



# SLOAT SEMINAR - NATIVE WILDLIFE GARDEN

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# NOT JUST A LIST OF VCP'S (VERY COOL PLANTS)

Although tempting...

Instead, let's explore  
the why's of choosing  
plants from Native  
Plant Communities  
appropriate for your  
site



Douglas Iris, photo: Joan Pont

# NATIVE WILDLIFE GARDEN

Start with what  
was originally  
there (pre 1542)

Take a hike!

Develop a feel for  
plant communities



Monarch on buckwheat (*Eriogonum fasciculatum*) Photo: Harmina Mansur

# PLANT COMMUNITIES

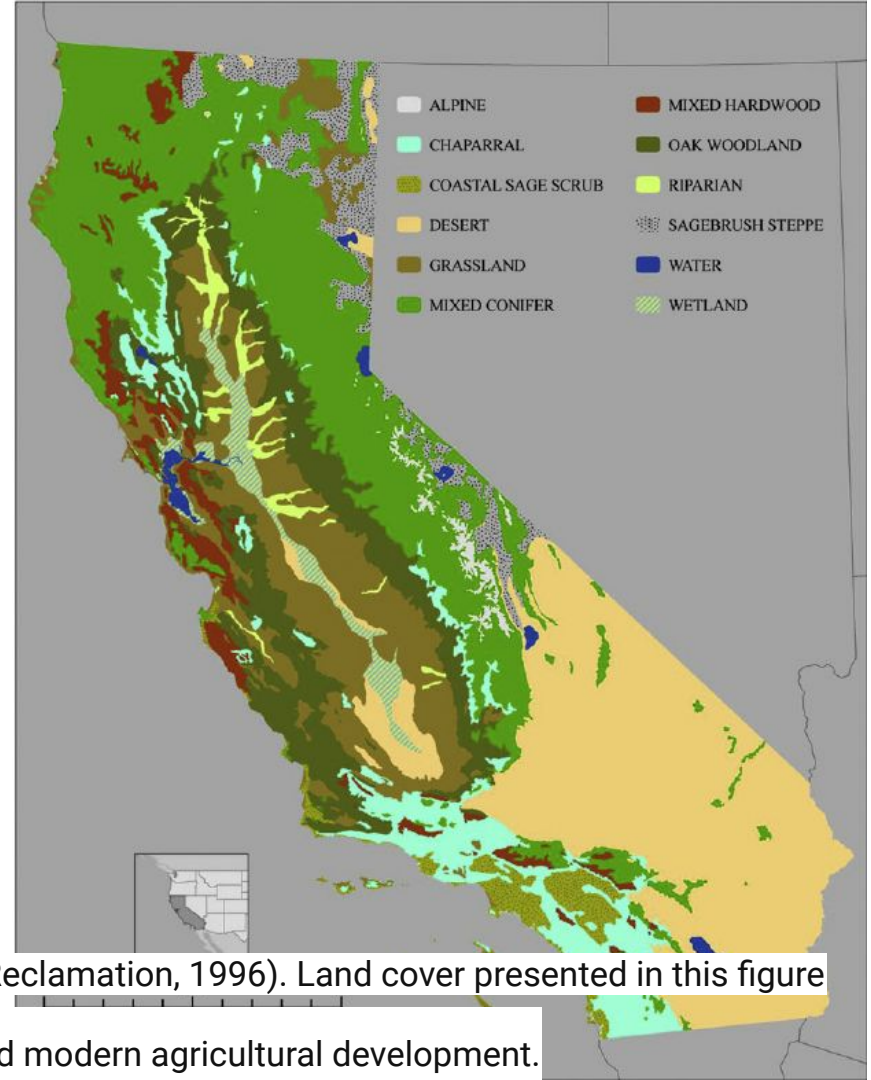
Evolve slowly over time

But in our lifetime, look static

Collection of plants and animals that “get along”

By “getting along,” some species dominate, but generally don’t wipe out their neighbors

Diverse populations provides resilience to disease, weather



Vegetation types and land cover in California (U.S. Bureau of Reclamation, 1996). Land cover presented in this figure represents potential natural vegetation before urbanization and modern agricultural development.

