



# United States Department of the Interior



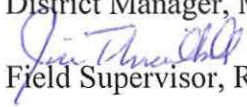
FISH AND WILDLIFE SERVICE  
Roseburg Field Office  
2900 NW Stewart Parkway  
Roseburg, OR 97471  
Phone: (541) 957-3474 FAX: (541) 957-3475

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July 16, 2014

## Memorandum

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

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

Subject: Formal consultation on the Mountain of the Rogue Mountain Bike Trail Project that is likely to affect Gentner's fritillary (*Fritillaria gentneri*) (USFWS Reference Number: 01EOFW00-2014-F-0131).

This document transmits the U.S. Fish and Wildlife Service's (Service) Biological Opinion (Opinion) addressing the Mountain of the Rogue Mountain Bike Trail Project proposed by the Medford District (District) of the Bureau of Land Management (BLM). At issue are the effects of the proposed action (or Project) on the endangered Gentner's fritillary (fritillary). On March 25, 2014 we received the District's Biological Assessment (Assessment) (USDI-BLM 2014) and a request for formal consultation pursuant to section 7 of the Endangered Species Act of 1973, as amended (16 U.S. C. 1531 et seq.) (Act) on the proposed action.

The attached Opinion is based on information provided in the Assessment along with other supporting information cited herein. A complete decision record for this consultation is on file at the Service's Roseburg Field Office. The attached Opinion includes a finding by the Service that the District's proposed action is not likely to jeopardize the continued existence of the fritillary.

The Assessment includes a finding that it may take several years to fully complete the proposed action; on that basis, the attached Opinion is valid for the term of the proposed action as discussed herein. In accordance with the implementing regulations for section 7 at 50 CFR 402.16, re-initiation of consultation is required where discretionary Federal agency involvement or control over the actions has been maintained (or is authorized by law) and if: (1) the amount or extent of exempted incidental take is exceeded; (2) new information reveals effects of the agencies' action that may affect listed species or critical habitat in a manner or to an extent not considered in the Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the Opinion; or (4) a new species is listed or critical habitat designated that may be affected by one or both of these actions. When consultation is reinitiated, the provisions of section 7 (d) of the ESA apply.

If you have any questions regarding the attached Opinion, please contact Sam Friedman of the Service's Roseburg Field Office at 541-957-3478 (email: [sam\\_friedman@fws.gov](mailto:sam_friedman@fws.gov)).

**Biological Opinion  
Addressing  
The Rogue Mountain Bike Trail Project  
Proposed by  
The Medford District Bureau of Land Management  
(Reference # 01EOFW00-2014-F-0131)**

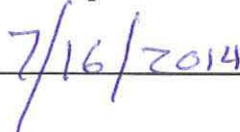
U.S. Department of Interior  
U.S. Fish and Wildlife Service  
Roseburg Field Office  
July 16, 2014

Signature: \_\_\_\_\_



**Jim Thrailkill  
Field Supervisor**

Date Signed: \_\_\_\_\_



## INTRODUCTION

This document transmits the U.S. Fish and Wildlife Service's (Service) Biological Opinion (Opinion) addressing the Mountain of the Rogue Mountain Bike Trail Project (MRMBTP) proposed by the Medford District (District) of the Bureau of Land Management (BLM). At issue are the effects of the proposed action (or Project) on the endangered Gentner's fritillary (fritillary). The District concluded the proposed action would have No Effect on the threatened northern spotted owl (*Strix occidentalis caurina*), and therefore will not be addressed in this consultation. On March 25, 2014 we received the District's Biological Assessment (Assessment) (USDI-BLM 2014) and a request for formal consultation pursuant to section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act) on the proposed action.

## CONSULTATION HISTORY

The Service and District conducted numerous phone and e-mail exchanges between May 14, 2013 and June 27, 2014 regarding the proposed action. On November 22, 2013, Service staff met with BLM staff at the project site. On March 4, 2014, the Service received a draft of the Assessment. The Service provided comments on March 21, 2014. On March 25, 2014 the Service received a final Biological Assessment from the District. A draft of the Opinion was provided by the Service to the District on June 10, 2014 for review. The District responded with comments June 20 through June 28, 2014; these comments were subsequently incorporated into the final Opinion.

## DESCRIPTION OF THE ACTION AREA

The term "action area" is defined in the implementing regulations for section 7 at 50 CFR 402.02 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 consultation, the action area includes Phase 1 of the MRMBTP located one mile east of the town of Rogue River in the foothills of the Klamath Mountains Physiographic region (Figure 1). The 200-acre (81-hectare) area is managed by the District and is generally undeveloped (Township 36 South, Range 4 West, Sections 22, 23, 26, and 27). However, past forest management activities and an ad-hoc primitive trail system is currently used by hikers and bikers in the area. The proposed trail (Figure 1) will occur on mostly west to southwest-facing steep slopes below Tin Pan Peak. Elevation ranges from 1,040 feet at the trailhead to 2,360 feet at Tin Pan Peak.

## DESCRIPTION OF PROPOSED ACTION

The BLM's Butte Falls Resource Area proposes to construct a phased mountain bike trail system near the town of Rogue River that will also be open to hikers and possibly equestrian use, but not be designed for motorized use. Construction will be completed in several phases and dependent on available funding. This consultation is based on phase 1 of the project and includes construction of a parking area and approximately 10 miles (16 km or 52,800 feet) of trails. The construction details are provided below.

**Parking Area**

The trailhead parking area will be located at the base of the trail system and access will be provided from North River Road. The proposed 0.5 acre parking area will provide parking for up to 15 vehicles and will be constructed using hand crews and trail-specific construction equipment such as a mini-excavator, Sweco trail dozer, mini skid steer, or a motorized tracked hauler. Construction will be designed and located to avoid removing any trees 12 inches in diameter or larger. Gravel will be used to cover the parking area and this will minimize sedimentation. A trail kiosk will be installed at the trailhead with trail maps and information, in particular, a description of appropriate riding and hiking behaviors for the area. Boulders or fencing will be placed to define the parking area, prevent motorized vehicles from accessing the trail, and conduct users to the trail.

