

May 14, 2013 Vernal Pool Site Visit Summary

Attendees: Bill Roper, Wildlands; Cam Patterson, consultant (Cascade Geo); Lauren Brown, DSL; Jim Thraikill, FWS; Greg Swenson, consultant (SWCA); Sam Friedman, FWS; Craig Tuss, RCVOG; Craig Harper, SOLC; Marilyn Rice, landowner; Keith Perchemlides, TNC; Darren Borgais, TNC; Derek Olsen, TNC; Tom Suttle, City of Medford, Paul Benton (ODOT).

Itinerary: As planned, the group visited three sites:

1. 8:30 am. Meet at Oregon Department of Transportation (ODOT) parking lot off of Table Rock Road on Central Point.
2. 8:45 - 9:30 am. Visit The Nature Conservancy (TNC) parcel
3. 9:30 - 10:15 am. Visit City of Medford parcel.
4. 10:15-10:45 am. Travel to ODOT Conservation bank site
5. 10:45 -11:30 am Visit ODOT bank parcel.

Objective for the site visits: The Objective of the tour was to provide an introduction to a variety of management actions (grazing, burning/seeding, mowing etc..) being conducted in vernal pool habitat on three different land parcels (Figure 1). These parcels are being managed for different objectives:

1. The Agate Desert preserve is managed for vernal pool and Endangered Species Act (ESA) species conservation, and native prairie restoration.
2. The ODOT conservation bank is managed for wetland mitigation and vernal pool species recovery/conservation as defined by Interagency Review Team (composed of U.S. Fish and Wildlife Service (FWS), U.S. Army Corps of Engineers (COE) and Oregon Department of State Lands (DSL)) performance standards.
3. The City of Medford parcel, originally purchased for industrial development, is being grazed to reduce fuel loading during fire season and for commercial cattle production.

Because of time constraints, we allotted 45 minutes per site. This gave us time to listen to the folks conducting actions on the parcels (about 15 minutes), walk around the property (20 minutes) and then have a wrap up and questions session (10 minutes) for each site. We did not get into great detail at any of these sites.

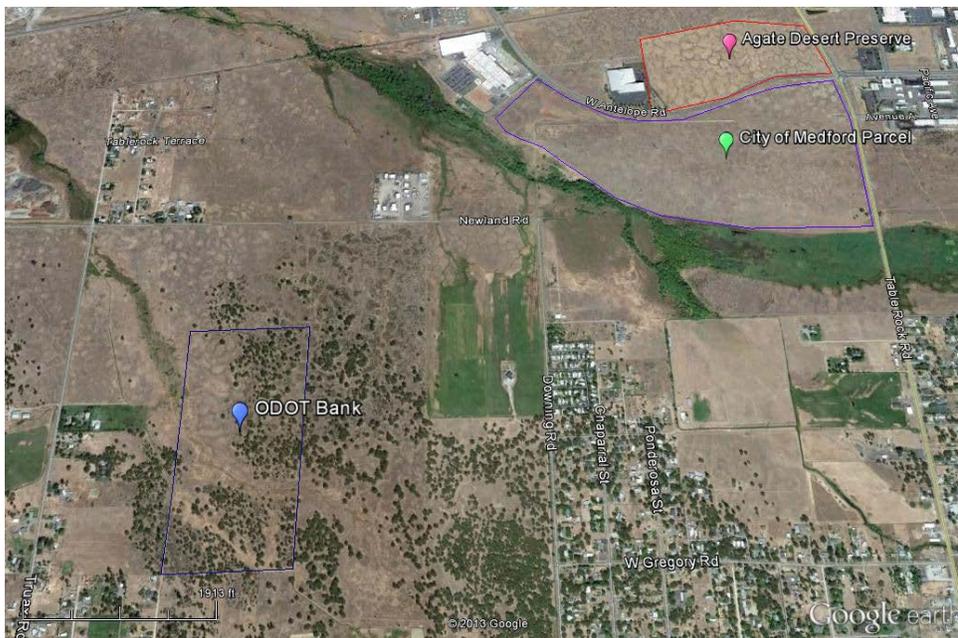


Figure 1. Locations of the three sites visited during the May 14, 2013 Vernal Pool Tour near Central Point, Jackson County, Oregon.

We plan to have a follow-up session where we can get into more detail about specific actions (such as cost, logistics, monitoring results) at a future session.

Summary of Management on The Nature Conservancy's Agate Desert Preserve

Keith Perchemlides and Darren Borgias of the The Nature Conservancy, Southwest Oregon Field Office provided the following information as a handout to the attendees



Photo 1. Keith Perchemlides (TNC), center of photo, provides information regarding the TNC's Agate Desert Preserve. Photo taken by Craig Tuss.

