is estimated to have 146,356 plants (Kaye and Thorpe, 2007). The smallest documented location is 1 plant. The median is 250 plants. No populations have ever been found between the Illinois valley and Medford Agate desert populations either along the Rogue River or in alluvial areas along the lower Applegate River. Most of the habitat between these populations is on non-federal lands, and have been heavily modified by rural development. Little likelihood exists that

undiscovered populations occur between the Agate Desert and the Illinois valley occurrences; these two major populations segments are disjunct and are not interbreeding.

The habitats of the species are slightly different between the Agate desert and Illinois valley sites. In the Agate desert, its habitat is along the margins and bottoms of vernal pools. These pools, within swale and mound topography, form during the winter rains in shallow clayey-gravelly soils over an impervious hardpan. The Illinois valley habitats are mostly alluvial silts and clays within serpentine soils. The soils consist of flood plain bench deposits that also have a clay hardpan 60-90 cm below the soil surface. This creates seasonally wet areas similar to vernal pools in the Agate desert, but lacks the swale and mound topography (*i.e.*, no pools). The Illinois valley sites are alluvial in nature within serpentine substrates and are within the serpentine valley bottom communities. The meadows are dominated by California oat-grass and occur within Oregon white oak – ponderosa pine/Jeffery pine savanna. An open shrub layer comprised of wedge-leaf ceanothus and white-leaf manzanita is interspersed with native and introduced grasses and herbs. One known site occurs in Oregon white oak dominated grassland on a shallow slope (not a meadow).

Flowering stems emerge from a rosette of leaves in late February, with flowers appearing in mid-march and blooming until mid-May. As with many *Lomatium* species, the earliest flowers are usually staminate, while the later umbels have both staminate and hermaphroditic flowers. Plants that produce only one umbel produce few, if any, seeds (Kaye and Kirkland, 1994). The exact pollinators have not been well documented. Initially the likely pollinator was thought to be andrenid bees (Kaye 2002). Bumblebees had also been observed. A small unidentified black moth has been documented visiting umbels too (Kagan 1986). In 2007 a study was done by Dr. Carole Ferguson from Southern Oregon University examining the pollinators. They visually monitored plants, collected and identified insects from 7 different families on Cook's *lomatium* plants. The most common insect pollinators were native solitary bees in the family Andrenid and several species of Syrphid flies were also documented moving pollen. Several beetles in the families Dasytidae and Dermestidae also were regularly observed feeding on pollen (Ferguson, 2007). A more thorough investigation of the breeding system would be necessary to identify any difference in the pollinator guild.

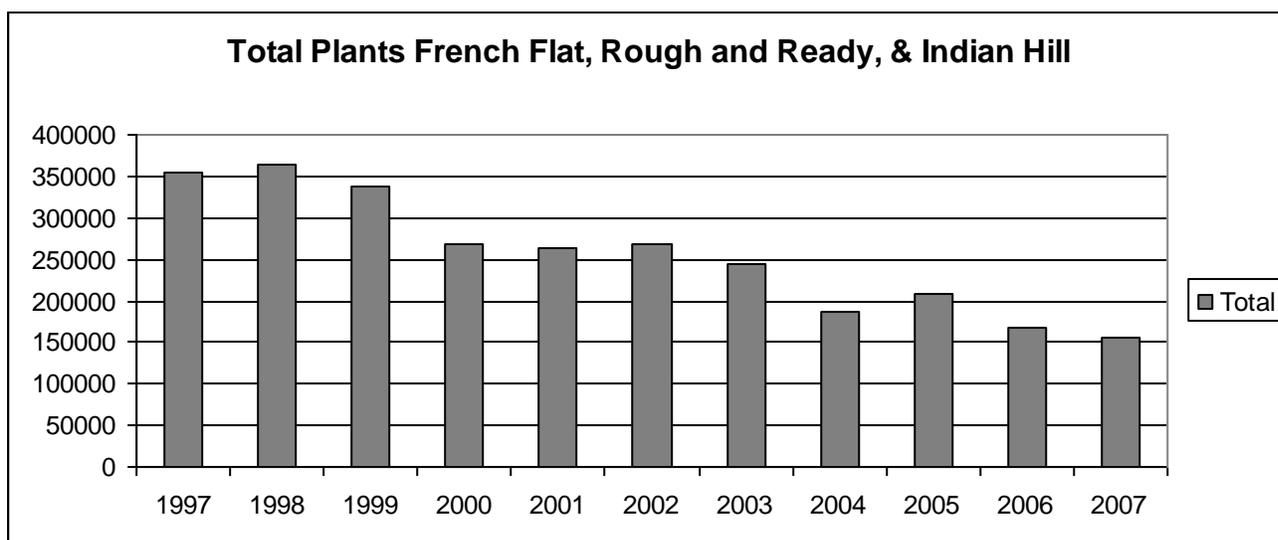
Cook's *lomatium* habitat in the Illinois Valley is threatened by rural development and abuse by recreational users in the area. Both the French Flat and Rough and Ready Creek sites have been repeatedly damaged by OHRV use, with observations of damage documented every year from 2002-2007 (Kaye and Thorpe, 2007). At both sites damage is severe in the *L. cookii* population, even harming population monitoring plot markers. Illegal dumping (trash, tires, and old appliances) have been found at both the Rough and Ready and French Flat ACEC's next to existing populations. Hydrology at the Rough and Ready Creek population is affected by open roads that pass through and divide the population. The BLM has closed the roads, increased law enforcement, repeatedly gated, dug barriers, and fenced sites, but illegal entry into the meadows continues to occur. Just this year, the BLM reinstalled a gate and dug an earthen barrier at French flat ACEC, and fenced a *Lomatium cookii* population.

Mining activities in Cook's *lomatium* populations are a concern. Placer gold mining has restricted the population at French Flat and permanently altered much of the natural hydrologic patterns through the meadows. Some of the French Flat subpopulations monitored and discussed

in this report are located on BLM managed lands adjacent to the Hillside Placer No. 1 and No. 3 Mines owned and operated by a local resident. A proposed mining plan filed in 1993 would involve destruction of a significant portion of this subpopulation (Kaye and Thorpe, 2007). Because of the recent spike in the prices of precious metals, renewed interest in mining at French flat is occurring. Because of the ACEC status, BLM regulation require a “Plan level” plan prior to operations and the BLM has the ability to mitigate actions to protect listed species.

Annual monitoring of three populations (Indian Hill, Rough and Ready and French flat ACEC) on BLM lands since 1994 has revealed a steady decline over the last 10 years (1997 – 2007) in the total number of plants at all three sites. There have been large variations in population densities and reproduction, within the three populations, seemingly in response to undefined environmental changes.

Figure 1. Total Cook’s lomatium plants at French Flat ACEC, Rough and Ready ACEC, and Indian Hill, 1997-2007



The largest population (146,356 plants 2007) is at French Flat ACEC. Monitoring is showing a slow decline over the last 9 years at the 2 sub-populations (French Flat middle and French Flat south). Herbivorous feeding of reproductive plants by rodents (e.g. voles) at French Flat ACEC and successional changes (tree encroachment of the meadow) is a likely the cause for the decrease (Kaye and Thorpe, 2007). Both the Rough and Ready and Indian hill populations are showing a steadier trend, with some wide fluctuations, but these populations are much smaller than French flat. In 2007 Rough and Ready and Indian hill had 924 and 8685 total plant respectively.