**Trail Construction**

Up to 10 miles of sustainable trail will be constructed utilizing hand crews and mechanized trail building equipment specifically designed for constructing trails. Of the 10 miles of trail, 8.5 miles are mapped, but the location of the remaining 1.5 miles still need to be determined. The 1.5 miles of trails will be placed outside of known fritillary patches and will adhere to the Project Design Features (PDF) mentioned below. Construction will be conducted by BLM staff, contractors, and volunteer labor and adhere to BLM engineering standards and International Mountain Biking Association (IMBA) standards as described in the book "Trail Solutions – IMBA's Guide to Building Sweet Singletrack". IMBA's philosophy is to "...build sustainable trails, encourage low impact riding and to have environmentally responsible trail building and trail etiquette practices". The trail bed will be single track, full bench trail, with a desired average width of approximately 2 to 4 feet, but could take up to 10 feet including the disturbance from the top of cut bank to the bottom of fill slope. The total displaced area from trail construction and the 0.5-acre parking lot would be 6.5 acres  $[(10 \text{ miles } (52,800 \text{ feet}) \times 10 \text{ feet} = 258,000 \text{ feet}^2 (6 \text{ acres}) + 0.5 \text{ acres}]$ . The trail system will be designed as a one-way loop system that would maximize mountain biking flow and minimize off-trail impacts that could result under a two-way trail loop.

The trail will be generally out-sloped approximately 3 to 5 percent to shed water off the trail. The in-sloped banked turns will be constructed with a grade reversal or rolling dip installed both immediately above and below the turns to prevent water from eroding the trail. The trail will be designed to maintain a consistent speed by providing frequent grade reversals, rolling dips, and winding turns, which serves to shed water off the trail along with minimizing braking and skidding of bikes reducing erosion concerns. The trail will be corralled with rocks, logs or constructed materials to prevent users from cutting corners where the trail changes directions on steep slopes. Retaining walls and crib walls will be constructed where necessary to stabilize the trail, particularly on turns and on approaches to drainage crossings. All drainage crossings will be armored with large rocks.

All stumps will be removed from the trail bed and immediately adjacent to the trail bed. Brush and tree branches will be thinned and trimmed back about 3 feet from each side of the trail edge. Trail routing will avoid removal of trees over 12 inches in diameter. Branches extending over the trail corridor will be cut no higher than 10 feet above the trail surface.

Trail signs will be installed at trail intersections and benches may be installed in areas with good viewpoints such as the top of Tin Pan Peak and on the ridgeline portion of the trail.

The proposed trail will cross seven intermittent streams and construction is planned to occur when the streams are dry. During fall and winter months, the run-off exits the property into a road-side ditch. The low number of stream crossing along with the dry nature of the site would also minimize the potential for sediment being transported downstream and into the Rogue River.

### **Trail Management and Monitoring**

The trail will be open year round for non-motorized use; however, trail use will be discouraged in abnormally wet conditions through signage at the trailhead kiosk. All trail users will be directed to stay on the trails by signage but also through proper trail design, steep terrain, and thick poison oak understory in some locations are features intended to discourage off-trail hiking or equestrian use or mountain biking. It is expected that the trail will be more heavily used in the spring and fall months and in the winter during drier conditions.

The District alone and/or in partnership with local mountain bike enthusiasts and clubs will monitor the trail to check for maintenance needs (e.g., proper drainage) and unauthorized use throughout the year and will consist of a combination of visual reconnaissance and photo documentation at key points such as drainage crossings and switchback areas. If impacts begin to occur at any time, a trail closure will be considered. In particular, during the wet season, a seasonal closure will be considered to protect soil and vegetation. Some maintenance activities may occasionally require use of all-terrain vehicles (ATVs) for ease in hauling materials on the trail. Maintenance activities will follow the guidelines and project design features of the most current Medford District Trail Maintenance Categorical Exclusion Decision Record (DOI-BLM-OR-M0000-2011-0001).

Frequent law enforcement presence by BLM Rangers and Jackson County Sheriff's Office Deputies will be encouraged by the District at the trailhead and along the trail, particularly soon after the trail is completed, to manage any unauthorized activities such as motorized off highway vehicles and garbage dumping. Off-highway vehicle (OHV) restrictions and private land boundaries will be posted at appropriate locations and fencing will be utilized in areas to keep motorized vehicles off the biking and hiking trails. Signs will channel bike riders and hikers onto the designated trails in the action area.

In addition to the trail signage of directional and difficulty rating, interpretive signs will be placed informing visitors of the fritillary populations, its federal listing status, and the need to stay on the trail to avoid impacting the plants. Private land adjacent to the trail will be signed as such.

