



R. Schoenenberger

# *All About Monarch Butterflies* and how to garden for Monarch Habitat

University of California  
Cooperative Extension  
Santa Clara County  
Master Gardener Program



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# Master Gardeners of Santa Clara County



- E-mail questions using our website: [mgsantaclara.ucanr.edu](http://mgsantaclara.ucanr.edu)
- Call the Help Desk: (408) 282-3105 (9:30am - 12:30 pm Monday through Friday)
- Bring specimens to the Master Gardener Help Desk Office during Hotline hours: 1553 Berger Drive, Building 1, 2nd Floor, San Jose, CA 95112
- Call or bring specimens to the Master Gardeners at the Gamble Garden Library in Palo Alto: (650)329-1356 Fridays only, 1-4pm. In Winter, please call before going to Gamble.



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# Monarch Butterfly - *Danaus plexippus*

**Male**



**Female**



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# About Monarchs

- Life Cycle
  - Egg
  - Larvae (5 instars)
  - Pupa
  - Adult
- Migration
- Habitat
- Threats
- Conservation

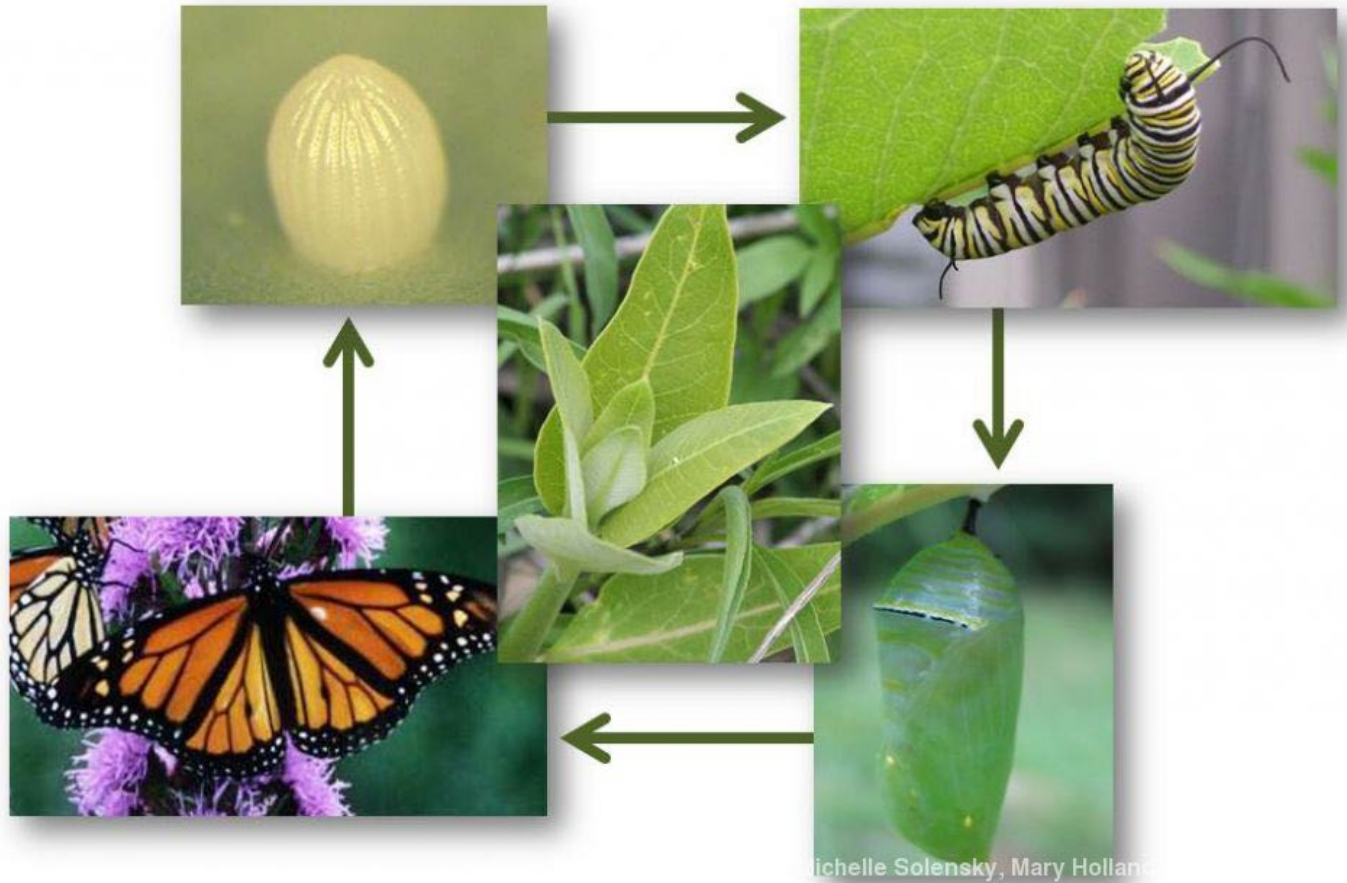


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# Life Cycle



Life cycle (Photo: Dave Astin, Denny Brooks, Michelle Solensky, Mary Holland, Wendy Caldwell)



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# Egg



Caterpillar ready to emerge from egg. The dark tip at the anterior of the egg is actually the 1st instar head. (Photo: Siah St. Clair)



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# Larva



All 5 monarch larval instars (Photo: Monarch Lab)