Figure 2. Total plants at French Flat ACEC 1993 – 2007

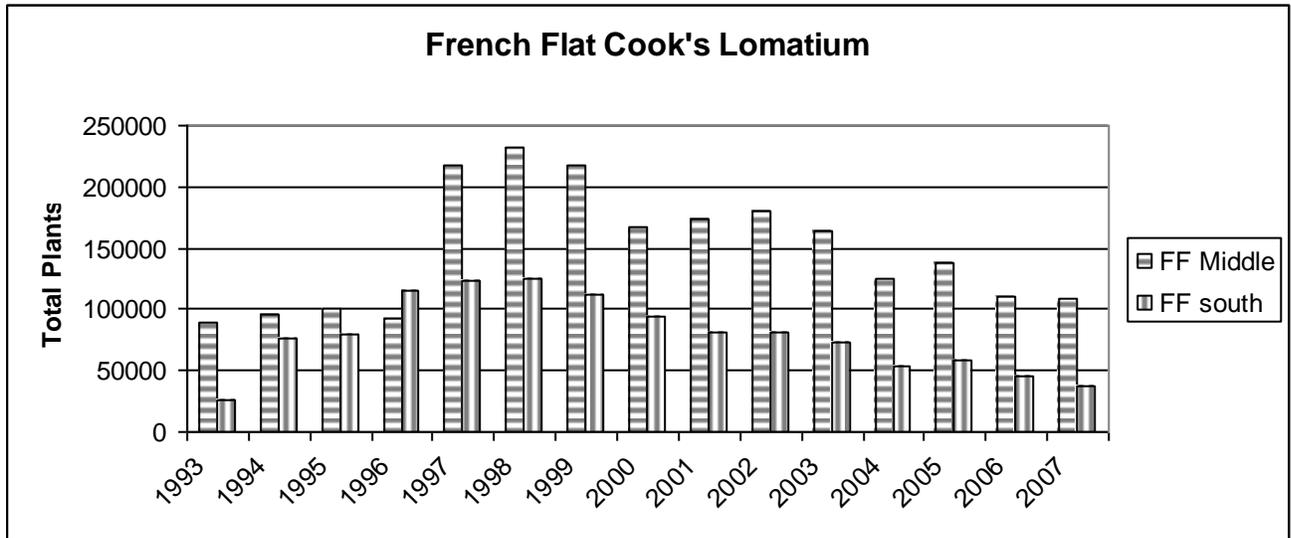


Figure 3. Total plants at Rough and Ready ACEC, 1994-2007

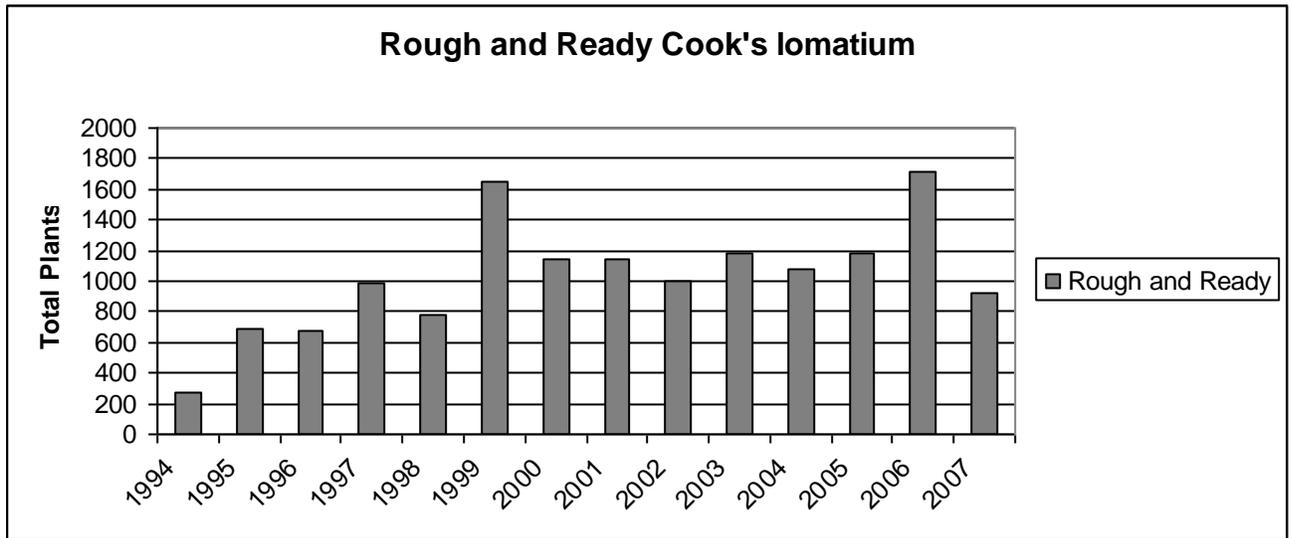
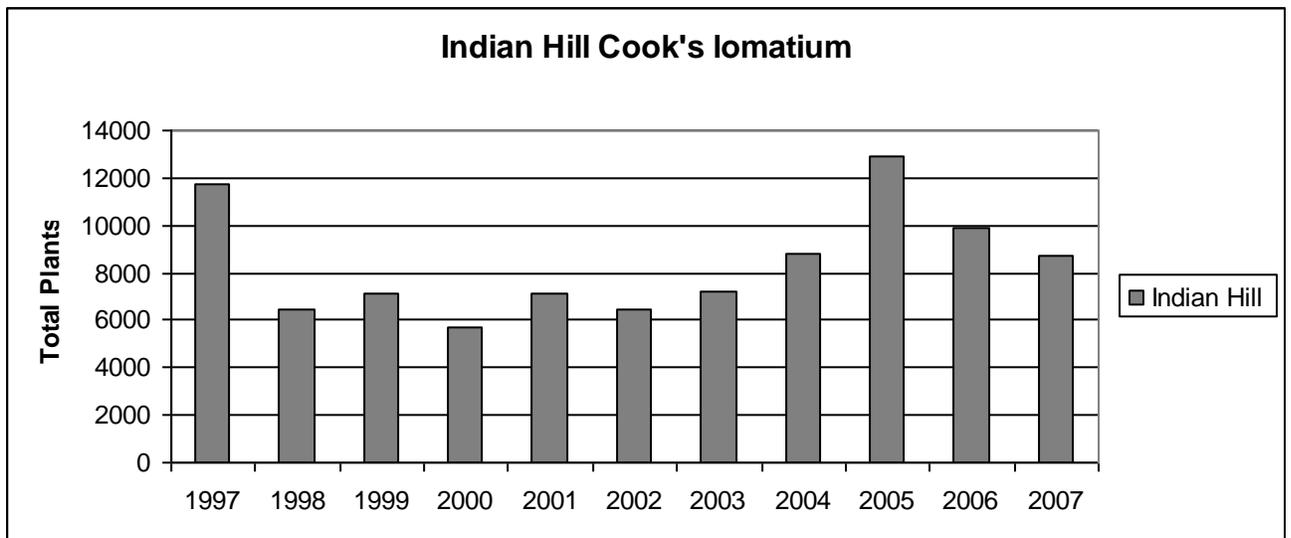


Figure 4. Total Plants Indian Hill, 1997 – 2007.



Most of the other Cook's lomatium populations in the valley are small; no more than 25,000 plants are believed to occur. Most populations have less than 50 plants. The total population in the Illinois valley is estimated to be about 178,000 plants on less than 50 acres of occupied habitat (Medford BLM, 2008). Suitable habitat within the range in the Illinois valley for Cook's lomatium has been estimated to be less than 2000 acres (USDI, 2006.) To date, within the species range on Medford BLM lands, 2,508 acres of surveys for Cook's lomatium have occurred.

Because of the small occupied acreage, scattered distribution, and threats to its habitat (development and off-highway vehicle impacts in occupied habitat) the trend for populations in the Illinois valley is downward.

B. GENTNER'S FRITILLARY (*Fritillaria gentneri*) – Endangered - Documented

Helen Gilkey described *Fritillaria gentneri* in 1951 (Gilkey, H., 1951). It is commonly referred to as "Gentner's fritillary" and is a member of the lily family. Its discovery is attributed to Katherine Gentner who noticed it in a vase of wildflowers on her family's kitchen table in 1941 in Jacksonville, Oregon (personal communication K. Gentner, 2001).

Gentner's fritillary is a perennial herb arising from a fleshy bulb that has a wide axis and is flattened vertically in older specimens, with several large scales surrounded by numerous small rice-grained bulblets. Non-flowering plants vastly outnumber flowering plants in natural populations, and are recognizable only by their single ovate to lanceolate basal leaf that is indistinguishable from several other common related fritillaries. The species has dull to bright, red- to maroon-colored flowers mottled or streaked with yellow. The flowers are solitary, or in bracted racemes, 1 - 5 (rarely more) on long slender pedicels. The 25-40 mm bell-shaped perianth has segments that bend more or less outward, but are not strongly recurved; the nectary glands extend about ½ its length. The style is divided about ½ its length, with widely spreading branches. The whorled, lanceolate to linear leaves on the flowering stalks, are 70-150 mm in length.

In 1980, it was identified as a Candidate species for federal listing as a Category 2 species. The BLM and Oregon Natural Heritage have tracked this species since the early 1980's. The Oregon Natural Heritage program classifies this species as a G1 category species, which identifies it as a species that is threatened with extinction throughout its range. It is on the State of Oregon's State Endangered Plant list. It was listed as federally endangered on December 10, 1999 (USDI, FWS, 1999). Critical habitat was not designated. A final recovery plan was published in 2003 (USDI, 2003).

This rare lily is endemic to the Rogue River basin in Jackson and Josephine County, and in the upper drainages of the Klamath basin in the Cascade-Siskiyou National Monument, Jackson County, Oregon. It is now documented in Northern California about 2 miles south of the border and the Cascade Siskiyou National Monument, in Siskiyou Co., California on BLM and State lands.

Within the Rogue basin, populations have been documented as far west as Pickett Creek near Merlin, north of Sexton Mountain, around the city of Grants Pass, and north of Murphy. A large

number of populations occur in the Middle and Little Applegate drainage, around Jacksonville, and in the Gold Hill and Sam's Valley area. It is also documented to the northeast in Big Butte Creek, and another pocket of occurrences is in the Colestine valley and south of Soda Mountain in the Cascade Siskiyou National Monument (Klamath sub basin). Most of the known occurrences on private lands occur in close proximity to the cities of Jacksonville and Grants Pass.