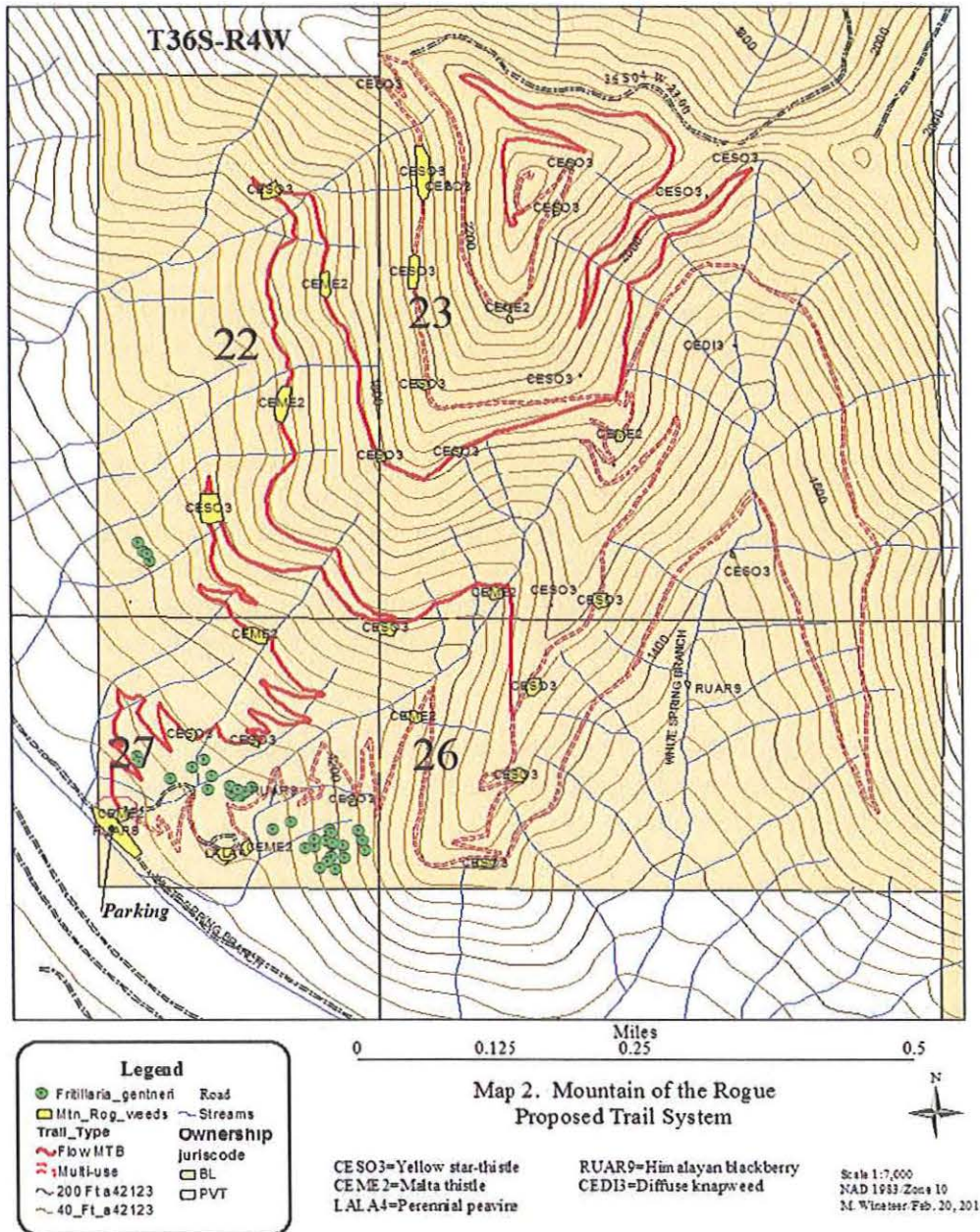
Herbicide will be applied to non-native invasive (NNI) plants and noxious weeds in conjunction with seeding natives in post-construction sites as feasible. This will help to reduce the colonization of NNI and noxious weeds into fritillary habitat near the trail system. It would not be feasible to seed steep cut banks because seeds could roll into the trail. It is anticipated the more moderate banks would have increasing numbers of seeded native plants, while medusahead and other nonnative grasses occupancy would decrease gradually over time.



### Future Trail Opportunities

The BLM has available land to expand the Mountain of the Rogue trail system to the north and east along the ridgeline between Wards Creek and Sardine Creek. Any additional trail expansion would be dependent on interest from user groups, funding, further public involvement and ESA consultation as appropriate.

**Figure 1. Map of the Mountain of the Rogue Proposed Trail System (USDI BLM 2014).**



## Project Design Features

Project Design Features (PDF) associated with the Mountain of the Rogue Bike Trail Project are defined as measures incorporated into the proposed action to minimize potential adverse effects to Gentner's fritillary. The Effects Analysis of this Opinion relies on the full implementation of the PDF described herein.

- The District has completed project clearance surveys for fritillary in 2013 and 2014 covering all existing trails, the parking area, and other areas proposed for ground disturbance. Fritillary surveys will continue each season until the project is completed. With this PDF, both the mapped and unmapped trail portions, boulders, signs, and fences will be placed at least 15 feet away from plants and thus minimize direct impacts to the fritillary.
- During construction, District staff will watch for unearthed *Fritillaria* species bulbs and collect them for later storage or replanting. This action will reduce loss of plant bulbs that were incidentally exposed during construction efforts.
- The 2- to 10-foot wide trails will be constructed using lighter-weight and small wheelbase equipment. Use of this type of equipment will reduce soil impacts and overall area of disturbance.
- Both the mapped and unmapped trail portions will be constructed to not exceed a five percent grade, mostly at three to five percent. Limiting the grade to five percent or less will minimize erosion, retard water channeling, and ponding within the trail. Additionally, retaining walls and crib walls will be constructed where necessary to prevent erosion and add stability to cut slopes. Rolling dips, winding turns, and grade reversals will also be constructed into the trail to reduce water channelization and in-cutting.
- Rocks, logs, or other constructed materials will prevent users from making side and short cuts. In general, the steep topography will likely keep trail users on the trail instead of making cross country short-cuts.
- Disturbed areas along the trails and around the parking lot will be seeded with site-appropriate native species and mulched with weed-free straw or native grass hay to provide competition for noxious weeds. This action will reduce and limit spread of NNI plants, subsequently reducing competition with fritillary.
- All construction equipment and hand tools will be cleaned using hoses and sprayers prior to bringing into the project area. This action will reduce the introduction of NNI plant seed into the project area on the trails and parking area. Utilizing weed-free gravel on the parking area will also reduce the spread of NNI plant seed.



