



Vernal Pool Flora of the Pacific Northwest

ED ALVERSON

20 MARCH 2018

Plagiobothrys figuratus

What is a Vernal Pool?

- ▶ Feature of Mediterranean climates, lower elevation sites
- ▶ Topographic depression (usually) with seasonal hydrology
- ▶ Stressed by excess: aquatic in winter, extreme drought in summer

Downingia elegans



Hydrology and Seasonality

- ▶ Vernal Pool hydrology supplied by precipitation (small drainage basins)
- ▶ Precipitation in Mediterranean climates is seasonal: rainy winters and dry summers

Triteleia hyacinthina

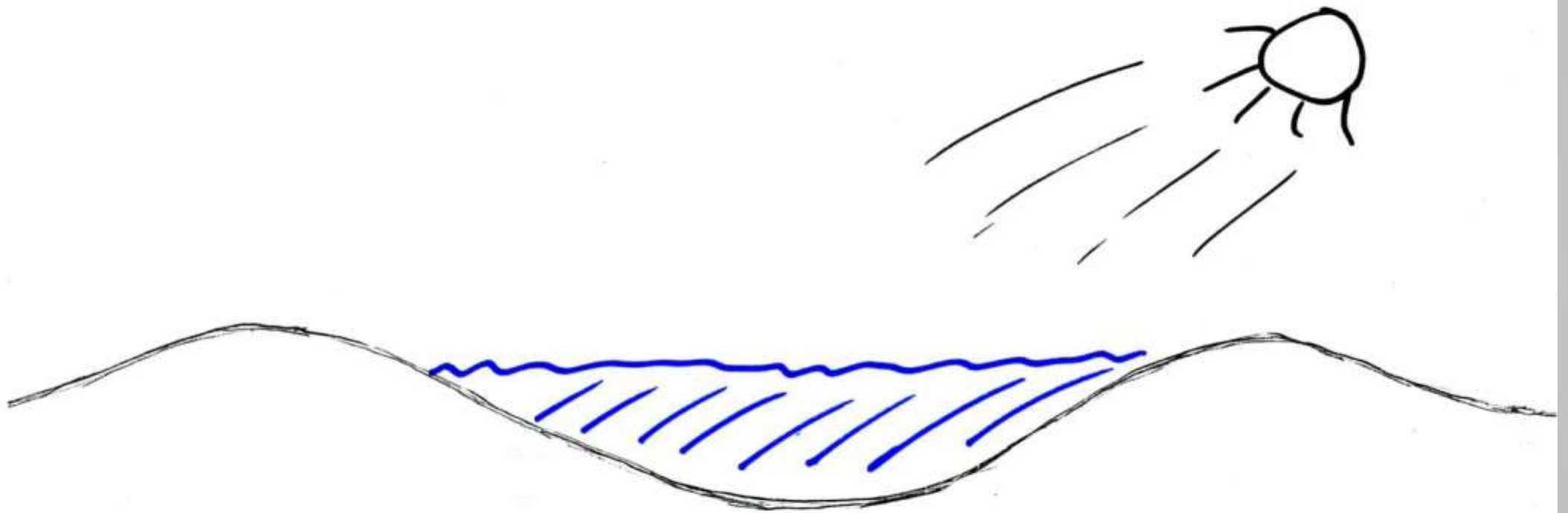


Distinctive Features

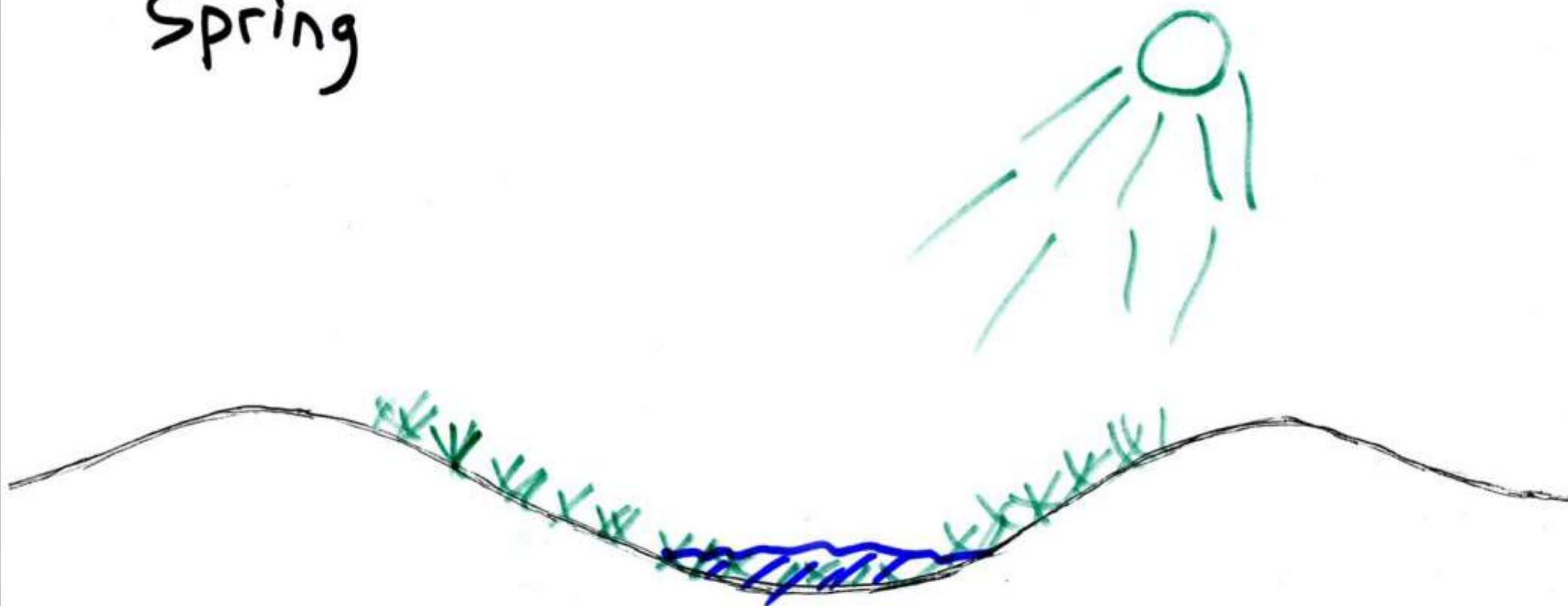
- ▶ Vegetation and Flora usually different from a region's predominant composition