Gentner's fritillary is known from a wide variety of habitats and soil types across its range. The recovery plan (USDI, 2003) identifies over 25 soil types and about 16 different plant communities that this species can occupy. Because of the extreme variation in habitats, the attempt to develop habitat prediction models has not proved useful. This species prefers situations where it can receive at least partial light (Brock and Callagan 2002). It is rarely found under a dense conifer canopy; although a few "riparian" populations (riparian ecotones) have a high cover of mixed conifer and deciduous trees. It has been found growing on the edges of grasslands and chaparral, and in partially open mixed evergreen forest and woodland openings. It is most often found in forest ecotones or transitional areas, especially along ridgelines or aspect changes. It appears to have a moisture requirement in that it has not been found in fully exposed rocky, skeletal soil types (e.g. open grasslands), but prefers a level of soil moisture that is also capable of supporting trees and shrubs. At a coarse scale, this species can be found in:

- ecotones between (and inclusions within) forested sites and more open habitat (oak woodlands/grassland/chaparral)
- open-canopied woodlands and mixed evergreen forests (madrone and Douglas-fir)
- permanent openings and edges of openings in forest and woodlands
- riparian zone edges with canopy gaps and/or deciduous tree canopies.

No estimates of suitable habitat within its range have been done and because of such a wide range of habitats that can not be well delineated, the utility of such estimates would be low.

Gentner's fritillary is almost always with or in close proximity to both scarlet fritillary (*Fritillaria recurva*), and usually, checker lily (*F. affinis* [syn. *F. lanceolata*]), two related species. Gentner's fritillary can be easily confused with scarlet fritillary. Where they all occur together, checker lily tends toward the moister, and shady habitats, scarlet fritillary toward the drier, more exposed habitats, and Gentner's fritillary occurs fully within the amplitude of the other two species (Brock and Callagan 2002).

The elevations of known occurrences range from 600 feet (near the Rogue River) to nearly 5,000 feet near Soda Mountain, and it can occur on nearly all aspects if the right habitat conditions are present. It does not appear to be an early colonizer of recently disturbed habitat, nor a "late successional" species found in "old growth," closed canopy forests. It is likely a long lived species and its relationship with disturbance is not clear, although it exists in communities that had fairly frequent fire return intervals historically. Like many geophytes, evidence suggests that it is adapted to fire, especially later in the summer when it has gone dormant and exists as an underground bulb. In areas with abnormally high fuel densities, the high severity and intensity of a stand replacing fire could bake underground bulbs.

Vegetative leaves appear in late February and early March (Gamon 1984; Knight 1991). Blooms

have been documented from early April through late May, and as late as June 15th, depending on precipitation, temperature, and herbivory. The blooms can persist into June, often wilting on the stems. The search window is generally April 1 (lower elevations) through June 15 (highest elevations) (Gamon 1984). Fruits are identifiable (if present) into early July, and can be differentiated from the common scarlet fritillary (Gilkey 1951).

Most occurrences of this species contain few flowering plants. When Gentner's fritillary does not flower, it is indistinguishable in its vegetative state from the common scarlet fritillary that can grow with it. Plants with the potential to bloom may be grazed (mostly by deer) prior to monitoring, and can be impossible to locate or tell apart from non-flowering scarlet fritillary. Plants can remain dormant for several years and never come above ground (Federal Register, 1999). Gentner's fritillary bulbs can be shallow (an inch or two) or deeper (up to 8 inches), depending on the soil type and depth (Gisler and Meinke, 2002). Gentner's fritillary is most likely pollinated by hummingbirds (McFarlane 1980), and by andrinid and halictid bees (Donham 2002). Several researchers (Donham 2002, Amsberry and Meinke 2002, Kaye 2003) have documented hummingbirds visiting Gentner's fritillary. Foraging areas of a hummingbird are reported to be about 2.5 miles, which is likely the breeding distance for Gentner's fritillary (Robinson 2002).

Reproduction is mostly asexual. Small 'germinant' plants often arise from near the base of larger flowering plants, presumably from under ground "clonal" bulblets coming off the "mother" bulbs. Amsberry and Meinke (2002) documented between 10 – 200 rice-grain bulblets attached to mature mother bulbs on 25 excavated plants. Transplanting bulblets collected from donor 'mother' bulbs into the greenhouse for several years, growing and harvesting bulbs for transplanting back into the field has proved to be a viable way to increase population sizes (Amsberry and Meinke, 2005; Amsberry and Meinke, 2007).

The frequency of the number of plants that set fruit is very low and variable (Knight 1991); a high number of fruits that do develop abort, and even fewer numbers of fruits contain viable seed (Guerrant 1991). Both Gentner's fritillary and the common scarlet fritillary have low pollen germination rates, (Amsberry and Meinke 2002). Recent fertility studies by the Oregon Department of Agriculture, have found that Gentner's fritillary is not sterile, and produces capsules and seed best when pollen from another population is used (Amsberry and Meinke, 2007). This suggests that a genetic self incompatibility exists, and as most populations or patches are clonal, or very closely related, within population sexual reproduction is non-existent or very low. Intra-population fruit set in controlled setting, for *Gentneri* x *Gentneri* crosses has been found to be 2.3 percent with poor seed viability, while inter-population fruit set of *Gentneri* x *Gentneri* crosses were 48.9%, with good seed viability.

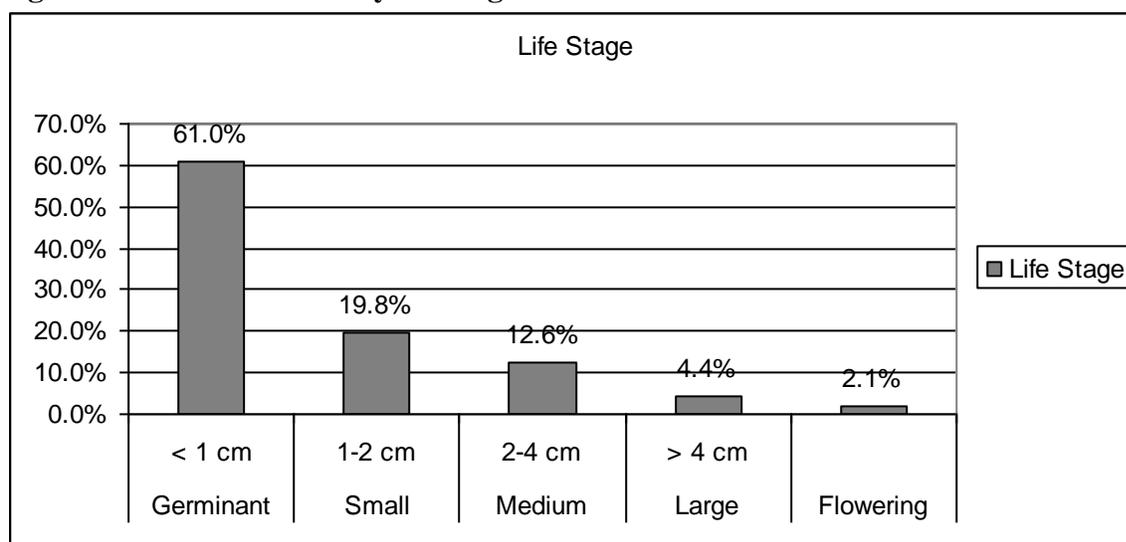
There is no doubt that Gentner's fritillary is a long-lived species and persists mostly by asexual means. It is likely that successful sexual reproduction is episodic and only occurs given certain climate conditions, and if pollen from other populations is able move to a population and fertilize flowers. Pollinator movement and the distance between populations is likely limiting sexual reproduction.

There is strong evidence that Gentner's fritillary is of hybrid origin and has arisen from multiple hybridization events between *Fritillaria recurva* X *Fritillaria affinis*. Although sporadic,

documentation of fertility in this species demonstrates that it is capable for sexual reproduction, making it a ‘good’ biological species.

Individual plants do not always come up every year, or in the exact same spot, making the tracking of individual plants difficult. At two sites on federal lands, demographic monitoring has tracked individual plant changes through time (Brock and Callagan 2002; Kaye 2007). Annual revisits and census counts have been done since 1999 and now monitor 59 sites. Accurate counts of the true number of plants in a population are difficult to obtain, and most have usually focused on flowering and ‘mature’ vegetative plants (i.e., leaves greater than 2 cm wide) , but have not counted hard to see vegetative or germinants leaves that can have leaf widths less than 2 cm. The recovery plan used a ratio of 14.8 vegetative plants per flowering plant. Individual plants have been documented as dormant for several years (Brock and Callagan 2002), but the length of time one can be dormant and start growing again is unknown. In 6 years of demographic monitoring at Pickett creek, (Kaye, Thorpe, and Martin, 2007), counting all life stages, found that for every flowering plant on average there was 64.5 vegetative plants, including new bulblet germinants. The ratio for plants with leaves wider than 2 cm (medium and large plants) is about 1 flowering plant for each 8 vegetative plants. Plants with leaves less than 2 cm are harder to see, but these make up almost 81% of the population. Presumably it is these stages where most of the mortality occurs as well. It is important to note that the life stages are not linear. Plants that are medium one year, can be large, or flowering the next, or dormant. Plants that flowered one year, can be vegetative the next, or dormant. The rate of dormancy is not known, but is likely less than 5% (Kaye, 2008). It is believed that most dormant plants would be medium / large leaved and flowering plants that had a large bulb capable of storing photosynthates so a plant could survive a year underground. Dormancy in germinants and small plants is less likely because of the lack of carbohydrate resources.

