



Vernal Pools in California

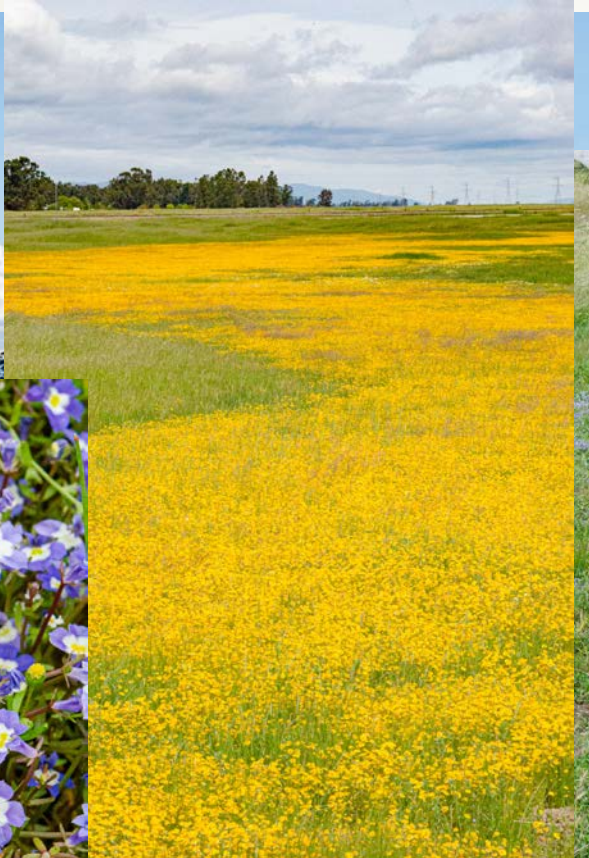
With an emphasis on Grasslands Regional Park

Photos from Glide Tule Ranch & Jepson Prairie Preserve

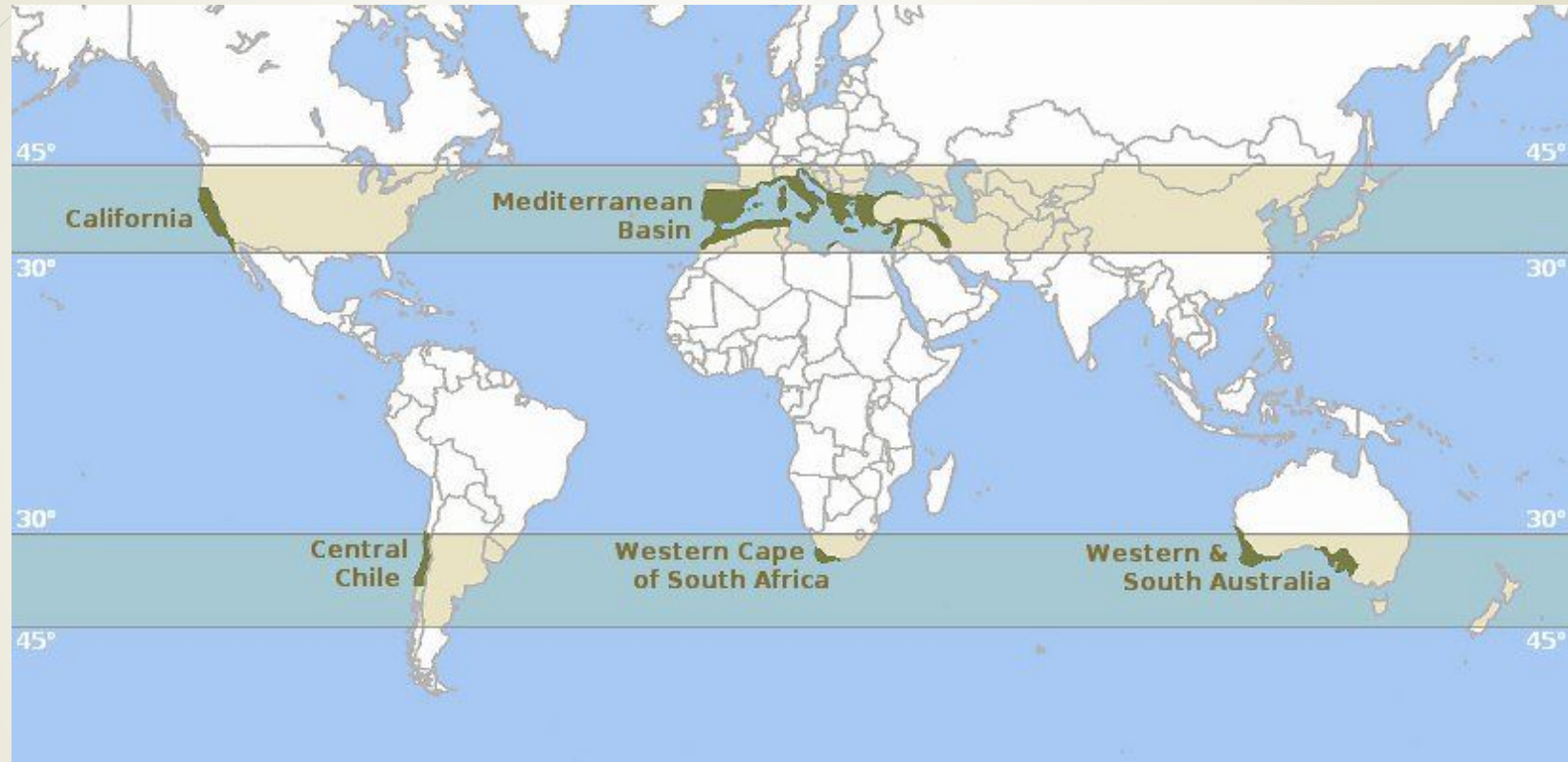
What is a "vernal pool"?

