

# Interagency Special Status and Sensitive Species Program Final Report

Date: March 25, 2020

Project Title: High-Value Riparian Exclosure Fence Inventory and Management Planning on the Ochoco National Forest

Field Unit: Ochoco National Forest

ISSSSP funds invested: FY2018 \$15,000  
FY2019 \$15,000

Project Lead: Jill Welborn

## SUMMARY

This report summarizes the purpose, methods, and findings of a two-year project to assess existing livestock and/or wildlife exclosure structures located in riparian habitats across the Ochoco National Forest. The purpose of the project was to identify exclosures that contain high value habitats and sensitive plant, wildlife, and fish populations, in order to better understand the resource values protected. In addition, this information will be used to prioritize exclosure maintenance and management.

43 exclosures, totaling 280 acres, were surveyed over the two years of the project. 16% (N=7) of the exclosures visited had a documented sensitive plant EO. A Columbia spotted frog, habitat for silver bordered fritillary, and redband trout were also observed. Data to the quality of habitat, sensitive species found, structure conditions and more were included in the survey. 7 of the highest potential exclosures were revisited by the botanist, wildlife biologist, and/or biological technician in 2018 or 2019 for a closer evaluation of sensitive species habitat.

Exclosures play an important role in sustaining species conservation and diversity across the forest by protecting uncommon and vulnerable habitats. The relative importance of exclosures to species conservation may vary by individual species, their habitats, and biology. Based on occurrence data and observations gathered for the project, exclosure fences may play an important role in maintaining species viability for some of the rarest plant species on the forest.



Photo 1. Columbia spotted frog occupying habitat protected by one of the exclosures visited for the project.

## **BACKGROUND**

The Ochoco National Forest has about 298 exclosures across the forest. These areas, ranging in size from 0.2 to 95 acres or more, are fenced to protect them from livestock and/or wildlife impacts. Over the years, exclosures were built to protect resources that have a high potential for sensitive species, including fish, wildlife, and plants. However, prior to this project, little was known about whether there was a higher occupancy of such species within exclosures that protect high value habitats, such as wetlands, springs, aspen stands, and other features. This lack of information left questions about how best to prioritize limited fence maintenance resources, how habitats inside exclosures contribute to species viability, and how the locations of exclosures across the forest might form a landscape-level network of protected habitats.

## **METHODS**

A survey protocol and data collection form (Attachment 1) were developed as part of pre-field project activities. Data collected included a detailed vascular plant inventory, wildlife observations and habitat potential, features protected, fence type and condition, assessment of suitable habitat outside the exclosure, disturbances, and other relevant information. NRIS-TESP and Wildlife databases were consulted to develop a list of exclosures that overlap or are near sensitive plant and/or wildlife locations. Any exclosures overlapping with such occurrences were the highest priority for year 1 field work. Other exclosures with known habitat values, overlap with mapped springs, etc. were also identified and added to the list.

Year 2 field work prioritized high potential exclosures that were not visited the first year, along with revisits to exclosures with the highest quality habitats for sensitive plant and wildlife species based on biological technician observations. The revisit team consisted of a district botanist or district wildlife biologist, and an interdisciplinary (plants/wildlife) biological technician, and focused on further inventorying and assessing the habitat potential of these areas.

Site visit records included a completed data collection form for each exclosure, updated spatial data documenting the location and layout of each structure as needed, photographs, NRIS TESP database survey records, and database documentation of sensitive plant observations.

## **RESULTS**

43 exclosures were visited, with broad geographic coverage across the forest (Figure 1). As shown in Figure 1, many of the high value exclosures are situated in headwaters positions within major watersheds. Although not quantified by this project, these protections likely contribute to overall water quality and possibly even lower water temperatures in perennial rivers and streams. A total of 280 acres within these exclosures was inventoried as part of the project. Exclosures typically protected small areas; the median exclosure size was 2.64 acres.