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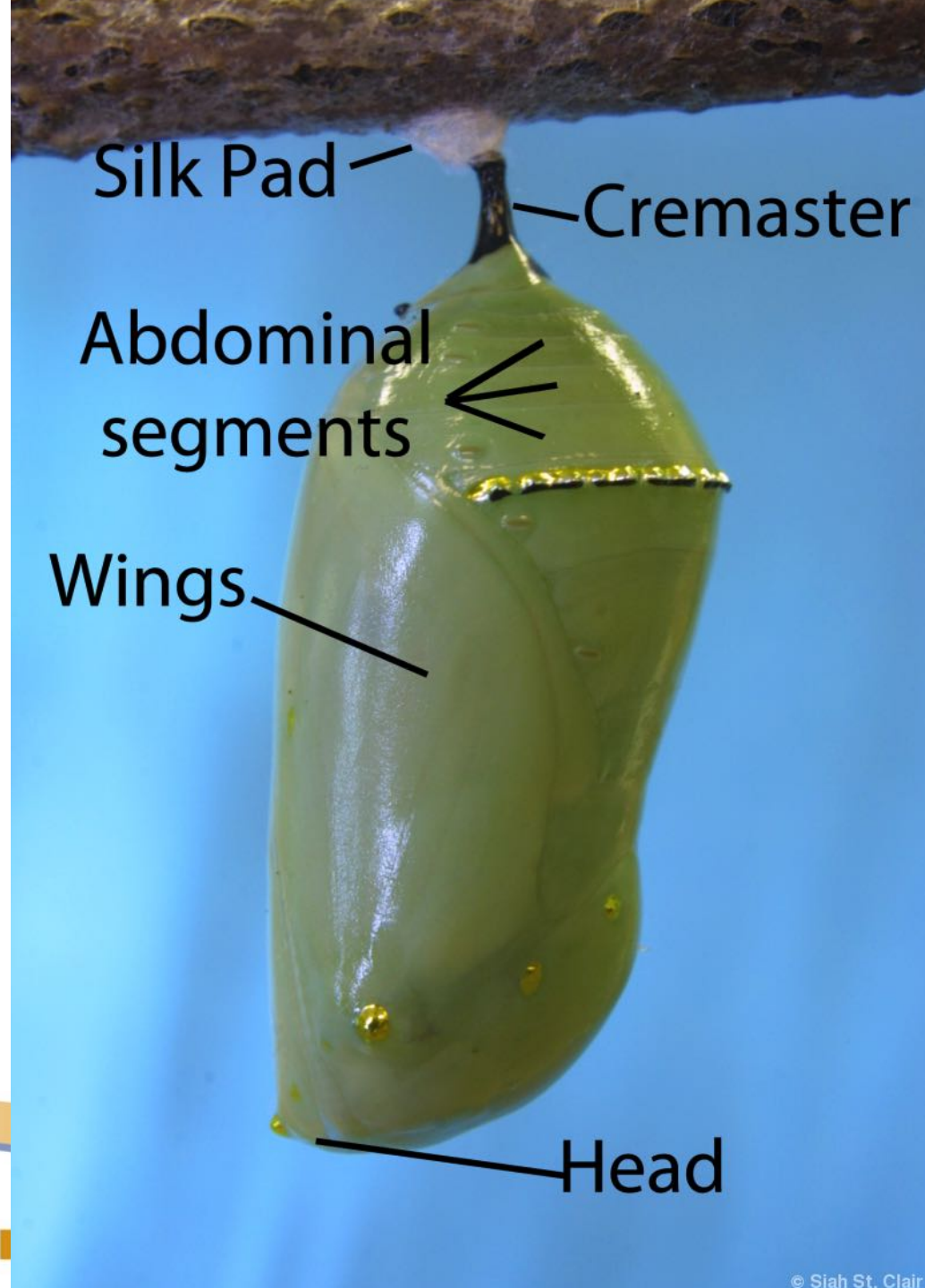
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# Pupa

“The most dramatic changes that occur in the pupa are the growth of the wings and the development of flight muscles. These things could not occur in an active larva.” Monarch Lab - University of Minnesota

Labeled diagram of monarch pupa  
(Photo: Siah St. Clair)