A puddle of water that dries up in the summer

- A seasonal wetland
- Mediterranean climate
- Perched water table
- Impenetrable soil layer



Mediterranean Climate



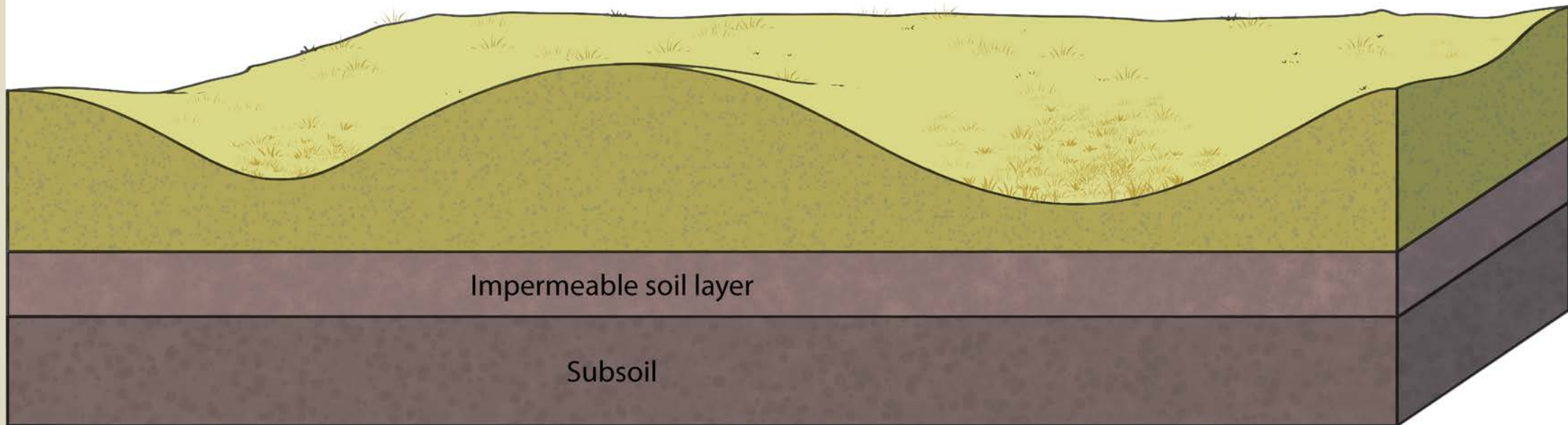
Mild wet winters followed by hot dry summers

Jepson Prairie receives 18" of rain per year.
From late May to mid October it averages 0.4"