# SHRINK TO YOUR COUNTY: MARIN HAS 12

Dunes and Beaches

Coastal Grassland and Valley Grassland, often scattered with oaks

Evanescent Vernal Pools with concentric rings of flowers

Salt March

Freshwater Marsh - full of basketry plants and fruits

Riparian Woodland with water-loving trees

Coast Redwood Forest

Mixed Evergreen Forest with Douglas Firs and Oaks

Bishops Pine Forest with an understory of Huckleberries

Hard Chaparral with Manzanita and Chemise

Soft Chaparral or Northern Coastal Scrub



# EACH COMMUNITY INCLUDES MANY CHOICES

Feeling limited in plant choices?

California hosts nearly 8,000 species, subspecies, and varieties of plants that occur naturally in the state, and many of these are found nowhere else in the world.



<https://wildlife.ca.gov/Conservation/Plants>

# SOME COMMUNITIES ARE WIDESPREAD, SOME EXTREMELY RARE

The rarest, Vernal Pools, are magical

Whatever your location, some species will love it

Many options are here at Sloat, and rarer plants can be found at your local Native Plant Sales from CNPS\*

Chapters



<https://www.tularecountytreasures.org/mysterious-life-of-vernal-pools.html>

\*California Native Plant Society

# YOUR YARDS CONTAINS MULTIPLE HABITATS

South exposure: chaparral,  
grassland

North Exposure: Trees, Ferns and  
understory plants

East and West: Native bunch  
grasses, seasonal and perennial  
flowers



# SHRINK TO YOUR OWN HOME

Your house can represent a very straight sided hill

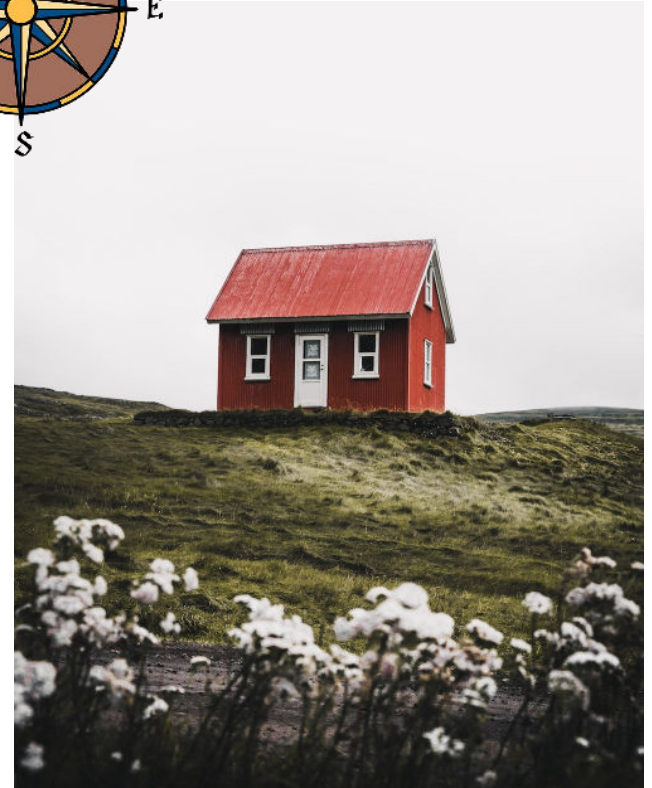
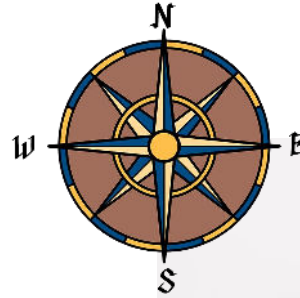
Southern exposure: chaparral

Northern shaded area: woodland

East and West exposures: Sun to partial shade options

Sinkhole: Wetland retreat

Dry elevation: bulbs that insist on a totally dry summer respite



House in dire need of landscaping

# WHY CHOOSE NATIVE PLANTS?

Support wildlife, especially insects

Shrink your gardening carbon footprint (no mowing, no chemicals)

Drought adapted

Slow down habitat destruction

Get some surprise volunteers!