Figure 5. Gentner’s fritillary life stages

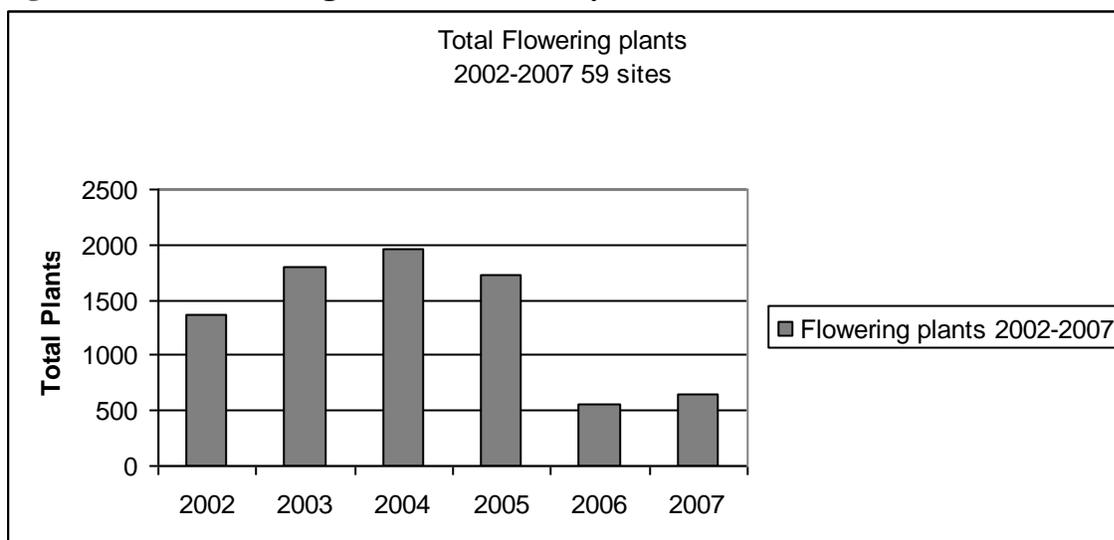


The BLM has annually monitored Gentner’s fritillary sites since 1998, starting with 15 sites, and now annually monitors 59 of the 146 sites documented on BLM, including the largest patches (Pickett creek and Jacksonville woodlands). In 2008, 10 additional sites were added. It is believed that the monitored sites are a good representative sample of all sites.

Of all the sites monitored, 46 sites (77.9%) have had at least one year with no flowering plants. Only 8 sites (13.5%) have had more than 50 flowering plants (on average) per year. The largest ever recorded was 600 plants at a site. On 59 BLM sites monitored since 2002 the six-year average population size is 22.9 flowering plants/ site, with a range from 0 to 600 plants. However, the median population size is 1 plant; the majority of populations are very small, and many populations have no flowering plants some years. This has resulted in a multi-year surveys protocol for large projects, where a 2nd year survey doubles the likelihood of finding a small population that may have not had any flowering plants in year one. The total annual counts at the 59 sites over 6 years have varied from a high of 1959 plants in 2004 to a low of 555 flowering plants in 2006.

There are 194 known occurrences on all ownerships for the plant. There are 146 sites (75%) on federal lands, 16 sites (8 percent) on State, County, or City owned public lands, and 32 sites (16 percent) on private lands (Medford BLM, 2008; USDI FWS 2002; USDI FWS, 2003). Over the last 10 years, surveys within the range of this species have occurred on 236,353 acres (Medford BLM, 2008).

Figure 6. Total flowering Gentner's fritillary 2002-2007 on 59 sites.



About 3000 flowering plants are documented on federal lands, and it is estimated that about 140,000 vegetative (all size classes) plants exist, although since the amount of genetic diversity within patches is very low (many are clonal), the number of distinct genotypes maybe fewer than a few hundred. Three populations on private lands are believed to be extirpated.

Gentner's fritillary and scarlet fritillary are browsed by deer and livestock. Data from monitored populations have shown deer grazed 57 percent of the flowering plants in a single year (Brock and Callagan 2002). Evidence of herbivorous insect activity has also been documented. Grazing by cattle, donkeys, and horses has been documented on non-federal lands in a pasture setting (Marcia Wineteer, Medford BLM botanist, personal communication 2001).

Because of small population sizes, a lack of within population variation, and widely scattered populations, the FWS believes that for some of the sub-populations of Gentner's fritillary, long-term viability is in question. As a result, the recovery plan calls for intensive augmentation of

populations with nursery grown plants. Currently the existing trend for the species is downward.

C. LARGE-FLOWERED WOOLY MEADOWFOAM (*Limnanthes floccosa* spp. *grandiflora*) – **Endangered - Suspected**

Large flowered woolly meadowfoam (*Limnanthes floccosa* spp. *grandiflora*) is a delicate annual in the meadowfoam, or false mermaid, family (*Limnanthaceae*). The plant grows 5 to 15 centimeters (cm) (2 to 6 in) tall, with 5 cm (2 in) leaves divided into 5 to 9 segments. The stems and leaves are sparsely covered with short, fuzzy hairs. The flowers, and especially the calyx (outer whorl of floral parts), are densely covered with woolly hairs. Each of the 5 yellowish to white petals is relatively long compared to other meadowfoams, 6 to 13 mm (0.2 to 0.5 in.), and has 2 rows of hairs near its base.

This plant had been a candidate for listing since 1980 (45 FR 82480). In May of 2000 it was proposed for listing (Federal Register 65:30941-30951, May 15, 2000), and the comment period was re-opened in January of 2002. It was listed as federally endangered in November of 2002 (Federal Register 67:68004-68015, November 7, 2002) in the same listing package as Cook's lomatium. A draft recovery plan was released in June 2006, and the final is due out in 2009. Currently critical habitat has not been designated.

The current range of the species basically extends along the floor of the Rogue River from south of Shady cove, down river to Gold hill, along the historical floodplain of the Rogue River. Like Cook's lomatium in the Agate desert, it is associated with vernal pools in swale and mound topography, except that large-flowered woolly meadowfoam grows on the wetter inner fringes of vernal pools and is not known from wet meadows. This species is now only known from the Agate desert, located on the valley floor of the Rogue River just north of Medford, Oregon in an area of rapidly expanding development. No estimates of suitable habitat on federal lands in its range have been done and the species has only been suspected to occur on BLM lands. One area with vernal pools on federal lands (the Table Rocks ACEC) has been extensively surveyed and does not have this species, even though it's within a few miles of existing occurrences and contains populations of a closely related species *Limnanthes floccosa* spp. *pumila*. Mapped occupied habitat for this species in the Agate Desert totals 198 acres (ONHP Database 1998, USDI, 2006). However, development in the Agate desert has continued since this plants listing in 2002. Nearly 50% of existing populations have been altered (USDI, 2006). Populations have not been found on BLM lands within its range, even though suitable habitat exists. This species is unlikely to occur on BLM lands since most suitable habitat has been surveyed.

In the Agate Desert, large-flowered woolly meadowfoam flowering and fruiting time occurs in early spring, from March to mid-April (USDI, 2006). In its habitat large-flowered woolly meadowfoam is sympatric or closely related with *L. floccosa* ssp. *floccosa*, however, sub-species "*floccosa*" grows on the slightly drier, outer fringes of the pools, whereas *L. f. grandiflora* grows on the relatively wetter, inner fringe of the pools (Kalin-Arroyo 1973). Only 10 occurrences of large-flowered woolly meadowfoam on non-federal lands in the Agate Desert are known. The numbers of plants are unknown, but probably are less than a 100,000 in this small area. Because of the existing threats to habitat, and the small amount of occupied habitat, the current trend for the species is downward.

D. MCDONALD'S ROCKCRESS (*Arabis macdonaldiana*) – Endangered - Suspected

McDonald's rock-cress is a member of the mustard family (*Brassicaceae*) and genus *Arabis*. Within the genus *Arabis* is a group of six perennial species of the coast ranges of northwestern California and southwestern Oregon that have purple flowers and a basal rosette. Members of this group besides McDonald's rock-cress include Waldo rock-cress (*A. aculeolata*), Oregon rock-cress (*A. oregana*), modest rock-cress (*A. modesta*), and coast rock-cress (*A. blepharophylla*). Preston peak rock-cress (*A. serpenticola*) is believed to be a variant of McDonald's rock-cress.