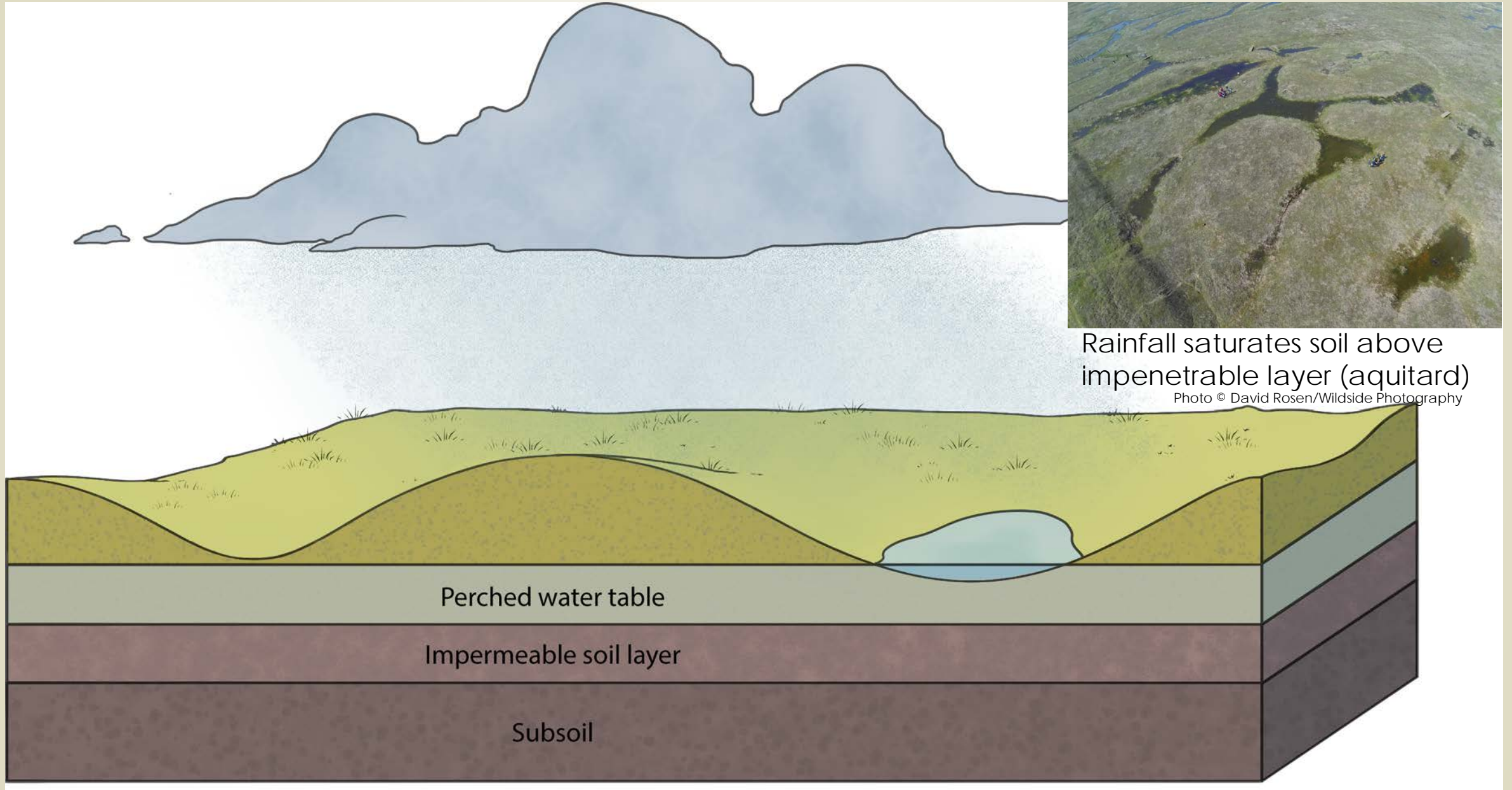
Vernal Pool Phases: Dry Phase



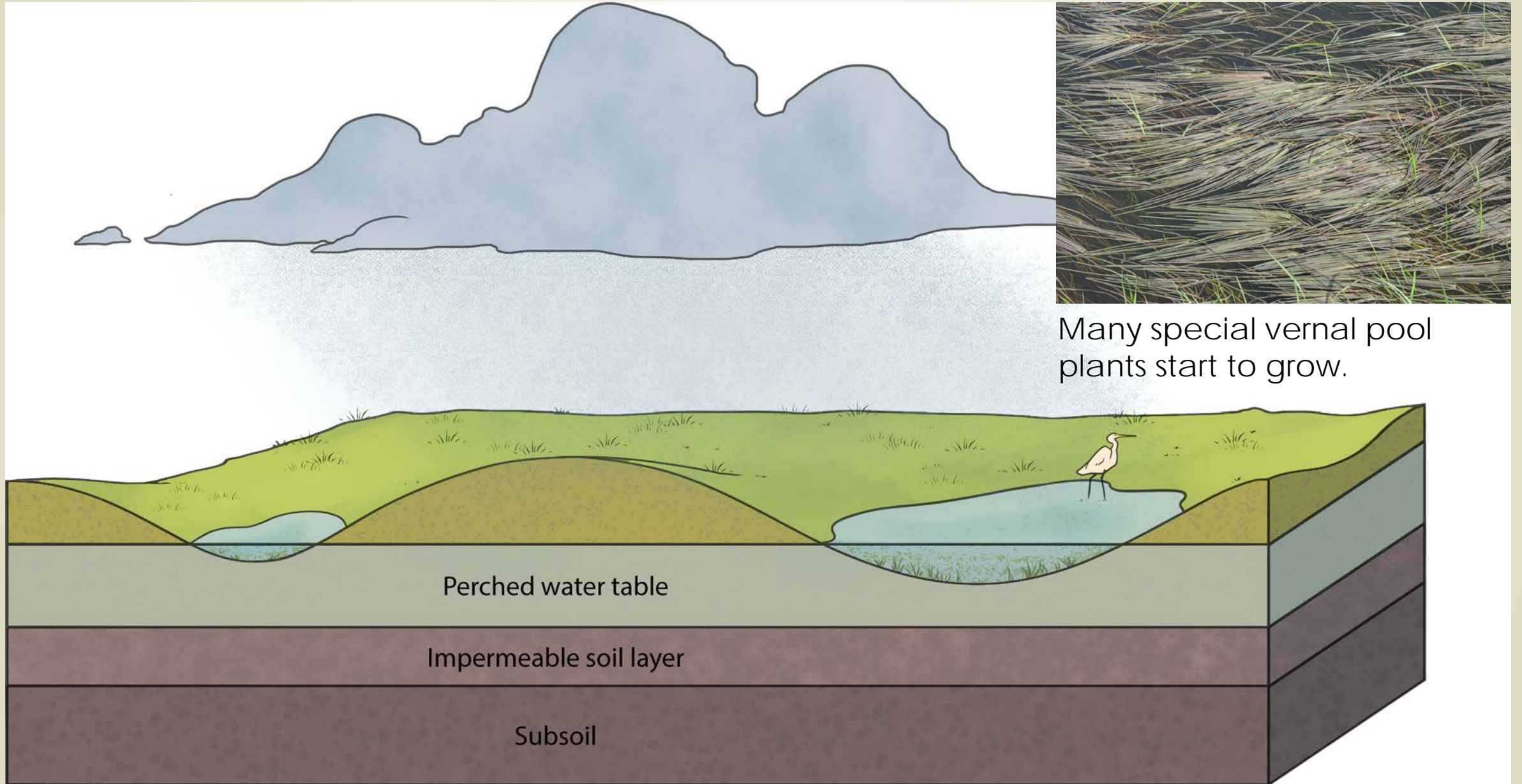
- Hot and dry summer
- Alkaline soil
- Inhospitable to *most* plant growth
- No source of water such as spring or river



