

**Vernal Pool Information Network
Site Visit to Lower Table Rock
May 2, 2018
Summary**

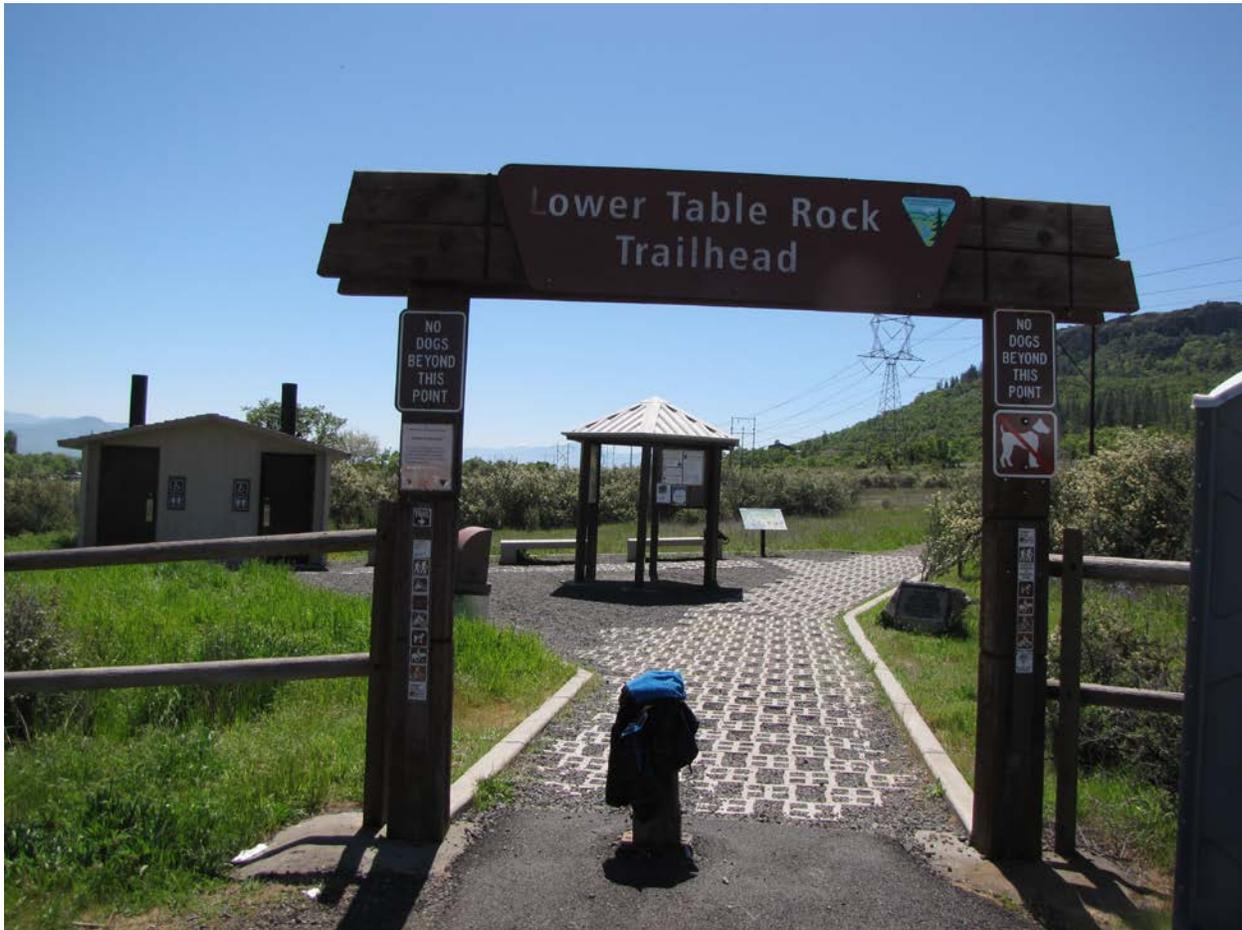


Photo of entrance to Lower Table Rock trailhead. Photo by C.Tuss.

Attendees: Sam Friedman, U. S. Fish and Wildlife Service (Service); Craig Tuss, Rogue Valley Council of Governments (RVCOG); Sasha Joachims, U.S. Bureau of Land Management (BLM); Aleah Querns (BLM); Marta LeFevre-Levy BLM.

Objective of meeting and visit: To see the Lower Table Rocks vernal pool area and discuss management actions taken to conserve and improve habitat conditions.