- The trail and interpretive signage and associated protective structures (e.g., boulders, fencing, etc) will not destroy or remove fritillary because they will be placed a minimum of 15 feet away from fritillary plants.
- A trail kiosk will be installed at the trailhead with trail maps and information. This will reduce chances for trails to be damaged by riders and hikers taking short-cuts and provide information about protecting the fritillary. Content of this signage will be reviewed by the Service.
- The trail access will be controlled coming from adjunct private lands with appropriate signage conducting users to the main BLM trail system.
- The District and volunteer groups will monitor the project area during high use and the fritillary flowering season to detect user-created trails that could impact fritillary plants. If problem areas are discovered, barriers will be placed along the trail system to prevent further expansion of the trail, side trails, or short-cuts. Disturbed areas will be rehabilitated. The District will implement trail closures if corrective measures are not successful, problems persist, and the fritillary is damaged. If the trail has other maintenance needs (e.g. proper drainage) or unauthorized use becomes an issue, the trail will be promptly repaired or closed as appropriate.
- The BLM will treat existing noxious weed populations where ground disturbance occurs in the project area, especially along the trails and around the parking area, prior to trail construction. The trails and parking area will be monitored after construction and noxious weed populations will be treated when detected. Weed treatments near the fritillary populations are planned for 2014 and treatments will include hand pulling, herbicide spraying, and potentially release of a biocontrol for yellow star-thistle and Malta star-thistle. Hand pulling of noxious weeds and NNI closest to fritillary patches will greatly diminish incidental spray from herbicide. If herbicide use is necessary within fritillary sites, spraying will be restricted to the dormant season. Pre-emergent soil-active herbicides will not be applied within or immediately adjacent to fritillary sites unless the product's safe use is demonstrated through published research and/or field trials. Discussions between the District and the Service will occur prior to any use of these products (M. Wineteer, pers. comm. 2014; USDI-BLM 2013).
- The District will establish an FMA within or as part of a larger surrounding area to ensure protection of plants, maintain favorable habitat conditions, prevent degradation of the site, assess the effects of management actions, and allow for adaptive management to promote recovery of the species (see below).

#### **Establishment of Fritillary Management Area (FMA)**

The area encompassing the Mountain of the Rogue Bike Trail system will become a permanent *Fritillaria* management area and established under the concepts of FMAs in the Recovery Plan for Gentner's fritillary (USDI FWS 2003). The location of the proposed FMA is between two recovery units; however, the establishment of an FMA in this location comprising a stronghold of fritillary is key to recovery efforts and may suffice in the future as a recovery unit depending

recommendations in the Service's 5 Year Reviews. A coordination meeting between the Service and District will be held to discuss the process of establishing a FMA prior to project implementation (signed Record of Decision) of the bike trail system.

The District's Management of the FMA will consider the following:

1. Conducting annual monitoring of fritillary to track the location and number of flowering plants.
2. Developing protection measures to counter threats to plants as needed.
3. Monitoring of the trail system to detect threats to fritillary plants, such as off-trail bike cuts.
4. Installing fencing or other barriers along trails as needed to deter short-cutting and protect plants.
5. Installing an interpretive panel at the trailhead to inform the public about the status and importance of the fritillary and what they can do to protect plants at the site.
6. Conducting habitat assessments to determine what treatments are needed to maintain or improve habitat.
7. Developing habitat treatments in coordination with the Service to enhance habitat as needed. The population will be monitored to detect responses to the treatments so that approaches can be adjusted to ensure treatments provide beneficial results. Such management treatments may include prescribed burns, vegetation clearing, or population augmentation.
8. Monitoring and treating noxious weeds or NNI plants around fritillary patches, along the trail system, and around the parking lot.
9. Coordinating with fire personnel to protect plants from fire suppression activities.
10. Through protection and/or outplanting, maintain at least one recovery level fritillary population (100 flowering plants) in up to a 10-acre FMA. The recovery plan calls for at least two 100-flowering plant populations in each recovery unit.
11. Establish a signed Conservation Agreement between the District and Service on management direction of the FMA per concepts outlined herein.

## **STATUS OF THE SPECIES**

### **Background**

The fritillary was listed on December 10, 1999, without critical habitat. The Recovery Plan for *Fritillaria gentneri* (Gentner's fritillary) (recovery plan) established four recovery units across the range of the fritillary and was finalized on July 21, 2003 (USFWS 2003).

The fritillary is a perennial bulb-producing herb of the Liliaceae (lily family) with showy deep red to maroon flowers with yellow checkers. Individual flowering plants can reach up to 70 cm (28 inches) in height and produce green to purplish, lanceolate to linear leaves on the flowering stalks in whorls of 3 to 5. Non-flowering plants produce one 0.6 to 72-cm (0.24 to 28-inch) long fleshy, linear to oblong leaf. Plants without flowers cannot be identified to species level because leaves are indistinguishable from other *Fritillaria* spp. Stems support from 1 to 15 flowers. The flowers are 3.5 to 4 cm (1.47 to 1.6 inches) six-petaled, hang downward, and are trumpet-shaped, often with flaring tips. Plants occasionally produce a broadly winged fruit, which very rarely yield viable seed. The fritillary also produces a bulb which in turn produces numbers (50-100) of tiny “rice-grain” bulblets each year. The constant manufacture of abundant new bulblets allows plants to continue to reproduce in the absence of seed production and compensates for loss of bulbs due to herbivory or other environmental factors. Flowering plants constitute a small percentage of an average population (Siskyou BioSurvey LLC 2013; Giles-Johnson et al. 2013). For example, during 12 years of surveys at the Pickett Creek monitoring site, only 0.26 to 3.1 percent of individuals flowered annually (Giles-Johnson et al. 2013) and many populations have been documented to be completely dormant for one to three years. The majority of fritillary populations monitored across BLM lands experience years when no flowering plants are found. Populations may go one or more years without flowering and because the number of consecutive no-flower years can go higher than one or two, there is nearly no feasible survey protocol to positively detect every fritillary location in one year (Pacific Crest Consulting 2009).