Vernal Pool Phases: Wet Phase



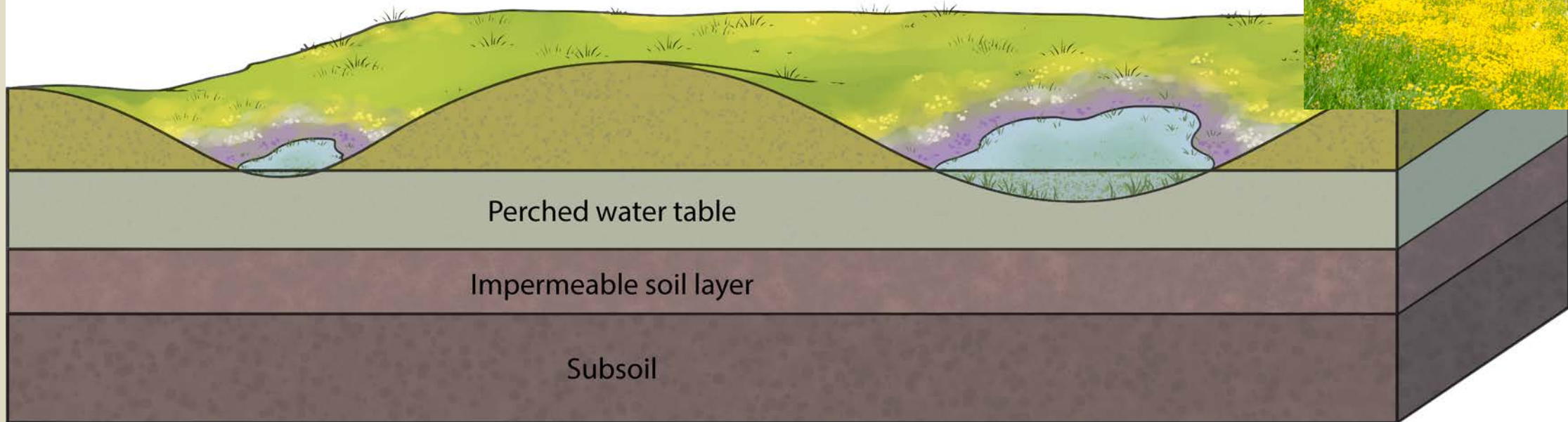
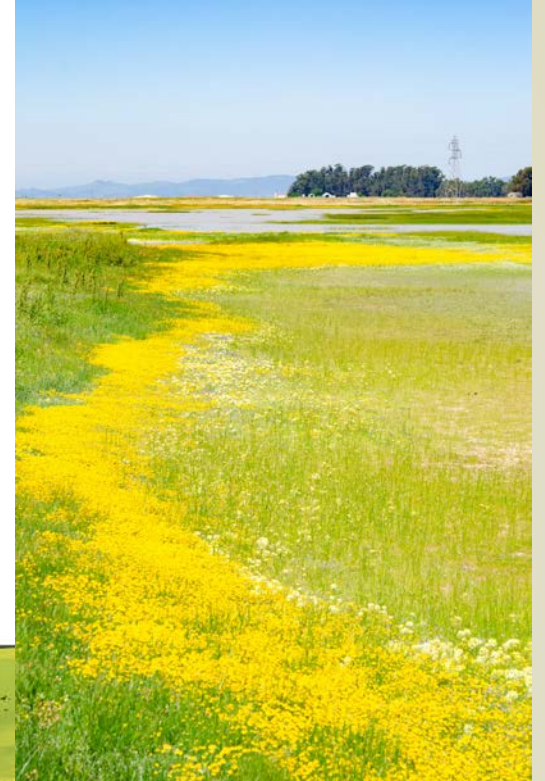
Vernal Pool Phases: Wet Phase



Vernal Pool Phases: Flowering Phase

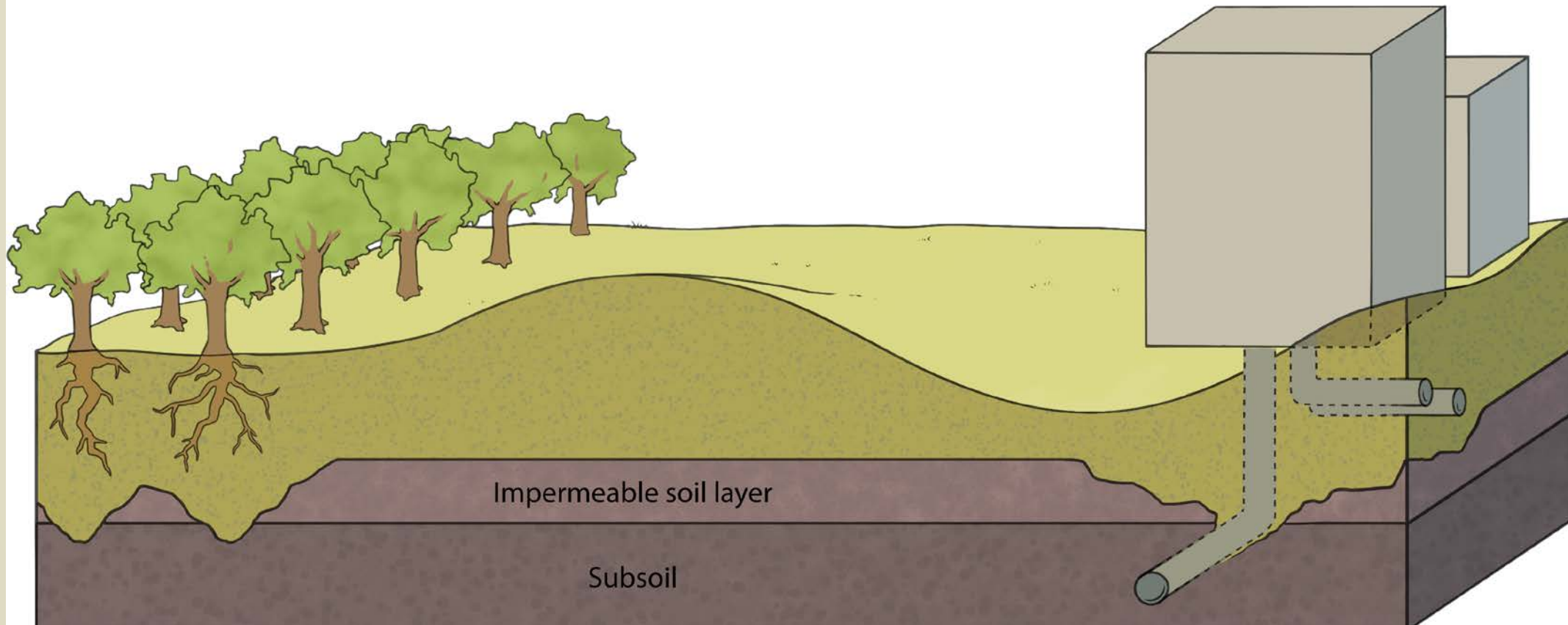


- Water leaves by evaporation
- Plants have short stature
- Emphasis on flowering parts, less leaf surface
- Many just drop their seed at base, it is the best habitat



Vernal Pool Phases: Dead Phase?