Background (portions adapted from Petix, M.1., E.C. Gray, and M.A. Bahm. 2017): Upper and Lower Table Rocks were designated in 1984 as an Area of Critical Environmental Concern (ACEC) to protect special plants and animal species, unique geologic and scenic values, and education opportunities. The Medford District of the U.S. Bureau of Land Management manages significant portions of both Table Rocks.

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In 1977, The Nature Conservancy (TNC) established a preserve on a portion of the top and flanks of Lower Table Rock. In 2009, TNC purchased the remaining private lands on Upper and Lower Table Rocks, permanently protecting the areas and their rare plants and wildlife. The habitat on top of the Table Rocks includes vernal pools, mounds, and flat, rocky scablands. The impermeable volcanic substrate retains water during winter and spring months in vernal pools. The mounded prairie/vernal pool complex lacks a shrub and tree overstory, leaving it hot and dry during the summer months. During July and August, temperatures periodically top 100° F. Numerous rare plant species occur at Lower Table Rocks, including the BLM sensitive species dwarf woolly meadowfoam (*limnanthes pumila ssp. pumila*) (dwarf meadowfoam), Austin's popcornflower (*Plagiobothrys austiniae*), Greene's popcornflower (*P. greenei*), and California water starwort (*Callitriche marginata*). Vernal pool fairy shrimp (*Branchinecta lynchi*) also occur on Lower Table Rock.

On July 7, 2010, an emergency load of fire retardant was jettisoned on top of Lower Table Rock due to problems with a tanker aircraft. Three-thousand gallons of fire retardant were dumped in vernal pool fairy shrimp critical habitat. The substance jettisoned, Phos-Chek fire retardant, was composed of 80% water, 14% fertilizer salts, and 6% coloring agents. The active ingredients are primarily ammonium sulfates and phosphates, which could produce a significant fertilizer effect within plant communities of the affected area on Lower Table Rock (USDI BLM 2010).

A prescribed fire occurred on October 22, 2015, burning just over 20 acres in the area of the fire retardant drop to control the increase of non-native grasses and thatch buildup on Lower Table Rock. After the burn, a suite of native forbs and grasses were seeded in the burned area including *Achnatherum lemmonii* (32 lb.), *Koeleria mtJcrantha* (32 lb.), *Poa secunda* (32 lb.), *Elymus elymoides* (21 lb.), *Danthonia californica* (21 lb.), *Pseudoroegneria spicata* (21 lb.), *Achyrrachaena mollis* (0.5 lb.), *Grindelia nana* (0.5 lb.), *Collinsia grandiflora* (0.5 lb.), and *Clarkia purpurea* (0.5 lb.).



A second, prescribed fire occurred on October 26, 2017, burning just over 16 acres in the area of the fire retardant drop and the 2015 prescribed burn area to control the increase of non-native grasses and thatch buildup on Lower Table Rock. The footprint of this second prescribed burn shifted to the south relative to the 2015 prescribed burn, resulting in about 20 acres burned in 2015 and 2017 overall (map, page 6). Photo provided by BLM.

The potential threats to vernal pool species on the Table Rocks include grazing by native ungulates, recreational use, and invasion by non-native species. Cattle grazing historically occurred on both Upper and Lower Table Rocks. Grazing continued at Upper Table Rock through 2008, but ceased after TNC's purchase of the remaining private lands in 2009. Thousands of people visit Upper and Lower Table Rocks each year, with the highest traffic in the spring, when most plant species, including dwarf meadowfoam, are flowering. Foot traffic and occasionally horse traffic (though not permitted) negatively affect dwarf meadowfoam populations intersected by trails. Recreation traffic has increased notably over the years, especially on the southern end of Upper Table Rock. While there are primary trails for use by visitors, many people wander off-trail directly through sensitive pool habitat. The abundance and thatch of non-native grasses (e.g. *Taeniatherum caput-medusae*) on Lower Table Rock has increased notably over the years, potentially posing a great threat to native species in these habitats. The growing human population of the Rogue Valley, improvements to the trails, and increased environmental education activities in the ACEC will undoubtedly lead to more use of the Table Rocks.