# Adult

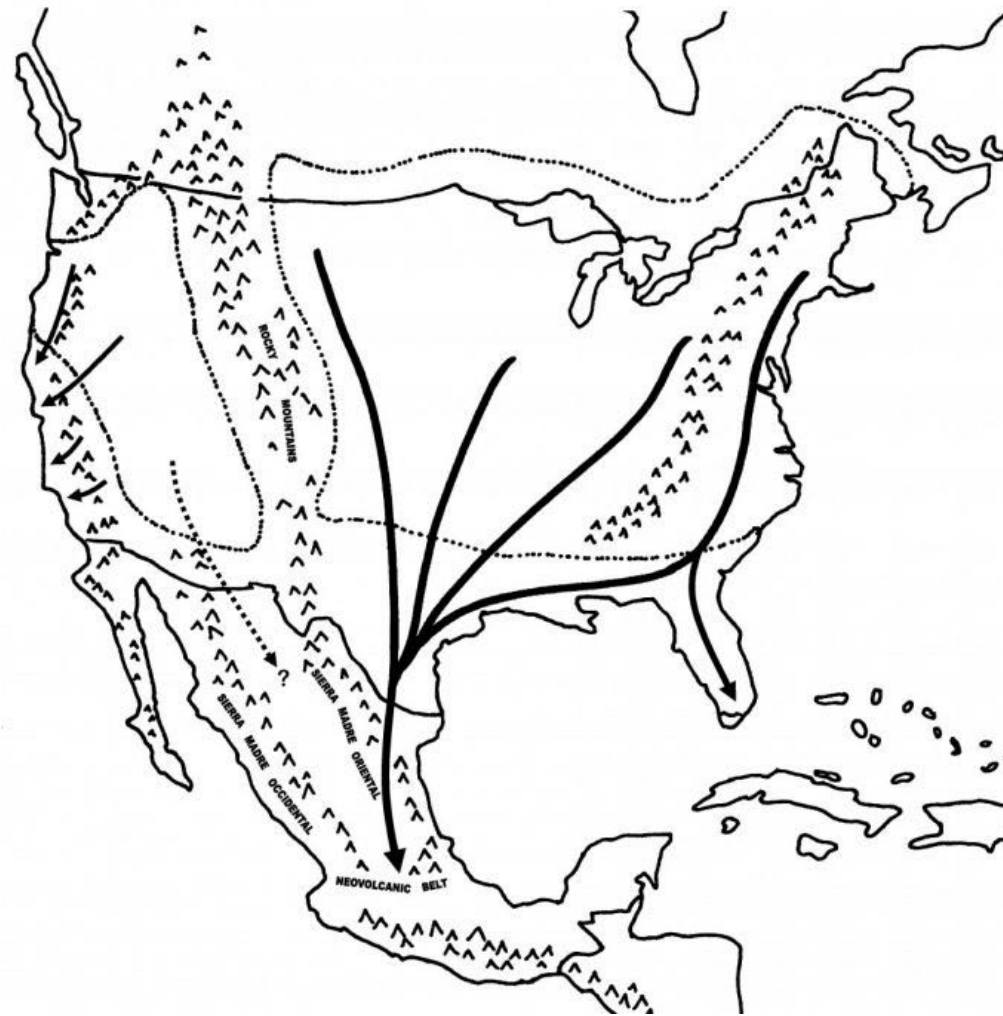


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# Migration

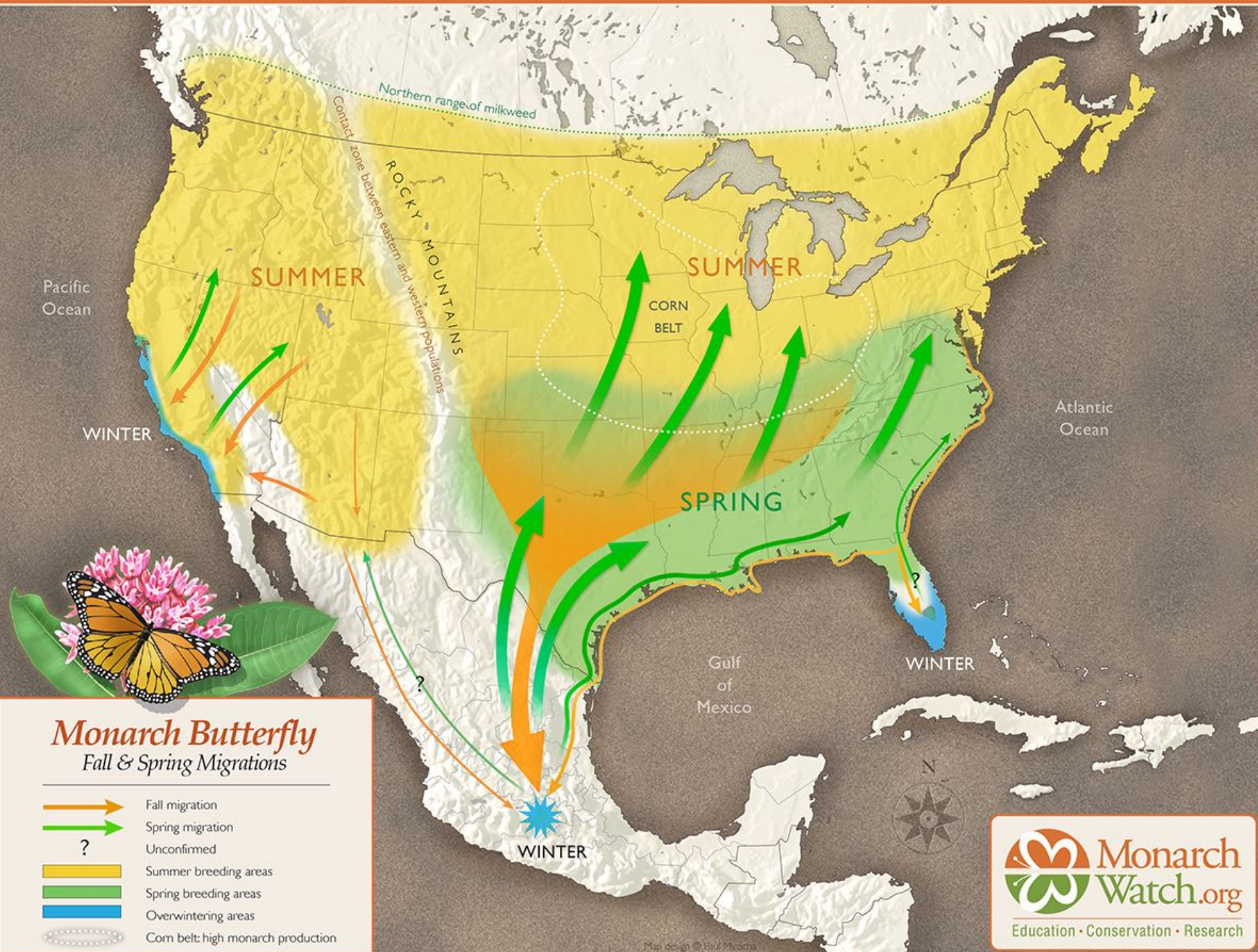
- East Coast
  - Southeastern Canada, Eastern USA & Central Mexico
- West Coast
  - Southwestern Canada, Western USA



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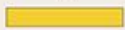





# Monarch Butterfly

## Fall & Spring Migrations



-  Fall migration
-  Spring migration
-  Unconfirmed
-  Summer breeding areas
-  Spring breeding areas
-  Overwintering areas
-  Corn belt: high monarch production



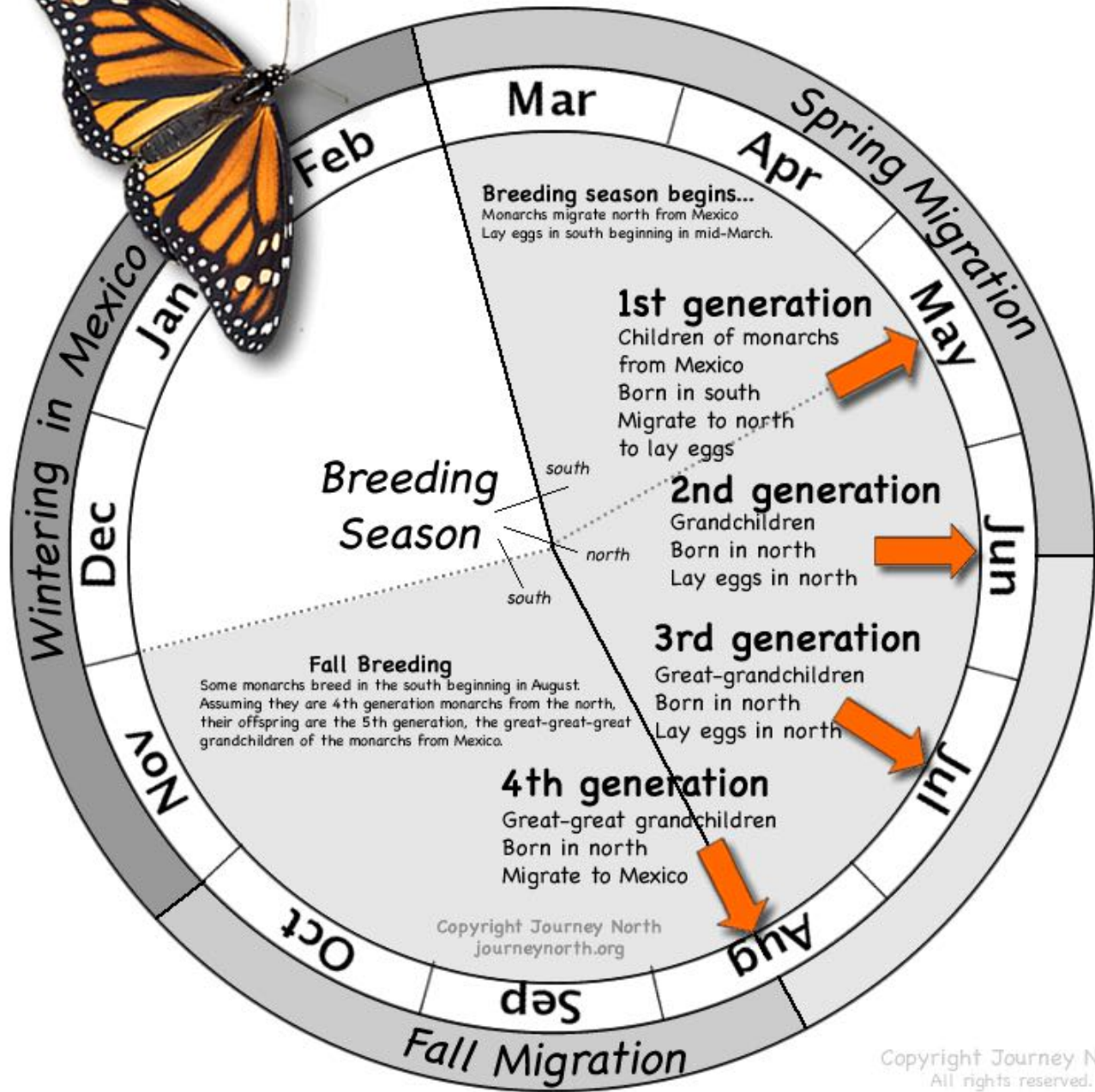
**Monarch Watch.org**  
Education • Conservation • Research