- Break the Aquitard, kill the Vernal Pool
- Losses to “deep ripping” for orchards
- Losses to sewer lines, etc., with urbanization

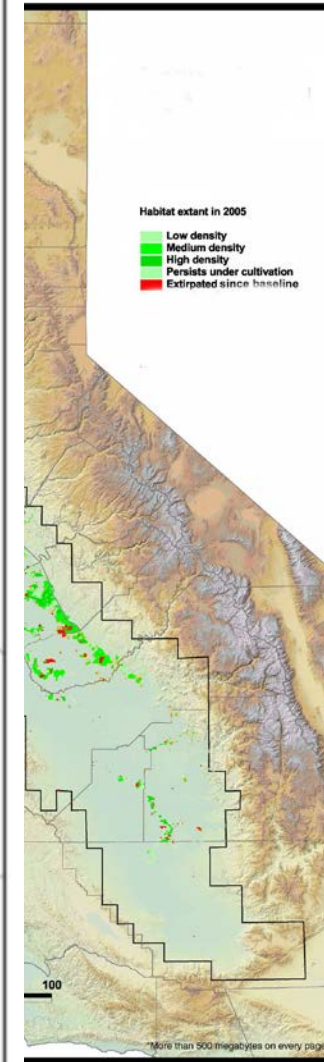
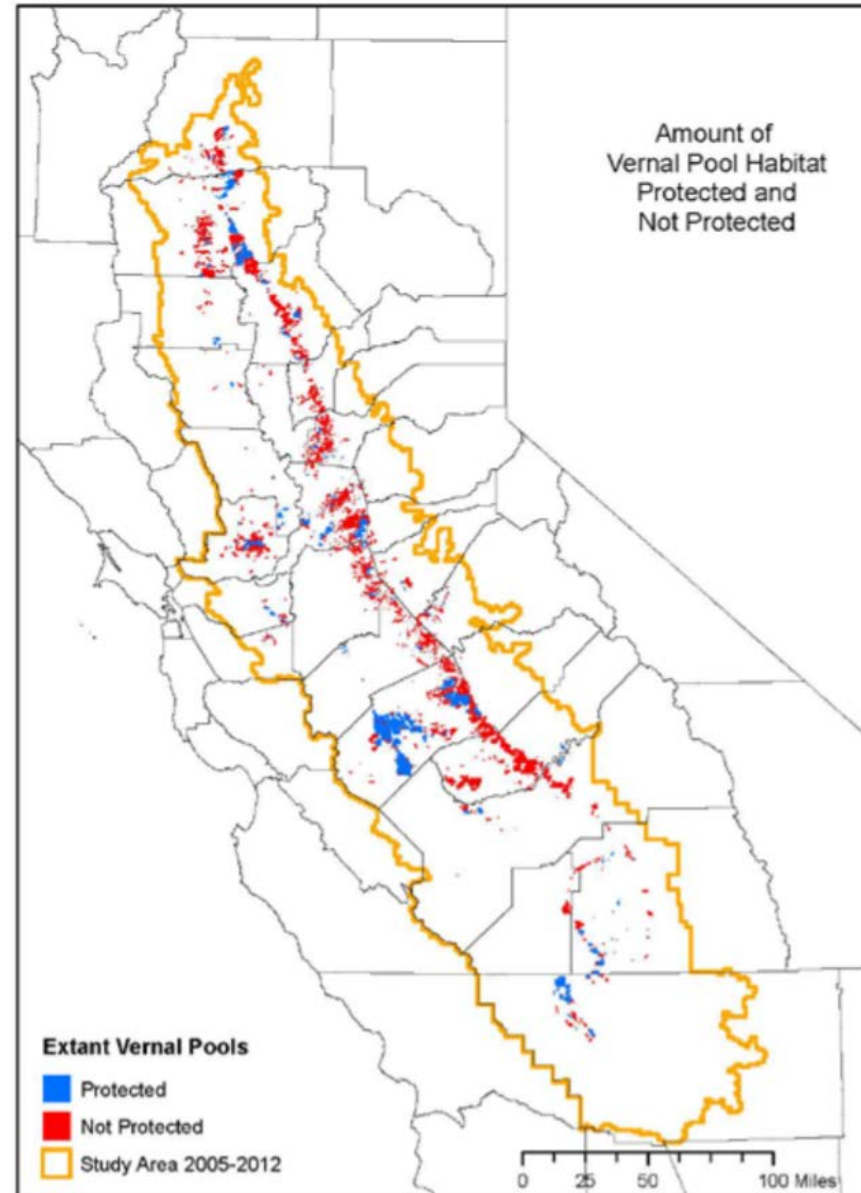
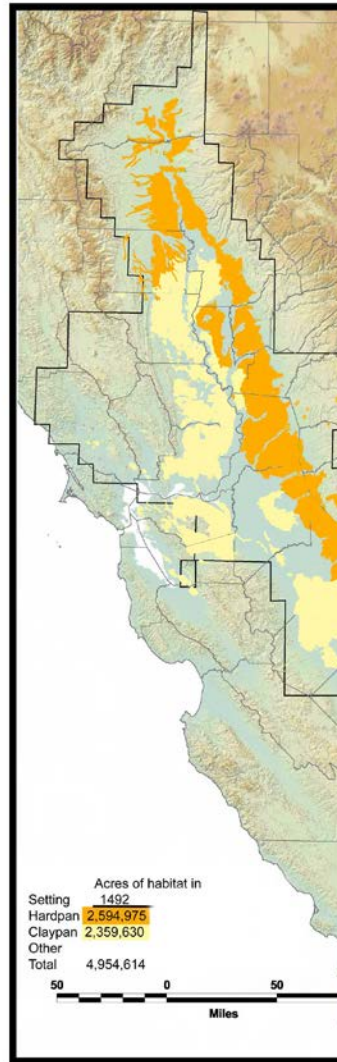