Overview and prior land use

- 50 acres mounded prairie and vernal pools, first prioritized by the Native Plant Society of Oregon (ONHP) and the Oregon Biological Information Center (OBIC).
- Topography and hydrology largely intact, except in the northeastern corner, ditch sides, and a Roguelands Irrigated Orchard Tracts irrigation ditch (restored 1994).
- Prior long-term land use for cattle grazing.
- Donated by Don Deardorff (Fourply Lumber) and part exchange with City of Medford, transaction completed April 1987, grazing ceased.
- Restore and maintain at near historic reference conditions for intact native bunchgrass prairie and vernal pool habitat.

- Re-establish native bunchgrass cover.
- Reduce invasive annual grasses and control thatch.
- Increase cover of native perennial forbs.
- Maintain viable populations of Lomatium Cookii (LOCO), Limnanthes Pumila Grandiflora (LIPUGR), and Vernal Pool Fairy Shrimp (Branchinecta Lynchi (BRLY)) (discovered 1998).
- Control or eradicate priority invasive weeds.
- Reintroduce fire as the primary disturbance dynamic.
- Evaluate success by similarity to desired guild composition in Ecological Reference Site Description – and population thresholds for ESA species (Borgias 2004).

Burn history under TNC management

- Reintroduced fire at average interval of 5.5 years over past 2+ decades.
 - 1989: Research plot burns and patchy wildfire on eastern third of property – spring and summer.
 - 1996: Spring burn on eastern 17 acres– TNC crew and burn boss, bladder bags.
 - 1998: Spring burn across entire property – TNC with Greyback Forestry support.
 - 2002: Spring burn across entire property – TNC with Summit Forests support.
 - 2011: Fall burn across entire property –Pacific Habitat and Fire contract with TNC support.

Post-burn native bunchgrass seeding

- Fall sowing across burned area (or limit of available seed).
- Manually broadcast – tractor chain harrow.
- Three cycles of burn-and-seed on eastern half of preserve.
- Upland grasses: Lemmon’s needlegrass (*Achnatherum lemmonii*; (ACLE)) (predominant spp), Romer’s fescue (*Festuca romerii*; (FERO)), bluebunch wheatgrass (*Pseudoroegneria spicata*; (PSSP)), June Grass (*Koeleria macrantha*; (KOMA)).
- Flank grasses: Pine bluegrass (*Poa secunda*; (POSE)), California oatgrass (*Danthonia californica*; (DACA)).
- Upland forbs: Eriophyllum lanatum;(ERLA), Wyethia angustifolia; (WYAN), Achillea millefolium; (ACMI).
- ACLE seed harvested from preserve since 1996, currently at 35-50 lbs annually.
- Sowing history under TNC management:
 - 1996: ACLE at 11 lbs/ac, eastern third of preserve.
 - 1998: ACLE, FEID, and PSSP at <4 lbs/ac, eastern half of preserve.
 - 2002: ACLE at 10 lbs/ac, mixed perennial forbs, eastern side.
 - 2011: ACLE (10 lb/ac), PSSP (4 lb/ac), FERO (2 lb/ac), KOMA (2 lb/ac) *western* uplands; POSE (2 lb/ac), DACA (4 lb/ac) on flanks; limited patch seeding of ACMI, WYAN, ERLA.

Targeted treatment of priority weeds and thatch

- Curly dock (*Rumex crispus*), yellow star-thistle (*Centaurea solstitialis*) – hand pull
- Wild oat grass (*Avena fatua*) – hand pull or mow.
- Rush skeletonweed (*Chondrilla juncea*), Russian thistle (*Salsola tragus*) – hand pull or spray (roadsides).
- Limited fire-surrogate mowing and raking of thatch around LOCO patches.

Monitoring condition and management effectiveness

- Point-intercept sampling:
 - Vegetation cover, composition, thatch, bunchgrass presence stratified by habitat.
- ESA species:
 - LOCO and LIPUGR distribution, and census or sample for population size.
 - Widespread upland patches of LOCO extirpated by thatch.
 - BRLY distribution and vernal pool occupancy rate.
- GIS/GPS mapping and database tracking of priority invasive weeds and treatments.
- Photo monitoring.

Summary of Management on the City of Medford Property

(The grazing permittee, Terry Jackson, was not able to attend, but Tom Suttle of the City provided some history of the site.)