Map design © Paul Miracha



# Report Your Sightings!

journeynorth.org



# California Sites



- Ardenwood Historic Farm, Fremont, CA
- Natural Bridges State Park, Santa Cruz, CA
- Lighthouse Field State Beach Monarch Grove, Santa Cruz, CA
- Point Lobos State Park, Carmel, CA
- Morro Bay State Park, Morro Bay, CA
- Pismo Beach Monarch Butterfly Grove, Oceano, CA
- Ellwood Mesa Open Space, Goleta, CA



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# Habitat

- Food
  - Larvae = Milkweed
  - Adult = Nectar
- Shelter
  - Monterey Pine, Monterey Cypress & Eucalyptus
  - Moderate Weather Extremes
- Space
  - International



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# Pacific Wintering Habitat



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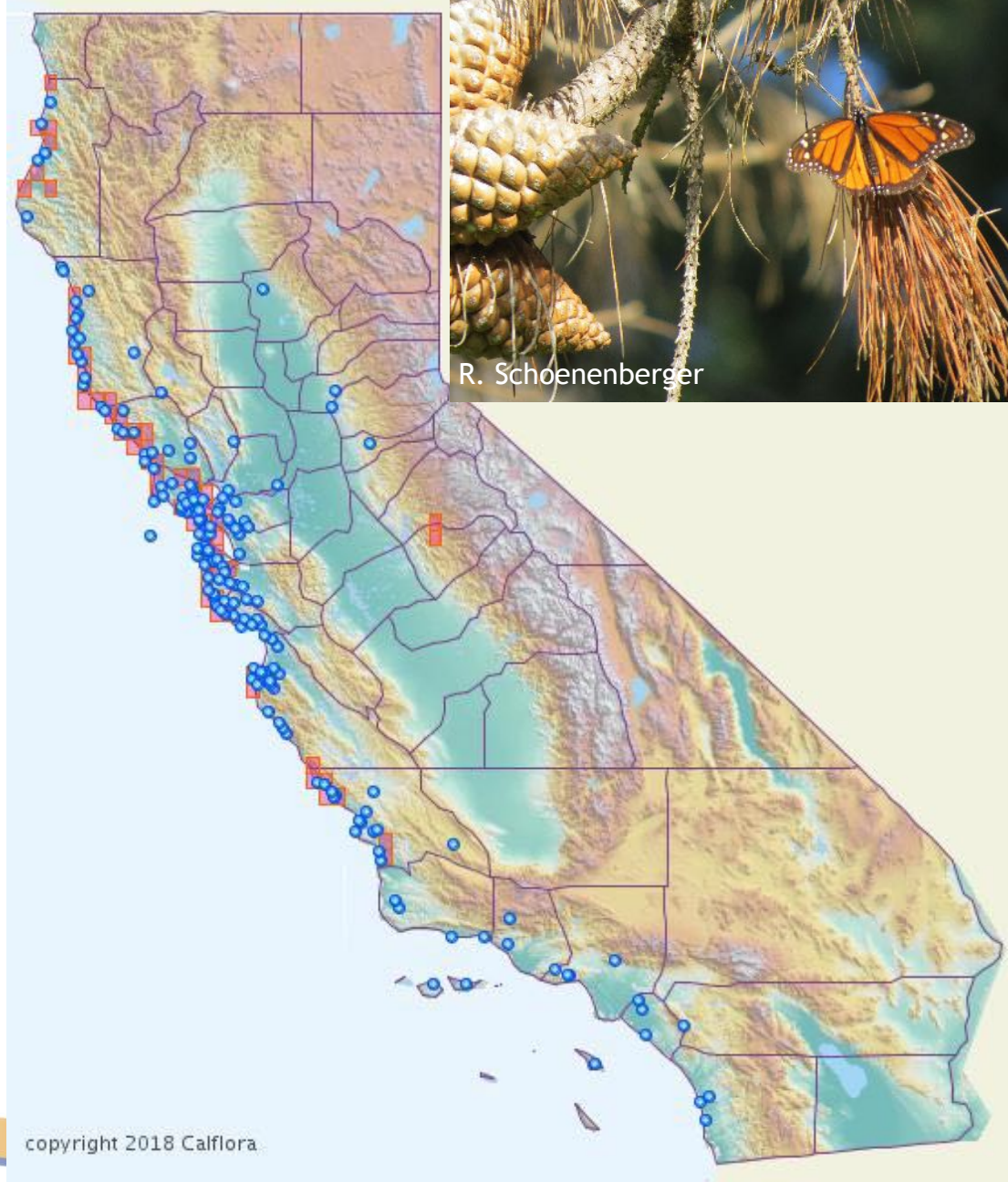
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# *Pinus radiata* Monterey Pine