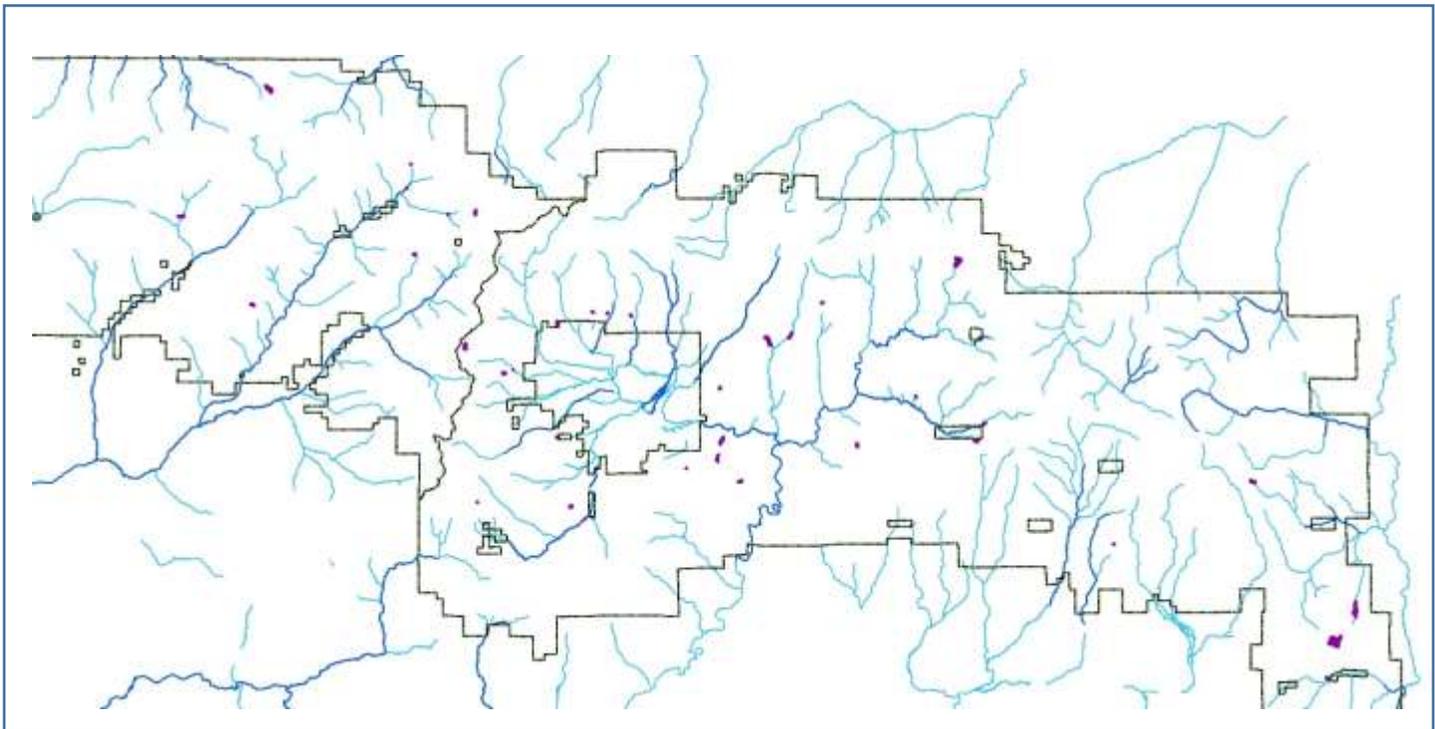


Figure 1. Map of exclosures visited for the project, shown in purple, along with Ochoco National Forest ranger district boundaries and major streams.

Table 1 presents results based on all exclosures included in the project. The most frequent features protected were hydrologic resources, including wetlands and/or streams (65% of exclosures), and aspen (found in 53% of exclosures). Groundwater dependent ecosystems (GDE) occurred in one-third of the areas. The majority of exclosures protected multiple resource types, for example, those with springs or other GDE features typically also had hardwood stands (thus, feature data in Table 1 totals over 100%). Of those exclosures found to protect a single resource, aspen was the most frequent stand-alone resource.