Fritillary occurs in a variety of habitats including oak woodlands dominated by Oregon white oak (*Quercus garryana*), mixed hardwood forest dominated by California black oak (*Q. kelloggii*), Oregon white oak, and Pacific madrone (*Arbutus menziesii*), and coniferous forests dominated by Pacific madrone and Douglas-fir (*Pseudotsuga menziesii*). Twelve examples of the variety of habitats that support fritillary, as identified in the final recovery plan (USFWS 2003), across its range in Siskiyou County, California; Jackson County, Oregon; and Josephine County, Oregon include:

- Oregon white oak and Pacific madrone woodland
- Oregon white oak – Douglas fir ecotone
- Dry Douglas fir forest
- Moist riparian Douglas fir – white fir (*Abies concolor*) forest
- Mixed hardwood / conifer with California black oak, Oregon white oak, Douglas fir, ponderosa pine (*Pinus ponderosa*), and wedgeleaf ceanothus – whiteleaf manzanita (*Arctostaphylos viscida*) in shrub layer
- Oregon white oak / birchleaf mountain mahogany (*Cercocarpus betuloides*)- wedgeleaf ceanothus ecotonal chaparral
- Ponderosa pine – Douglas fir forest
- Oregon white oak / wedge-leaved ceanothus (*Ceanothus cuneatus*) dry chaparral
- California black oak forest with silktassle (*Garrya fremontii*), poison oak (*Toxicodendron diversiloba*), birchleaf mountain mahogany; serpentine influence
- Grassland / meadow
- Moist riparian shrub community
- Moist chaparral with California black oak, silktassle, birchleaf mountain mahogany, whiteleaf manzanita; serpentine influence

Throughout the range of fritillary, habitat varies from relatively undeveloped to weedy and disturbed. It is assumed that fire is important for retaining suitable habitat conditions for the species by maintaining open canopies and contributing to soil nutrients (Siskiyou BioSurvey LLC 2013). Medford BLM has documented habitat changes at several fritillary sites due to fire or no management. Although not closely studied, the plant appears to respond positively in the short term to prescribed fire and thinning and responds negatively to vegetation succession (Siskiyou BioSurvey LLC 2013). The positive response of fritillary to fire is typically short-lived as populations that often show an increase in flowering plants, often resume their levels after several years.

There are currently, approximately 138 occurrences of fritillary distributed discontinuously from Wolf Creek, Oregon, southeast to Brushy Gulch, in northern Siskiyou County, California, near the Klamath River and from Pickett Creek in Josephine County to Dog Creek and easterly to the Cascade-Siskiyou National Monument (CSNM) in Jackson County. At the time of the 2003 recovery plan, approximately 95 macroplots (translate to occurrences) were known. The majority of the population was centered within the Jacksonville area in 2003, but currently the highest population density is centered in the CSNM.

#### **Fertility, Pollen, Chromosome, and Molecular Research**

Limited genetic analysis has been conducted on the fritillary. Fertility studies conducted by ODA have found that the fritillary is not sterile, and produces capsules and seeds when pollen from another population is used (Amsberry and Meinke 2007). This suggests that individuals within clusters are self-incompatible, which explains why most populations or patches are clonal. Fruit-set in controlled intra-population crosses was 2.3 percent, with poor seed viability; while Fruit-set for the inter-population crosses was 48.9 percent, with much improved seed viability (Amsberry and Meinke 2007).

Fritillary pollen was determined to have lower viability than two closely related species, scarlet fritillary (*Fritillaria recurva*) and chocolate fritillary (*F. affinis*). Chromosomal abnormalities associated with *Fritillaria* spp. hybridization are probably the reason for low pollen viability in the fritillary from naturally occurring populations and in other pollination experiments (Amsberry and Meinke 2007).

Chromosome counts for 17 fritillary individuals, along with four individuals of *Fritillaria affinis* and six of *F. recurva* indicate that all *Fritillaria* spp. had some degree of polyploidy, but almost all fritillary individuals were triploid ( $2n=36$ ) and showed evidence of meiotic irregularities (Amsberry and Meinke 2007). Half of the *F. affinis* samples exhibited triploid chromosome counts, while only one out of five *F. recurva* were triploid. The results are consistent with traits of hybrid plants, but they do not prove hybridity in the species and the data set was statistically low.

There are marked morphological, genetic and physiological similarities in traits among *Fritillaria gentneri*, *F. affinis*, and *F. recurva* (Guerrant 1991, Knight 1991, Carey and Jessup 2004). Because their ranges are overlapping it is widely accepted that the fritillary is a stabilized hybrid between *F. recurva* and *F. affinis*. Although not complete, ODA has conducted an initial molecular analysis of *F. gentneri*, *F. affinis*, and *F. recurva* to determine if the fritillary is a

hybrid. Nucleotide material of the three species was examined using Superimposed Additivity Pattern analysis. Results indicated that the fritillary is a hybrid resulting from multiple but separate hybridization events resulting in very low variation within local populations (Amsberry and Meinke 2007).

### **Threats**

The fritillary was listed due to impacts and threats from loss and degradation of habitat, lack of protection on private lands, over-collection of plants and bulbs, predation, competition from NNI plants, small population size and scattered distributions, fire exclusion, and the subsequent ecological succession that shaded out plants. The use of non-selective herbicides during plant growth was mentioned as a threat in the listing rule, but this had not been documented as a widespread and continuous threat (USFWS 2003). Additional on-going disturbances and threats that have been identified during monitoring include trail and road maintenance; OHV vehicles traveling off roads and trails; encroachment of conifers; the potential for high intensity fires that could negatively impact fritillary through soil sterilization; noxious weeds and NNI plants; human impacts; herbivory by deer, small mammals, and insects; and ground disturbance from gophers (Siskiyou BioSurvey 2011). Slight soil disturbances may benefit plants by distributing bulbs and loosening soil to facilitate the growth of vegetative leaves (USDI-BLM 2014).