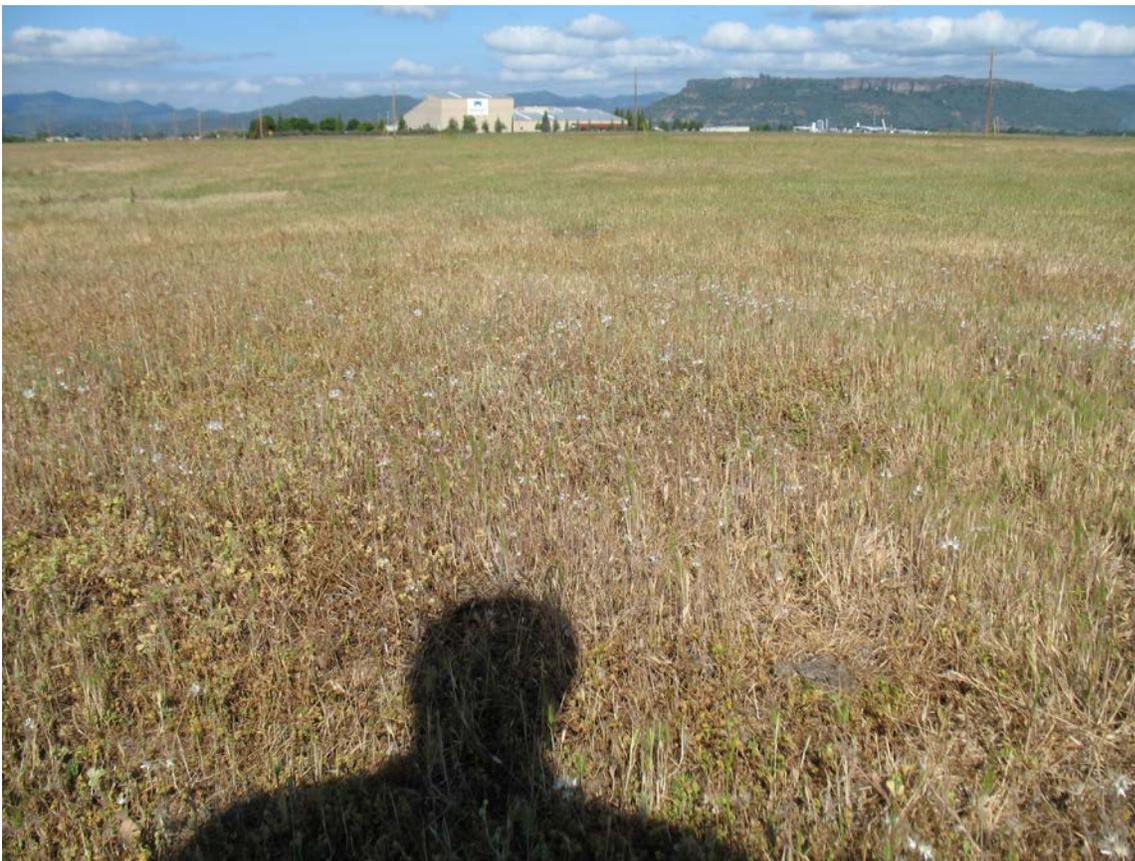


Photo 2. Overview of city of Medford property looking north. Photo taken by Keith Percehmlides.

Overview and history

- The approximately 250 acre parcel was part of camp White in the late 1930s and 40s. The city purchased the property and planned to use the land for industrial development. Some of the area has been sold and developed (Amy's Kitchen) and some of the area has

been used for vernal pool mitigation. The parcel we visited has been grazed annually by a rancher as a grazing allotment.

Grazing schedule

- The rancher typically brings about 25 cows into the allotment in October of each year and grazes the area till June.
 - The cattle calf on this allotment in the early spring, then the rancher brings in a herd of bulls.
 - The cattle are generally removed in June. This year they were removed earlier (May 11) due to the type of spring we are experiencing.
- The area has a population of LOCO and BRLY.

Summary of Management on the ODOT Conservation Bank

Paul Benton from ODOT provided background regarding the 80-acre conservation bank.



Photo 3. Photo of the tour group at the ODOT bank site. Photo taken by Keith Perchemlides.

Overview and history

- ODOT purchased the parcel as a mitigation/conservation bank in 2008. The bank is compensatory mitigation for loss of vernal pool wetlands within Jackson, Josephine and Douglas Counties of Oregon.
- The property had been grazed through 2007 when purchased by ODOT.
- The parcel has vernal pool and oak woodland/savanna habitat (Figure 1) as well as a swale/draw that runs through the middle of the parcel from east to west.

Restoration

- Restoration actions since 2008 include:
 - Targeted vegetation management to remove specific non-native invasives from the area (e.g. yellow star thistle, curly dock, blackberry).
 - The piping of an irrigation canal through a portion of the property and subsequent restoration of several vernal pools affected by the canal.
 - Mowing of a portion of the area adjacent to the swale.
 - Seeding of Lomatium and Limnanthes in selected vernal pool areas.
 - ODOT is planning to burn the area in late May/early June 2014. Cost is estimated at \$40,000.