Since 2006, the Institute for Applied Ecology (IAE) has monitored experimental plots to determine population trends and the effects of grazing, trampling, and invasive species on Dwarf meadowfoam, and used transects to document plant community types, disturbances (including trails and animals activity), and distribution of habitat types. The initial goals of this project were to develop a quantitative monitoring strategy for assessing population trends and vernal pool habitat quality, and collect baseline data on dwarf meadowfoam to evaluate population trends and the effects of human activities and management practices. Specifically, these goals include:

1. Assessing the effects of trampling on dwarf meadowfoam growth, reproduction, and recruitment;
2. Assessing the effects of grazing on dwarf meadowfoam growth, reproduction, and recruitment;
3. Assessing habitat quality (including cover of invasive vs. native plant species) on Upper and Lower Table Rocks; and,
4. Assessing population trends of dwarf meadowfoam on Upper and Lower Table Rocks over time, documenting potential threats.

Tour Discussion

The day of the tour, the weather was mostly sunny with a high of 75°F. Due to the recent dry weather pattern, the vernal pool complexes were dry, but the soil was moist in some of the pool bottoms. Sasha Joachims (BLM botanist) led the hike and the tour discussion. The hike up from the trailhead took about 45 minutes and interrupted briefly by a pileated woodpecker sighting. Once on top Sasha described the location of the retardant drop (July 2010) and the two prescribed fires (October 2015 and 2017) as well as the ongoing monitoring See aerial photo, page 5).

Sasha also mentioned that portions of the trail to the top of Lower Table Rock will be relocated in the near future. This is to accommodate public safety and erosion issues.

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Since 2006, the Institute for Applied Ecology (IAE) was contracted by BLM to monitor experimental plots to determine population trends and the effects of grazing, trampling, and invasive species on dwarf meadowfoam. Transects were used to document plant community types, disturbances (including trails and animals activity), and distribution of habitat types.

Dwarf meadowfoam results:

- Following a steady decline from 2010 to 2012, number of plants in long-term monitoring plots on Lower Table Rock have fluctuated over the years. While 2015 had the lowest number of plants observed over the course of this study, increases in the number of plants were recorded over the last two years.
- In 2017, fewer plants were observed in high traffic areas than in moderate traffic areas, but there was not a significant difference as there was in 2016.
- Upper Table Rock had trends similar to those observed on Lower Table Rock - 2015 had the lowest numbers over the course of this study, but there have been increases in number of plants and number of flowers per plant over the last two years. In 2017, mean number of plants and number of flowers per plant did not differ significantly between moderate traffic and high traffic plots.

Monitoring of the fire retardant drop:

- From 2013 to 2016, a decline was observed in non-native grasses both within and outside of the fire retardant drop; over the past two years of sampling, non-native grass cover has remained stable. After low numbers in 2015, an increase in dwarf meadowfoam was observed in 2016, followed by a decrease in 2017. Pool habitats declined from 2014 to 2015, but increased in 2016 and 2017.
- Long-term monitoring plots were used to assess impacts of the prescribed fire in the area of the fire retardant drop in fall 2015. Mean number of plants and number of flowers per plant did not differ between burned and unburned plots in 2017. Litter cover was similar in burned plots and unburned plots. *These results should be interpreted cautiously as plots were not set up to monitor fire effects.*

Observations during the tour:

- There was a flush of Bulbous bluegrass (*Poa bulbosa*) in 2018 within the prescribed fire areas. Bulbous bluegrass is native to Eurasia and northern Africa, but introduced to North America in early 1900's.
- Dwarf meadowfoam patches were exhibiting many flowers per plant.
- Thatch noticeably reduced in the prescribed fire treatment areas compared to the unburned areas.
- BLM has no current plans to introduced fire to the area in the near future.
- There were several hikers and runners in the area, as this was one of the nicer (warmer) days in a last few weeks.

Future VPIN Site Visits

In August 2016, the Service provided funding (\$7,200) to RVCOG to convene several more VPIN site visits. RVCOG also received funding (\$2,500) from the Jackson Soil and Water Conservation District to augment the Service funding for the VPIN site visits. This funding,