McDonald's rock-cress was first collected by Alice Eastwood on top of Red Mountain, Northern Mendocino County, California in 1907; it wasn't seen again until 1942. Additional surveys done in 1977 in California by J. Sawyer and R. Kay better delineated its habitat in California (California Native Plant Society, Rare Plant Status Report, 1977). It was discovered in Del Norte County, California and in adjacent Southwest Oregon in 1980 on the Siskiyou National Forest in Curry County. D. Goforth did additional taxonomic & ecology work in 1983, and combined the Red Mountain *Arabis* population with the population in Del Norte and Curry Counties.

McDonald's rock-cress is a short lived perennial, with basal leaves in a rosette from which the flowering stem supports lavender to deep pink (~ purple), four-petaled flowers. The plants can be 3.7 to 24.7 cm tall in flower, and have highly branched caudexes; the caudex branches are short, stiff and form new rosettes at their tip. The basal leaves are 7-32 mm long by 2.2 – 13 mm wide, slightly to strongly lobed, and pubescent or ciliate with simple, forked or dendritic trichomes (very small hairs), to 1.5 mm. The flower is a simple raceme or occasionally simple flowers in the axils of upper cauline leaves. The number of flowers is 4 - 19 with up to six open at a time. The light-green to pink sepals are 3.2 – 7.5 mm long by 1.2 – 2.8 mm wide with fine to .05 mm forked or dendritic trichomes. The four petals are 8 – 14 mm, claw 4 – 6.5 mm, blade 4 - 8 mm long, by 2.5 -5.0 mm wide. The fruits are 0 – 12, 22-58 mm long by 1.5 – 2.1 wide, with an obvious mid-vein from 30 percent - 100 percent of the tip.

Considerable taxonomic confusion and controversy have surrounded this species and the other "purple-flowered *Arabis*" species and has recently been sorted out by L. Vorobik (2002). The plant has been especially confused with the related Waldo rock-cress and Preston peak rock-cress, which also evolved in this area and inhabit the same habitats. L. Vorobik (2002) has determined that many of the sites originally thought to be McDonald's rock-cress in the lower elevation areas of Rough and Ready creek, Eight Dollar Mountain, Woodcock bog areas in the Illinois valley on BLM lands are actually variants of Waldo rock-cress (*A. aculeolata*). Waldo rock-cress plants on extreme serpentine sites are often smaller than normal and can resemble plants of McDonald's rock-cress. She also has proposed that populations of Preston Peak rock-cress are an ecological variant of McDonald's rock-cress, and not a valid species.

Currently, no verified populations of McDonald's rock-cress have been documented on lands managed by Medford BLM. Surveys have occurred for this species since for 25 years, since the early 1980's. Six populations are documented on lands managed by the Forest Service to the west of the Illinois valley in the areas of upper Rough and Ready creek, Cleopatra lookout, Stone corral, Josephine creek, and Packsaddle Mountain (ONHP 2002). One population last documented by Leach in 1932 on Red Mountain is believed to be extirpated. In the Illinois

valley of southwest Oregon, BLM lands occupy the low elevation areas adjacent to private lands to the east, and National Forest lands occupy the higher elevations to the west.

McDonald's rockcress was listed as endangered in 1978 (Federal register 43:44812; September 28, 1978). The initial listing pertained to the Red Mountain, Mendocino County population only. The primary threat identified to the species was mining. The range of the listed plant was extended in 1980 to include the extreme SW corner of Oregon. A recovery plan was published in 1990, but only addresses the Red Mountain population in California; the plan has never been updated. Critical habitat has not been designated for the northwest California/southwest Oregon population.

McDonald's rockcress is found on soils and loose rock derived from ultramafic rocks, namely serpentinite and peridotite (*i.e.* serpentine). It has been found on ridgelines, hillsides, and along rivers throughout its range, on serpentine influenced soils. Most often, it is on steep, unstable serpentine slopes at elevations between 1200 – 5200 feet. Common associates include knobcone pine (*Pinus attenuata*), Jeffery pine (*P. jeffreyi*), huckleberry oak (*Quercus vaccinifolia*), Siskiyou mat (*Ceanothus pumilus*), and other serpentine herbaceous plants. Serpentine intrusions across Northern California and Southwest Oregon are sporadic and support many plant species that have evolved in these harsh mineral environments. No estimates of suitable habitat have been done for this species.

There are about 50,000 individuals documented in Mendocino County, California, and less than 500 in Oregon, (ONHP 2002). Its life history and reproductive ecology is not well known. Both asexual spread by new rosettes forming off short-branched caudexes, and sexual reproduction by seed, are believed to be its reproductive means. Each plant can produce between one and twelve rosettes in a year, but how many survive is unknown. The pollinators are not documented, but are likely bees and butterflies. It is believed that McDonald's rockcress can interbreed with Waldo rockcress, resulting in intermediate forms. Molecular work done by Vorobik (2002) only showed that these species are very closely related.

The lower elevations in the Illinois valley have experienced a lot of disturbance by humans, and intensive mining activities have occurred in serpentine over the last 100 years. The Biscuit Fire in 2002 burned over some of the occurrences on National Forest lands, but the long term effects are not known; most populations survived. Road building and road maintenance have likely affected populations. Over the last ten years, many areas comprised of serpentine have been surveyed in the Illinois valley for rare endemic plants, but more areas have yet to be surveyed. Based on Vorobik's (2002) taxonomic work, the Medford BLM has no known occurrences and only ten populations have verified on the Rogue River Siskiyou National Forest (Rolle, 2008). Given the number of surveys on low elevation serpentine areas throughout the years, McDonald's rockcress is unlikely to occur on BLM lands. No life history and demographic monitoring is being done in the Oregon populations. The trend for this species within the Action Area is not known as no populations exist.

V. EFFECTS OF THE PROPOSED ACTION ON LISTED PLANT SPECIES

The following effects are mainly for the listed Gentner’s fritillary (*Fritillaria gentneri*) and Cook’s Lomatium (*Lomatium cookii*). Large-flowered wooly meadowfoam (*Limnanthes floccosa* spp. *grandiflora*) and McDonald’s rockcress (*Arabis macdonaldiana*) have not yet been documented on BLM lands, despite years of surveys, and presence of habitat. These species are still addressed in case populations are discovered on BLM lands in the future. All PDC’s will apply to these species if locations are documented to reduce effects.

In 2006 the USFWS issued a permit to the BLM for collection of Gentner’s fritillary bulblets and seed for Cook’s lomatium (USFWS permit number TE054395-1). This action is already covered by a Biological assessment prepared by the USFWS in 2006.

Direct, and Indirect Effects

For the listed plants analyzed in this BA, direct effects are the physical disturbance to individual plants and populations that affect growth, survival, and reproduction. Indirect effects are changes in habitat that can affect the plants through time, and other changes that can influence growth and reproduction such as increases or decreases in competition from other plants, the introduction of noxious weeds, increasing light or available precipitation to plants from thinning, etc. Direct effects are negated (no effect) or strongly reduced (not likely to adversely affect - NLAA) by implementation of the PDC’s. Most of the NLAA calls are based on indirect effects. All effects are at the A synopsis of effects to species is displayed in Table 2.

Project category		Direct Effects	Indirect Effects
A	Tree harvest	Implementation of PDC’s result in no direct effects. Two year surveys of suitable habitat will document existing populations for Gentner’s fritillary for timber sales. PDC’s for salvage sales will reduce direct effects.	Canopy cover modification (increased light), increased temperature, and decreased humidity can indirectly affect populations as well as changes in the hydrologic regimes. Unintentional increase in weeds as a result of disturbance can increase competition with listed plants. Light Commercial thinning through populations during the dormant period could result in long-term beneficial effects for Gentner’s fritillary.

B	Silviculture	Implementation of PDC's result in minimal direct effects.	Canopy cover modification (increased light), increased temperature and decreased humidity, changes in the hydrologic regimes can indirectly affect populations. Unintentional increase in weeds as a result of disturbance can increase competition with listed plants. Thinning can benefit Gentner's fritillary by increasing light, but can make the plants more vulnerable to browsing. Fertilization can increase growth of listed plants and increase competition from other species.
C	Watershed restoration	Implementation of PDC's result in no direct effects	PDC's will reduce any indirect effects from equipment. Restoration of natural hydrologic regimes would likely be a beneficial effect in the long run to vernal pool and wet meadow species.
D	Recreation	Implementation of PDC's result in no direct effects	No effect from maintenance activities given PDC's to protect existing occurrences. New developments and increased recreation use near existing sites can result in physical impacts through time; incidental trampling, and increases in weeds. PDC's reduce effects.
E	Fuels Management	Implementation of PDC's reduce direct effects to an insignificant level. Individual Gentner's fritillary plants could be disturbed (above ground portion) but not likely killed. Seasonal restrictions on broadcast burning are not likely to hurt underground bulbs/roots and should improve habitat. Two year surveys of suitable habitat will document existing populations for Gentner's fritillary. PDC'S will eliminate direct effects from pile burning.	Canopy cover modification (increased light), increased temperature, and decreased humidity can indirectly affect populations. Unintentional increase in weeds as a result of disturbance can increase competition with listed plants. Fuels treatments, thinning and burning can improve habitat in the long term.
F	Grazing	Implementation of PDC's reduce direct effects (incidental trampling/grazing).	Increased competition from weeds / annual grasses as a result of disturbance.
G	Special Forest products	The likelihood of direct effects from plant and burl harvesting is reduced by PDC's. Incidental direct effects from trampling would be limited in scope and scale for Gentner's fritillary or Cook's Lomatium.	PDC's reduce the likelihood of indirect effects.