Vernal Pool Regions in California



Vernal Pools in the Central Valley

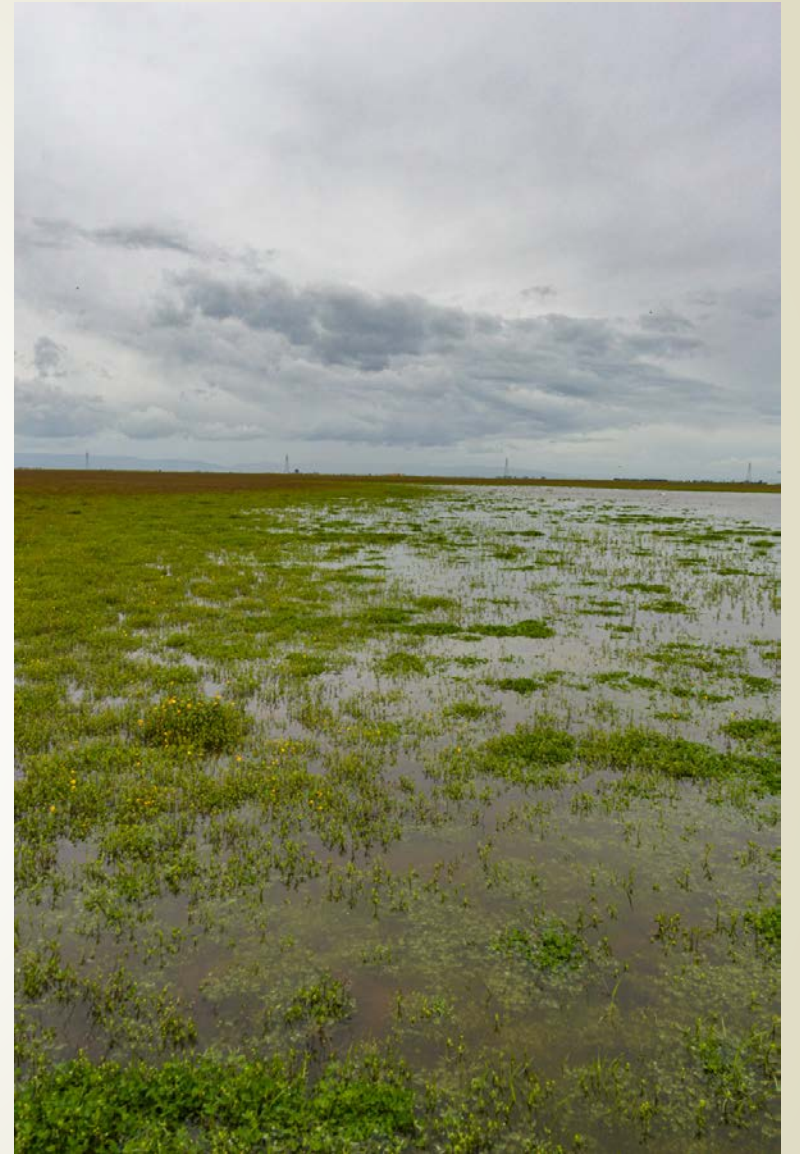
Pools are concentrated at the edges of the valley especially on the east side heading into the foothills.



Glide Tule Ranch

Similar to Grasslands Regional Park

- ▶ Claypan prevents leaching of salt (etc.)
- ▶ Plants need to be alkali tolerant and shallow rooted
- ▶ Shallow clear-water pools
- ▶ Larger playa pools not as clouded as Jepson (none at Grasslands?)
- ▶ Extremely flat, pools are very shallow



Rare Vernal Pool Crustaceans

Vernal
pool
tadpole
shrimp,
Lepidurus
packardi *
(FE)



Conservancy
fairy shrimp,
Branchinecta
conservatio *
(FE)