- ▶ Annual species overly represented in the flora
- ▶ High species diversity at micro scale
- ▶ Flora includes both obligate and generalist species



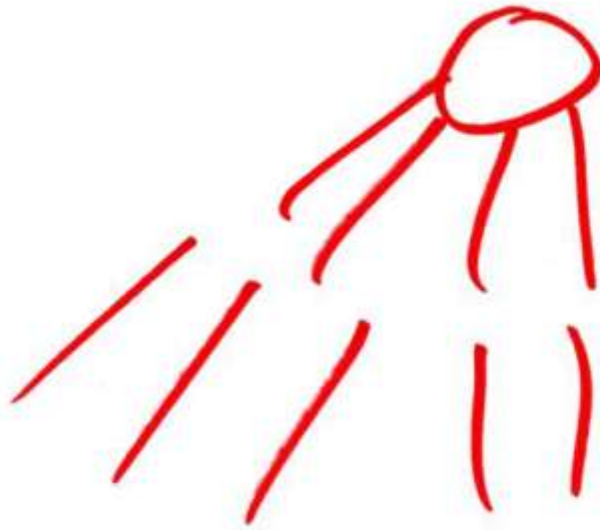
Winter



Spring



Summer









Sources of hydrology

- ▶ Seasonal hydrology usually a result of impermeable layer: bedrock, clay, weathered gravels.
- ▶ Hydrology derived from precipitation, typically not surface or groundwater flowing in from elsewhere
- ▶ Oligotrophic nutrient status

Trifolium willdenovii



Related Vernal Habitats:



Vernal Seepage



Prairie Swales



Shallow Soil
Over Bedrock

Where in the Pacific Northwest are vernal pools found?