Monitoring

ODOT monitors the area as part of the banking instrument requirements. Results of monitoring determine credit release as well as compliance with compensatory mitigation obligations.

Observations, Questions and Comments during the visits

The following observations, questions and comments were captured during the visits. This information will inform subsequent discussions regarding management actions:

The Nature Conservancy's Agate Desert Preserve:

- Native diversity, number and concentration of natives, aesthetically pleasing. The vernal pools appear to have a strong component of bunch grass and pools are relatively smoothly contoured.
- Still large dispersal and concentration of medusahead and mediterranean barley and thatch accumulation is high. Noticed much stork's bill, but perhaps this plant is on a decline?

City of Medford Property:

- Native diversity, distribution of natives, not a much density and thatch accumulation of non-natives. The site doesn't appear to have as much annual grass cover as the Agate Desert Preserve.
- Not so aesthetically pleasing, medusahead and Mediterranean barley present and well-dispersed, vernal pools appear sparser and not as well-vegetated. In the pools there is no vegetation within the cattle hoof prints.

ODOT Conservation Bank:

- This site is very different from the Agate Desert Preserve or the City of Medford sites due to oak and shrub presence and swale features. The site had moderate shading due to oak canopy cover. Along with the oaks and Ceanothus, the plant composition was different as well.
- We observed several restored vernal pools with abundant native plant cover. The restoration appears to have been successful.
- Since grazing has been removed from the ODOT bank parcel monitoring shows a decline in native plant cover and an increase in medusa-head annual grass cover *in prairie uplands*; but native and TACA cover has remained stable in vernal pools and oak woodlands under grazing rest. Overall, survey results indicate native vegetation cover to be on a decline and non-native plant cover on a slight incline. This might be a result of lack of any large-scale vegetation management such as grazing. Grazing has ceased at the site since 2008. A prescribed burn will soon be implemented to address non-native plant increases.

Summary

The different management practices are designed to introduce disturbance to the habitat complex. The actions may have both positive and negative impacts on the native plant composition. It appears that some management (disturbance) is necessary to maintain the habitat complex (such as mowing, burning and/or grazing). There has not been much interest in cryptobiotic soil crusts. The amount of light available to the organisms making up these colonies greatly determines their composition and diversity. If soils are more frequently exposed to sunlight, we could expect more diversity. Fire could open up areas to allow more sunlight to hit soils now shaded or covered by vegetation (threes, shrubs and thatch). Of course, fire may not be compatible with soil crust management.

Follow-up Questions and Discussion

The following questions are hoped to guide future discussions regarding management of vernal pool habitat:

- 1) What are the specific target conditions that TNC has defined for mounded vernal pool prairie vegetation? (Ecological Reference Site Description and ESA species thresholds). And how do these compare to performance standards used by DSL and COE for mitigation areas?
- 2) How could the burn-and-seed process for re-establishing native bunchgrass cover be accelerated and accomplished in a relatively short span of years?
- 3) What is the estimated cost of a burn-and-seed treatment? (And how many rounds of treatment are needed to achieve desired condition?)
- 4) Based on monitoring results, what are the positive effects (e.g. increase in target plant species, decrease in non-native invasive species) of burning and seeding, and how long do they last?

- 5) What is known about the potential impact on vernal pool hydrology (such as inundation period, depth, duration, dissolved Oxygen, etc.) of invasive annual grass cover on mounds and flanks?
- 6) What would an ecologically appropriate grazing regime be in terms of cow/calf pairs per acre, season and duration of grazing, etc in order to reduce annual grass cover while maintaining native species cover and diversity on uplands, flanks, and in pools?
- 7) What are the impacts of using the chain harrow on the cryptogammic crust associated with the mounds? And what are the impacts of fire, grazing, or an absence of disturbance?
- 8) How close does the Agate Desert Preserve and the grazed City of Medford parcel (or the Wildlands Conservation Bank) come to meeting the performance standards for vegetation cover (and for how long)? These are usually expressed as percent ground cover by native vegetation and specific invasive species (defined by the IRT). .
- 9) Can we determine, based on information we have now, what the appropriate fire return interval is for vernal pool habitat And at what spatial scale – i.e. how patchy.
- 10) What is the cost (dollars and impacts) of burning/seeding versus grazing in terms of:
 - a) Annual cost
 - b) Impacts to native species
 - c) Impacts to non-native species
 - d) Logistics to carry out management regime.
- 11) Can a combination of burning, seeding, and grazing be used to achieve better results in terms of vegetation cover than either approach alone while still being cost-effective and realistic to implement? What opportunities and funding sources are there for testing and developing effective implementation approaches locally?