Lifelong learning opportunity

The screenshot shows the Calscape website interface. At the top, there is a navigation bar with links for ABOUT, FIND NURSERIES, DESIGN & INSPIRATION, BUTTERFLIES, MY PLANT LISTS, Contact Us, Sign In, and Donate. Below the navigation bar is the Calscape logo, which includes a green circular icon with a yellow flower and the text "CALIFORNIA NATIVE PLANT SOCIETY Calscape Restore Nature One Garden at a Time". To the right of the logo is a search bar with the placeholder text "Search for California native plants by name" and a magnifying glass icon, followed by a link for "ADVANCED SEARCH". Below the search bar is a text input field containing "California" and a button labeled "Enter a California address or click the map to see plants native to that location". Underneath the input field, it says "7984 plants native to California". There are seven small image thumbnails arranged in two rows. The first row shows: "All Plants 7984" (a green circular icon with a yellow flower), "Trees 216" (a green leafy branch), "Shrubs 1449" (a blue flower), and "Perennials 3703" (a purple flower). The second row shows: a pink flower, a grey seed head, a blue flower, and a green leaf. To the right of these thumbnails is a map of California with several cities marked: Medford, Klamath Falls, Crescent City, Redding, Reno, Winnemucca, and Elko. The state of NEVADA is also labeled on the map.

# SPOILER ALERT: NOT ALL ARE IN THE NURSERY TRADE (YET)

Some are yet to be discovered

Some are so particular to their habitat they have not been propagated commercially

But a backbone of great plants await your discovery



Tiburon Mariposa Lily, *Calochortus tiburonensis*, found only on Ring Mountain, Marin County, rare, protected, not in the horticulture trade

# RELATIONSHIPS COUNT

Why does it even matter which plant you plant in your own garden?

It depends on how much good you want to contribute to the environment



Cornell Lab of Ornithology, Science, Sept. 2019

# DIFFERENT STRATEGIES FOR SURVIVAL: FEED EVERYONE OR LIMIT THE NIBBLERS

Oaks: keystone species feed many, including indigenous people, Native Americans

Produce millions of acorns to reproduce themselves...once

Acorns are eaten by woodpeckers and jays or drilled into by weevils

Leaves are converted to high-protein, high fat food called caterpillars for birds



Vallery oaks, *Quercus lobata*, at Laguna de Santa Rosa

# LIMITING THE NIBBLERS

These plants don't want to be eaten

They start an arms race, producing a toxin

Some insect creates a workaround

Plants up the ante

Insects figure out another workaround

Given time, someone will contrive an approach to be able to use that food source



Narrow-leaf Milkweed, *Asclepias fascicularis*

# TOXIN STRATEGY

Plants are generous to a point

Being totally devoured is an evolutionary dead end

Physical barriers: thorns, spikes

Chemical barriers: toxins



Milkweed sap. Photo: Emma Pelton/Xerces Society  
Great at gluing shut insect mouthparts

# WHEN LATEX ISN'T ENOUGH

When latex isn't enough,  
milkweeds produce cardiac  
glycosides

Toxic to most animals,  
cardenolides are found in  
foxglove and other plants

Historically digitalis was used  
medicinally but is highly toxic  
with just a smidge too much

Monarch caterpillars tolerate it



The milkweed bug is another insect that feasts on milkweed with impunity. Toxins of the plant build up in the bug's body, making it poisonous to birds and other creatures that like to would eat it. Many inedible insects develop similar warning markings. Credit: Thomas Shahan *Flickr* (CC BY 2.0)

# NONCHALANT ADULTS

Have you ever wondered how Monarchs get away with slowly fluttering through the garden and not be picked off by a fast bird?