- Fast growing, but short lived.
- Limited Range
- Pitch Canker Disease
- Drought Stress
- Habitat Destruction / Encroachment

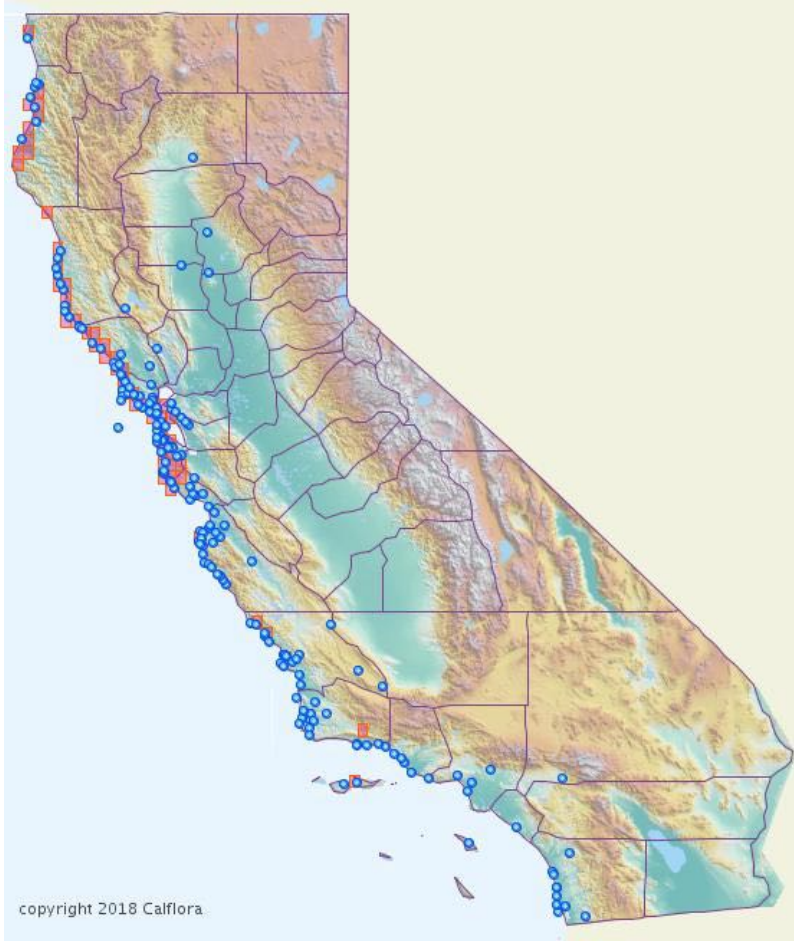


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# *Hesperocyparis macrocarpa* Monterey Cypress



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# Milkweed *Asclepias*

- Native Larval food for Monarchs
- Goes Winter dormant
- Contains cardenolide
  - Monarch larvae can eat
  - Makes Monarchs distasteful to predators



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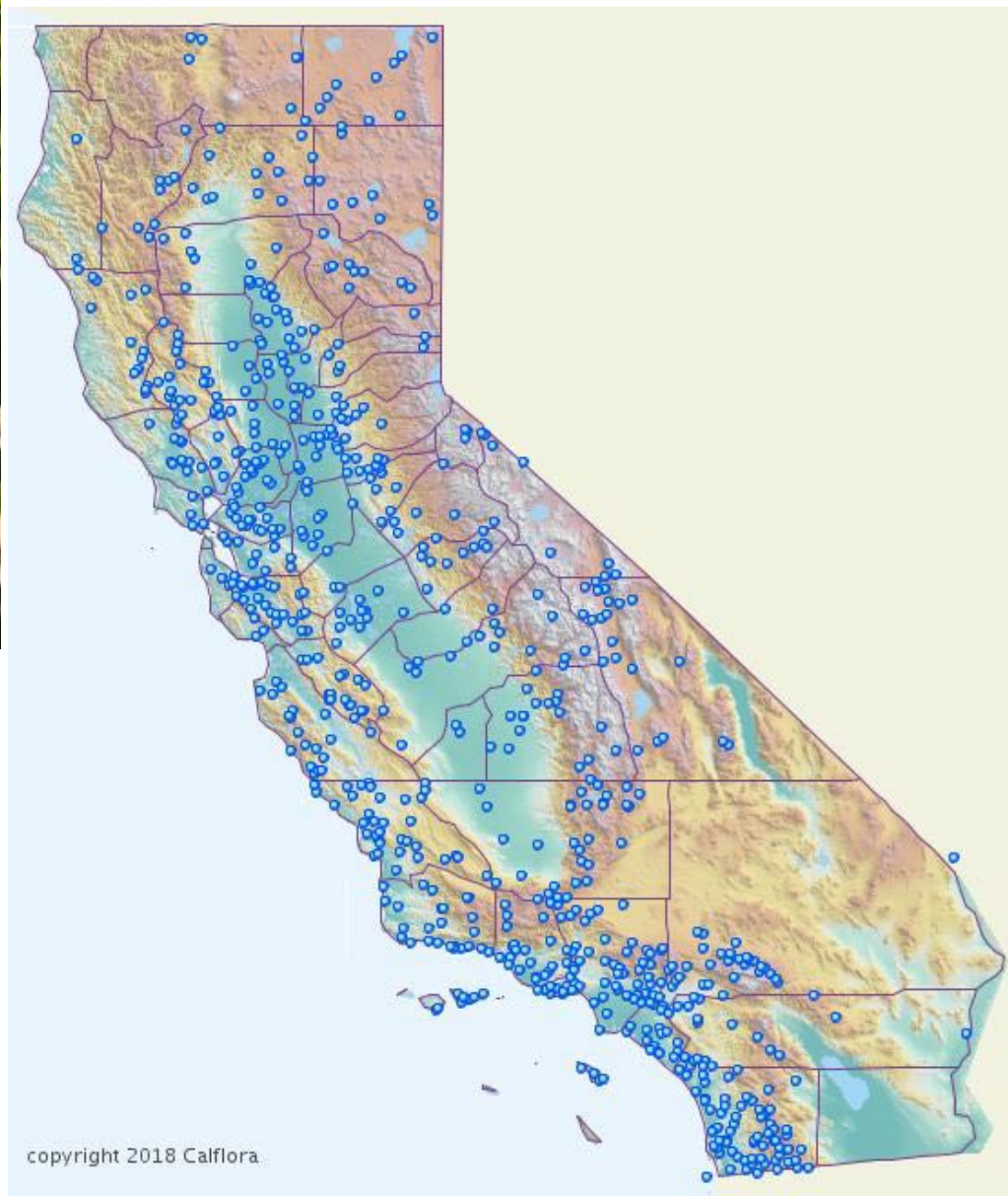
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# *Asclepias fascicularis* Narrowleaf Milkweed