H	Road maintenance and construction	Implementation of PDC's result in no direct effects for new road construction. PDC's result in no direct effects for road maintenance, decommissioning, PDC's will reduce effects for road obliteration.	Increased competition from weeds as a result of disturbance; indirect effects to species and habitat from changes in hydrology. PDC's reduce effects
I	Roads Right of Way – Roads	Implementation of PDC's result in no direct effects on federal lands	Implementation of PDC's reduce indirect effects on federal lands. Increased competition from weeds as a result of disturbance; changes in hydrology.
J	Other ROW permits	Implementation of PDC's result in minimal direct effects for new construction and maintenance. Implementation of PDC's result in no direct effects on federal lands	Implementation of PDC's reduce the likelihood of indirect effects on federal lands. Canopy cover modification (increased light), increased temperature and decreased humidity can indirectly affect populations. Unintentional increase in weeds as a result of disturbance can increase competition with listed plants.
K	Mining/ quarries	Implementation of PDC's result in minimal direct effects. Documented listed plants in existing claims will be protected. Surveys for plan level mining will document and protect plants.	Indirect effects from changes in hydrology and subsurface drainage; increases in noxious weeds from disturbance. Any small-scale logging associated with claims could change light regimes and microclimate of adjacent populations.
L	Cultural	Implementation of PDC's results in no direct effects.	Implementation of PDC's result in no indirect effects.
M	Weed control	Implementation of PDC's will eliminate direct effects for weed control.	Treatments would generally provide long-term benefits to species habitat.
N	Recovery Actions	Implementation of PDC's result in minimal direct effects. Recovery actions designed to improve species population and habitat in the long run.	Implementation of PDC's result in minimal indirect effects.
O	Tracking and Monitoring	Implementation of PDC's results in no direct effects.	Implementation of PDC's result in minimal indirect effects

Effects to Listed Plants

Surveys of suitable habitat for listed plants prior to federal activities during the growing season, combined with spatial (buffers) or seasonal protection, are the primary PDC's for all activities. Knowing where the plants are and where they are not, has proven to be the best way to facilitate conservation for these species, and to meet the Bureau Special Status Species goals, regulations, and policies of the agency. The developed PDC's in most cases negate or reduce direct and indirect effects to insignificant levels for the listed plants. Indirect effects from habitat

disturbance can have adverse, neutral, or beneficial effects to plants, depending on the type of disturbance, the intensity and duration, and the timing. PDC's reduce adverse effects in all cases such that a determination of "may effect, not likely to adversely affect" is the call for most actions. The long-term effects of habitat modification are not well known, as few studies have occurred for these species. Much of the information is anecdotal in nature, uses best professional judgment, or is based on ecological patterns seen in related species.

Direct physical ground disturbance in occupied listed plant habitat from equipment associated with timber harvest (e.g. bulldozers, skidders and yarders), silviculture and fuels (e.g. mechanical 'brush-whackers'), restoration (e.g. excavators and backhoes) or permanent modification of the habitat with bulldozers or blasting for road construction, mining, quarry development can have adverse effects to listed plants. Plants can be crushed, broken, dug up, and killed, and the soil compacted, displaced, or removed. The implementation of PDC's will remove these direct effects. These actions are not likely to adversely affect any listed plant.

Road maintenance or reconstruction within the road prism is unlikely to directly affect Gentner's fritillary affect plants as the footprint of the disturbance is not new and road edge habitat is generally not suitable. Indirect affects could occur to plants growing next to roads from competition from weeds coming in along roads, however these affects are slight and discountable. Weed populations potentially affecting listed plants will be targeted for treatment.

Roads and drainage structures can change or influence hydrologic regimes within wet meadow and other riparian habitats that could support Cook's lomatium and large flowered wooly meadowfoam. The establishment of no-equipment buffers in population sites found during surveys would eliminate this threat. Surveys for and protection of listed plants for timber sales, fuels projects, watershed restoration, and road construction, either on BLM, or in conjunction with FLPMA and discretionary O&C road use permits negate direct effects and reduce indirect effects to discountable levels. Effects for non-discretionary ROW actions (e.g. reciprocal permits) are not addressed in this BA. Issuance of road use permits for existing (open) roads will not have measurable effects different from the non-discretionary public use of existing roads. Any known occurrences adjacent to roads will be protected. These projects are not likely to adversely affect any listed plant.

Physical impacts from humans walking through populations during the growing season, in the course of authorized BLM activities (timber harvesting, fuels, silvicultural practices, manual weed treatment, recreation) can also damage the above ground portions of plants, reduce the season's reproduction potential, but is unlikely to eliminate entire populations as soil disturbance is minimal and the roots and bulbs should survive. The PDC's involving seasonal restrictions, identification of the occurrence on the ground, and making the BLM field crews aware of the site, will eliminate inadvertent trampling and any adverse effects. The probability of the public recreating and randomly stepping on listed plants is low as the amount of total occupied habitat is less than a few hundred acres in the whole action area (890,000 acres). The likelihood of incidental trampling killing the plant is low. PDC's require that known sites experiencing affects from over-recreating will be protected. These actions are not likely to adversely affect any listed plant.

The probability of occurrence of Gentner's fritillary in managed stands needing pre-commercial

thinning (previously harvested and planted) is low. Often these stands were commercially harvested 20 or more years ago, burned, planted, and are now ready to thin. These habitats generally are no longer suitable for Gentner's fritillary, and are not habitat for the other listed plants. However, pre-commercial thinning of natural stands has documented populations of Gentner's fritillary, although the number of acres treated annually is very small (<300 acres/yr). Potential direct effects would be eliminated by implementing the PDC's, and indirect effects will be reduced to discountable levels. Thinning of natural stands and reducing fuel loads, could be a beneficial long term effect for Gentner's fritillary.

The modification of listed plant habitat from actions like partial thinning of the canopy, and increasing the light regime and available precipitation, can have a beneficial effect for listed species through time. These activities likely mimic the role that wildfire historically played in these habitats by periodically opening the canopy. Based on existing data from known populations, it appears that partial light (40 - 60 percent canopy cover) is optimum for species like Gentner's fritillary. However, the removal of all understory vegetation was seen to lead to a short term increase in browsing of Gentner's fritillary flowering plants by deer in the Jacksonville Woodlands. Sometime brush and small patches of young oaks and evergreens hide flowering plants from voracious blacktail deer that seem to delight in nipping fritillary flowers. Cook's Lomatium, McDonald's rockcress and large flowered wooly meadow foam likely won't benefit from thinning activities as they are generally in habitats with no canopy cover. Watershed restoration activities that improve the hydrology for vernal pool habitat could benefit large-flowered wooly meadowfoam. Tree encroachment into wet meadows supporting Cook's lomatium was likely historically regulated by periodic wildfires during the dormant season. The removal of encroaching trees (and shrubs) would benefit this species, as this plant prefers full sun. Canopy modifications from silviculture and water shed restoration projects are not likely to adversely effect any listed plants.

Because of extreme fuels loads from many decades of fire suppression, wildfires can now burn with more intensity and more sustained heat. Sustained heat will bake bulbs and roots that historically would have survived a less intense fire, as well as alter the soil chemistry, structure and biology. For example, in the Biscuit Fire that occurred in southwest Oregon in 2002, several populations of the rare Umpqua swertia (*Frasera umquaensis*) that had been monitored for nearly a decade were burned through. In areas that the fire burned with light to moderate severity, the populations survived and will likely benefit from the open habitat created by the fire. In the areas where the fire was severe, because of dense fuels that caused a sustained burn over the plants, the populations were lost (Kaye, 2005). Excavations of this species large root system at these sites revealed that the tubers literally baked under-ground from the sustained heat.

Fuels reduction projects can have a long term beneficial effect by creating more open habitat that is more suitable for plants like Gentner's fritillary and Cook's lomatium. Herbivorous browsing of Gentner's fritillary by deer in treated areas has been observed presumably because they are more exposed and visible. The effect of hand crews slashing was addressed above and is not likely to adversely affect listed plants. The burning of meadows could benefit Cook's Lomatium by removing thatch build up and increasing soil patches where seed germination can occur. Burning has helped increase Cook's lomatium plants on the Agate desert on the Nature Conservancy Preserve. Areas with listed plants that have had fuels treatment are likely to burn with less intensity in the future increasing the probability of survival, and potentially helping

with recovery.