Table 1. Summary of project results

<b>Exclosures visited</b>	<b>2018</b>	<b>2019</b>	<b>TOTAL</b>
Lookout Mtn District	18	5	23
Paulina District	11	9	20
Total	29	14	43
<b>% containing features</b>			
TES (plants)	17%	14%	16%
Aspen	62%	36%	53%
Other hardwoods	21%	57%	33%
Spring/GDE	21%	57%	33%
Surface water/wetland	55%	86%	65%
TES (wildlife)	3%	0%	2%

<b>Fence Type</b>			
<b>Exclosures visited</b>	<b>2018</b>	<b>2019</b>	<b>TOTAL</b>
Plastic mesh	3	3	6
Barbed wire	12	5	17
Buck & pole	6	2	8
High tensile wire	11	0	11
Smooth wire	1	10	11
Not recorded	1	0	1
<b>Fence condition</b>			
Intact	10	7	17
Needs repair	17	6	23
Recommend removal	2	0	2

### Sensitive Species

The most frequent R6 sensitive species found within exclosures was Peck’s mariposa lily (*Calochortus longebarbatus* var. *peckii*), with 7 populations partly or wholly protected by exclosures. Other sensitive plant occurrences included crenulate moonwort (*Botrychium crenulatum*) (N=1), upward-lobed moonwort (*Botrychium ascendens*) (N=2), and northern adderstongue (*Ophioglossum pusillum*) (N=1). One new upward-lobed moonwort occurrence and one new Peck’s mariposa lily occurrence were documented as a result of the project. A Crook County record for *Listera convallarioides* was also documented. For some sensitive plant species, exclosures may play an important role in species viability. For example, northern adderstongue is only known from a single occurrence on the Ochoco National Forest, protected by an exclosure fence. Similarly, two of five known upward-lobed moonwort sites are located within exclosures visited during the project. Both species occupy fragile GDE habitats that are vulnerable to livestock and wildlife impacts. Conversely, the great majority of Peck’s mariposa lily and crenulate moonwort occurrences are located outside of exclosures, so exclosure protection may be less important to conserving these species across the forest. In at least two locations, Peck’s mariposa lily populations partially protected by an exclosure were observed to have as many flowering individuals outside the fence as inside. The project did not systematically compare protected populations to those not fenced. Such a study examining population trends may be of value in determining how best to manage these species and their habitat over the long term.

Also of note, no new sensitive *Carex* spp. populations suspected to occur on the forest were detected as part of the project. (There are several sensitive sedges suspected to occur on the forest but none are documented; these include *Carex diandra*, *Carex idaho*, *Carex lasiocarpa*, and *Carex retrorsa*). This despite several sites hosting potential habitat and the generation of a detailed plant list for each location. While lack of detection as part of this project can’t be considered definitive proof of absence, these additional observations and negative survey results add to the picture of whether these species may occur on the Ochoco NF.

Sensitive wildlife species directly observed included Columbia spotted frog (*Rana luteiventris*) and redband trout (*Oncorhynchus mykiss gairdneri*). Habitat for silver bordered fritillary (*Boloria selene*), Morrison’s bumblebee (*Bombus morrisoni*), and western bumblebee (*Bombus occidentalis*) was also documented as part of the project. Since the habitats protected by exclosures were found to include a

diversity of flowering native plants, high quality water resources, and ample cover and nesting sites, many exclosures likely contribute substantially to high quality habitat for these species across the forest.



Photo 2. Close-up of northern adderstongue within the Goofy Spring exclosure, the only known occurrence of this R6 sensitive plant species on the Ochoco National Forest.



Photo 3. Fenceline at Goofy Spring. Habitat on the right could be included in an expansion of this exclosure to include all suitable habitat.

### Special Places

Several exclosures stood out as particularly valuable. Among these are Goofy Spring, mentioned above, Ingram Meadow, Derr Meadow, and Noble Garden Spring. The Derr Meadow exclosure protects occurrences of upward-lobed and crenulate moonwort, high quality wet meadow, groundwater dependent ecosystems, and outstanding pollinator habitat. The meadow vegetation is diverse and hosts abundant *Viola* spp., host plant for the sensitive silver-bordered fritillary. The fence surrounding Derr Meadow has been difficult to maintain due to the surrounding lodgepole stands and heavy snowpack. The additional sensitive plant population documented there as part of this project will add to the case for improving and maintaining this exclosure.



Photo 4. High quality sensitive plant and pollinator habitat within the Derr Meadow enclosure.

Ingram Meadow is the site of an ongoing riparian and meadow restoration project, which seeks to improve hydrologic function and restore riparian plant communities. While no R6 sensitive species are known from the meadow, it boasts suitable habitat for moonwort species and sensitive pollinators. Livestock exclusion will contribute to meeting the goals of the restoration project in this area.