One bite, and the bird gags but does not die. She remembers to avoid that species for the rest of her life

Other insects mimic the pattern for protection



Monarch adult assesses the plant for appropriateness for her eggs

# MONARCHS AS BOTANISTS

Pregnant Monarch butterflies assess plants for suitability for her eggs

She determines that the species is an *Asclepias* and glues her eggs in place

16 species in the genus “*Asclepias*” are found in California

2 native species available to the gardener are Showy Milkweed and Narrow leaf Milkweed



An east coast monarch caterpillar feeds on common milkweed, *Asclepias syriaca*. Milkweed plants, primarily from the genus *Asclepias*, are the only food source of monarch caterpillars. (Peggy Greb, D4225-1)

# TOLERATING POISON

Milkweeds, with over 200 species worldwide in the *Asclepias* genus, produce cardiac glycosides which are poisonous

Monarchs tolerate these toxins and even retain them through metamorphosis



USDA: Monarch caterpillar diet is limited to *Asclepias* species

# DON'T WASTE THE TOXIN, USE IT

You might think Monarchs metabolize the toxin to be able to eat milkweeds that no one else can touch

*Mais non!* They accumulate it so that anyone who tries to eat them has a non-fatal encounter before spitting it out. That bird remembers for the rest of its life to avoid black and orange coloration

Monarchs had to acquire three genetic mutations, in a specific order, to tolerate cardenolides



A stripy monarch caterpillar (*Danaus plexippus*) gorges on a butterfly milkweed. Milkweed sap contains toxins that make many animals sick, but monarchs have evolved to tolerate such a diet. Credit: [Marshal Hedin Flickr](#) (CC BY-SA 2.0) Scientific American

# ARMS RACE BETWEEN PLANTS AND INSECTS

The constant evolutionary arms race between plants and herbivorous insects is reproduced in a closed environment

California is such a place

Ocean, desert, mountains separate us from the rest of North America, acting like an island

Divergent evolution, like Darwin's Finches in the Galapagos Islands, happened right here for millions of years



California Floristic Province, one of 34 biodiversity hotspots in the world

# NON-NATIVE PEST PLANTS

Nature is Picky

Pickier than a two year old  
rejecting anything you serve

Plants that look nearly  
identical to us are rejected by  
herbaceous insects around us

Then, birds don't have yummy  
fat caterpillars to feed their  
chicks

And the downward spiral of  
habitat destruction continues



French broom, *Genista monspessulana*, invading a hillside near Bodega Bay, California. Photo by Photo by Barry Rice.  
Licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 3.0 license](#).

# WAIT, YOU WANT YOUR PLANTS TO BE NIBBLED?

**Yes** - avoid pest plants taking over and causing extinction of natives, which in turn affects insect and bird populations

**Yes** - support plant diversity for resilience to stressors like drought, flood, heat, frost

**Yes** - support plant diversity so there are flowers and fruit available year round

**Yes** - so you don't have to be the muscle



Broom Pulled with Weed Wrench by Woody Elliott. Some CNPS chapters loan tools out. Invented as a fence post puller

# THOUSAND OF NATIVE OPTIONS

*Eriogonum umbellatum*, sulfur buckwheat, for one example

Much prettier

Native

Supports oodles of native butterflies and moths



Calscape.org lists many options, try advanced search

# OTHER ONE-ON-ONE RELATIONSHIPS



Pipevine Swallowtail  
Butterfly

Larval food: Dutchman's  
Pipevine, *Aristolochia*  
*californica*



# ANOTHER BEAUTY



Anise Swallowtail  
Butterfly

Larval food: many  
in the Apiaceae  
family, pictured  
is Cow Parsnip,  
*Heracleum maximum*



# CONCLUSIONS

Similar to cuisines when too much “fusion” can spoil the dinner, stick primarily to plants which evolved in the plant community closest to your garden

Experiment with multiple species, and add more of those that are the happiest and most self sufficient

Notice the bird and insect life in your garden compared to others - then gloat!

# REFERENCES

<https://sonomalandtrust.org/enews/march-2023/#sonoma-county-biodiversity>

<https://www.scientificamerican.com/article/how-monarch-butterflies-evolved-to-eat-a-poisonous-plant/>

Marin Plant Communities:

[https://cnpsmarin.org/marin\\_edu/communities.html#:~:text=3.Valley%20Grassland&text=Can%20be%20seen%20on%20Mt,clover%2C%20true%20clovers%2C%20goldfields.](https://cnpsmarin.org/marin_edu/communities.html#:~:text=3.Valley%20Grassland&text=Can%20be%20seen%20on%20Mt,clover%2C%20true%20clovers%2C%20goldfields.)