Vernal pool
fairy shrimp,
Branchinecta
lynchi (FT)
Sacramento



Native Pollinators



Female of *Andrena* species
collecting pollen from *Lasthenia*



Grazing is an important habitat management tool

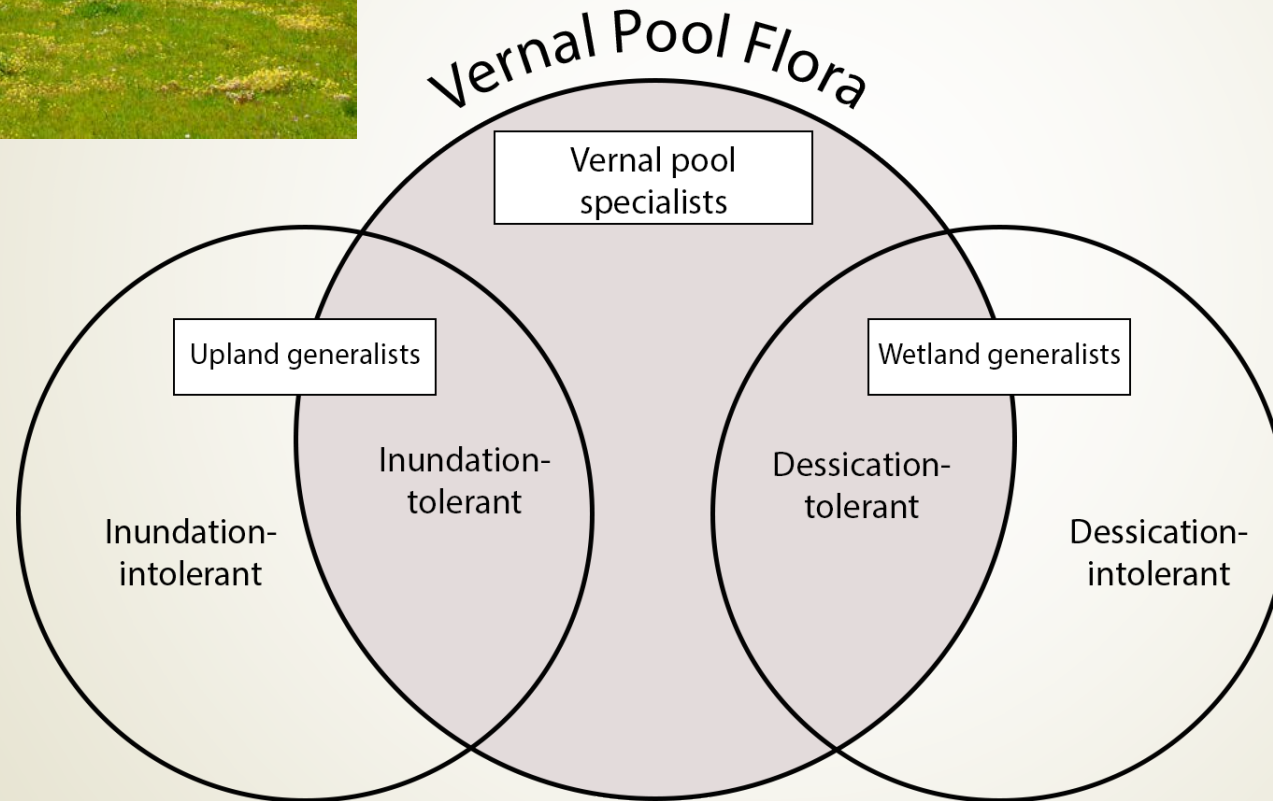


But fire would be better

Plant ID

- ▶ Hard to get to *species* without a hand lens, or features you don't see
- ▶ Common names are easier, but variable
- ▶ I spend more time on *native* plants than I do on *non-native* plants
- ▶ You won't see all the plants I list here
- ▶ You will see plants that I **don't** list here
- ▶ Grasses are difficult, I tend to ignore them, many will be non-native
- ▶ There will always be someone in your group who knows more about something than you do

Vernal Pool Plants



Vernal Pool Specialists

- Have to deal with being flooded for long periods.
- Most are annuals
- Short stature, no need to grow tall (summer is coming!)
- Emphasis on flowering parts, less leaf surface
- Many just drop their seed at base, it is the best habitat!
- Many can deal with alkaline soil, low water



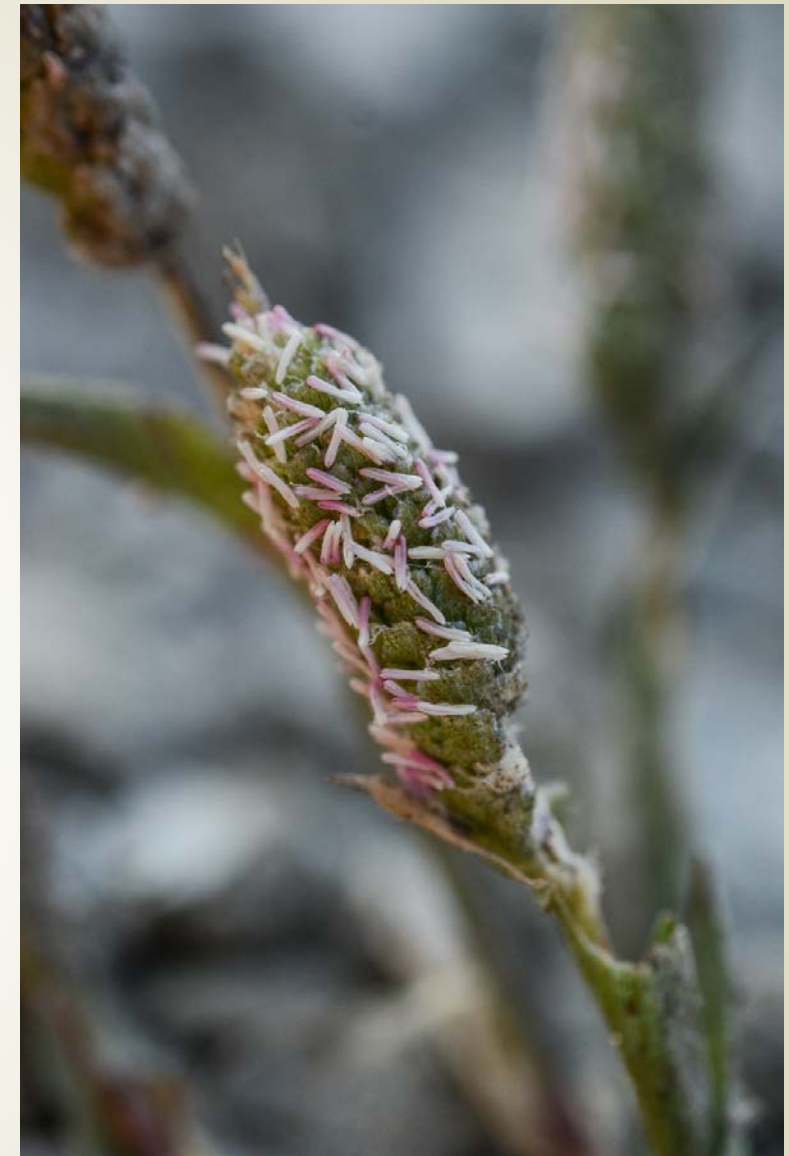
Rare Vernal Pool Plants



Alkali milkvetch, *Astragalus tener* var. *tener* *, CNPS1B.2



Solano grass, *Tuctoria mucronate* *. FE, SE, CNPS rank 1B.1, Only found in Yolo and Solano County



Colusa Grass, *Neostapfia colusana* *, FT, SE, CNPS 1B.1

Rare Vernal Pool / Alkali Flat Plants



San Joaquin spearscale,
*Extriplex joaquinana**,
CNPS1B.2
(photo from Calflora)



Palmate-bracted bird's-beak,
*Chloropyron palmatum**, CNPS 1B.2
(SE, FE)



Coyote Thistle,
Eryngium sp.