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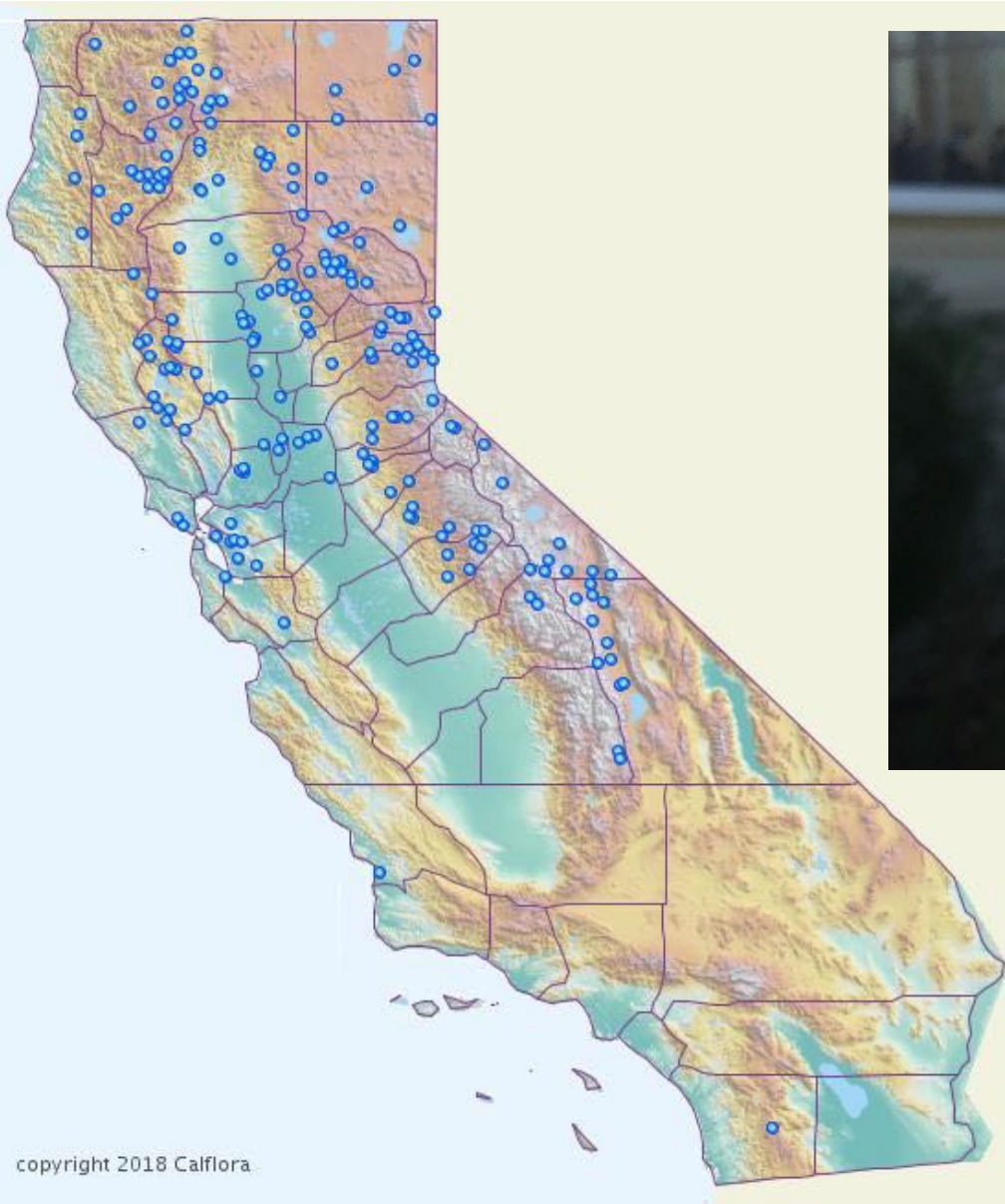


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# *Asclepias speciosa* Showy Milkweed

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*Asclepias cordifolia*  
Heartless Milkweed



*Asclepias cryptoceras*  
Humboldt mountains milkweed  
© 2013 Mary Winter



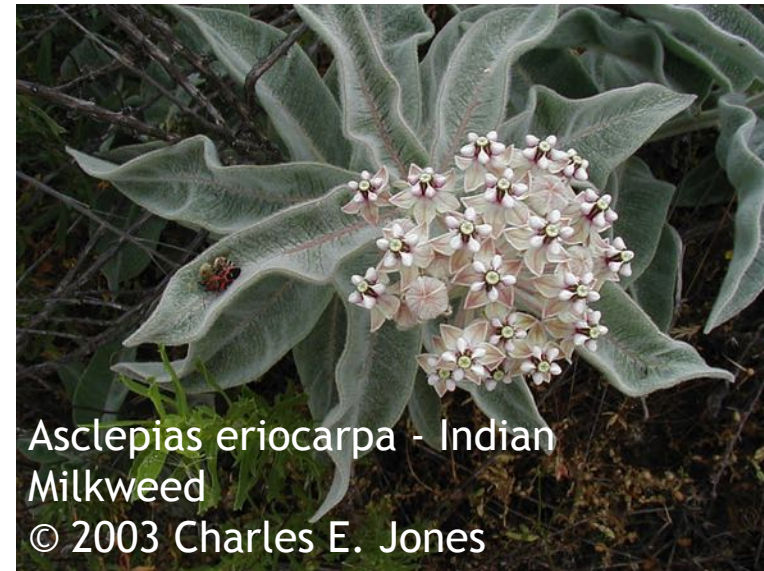
*Asclepias californica*  
California Milkweed  
© 2018 Naomi Goodman