### **Recovery Plan**

The four established recovery units were identified as Units 1 (Jacksonville), 2 (Grants Pass), 3 (Butte Falls), and 4 (CSNM). The Recovery Plan included the following conditions to downlist and delist the fritillary (USFWS 2003):

1. Each of the four established recovery units should include 750 flowering plants in order to downlist the species and 1,000 flowering plants to delist the species.
2. FMAs should be established on public lands or private land subject to a permanent conservation easement.
3. Each recovery unit should maintain 2 FMAs with a minimum of 100 flowering plants each within a 0.8 kilometer (0.5 mile) distance from each other.
4. Flowering individuals will be distributed over a minimum of 50,000 square meters (5 hectares or 12.4 acres) per recovery unit to avoid population vulnerability.
5. A site-specific management and monitoring plan be developed, approved, and implemented for each FMA to assure recovery of the species.
6. Areas could be subject to fencing, grazing management, or other measure as identified through monitoring of threats in each population.
7. A post delisting monitoring plan must be in place at time of delisting.

### **Recovery Actions**

For the last 10 years, the BLM has monitored fritillary plants on 58 sites across all four recovery units and within 43 occurrences. Beginning in 1998, 13 fritillary sites were monitored; nine in Unit 1, none in Unit 2, three in Unit 3 and one in Unit 4. By 2008, 18 sites had been added to Unit 1, two sites added to Unit 2, 15 sites to Unit 3, and 16 sites were added to Unit 4, bringing the total to 58. Flowering individuals are monitored for their ease of detection and leaves cannot be positively identified to species. Although detections of flowering individuals can document plant presence, more studies are needed to determine the particular quantity or density of flowering fritillary plants needed to maintain a healthy or robust population.



Since 2004, 31,060 fritillary bulbs have been planted at 22 sites on public lands within the 4 recovery units established in the 2003 recovery plan; 17 as augmentation of existing occurrences and 5 as reintroductions (J. Brown, pers. comm. 2013). Currently, transplanted bulblets continue to persist in all transplant sites, indicating that transplantation of these cultivated propagules into suitable habitat is an effective way to increase population size and number of this rare species (Groberg et al. 2013). The propagation efforts have yielded 7,038 non-flowering plants and 8 flowering plants, as of 2012, which is a 23 percent success rate. Although the outplanting projects appear successful initially, continued annual monitoring of all created populations for at least three more years, using similar sampling methods, is recommended for accurate evaluation of the results (Groberg et. al. 2013). Despite over 10 years of propagation and outplanting of fritillary bulbs, recovery population criteria objectives have not been met, which indicates a need for increased bulb plantings or to pursue a more integrated recovery approach.

The majority of known fritillary populations occur on BLM so many populations are safeguarded from development. Approximately 5.7 acres (2.3 hectares) supporting several fritillary plants was purchased in 2006 using funds from the Service's Recovery Land Acquisition Grant Program. In addition 1.25 acres (0.5 hectares) of private land was donated to the City of Jacksonville as match for the federal funds used in the above purchase. Several private landowners in southern Jackson County, with suitable fritillary habitat, occupied by the plant (Recovery Unit 4), have been managing their properties for this species in conjunction with the Services' Partners for Fish and Wildlife Program.

### Summary

The threats that caused the fritillary to become listed in 2003, namely, loss and degradation of habitat, lack of protection on private lands, over-collection of plants and bulbs, predation, competition from NNI plants, small population size and scattered distributions, fire exclusion, and the subsequent ecological succession that shade out plants, have been partially addressed by listing the species as endangered, initiating a bulb propagation and outplanting program, performing NNI plant control, demographic monitoring, and monitoring throughout the range of the species on BLM lands. Implementing a large-scale habitat restoration program or establishing FMAs to ensure long-term population stability have not been performed. The fritillary continues to persist on public lands, as described in BLM annual monitoring reports (Siskiyou BioSurvey LLC 2013), increasing in flowering plant numbers in some areas, but declining in others. Currently Unit 4, the CSNM recovery unit, meets several population and area recovery targets, while the other four units fall short.

### ENVIRONMENTAL BASELINE

The 200-acre (81-hectare) action area is in the Oregon white oak series and dominated by Oregon white oak, Pacific madrone, and ponderosa pine on the lower slopes and with California black oak on the upper slopes (USDI-BLM 2014). Approximately 65 to 85 percent of this area, or an estimated 175 acres, is considered suitable habitat for fritillary. The shrub component is made up of poison oak and wedgeleaf ceanothus (*Ceanothus cuneatus*) on the lower slopes and poison oak and deerbrush (*Ceanothus integerrimus*) on the upper slopes.

The forest canopy cover ranges between 40 and 60 percent and overstory tree diameters are generally less than 16 inches. The vegetation within the project area has been highly impacted by fire over the past 50 years. Multiple large fires within the project area have burned about 66 percent of the total acres. The high fire frequency has left a majority of the project area in an early seral stage of development.

The annual NNI grasses present in the project area are medusahead (*Taeniantherum caput-medusae*), hedgehog dogtail (*Cynocurus echinatus*), and several brome species (*Bromus* spp.) which germinate in the fall and produce seed heads the first summer. When these annual grasses die at the end of the summer, they create a thatch that suppresses germination and growth of other vegetation. Yellow star-thistle and Malta thistle also germinate in the fall and establish extensive root systems that result in excessive water consumption compared to natives. These species also produce abundant seed that increases their presence at the site in subsequent years.

Fritillary has been found in the lower slopes among grassy open areas with various native and non-native forbs, interspersed Oregon white oak, and to a lesser degree, California black oak, wedge-leaf ceanothus, manzanita, madrone, and poison oak (USDI-BLM 2014).