Annual
semaphoregrass,
Pleuropogon
californicus *



Goldfields



Fremont's
Goldfields
(*Lasthenia
fremontii*) *

Downingia



Flat-faced Downingia, *Downingia pulchella* *

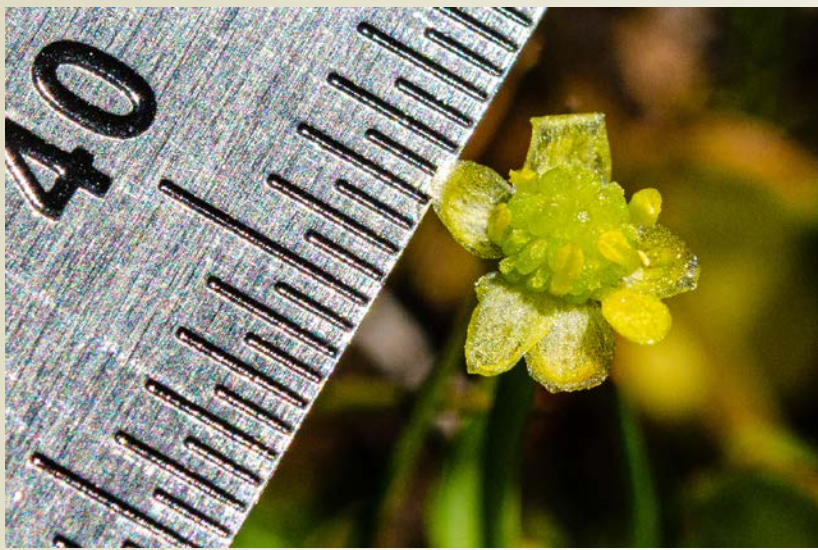


Cupped Downingia, *Downingia insignis*

Popcornflower



Stalked Popcornflower
(*Plagiobothrys stipitatus* var
stipitatus) at the top, and the
smaller Vernal Pool
Popcornflower (*Plagiobothrys*
stipitatus var *micranthus*) at the
bottom.



Vernal pool buttercup, *Ranunculus bonariensis* var. *trisepalus*



Alkali weed,
Cressa
truxillensis



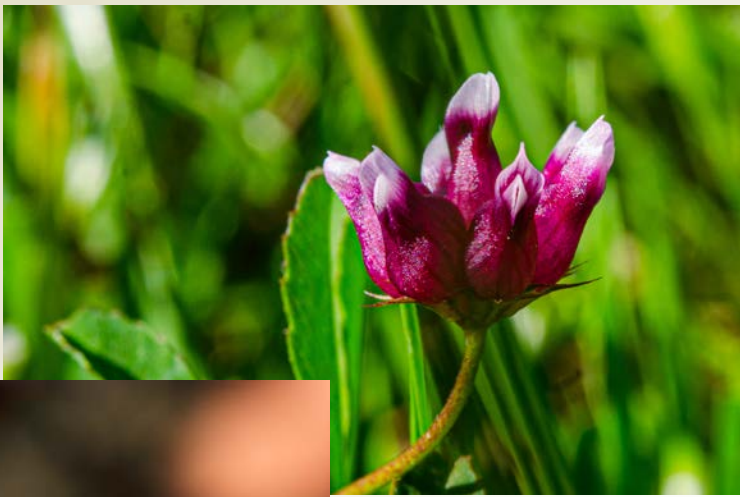
Sacramento Beardstyle,
Pogogyne zizyphoroides



Dwarf Woolly Marbles,
Psilocarphus brevissimus



Douglas'
Beardstyle,
Pogogyne
douglasii *



Common
Muilla, *Muilla
maritima*



Cowbag Clover, *Trifolium
depauperatum* var
depauperatum *



Tomcat clover, *Trifolium
willdenovii*

Shoulder species



California
Water
Starwort,
Callitriche
marginata



Common Spikerush,
Eleocharis
macrostachya



Wetland generalists



Alkali mallow, *Malvella leprosa*



Red Maids, *Calandrinia menziesii*



Butter 'n' Eggs,
Triphysaria eriantha ssp
eriantha



Shining peppergrass,
Lepidium nitidum





Hayfield tarweed,
Hemizonia
congesta

Dwarf
brodiaea,
Brodiaea
terrestris



California poppy, *Eschscholzia californica*



Upland generalists



Miniature Lupine,
Lupinus bicolor



Parry's Rough Tarweed, *Centromadia*
parryi ssp. *rudis* * (CNPS 4.2)

Blue Dicks. *Dichelostemma capitatum*
ssp. *capitatum*



Broadleaved Peppergrass, *Lepidium latifolium*

NON-NATIVE



Yellow Star Thistle, *Centaurea solstitialis*



Hyssop loosestrife, *Lythrum hyssopifolia*





Longbeak stork's bill, *Erodium botrys*



NON-NATIVE



Red stemmed
filaree, *Erodium
cicutarium*