*Asclepias subulata* - Alamete  
© 2008 Aaron Schusteff



*Asclepias erosa*  
Desert Milkweed  
© 2003 James M. Andre



*Asclepias eriocarpa* - Indian  
Milkweed  
© 2003 Charles E. Jones





# *Gomphocarpus* (*Asclepias*) *physocarpus*

- Balloon Plant
- Balloon Cotton-Bush
- Balloon Milkweed
- Bishop's Balls
- Elephant Balls
- Hairy Balls
- Monkey Balls
- Swan Plant
- Family Jewels Tree
- .... and many others

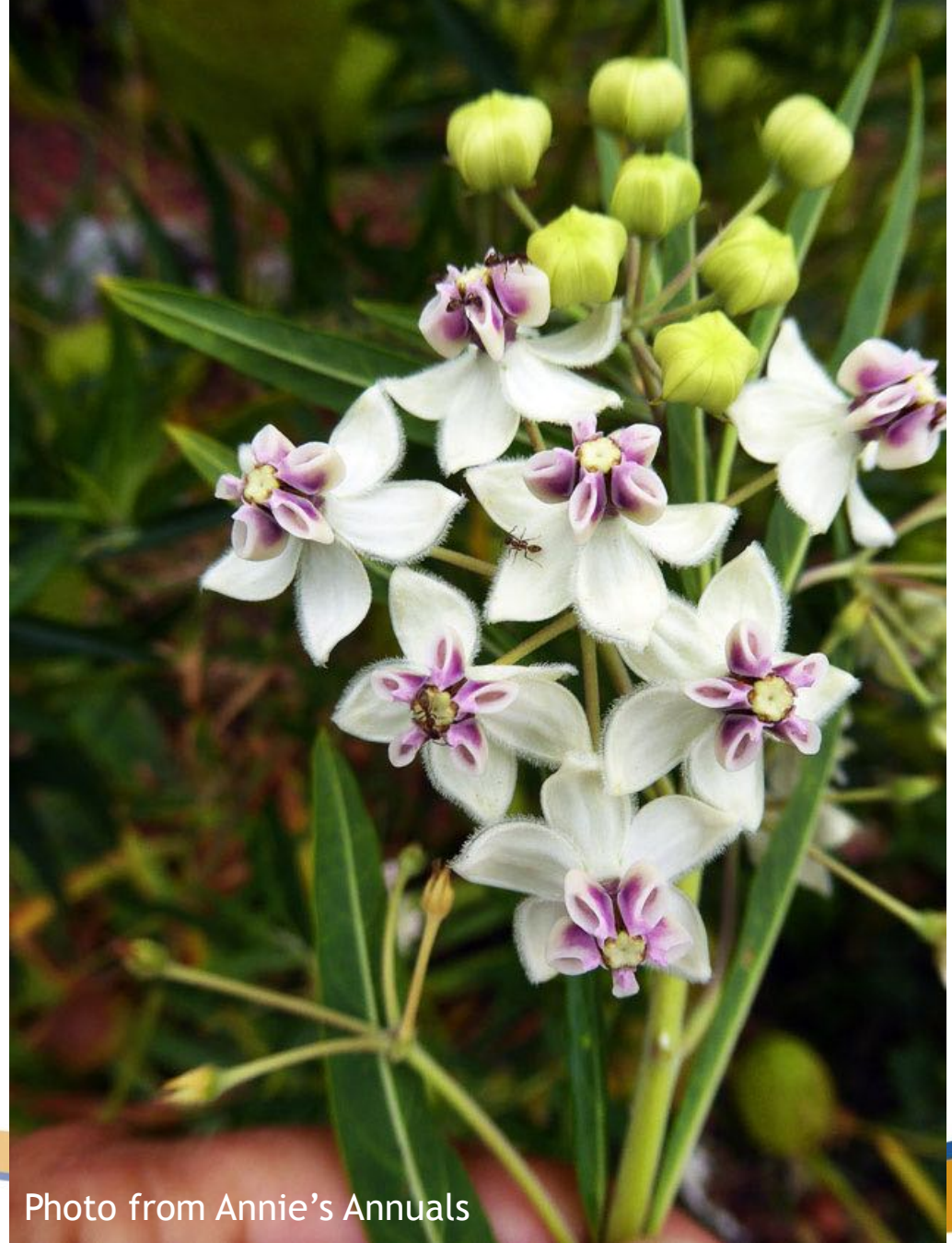


Photo from Annie's Annuals



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# *Gomphocarpus (Asclepias) fruticosus*

- Less common in commercial trade
- Smaller stature than *G. physocarpus*
- Also called Ballon Plant or Swan Plant
- Origin: South Africa



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# *Oxypetalum caeruleum* (*Tweedia caerulea*) Blue Flowered Milkweed

- Blue flowers
- Related to Milkweed
- Twining Perennial
- Origin: Brazil & Uruguay



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# Creating Habitat - Nectar Plants

- Umbel = landing pad / resting area
- Long bloom season or repeated blooms
- Colorful
- Early & Late blooming is most important: Feb. - April & Sept. - Oct.



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# Ornamental (non-Native) Plants for Butterflies

- Salvia - Sage
- Foeniculum vulgare - Fennel
- Zinnia - Zinnia
- Scabiosa - Pincushion Flowers
- Tagetes - Marigolds
- Dahlia - Dahlia
- Callistemon - Bottlebrush
- Lantana - Lantana
- Buddleja - Butterfly Bush
- Cosmos - Cosmos
- Echinacea - Coneflowers
- Erysimum - Wallflowers



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# *Achillea millefolium*

## Yarrow 'Island Pink'



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California native plant; colorful pink flowers in spring, summer, and fall make good cut flowers; ferny green foliage will spread; flowers attract butterflies and beneficial insects.



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# Achillea millefolium

## Yarrow



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# *Arctostaphylos densiflora* Manzanita 'Howard McMinn'



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# *Ceanothus* 'Concha'

## Wild Lilac Selection



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California native plant; one of the best California lilacs for the garden with dark-green leaves all year; showy, deep blue flowers with reddish bracts bloom in spring; attracts beneficial insects.



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# Encelia californica

## Coast Brittlebush

California native plant; golden daisies blossom from early spring until mid-fall among triangular-shaped green leaves; tolerates full sun or part shade and is low maintenance.