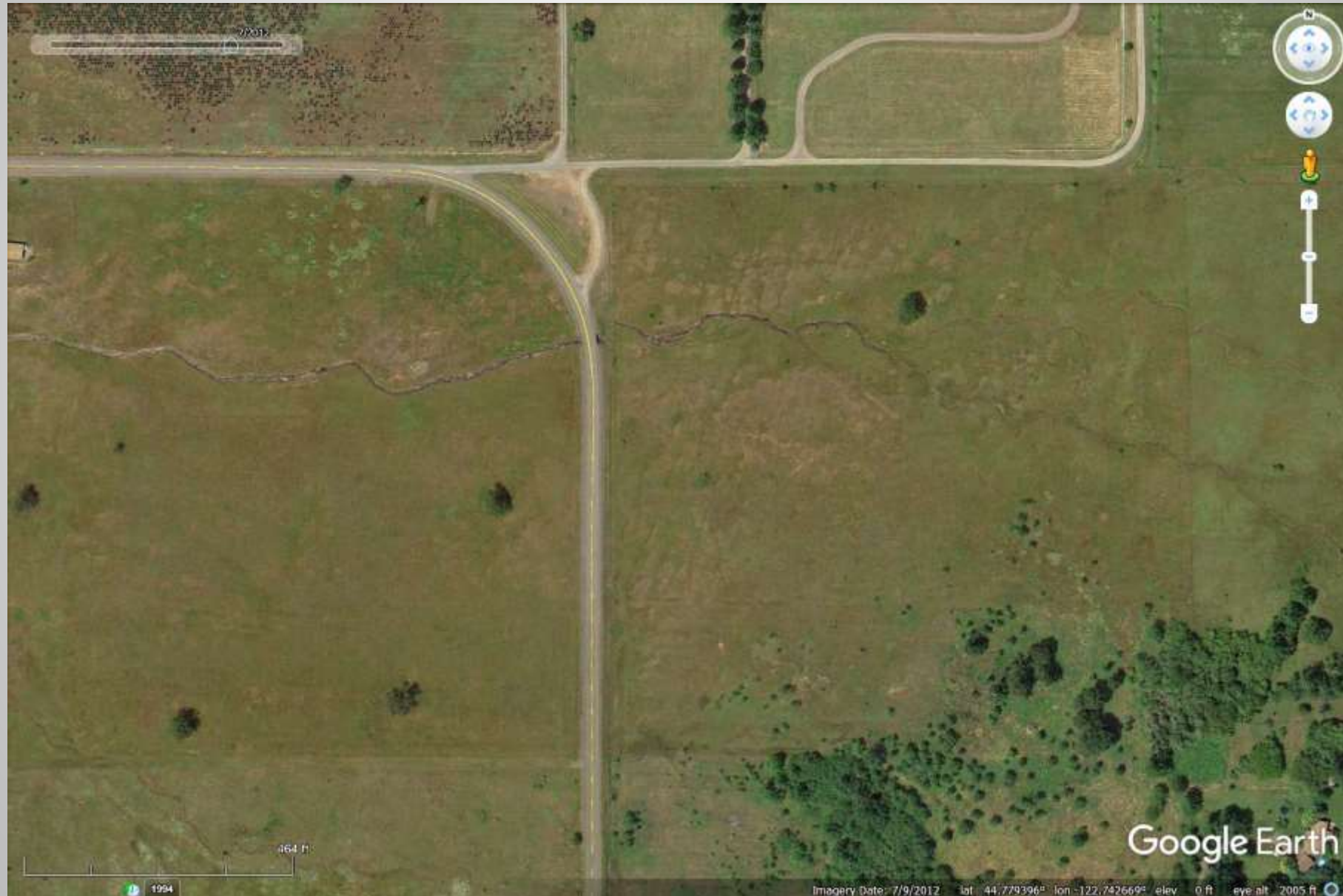
Southwest Oregon



Agate Desert



Willamette Valley



Kingston Prairie



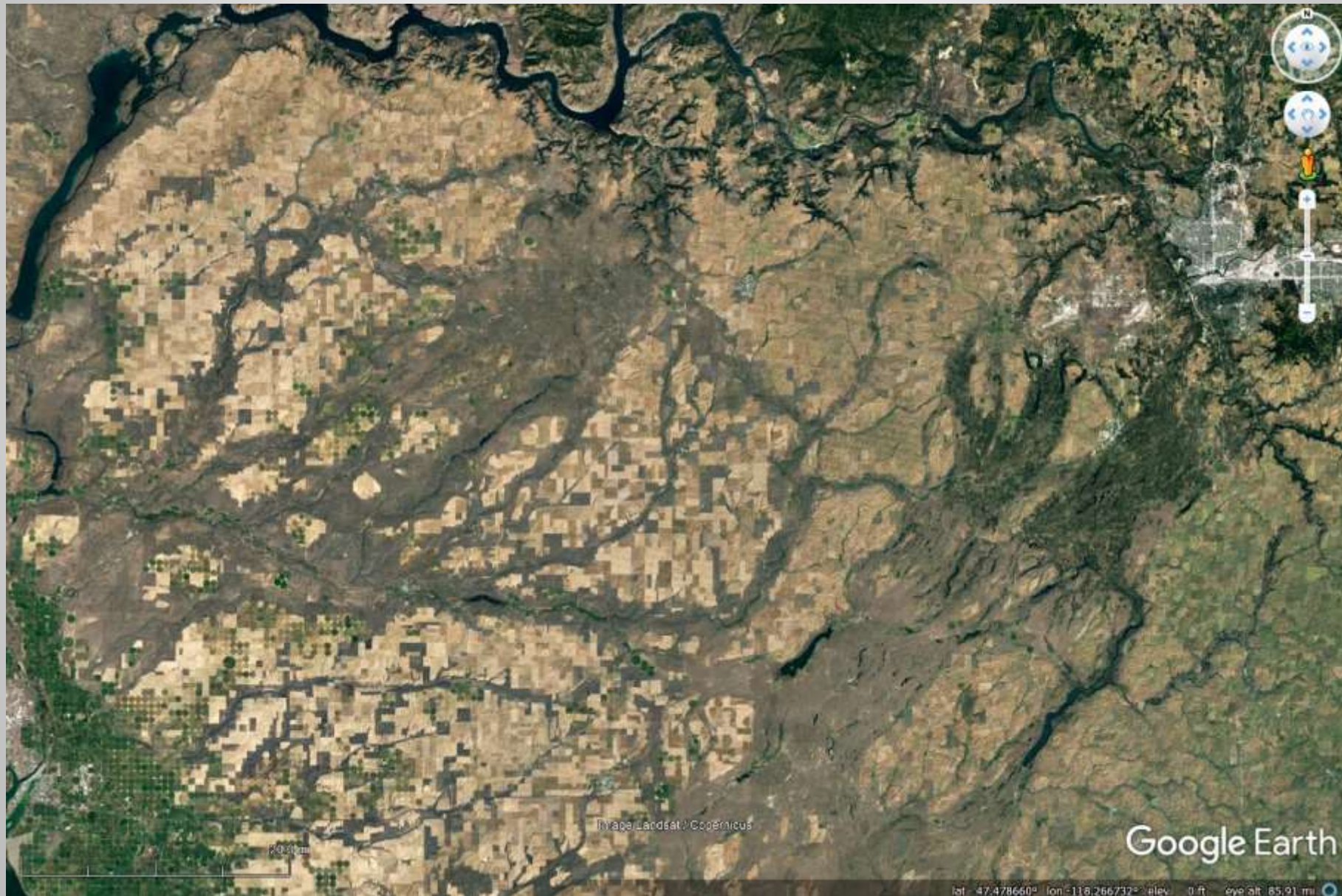
Columbia River Gorge



Tom McCall Preserve



Columbia Plateau



Columbia Plateau



Photo Credit: Joe Rocchio

Vancouver Island



Uplands Park

Friends of Uplands Park

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<http://friendsofuplandspark.wordpress.com>



VERNAL POOLS NOT Mud Puddles



SUNDAY JUNE 1, 2014

1 – 3 pm

**Meet at the Uplands
Park Sign on Beach
Drive**

Uplands Park "mud puddles" are actually **vernal pools** in the endangered Garry Oak Ecosystem. Many of the 22 rare plant species in Uplands Park are associated with wetland vernal pool ecology. Discover these pools with botanist **James Miskelly**, learn how they are formed and discuss **how you can protect them**.

Wear waterproof shoes or boots, bring your camera and enjoy seeing some of the smallest and rarest plants ever.