The fritillary population was documented along the contours of the lower slopes of Tin Pan Peak at 1,040-1,240 feet elevation within the action area in 2011 in a location outside of the designated fritillary recovery units mapped in the recovery plan (USFWS 2003), in between Recovery Units 2 and 3. Fritillary surveys were conducted in the action area from 2011 to 2014 with 3 flowering plants in 2011 and culminating in 120 flowering plants in 2013. The discovery of more plants in 2012 and 2013 can be attributed partially to additional searches and the species' positive response to fire (USDI-BLM 2014). In 2014, far fewer flowering plants were observed, perhaps due to a drop in available nitrogen in the soil, following fire or a lack of other climate-related flowering triggers (USDI BLM 2014). The fritillary population consists of five groupings which are separated by ridges and drainages and occupy up to 1.5 acres. The District considers that at least a 7.4-acre area encompasses the fritillary groupings and defines the entire extent of the known flowering plants within the action area.

The most recent method for estimating population size (Giles-Johnson, 2012, p. 11) estimates approximately 67 plants present for every flowering plant. Based on this formula, the North River Road fritillary population that occurs within the action area is estimated to contain 8,040 plants, based on 120 flowering plants in 2013. This population is among the ten largest fritillary populations in its range.

In addition to the fritillary population in the 200 acre action area, there are two known sites less than 1,320 feet (402 meters) from the proposed trail, outside of the action area. One site, on private land, is 528 feet (161 meters) away and the second site, on Oregon Parks and Recreation Department (OPRD) land, is 1,056 feet (322 meters) from the proposed trail at the Mountain of the Rogue project area. For the purposes of this consultation, we estimate that additional plants could occur outside of the 1.5-acre occupied groupings within the 175 acres of suitable fritillary habitat.

## Noxious Weeds

Historic weed inventories in the project area and inventories conducted in 2012, after the 2011 North River Road Fire, have detected eight noxious weed species including Armenian blackberry (*Rubus armeniacus*), bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), diffuse knapweed (*Centaurea diffusa*), Malta star-thistle (*Centaurea melitensis*), medusahead, perennial peavine (*Lathyrus latifolius*), and yellow star-thistle (*Centaurea solstitialis*). Yellow star-thistle along the proposed trail routes were manually pulled one time in 2013 and are being sprayed in 2014.

## **ANALYTICAL FRAMEWORK FOR JEOPARDY AND ADVERSE MODIFICATION DETERMINATIONS**

### Jeopardy Determination

The analysis in the following sections relies on four components to support the jeopardy determination for fritillary: (1) the *Status of the Species*, which evaluates the fritillary's range-wide condition, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of fritillary in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of fritillary; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on fritillary; and (4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the fritillary.

In accordance with the implementing regulations for section 7 and Service policy, the jeopardy determination is made in the following manner: the effects of the proposed Federal action are evaluated in the context of the aggregate effects of all factors that have contributed to the fritillary's current status and, for non-Federal activities in the action area, those actions likely to affect the fritillary in the future, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the fritillary in the wild.

The jeopardy analysis in this Opinion places an emphasis on consideration of the range-wide survival and recovery needs of fritillary and the role of the action area in the survival and recovery of fritillary as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

### Adverse Modification Determination

No critical habitat is designated for the species. Therefore, no analysis of adverse modification of critical habitat is needed.

## **EFFECTS OF THE ACTION**

### Direct and Indirect Effects

Effects of the action refer to the permanent or temporary direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated

and interdependent with that action that will be added to the environmental baseline. Indirect effects are those that are caused by the proposed action and are later in time but are still reasonably certain to occur. The Service considers the PDF as an integral part of the proposed action and the PDF will be fully implemented throughout project administration. By following these practices, the majority of potential impacts to the fritillary will be avoided, minimized or offset.

The Proposed Action will be designed to avoid known fritillary patches. Therefore, no direct impacts are anticipated to known fritillary patches. There is however a reasonable likelihood that some undetected fritillary bulbs could be directly or indirectly impacted on up to 4.9 acres of suitable habitat in the following ways:

#### Direct Construction Impacts

- Crushing of undetected plant bulbs could result in the loss of plants due to equipment use or placement of boulders and retaining walls in constructing the 10 miles (52,800 feet) of approximately 10-foot wide trails (taking into account a disturbance corridor from top of cut bank to bottom of slope), of which 2 miles lies within approximately 0.25 to 0.5 miles of the fritillary population.
- Incidental bulbs if dug up could be exposed on top of the soil and could be lost due to desiccation or subject to predation.
- Removal of habitat from trail construction could limit bulb dispersal within the population.
- Covering of habitat with side-cast soil and rock could lead to loss of plants within the 1.5-acre fritillary population.
- Incidental herbicide spray on fritillary plants or residual herbicide in the soil could kill plants or retard plant growth.

#### Indirect Impacts

- Changes in hydrology caused by construction could alter the local terrain and result in an impact to plants by decreasing water availability or increasing water exposure.
- Brush removal could enable plants to be more susceptible to herbivory.
- Trail construction could result in soil instability, leading to erosion and loss of habitat.
- Trail users going off-trail could impact fritillary in previously undisturbed habitat by trampling and spread of NNI plants.
- Gravel imported into the parking lot site could also import NNI plant seed that could spread throughout project area.
- Foot and horse traffic may further impact plants and habitat by increasing soil density due to trampling, increase erosion, or could cause trail width expansion.
- Soil disturbance and spread of NNI plant seed caused by trail use could increase the colonization of these plants along trail competing with fritillary for space, light and moisture.
- Herbivory, including horse browsing, could increase along trails due to additional clearings and access to plants.

While there is the potential for direct and indirect impacts to fritillary as listed above, the combination of PDF, building trail to IMBA standards and other project elements are anticipated

to avoid and minimize impacts to fritillary to the extent practicable. The Service anticipates short-term impacts but long-term gains in conservation of the species through provisions of the PDFs and establishment of an FMA. Because the impacts are measurable for reasons provided herein, the Service anticipates the proposed action is *Likely to Adversely Affect* fritillary.