Pile burning of slash, broadcast understory, or “maintenance” burning within plant communities within sale areas can affect occurrences and habitats of listed plants, especially Gentner’s fritillary. Spring/early summer burning could directly kill growing Gentner’s fritillary plants, but could also create new habitat that could become occupied later. This species is likely adapted to fire in the summer and early fall when it is dormant underground. Burning occupied habitat during the dormant period is likely a beneficial effect for listed plants. The use of drip torch oil to ignite fire in occupied habitat is unlikely to hurt the plants as the oil burns off (Martin, 2008). Fire can be used to promote, enhance, or maintain these habitats and create suitable habitat. The burning of piles of slash can bake listed plants if the piles are within close proximity or on top of plants. The radiant heat can penetrate the soil and kill the roots and bulbs, depending on the size of pile, and the duration of the event. Piles can sometimes occupy as much as 10% of an acre, depending on the plant community and the fuel loads. Where Cook’s lomatium occurs in wet meadows and at the edge of vernal pools, fire may have been infrequent and may have had a limited role in the maintenance of these communities. However, the grassland mosaics (dry, open stringer meadows) with the species in the Illinois Valley are being invaded by shrubs. Fire in these sites in the late summer or fall could benefit these communities and Cook’s lomatium. Thinning, slashing, and burning activities may occur in riparian reserves and could affect Cook’s lomatium if present at those sites. PDC’s will reduce or negate effects from fuels activities on the listed plants and the indirect effects are discountable or beneficial. The potential introduction of weeds into treated sites can compete with listed plants; weeds threatening listed plants will be treated following the PDC’s. Fuel reduction and prescribed burning is not likely to adversely affect any listed plant.

Ground disturbing activities from timber sales, fuels projects, watershed restoration, grazing projects etc., can facilitate the introduction and spread of noxious weeds such as yellow starthistle, dyer’s woad, Scotch broom, false brome, and Canada thistle, to name a few. Weeds can have an indirect effect by competing with listed plants for light, space, water, and nutrients. Recently, monitoring for Cook’s Lomatium has seen an increase in annual grasses (annual bromes) in occupied habitat (Kaye, 2007). Populations of Gentner’s fritillary have documented competition from yellow starthistle and Scotch broom in the Jacksonville woodlands and the Jacksonville Cemetery (Amsberry and Meinke, 2005). The washing of BLM and contractor equipment and vehicles can reduce the spread, but does not control noxious weeds. Existing infestations will continue to spread along roads and in other areas of disturbance. The current levels of weed infestation are about 10,000 acres on the Medford BLM There are no estimates of the rate that infestations are establishing, but weeds are expected to continue to increase

Chemical noxious weed treatments with herbicides can kill plants if direct contact occurs with herbicides. Weed treatment with chemicals like Glyphosate after senescence (the above ground portion is dead or gone) is unlikely to harm Gentner’s fritillary or Cook’s lomatium as the chemical does not penetrate below ground to get to the bulb or roots. The chemical Glyphosate binds readily to soil particles and is held because of a very high adsorption potential because of a strong cationic charge making the compound bind with the negatively charged clay soils.

Weed treatments can benefit listed plant populations, by reducing the competition for space, light, water and nutrients. Incidental physical trampling of listed plants from weed treatment

crews (hand pulling or otherwise) can reduce the season's reproduction potential, but is unlikely to eliminate entire populations, as soil disturbance is minimal and the roots and bulbs will survive. PDC's, including making crews aware of the populations, will reduce or eliminate potential direct adverse effects. The implementation of PDC's for active weed treatment can have a long-term beneficial effect by reducing competition in and adjacent to listed plant sites, while protecting populations from direct effects. Weed treatments are not likely to adversely affect any listed plant.

Cattle grazing can have effects to plants from eating and trampling. Grazing could also provide a beneficial effect if they browse on certain weeds that compete with the listed plants. However, disturbance from grazing also can contribute to increased noxious weeds and other species like annual grasses. Weeds are often found in areas that have experienced plant community changes from heavy grazing in the past (e.g. increased annual grasses), and areas of high livestock concentrations can be prone to invasion by weeds which can then spread to other areas and compete with listed plants. Gentner's fritillary is highly palatable to deer, and presumably cattle as well. Many lilies are palatable to cattle and sheep. While cattle can walk on and trample plants, reducing the year's reproductive potential, the plants would not likely be killed; the underground bulbs would likely survive. The BLM does not authorize grazing of any habitats containing Cook's lomatium, large flowered wooly meadowfoam, or McDonald's Rockcress, so there is no effect expected from grazing on this species. Grazing only occurs within the range of Gentner's fritillary. The PDC's will reduce direct and indirect effects from grazing to discountable levels for Gentner's fritillary. Populations will be surveyed for, identified and measures taken to protect occurrences. Grazing is not likely to adversely affect any listed plant.

High concentrations of recreation use near listed plant sites can have adverse effects on listed plants. Soil compaction, incidental trampling and flower picking can, in time, lead to decreased individuals. Small populations of especially showy plants like Gentner's fritillary could be vulnerable to being "loved to death." As mentioned above, the likelihood of the public trampling plants is low. Noxious weeds also can be introduced into areas of high use (trailheads, developed recreation sites) and can spread to other areas and compete with listed plants. The implementation of PDC's will negate direct and reduce indirect effects to discountable levels for listed plants. Recreation actions are not likely to adversely affect the listed species.

Numerous special permits are authorized, from telecommunication sites, power and pipe-lines, ROW permits etc. Effects are variable from such varied activities, but the PDC's will eliminate direct effects. Surveys for and protection of listed plant populations from ground disturbing activities for construction will protect populations. Even large permitted activities (commercial pipelines or power lines across the subbasin) have PDC's to eliminate or reduce direct and indirect effects to discountable levels. Maintenance activities of permitted sites that trigger a NEPA review, including vegetation maintenance along power lines, would also be subject to surveys in suitable habitat and buffering requirements following the survey protocols. The issuance of special forest products collection permits in suitable habitat also has PDC's to reduce effects. The likelihood of affects given the scope and scale of these Special Forest Products activities is very small, that adverse affects are not likely. The issuance of special permits is not likely to adversely affect listed plants; PDC's will reduce effects to discountable levels.

Road maintenance actions are not likely to cause adverse effects; known sites will be protected.

Plants on the edge of road prisms would not likely be killed, and may benefit from the more open edge habitat in following years (more light). Road edge disturbance can facilitate the introduction and spread of weeds that can compete with listed plants however. In response, much of the federal weed treatment programs (hand-pulling and spot spray) are occurring along roads. PDC's for roads and weed treatment will reduce or negate effects. These actions are not likely to adversely affect listed plant species.

Effects Probability

Over the last 10 years, the BLM has surveyed 234,688 acres within the range of Gentner's Fritillary (Medford BLM, 2008). In all, 146 populations of Gentner's fritillary were found occupying 126 acres. While it is certain that Gentner's fritillary is not homogeneously spread across the landscape, we can infer an expectation that for every 1,607 acres surveyed we would expect to find 1 Gentner's fritillary population, on average, and that site, will occupy .87 acres. This statistic can not be used to spatially predict where these species are or are not, just an occurrence ratio we would expect. The presence of habitat and the proximity to existing populations can increase the likelihood of an occurrence. This statistic can help one to understand how rare this species is, and how that relates to the likelihood of small projects in any given year to contain any listed species. For instance, for a single burl permits issued the disturbance acres for each action is less than an acre, but for arguments sake lets say it is 1 acre.

$$1 \text{ acre} \times 1 \text{ occurrence} / 1,607 \text{ acres} = .0006 \text{ occurrences}$$

Since we have a 'hit' ratio of 1 occurrence every 1,607 acres, we would expect to find .0006 occurrences; the chance of 1 occurrence being there is incredibly remote.

For a Notice level mining action, on less than 5 acres we would expect:

$$5 \text{ acres} \times 1 \text{ occurrence} / 1,607 \text{ acres} = .003 \text{ occurrences}$$

The expectation we would find an occurrence for a 5 acre Notice of mining is not likely.

Conversely, for a Timber sale or Fuels treatments project occurring on 3,500 acres we would expect to have:

$$3,500 \text{ acres} \times 1 \text{ occurrence} / 1,607 \text{ acres} = 2.2 \text{ occurrences}$$

We would expect to find 2 occurrences. New populations within the project are likely.

In general, projects containing larger acreage, especially in suitable habitat or in close proximity to existing populations, have a higher likelihood of occurrence and a greater risk of effects.

All significant adverse effects from the project activities can be eliminated by implementation of the PDC's for listed plants. Some minor and discountable effects will occur, mostly from indirect and cumulative effects.

Interrelated and Interdependent Effects

Interrelated actions are part of the larger action and depend on the larger action for their

justification, and Interdependent actions are ones having no independent utility apart from the proposed action. Timber harvest projects often have activities that are interrelated and interdependent (I&I). Surveys, fuels projects, associated road building, restoration actions within timber sales are all examples, and these affects are addressed above. Surveying for and protecting known occurrences will result in negligible effects.