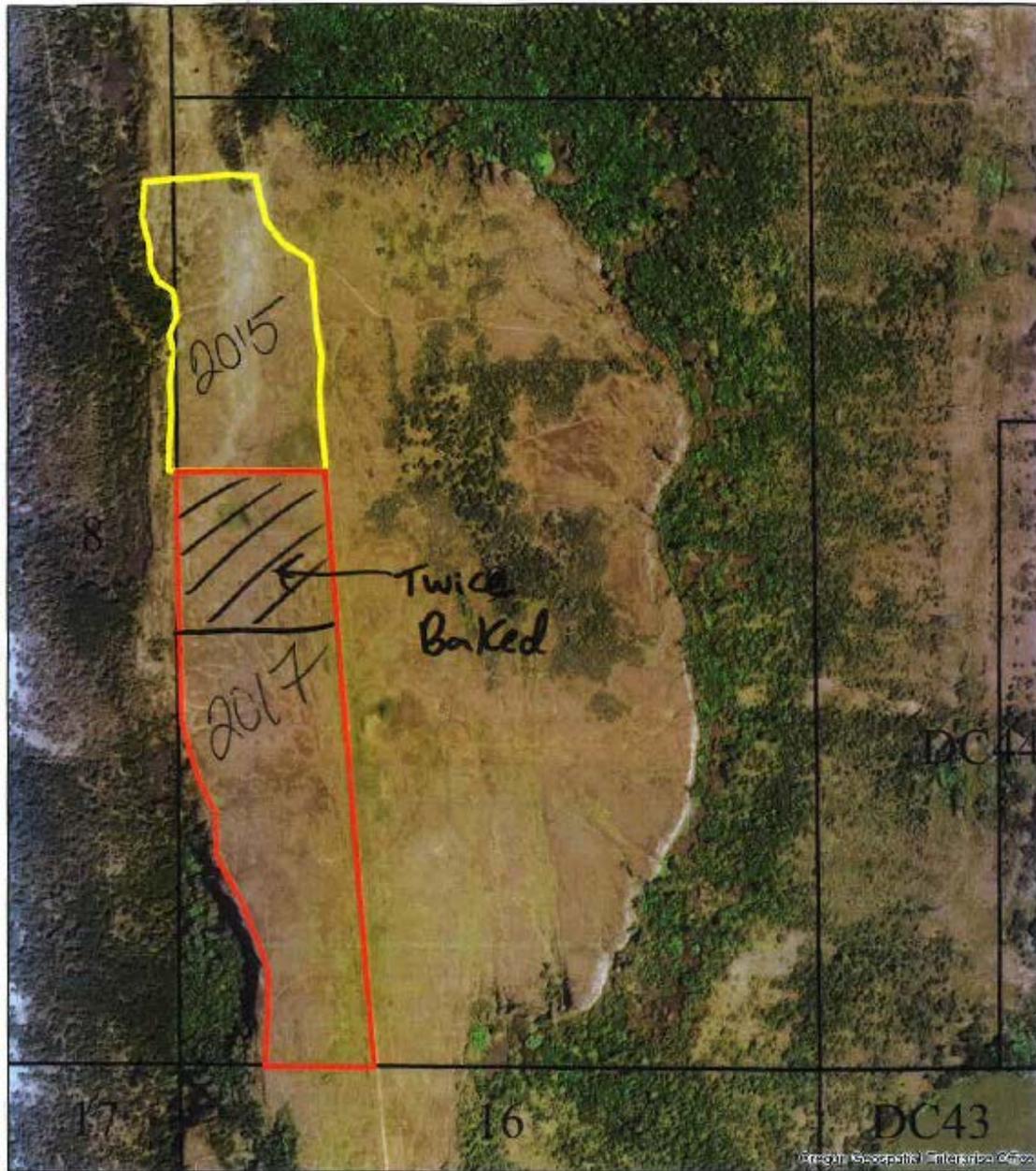
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along with in-kind staff time from RVCOG (\$500) and TNC (\$600) will allow the VPIN to continue site visits and landowner outreach into 2018. The May 2018 tour is the last tour supported under the current funding.

Literature Cited

Petix, M.1., E.C. Gray, and M.A. Bahm. 2017. Threat assessment for *Limnanthes pumila* ssp. *pumila* (dwarf woolly meadowfoam) on Table Rocks ACEC. Institute for Applied Ecology, Corvallis, Oregon and USDI Bureau of Land Management, Medford District. vii + 61.

Aerial Photo showing location of 2015 and 2017 Prescribed Burns on Lower Table Rock.



Legend

- 2017RX
- 2015RX

T36S-R2W-S9 Lower Table Rock
2015 and 2017 Prescribed Burns

Scale 1: 6,500
NAD 1983/Zone 10

Photos from tour (provided by C. Tuss unless otherwise noted):



Photo of boardwalk over a vernal pool on Lower Table Rock.



Photo of vernal pool complex within the 2017 prescribed burn area.

Photos from tour (provided by C. Tuss unless otherwise noted):



Portion of 2017 prescribed burn area (right of trail), and unburned area (left of trail). Note difference in “thatch”.



Dwarf Woolly Meadowfoam in pool within the 2017 prescribed burn area.



**Mt. McLoughlin
from the top of
Lower Table
Rock.**



**Pileated
woodpecker
near trail to top
of Lower Table
Rock.**