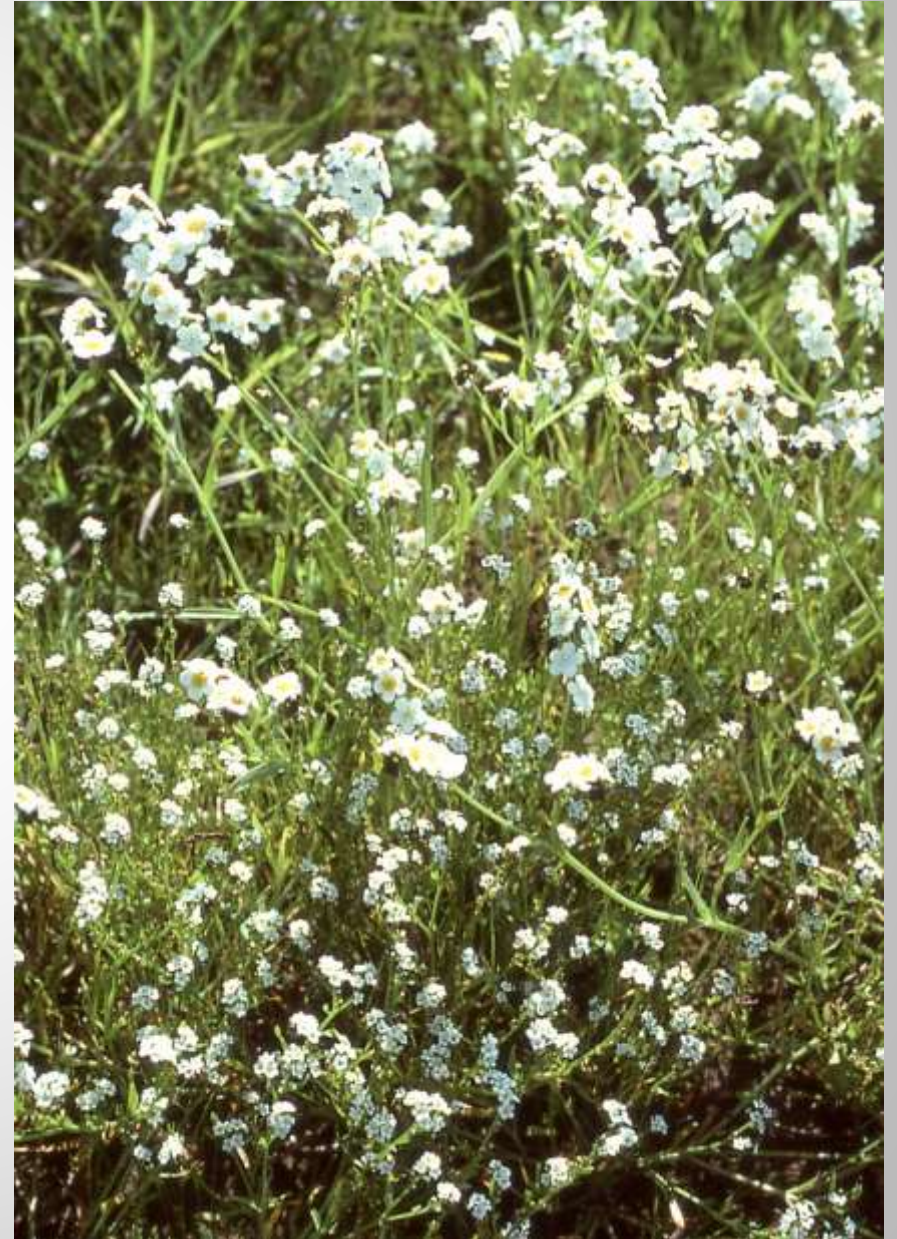


Distinctive/ Characteristic Flora

► Native Vernal Pool Species Richness

- California: **>300 native plant species**
- Columbia Plateau: “core vernal pool flora”, **200 species**
- Willamette Valley/Puget Trough/Georgia Basin, **100 species** with moderate or high fidelity to prairie habitats

Plagiobothrys figuratus and *P. scouleri*



Life Forms

- ▶ Annuals: typically >60% of species
- ▶ Geophytes
- ▶ Some Perennial Hemicryptophytes

Trichostema lanceolatum



Juncaceae and Poaceae



*Juncus hemiendytus**



Aristida oligantha

Photo credit: Peter Zika

Asteraceae



*Lasthenia glaberrima**



Psilocarphus oregonus

(photo credit: Ben Legler)

Polemoniaceae



Navarretia willamettensis



Leptosiphon bicolor

Gentianaceae



*Zeltnera muhlenbergii**



Cicendia quadrangularis

Phrymaceae



Erythranthe microphylla



Diplacus tricolor

Orobanchaceae



*Orthocarpus bracteosus**



*Castilleja victoriae**

(photo credit: Joe Arnett)

Limnanthaceae



Limnanthus macounii



Limnanthus floccosa ssp.
grandiflora

Amaryllidaceae/Asparagaceae



Allium amplexans



Brodiaea elegans ssp. *hooveri*

Ferns and Allies