Potential benefits to fritillary will include:

- Trail construction could inadvertently distribute fritillary bulbs within areas, allowing for fritillary to become better established in area.
- By closely monitoring and managing the area for NNI, fritillary should have a competitive advantage over time.
- Construction of the trail and clearing a 3-foot buffer adjacent to the trail will allow more light to enter fritillary patches adjacent to the path, thus allowing plants to have better sun exposure.
- A population level of at least 100 flowering fritillary plants will be maintained on site within approximately 7.4 acres of managed habitat, which meets a recovery unit standard, if one should be established in the area.

### **Interrelated and Interdependent actions**

Regulations implementing section 7 of the Act require that the Service consider the effects of activities, which are interrelated and interdependent to the proposed Federal action (50 CFR section 402.02). Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Interdependent and interrelated activities are assessed by applying the "but for" test, which asks whether any action and its associated impacts would occur "but for" the Proposed Action. Both activities are defined as actions with no independent utility apart from the action under consideration.

Actions that are interdependent on the Proposed Action include additional phases to expand the trail system by the BLM. Future trail expansion is dependent on this action, but would require additional consultation with the Service pursuant to section 7 of the Act once the scope and biological effects of action are assessed. Any changes to the Proposed Action such as permitting motorized vehicles to utilize the trails, reinitiation of consultation would be required. There are no other actions interrelated to this project.

### **Cumulative Effects**

Cumulative effects are those effects of future state, tribal, local or private actions on endangered and threatened species or critical habitat that are reasonably certain to occur within the area of the federal action subject to consultation. Future federal actions will be subject to the consultation requirements established in section 7 of the Act and, therefore, are not considered cumulative to the Proposed Action.



There are expectations that un-sanctioned and illegal non-Federal activities are reasonably certain to occur within the action area. The Service assumes that future non-Federal, state, and private activities will continue at similar intensities as in recent years.

### **Summary**

The Proposed Action will be designed to avoid fritillary groupings. Although fritillary will be avoided, there is a likelihood that some undetected fritillary bulbs occurring outside of the avoided fritillary groupings, may incur impacts due to trail construction, horse and foot traffic, overburden, or dug up bulbs. We anticipate a loss of up to 161 fritillary plants, or two percent of the known population within the action area. This percentage is based on the highest fritillary count in 2013. We estimate that approximately 4.9 acres of suitable habitat will be lost due to trail and parking lot construction together. Impacts would include plants dug up or unearthed during construction and exposed on top of soil, plants lost due to desiccation, predation, or herbicide use; reduction of plant dispersal in action area, and plants covered with dirt and rock during construction.

Although the trail will be designed to prevent erosion, long-term indirect impacts to plant habitat (e.g. loss of hydrology, habitat removal, NNI competition) can be expected. Indirect and direct impacts will be avoided by follow-up management actions such as NNI plant control and restriction of off-trail disturbance, and habitat restoration actions. Opening up vegetation to construct the trail will allow a small increase of light to get to a small percentage of the fritillary plants, but this beneficial effect is anticipated to be slight. We anticipate that the additional long-term management of the site will benefit fritillary in the long term and contribute to recovery. This area is planned to become an established fritillary management area.

### **CONCLUSION**

After reviewing the current status of the listed species, the environmental baseline for the action area, effects of the Proposed Action and cumulative effects, it is the Service's Biological Opinion that the Proposed Action is not likely to jeopardize the continued existence of Gentner's fritillary. This conclusion anticipates the following post-project conditions as a result of the Proposed Action:

- Trail construction in the project area is anticipated to avoid the adult fritillary plants and the highest density areas of the population.
- While the loss of fritillary habitat at the project area is anticipated to adversely affect the fritillary, the action is not expected to significantly decrease the long-term viability of the species or result in the loss of the local population because a minor extent of the population will be impacted.
- Because the fritillary produces great amount of new bulbs each year the population will likely recover from lost bulb material within a few years.

- The project design features and long term management within the action area are expected to offset the overall amount and extent of adverse effects to fritillary and are anticipated to promote activities that benefit the conservation and recovery of the species.
- The establishment of a FMA within the project area will help ensure protection of plants, maintain favorable habitat conditions, prevent degradation of the site, assess the effects of management actions, and allow for adaptive management to promote recovery (USFWS 2003) of the species.

## CONSERVATION RECOMMENDATIONS

Sections 2 (c) and 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. The term "conservation recommendations" has been defined as suggestions by the Service regarding discretionary measures to minimize or avoid adverse effects of a Proposed Action on listed species or critical habitat, to help implement recovery plans, or develop information and do not necessarily represent complete fulfillment of the agency's 7(a)(1) responsibility for these species.

The Service believes the following conservation action will reduce the impact of the Proposed Action within the action area:

1. The District will share and review periodic fritillary survey, FMA and trail management information with the Service.
2. The District will discuss and collaborate with the Service on establishing a FMA as described herein.

## REINITIATION NOTICE-CLOSING STATEMENT

This concludes formal consultation on the Proposed Action. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been authorized by law and if (1) new information reveals effects of the action that may affect fritillary or its habitat in a manner or to an extent not considered in this Opinion, (2) the action is subsequently modified or expanded in a manner that causes an effect to fritillary that was not considered in this Opinion, or (3) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of adverse effects is exceeded, any operation causing the impacts must cease pending reinitiation of formal consultation.

If you have any questions regarding the attached Opinion, please contact Sam Friedman of the Service's Roseburg Field Office at (541) 957-3478.

cc: Bryan Wender, Medford District BLM, Medford, Oregon (e)  
Marcia Wineteer, Medford District BLM, Medford, Oregon (e)  
Office Files FWS-OFWO, Portland, OR (e)

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#### **Personal Communication**

M. Wineteer. Botanist, Medford District, Bureau of Land Management, Medford, Oregon. E-mail correspondence with Sam Friedman. 2014.

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