The issuance of road building permits is one of the main I&I actions. It can be addressed by using the “but for” test, i.e. “But for” the issuance of a BLM construction permit to access private lands the activity (presumably logging or development) would not occur. If other access is reasonably available (it does not have to be economical just reasonable), or if another way to accomplish the private land objectives exists, then this is NOT an I & I issue. The BLM and the FWS has agreed that the issuance of a ROW permit on an existing road is not an interconnected and interdependent action requiring consultation for any action on private lands. See 10 March 2003 2670 memo *Endangered Species Act and Access to Nonfederal Lands Across National Forest System Land* and 30 March 2003 *interagency agreement Application of the Endangered Species Act to proposals for access to non-federal lands across lands administered by the Bureau of Land Management and the Forest Service*.

Cumulative Impacts

Cumulative effects are those effects of future tribal, county, state or private activities, not involving a Federal nexus, that are reasonable certain to occur within the action area of the federal action subject to consultation (50 CFR 402.2). The effects of future federal actions will be evaluated during future Section 7 consultations and are not included in cumulative effects under ESA. Cumulative effects analysis of foreseeable state and private actions provide the FWS and the BLM an accurate environmental baseline to assess impacts of federal actions. While ESA applies to federal lands within the action area, it is assumed that other federal agencies are meeting the Endangered Species Act. It is also assumed that existing State laws that apply to State, County and City public lands, are protecting federally listed plants. For the largest land owner in the sub basin, private lands (1,293,801 acres) the Endangered species act does not apply and it is assumed that cumulative affects are adverse; suitable habitat is being modified and converted to other uses, protection is accidental or incidental, on small areas like the Nature Conservancy Preserve in the Agate desert (USDI, 2006) or non-existent. Through time, existing populations of listed plants on private lands will be extirpated.

Suitable habitat for all listed plants has not been calculated for BLM, other federal lands (US Forest Service, Corp of Engineers, and Bureau of Reclamation), State, County and City lands, or private within the action. Habitat for large-flowering woolly meadowfoam and Cook’s lomatium has been well documented in the Agate desert on all ownerships in this small area north of Medford (USDI, 2006), and on the Nature Conservancy refuge in the Agate desert. For plants listed or proposed under the ESA, there is no federal requirement to manage or survey for plant species on non-federal lands, nor is there an incidental take provision under Section 10 of the act. Section 9 of the act does prohibit the “removal or possession of any listed plant from lands under federal jurisdiction” and “maliciously damaging or destroying any such species on any such (federal) area.” Existing Oregon State laws for endangered species do require State public lands (state, county, city) to address endangered plants. For the listed plants addressed in this BA, populations and suitable habitat on non-federal lands have likely experienced negative impacts

over the last 150 years from resource extraction (mining, grazing, and logging), the conversion of low elevation wild-lands to pastures, agricultural lands, and rural/urban centers. Habitat and populations of Gentner's fritillary and Cook's lomatium (outside the Agate desert) on non-federal lands will continue to be affected, or lost, as the human population of the Rogue Valley sub-basin expands. Populations may survive if located within green belts, parks, and refuges, but the ability of these populations to persist across an ever-increasing fragmented landscape is unknown and unlikely. Several populations of Gentner's fritillary exist in private woodlands around the city of Jacksonville, and are currently under the stewardship of concerned and ecologically minded citizens, but this a small percentage of the total population. The likelihood of persistence on these sites for the next 100 years is unknown, and will depend upon future landowners, or revised state laws that would require protection. Populations occurring on federal lands, where the ESA specifically mandates conservation, will likely serve as the primary refugia for these species into the 22nd century.

VI. BIOLOGICAL ASSESSMENT CONCLUSIONS

The determination of effects table (Table 9) reflects the entire project, including the direct, indirect, interrelated and interdependent and cumulative effects. There will be situations where "No Effect" (NE) determinations will be made on specific projects in specific situations, and a "May Affect, Not likely to adversely affect" call can be avoided, even if the determination on the table is a NLAA. Almost all the effects are from indirect effects; direct effects are mitigated for by PDC's.

Table 3. Species Determinations by Activity Type. NE = No effect. NLAA = Not Likely to Adversely Affect, including Beneficial Effects. *Assumes presence				
Activity Type	Cook's Lomatium	Gentner's Fritillary	Large-flowered Woolly Meadowfoam*	McDonald's Rockcress*
A. Tree Harvest	NLAA	NLAA	NE	NE
B. Silviculture	NLAA	NLAA	NE	NE
C. Watershed Restoration	NLAA	NLAA	NLAA	NE
D. Recreation	NLAA	NLAA	NLAA	NLAA
E. Fuels Management	NLAA	NLAA	NE	NE
F. Grazing	NLAA	NLAA	NE	NE
G. Special Forest Products	NE	NLAA	NE	NE
H. Road Maintenance /Construction	NLAA	NLAA	NLAA	NLAA
I. ROW Permits – Roads	NLAA	NLAA	NLAA	NLAA
J. Other ROW Permits	NLAA	NLAA	NLAA	NLAA
K. Mining And Quarry Operation	NLAA	NLAA	NE	NLAA
L. Cultural	NE	NLAA	NE	NE
M. Weed Control	NLAA	NLAA	NLAA	NLAA

N. Recovery actions	NLAA	NLAA	NE	NE
O. Tracking and Monitoring	NLAA	NLAA	NLAA	NLAA

It is the conclusion of this biological assessment that proposed actions may affect listed plant species or their designated critical habitat as documented above. The BLM requests concurrence on “may affect, not likely to adversely affect” (NLAA) determinations made relative to all actions included in this assessment.

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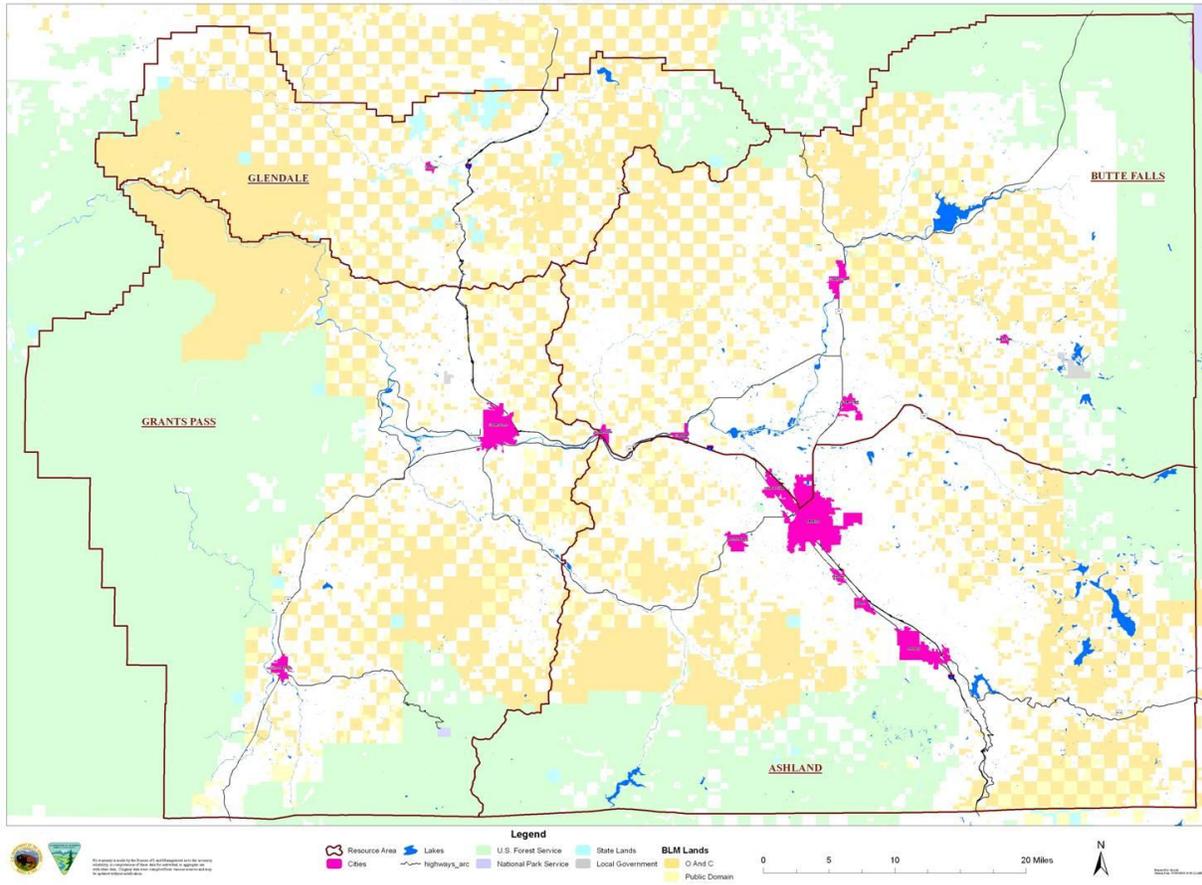
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Appendix A.

Medford BLM District



Appendix B. Range Maps for Listed species. Surveys must occur in suitable habitat within the range following the survey protocol. Surveys in project areas outside the range are not required.

{Insert Maps for *Fritillaria*, *Lomatium*, *Limnanthes*, and *Arabis*}