*Pilularia americana**

Photo credit: Peter Zika



*Isoetes nuttallii**

Invertebrates



Monarch on *Asclepias fascicularis*

Rare Plants in Vernal Pools

- ▶ Washington: about 20 vernal pool species on 2017 Endangered, Threatened, and Sensitive Vascular Plant List
- ▶ British Columbia: 30 WPG vernal pool plants (1/3 of total VP taxa) considered at-risk

*Eryngium petiolatum**



For More Information:

-Floristics and distribution of vernal pools on the Columbia Plateau of eastern Washington. Bjork and Dunwiddie 2004, Rhodora vol106 pp. 327-347 <http://www.jstor.org/stable/23313649>

-USFWS Recovery Plan for Rogue and Illinois Valley Vernal Pool and Wet Meadow Ecosystems

<https://www.fws.gov/pacific/ecoservices/endangered/recovery/documents/Rogue&IllinoisValleyFinalRecoveryPlan031913.pdf>

-California Vernal Pool Assessment Preliminary Report, Appendix C. Keeler-Wolf et al. 1998

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=99964>

-Recovery Strategy for Multi-Species at Risk in Vernal Pools and other Ephemeral Wet Areas Associated with Garry Oak Ecosystems in Canada
http://www.sararegistry.gc.ca/document/default_e.cfm?documentID=875