Photo 5. A view of Ingram Meadow, prior to restoration.

Noble Garden Spring was fenced in 2015. The exclosure protects several springs and diffuse groundwater discharge areas, a short reach of the perennial outflow stream, and associated riparian plant communities. While no sensitive species were documented within this exclosure, the GDE habitat within has high suitability for sensitive moonwort species.



Photo 6. Carex and alder dominated wetlands and planted willows inside the Noble Garden Spring exclosure.

### **MANAGEMENT CHALLENGES**

In reviewing the observations and data collected, two management challenges emerged as the most prevalent. 53% of inventoried exclosures noted the presence of invasive plants. Infestations ranged from mild to severe. Canada thistle, bull thistle, common mullein, cheatgrass, and ventenata were the most commonly noted invasive plants. While invasive plants were common in exclosures, observations do not suggest they are more prevalent inside such structures. Canada thistle, in particular, is associated with riparian habitats where the project was focused. Effective control of invasive plants is an important component of maintaining habitat suitability within exclosures.

42% of exclosures were observed to have recent livestock or wild horse grazing inside the exclosure. In a few cases, the grazing was so severe that few plants could be identified. It has been recognized that insufficient maintenance of exclosures can facilitate high livestock concentrations and thus negative impacts to the resource intended to be protected. These observations highlight the need to prioritize exclosure maintenance or, for lower priority areas, fence removal so that livestock are not concentrated inside broken fences.



Photo 7. Fenceline contrast showing an effective exclosure. This exclosure needs maintenance to continue to protect this riparian plant community.

### **CONCLUSION AND FUTURE MANAGEMENT**

This project enabled the detailed inventory of 43 of the highest value exclosures across the Ochoco National Forest. The data collected will make a lasting contribution to better understanding the resource values associated with these structures. Exclosures protecting the highest value resources contribute substantially to suitable habitat and population viability for sensitive species on the forest.

The project's data collection protocol contributed to the development of a standardized ArcGIS Online database and Survey123 data collection form that all natural resource staff can use in the field to record the condition, repair needs, resources protected, and management concerns of exclosures observed during field operations on an on-going basis. These tools were field tested extensively in 2019 and will be more widely used in 2020. The online database will inform forest-wide exclosure management and prioritization in the future. The data collected as part of this project will help to identify exclosures with the highest priority for limited maintenance and repair resources.

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ATTACHMENT 1: Data Collection Form

### **Exclosure Monitoring Form**

**Location:**

**Exclosure size:**

**GPS coordinates:**

**Fence type:**

Sensitive spp	Cover in exclosure	Seen out of exclosure?

% Forbs	% Grasses	% Shrubs	% Canopy Cover

**Fence condition:**

**Ecological features protected:**

**Extent of grazing outside exclosure:**

**Concerns/areas not protected:**

**Enclosure design comments:**

**Sensitive spp List**

Scientific Name	Common Name	FS Status	Heritage Global Rank	ORBIC Rank	FS-TRACS
<i>Botrychium ascendens</i>	Upward-lobed moonwort	SEN	G3	S2, List 1	TRACS Priority Species
+ <i>Botrychium crenulatum</i>	Crenulate moonwort	SEN	G3	S2, List 1	TRACS Priority Species
<i>Botrychium montanum</i>	Mountain grape-fern	OR-SEN	G3	S2, List 2	TRACS Priority Species
<i>Botrychium paradoxum</i>	Twin-spiked moonwort	SEN	G3/G4	S1, List 1	No status
+ <i>Calochortus longebarbatus</i> var. <i>peckii</i>	peck's mariposa-lily	OR-SEN	G4T3	S3, List 1	TRACS Priority Species
+ <i>Ophioglossum pusillum</i>	Northern adderstongue	SEN	G5	S1, List 2	No status
+ <i>Oncorhynchus mykiss</i>	Inland Columbia Basin redband trout	SEN	G5T4	S2/S3, List 2	No status
<i>Rana luteiventris</i>	Columbia spotted frog	OR-SEN	G4	S2/S3, List 2	TRACS Priority Species
<i>Boloria selene</i>	Silver-bordered fritillary	OR-SEN	G5	S2, List 2	No status