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# *Ericameria* sp. Rabbitbrush



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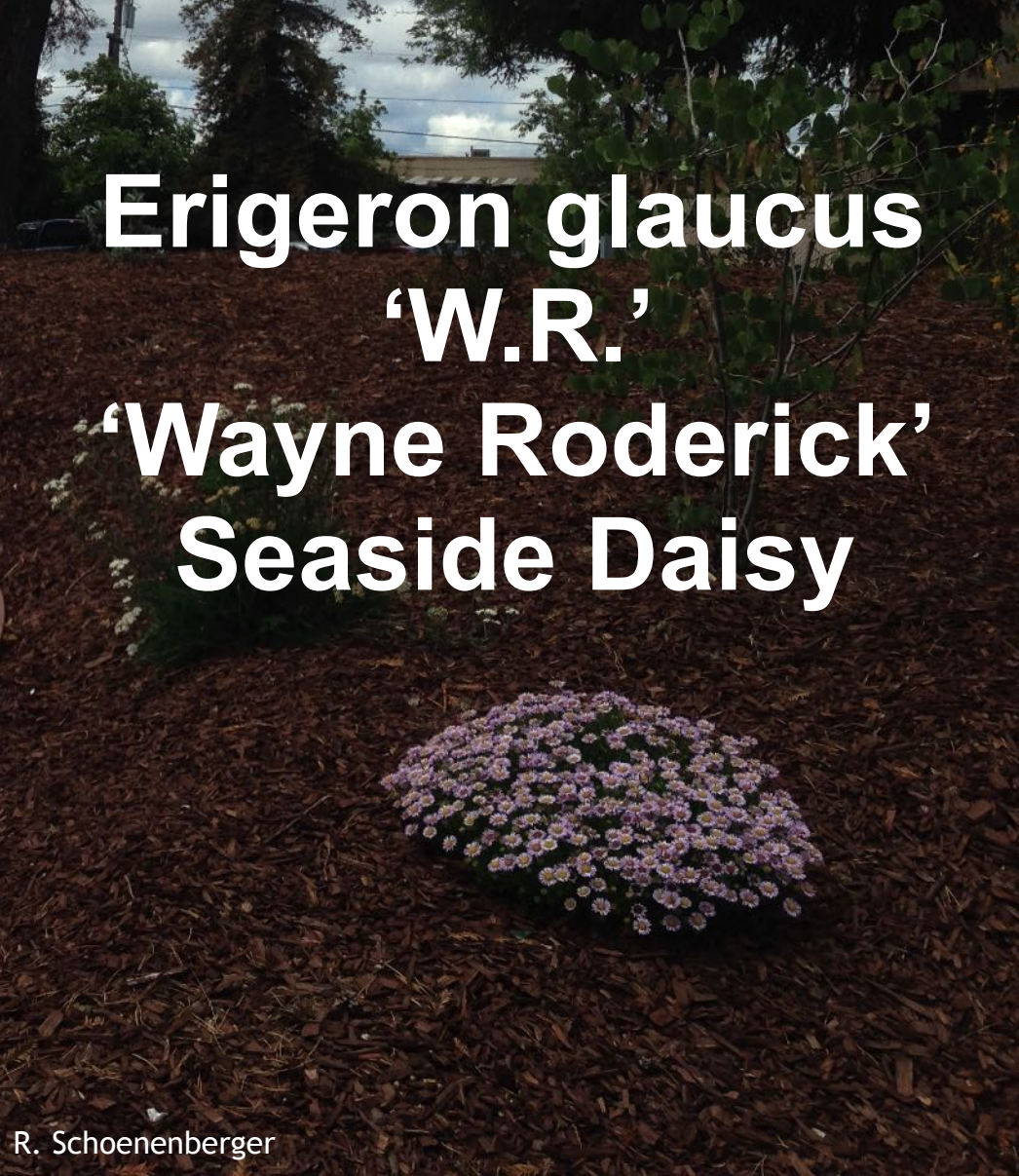
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**Erigeron glaucus**  
**'W.R.'**  
**'Wayne Roderick'**  
**Seaside Daisy**

California native plant; flowers bloom through the spring, summer, and fall; long-blooming daisy for home gardens; attracts butterflies and beneficial insects.

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# *Eriogonum* sp. Buckwheat



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# Peritoma (Isomeris) arboreus Bladderpod

California native plant;  
one of the only native  
shrubs that blooms year  
round; yellow flowers  
attract beneficial insects  
and hummingbirds to the  
garden and then develop  
into attractive seed pods.



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# Ribes aureum Golden Currant

California native plant;  
flowers have a light, spicy  
fragrance; good choice  
for planting under native  
oaks; attracts butterflies  
and beneficial insects.







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# Salvia clevelandii 'Winefred Gilman' Cleveland Sage

California native plant;  
evergreen shrub  
produces maroon-  
stemmed, blue-violet  
flowers; heat and  
drought tolerant;  
attracts hummingbirds,  
butterflies and beneficial  
insects.



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# Salvia Spathacea Hummingbird Sage

California native plant; leaves have a pleasant, fruity fragrance; excellent drought-tolerant groundcover for sun or partial shade; attracts hummingbirds.



Photo by Marie Haka



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# Solidago californica 'Cascade Creek'

## California Goldenrod

California native plant; bears bright yellow flowers in summer and fall that attract butterflies and beneficial insects; ideal for native grass meadow.



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# Threats

- Habitat Loss & Degradation
  - Private Property
  - Pruning
- Pesticides
  - BT (a non-toxic, naturally occurring biological larvicide)
  - Neonicotinoids (a common class of insecticides derived from nicotine)
- Climate Change
  - ➔ Milkweed too toxic
  - ➔ Unknown ???

Plant tag indicating a plant has been treated with neonicotinoids. Photo: SDF





1980s monarch population  
in California = 4.5 million.  
Current human population in  
Los Angeles = 4 million.



Current monarch population  
in California = 28,429.  
Current human population in  
Monterey = 28,828.

To-scale version  
of 28,429 vs. 4.5  
million (compare  
to leftmost photo).



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# OE - *Ophryocystis elektroscirrha*

- Decreased larval survival
- Smaller wing span & lower body mass
- Decreased male reproductive success & Shorter Adult lifespan
- Less activity & weight among females
- Diminished Condition & Activity: Wings tattered & Scale loss



Photo by Dara Satterfield, Project Monarch Health.



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# Conservation



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# Action Items:

- Protect CA Winter Sites
- Restore Breeding & Migratory Habitat in CA
  - Native Milkweeds
  - Pollinator Gardens
- Protect Habitat from Pesticides - Practice IPM
- Restore Breeding & Migratory Habitat outside of CA
  - Regional Milkweeds
  - Pollinator Gardens
- More Research on how to best aid Monarchs





# Citizen Science

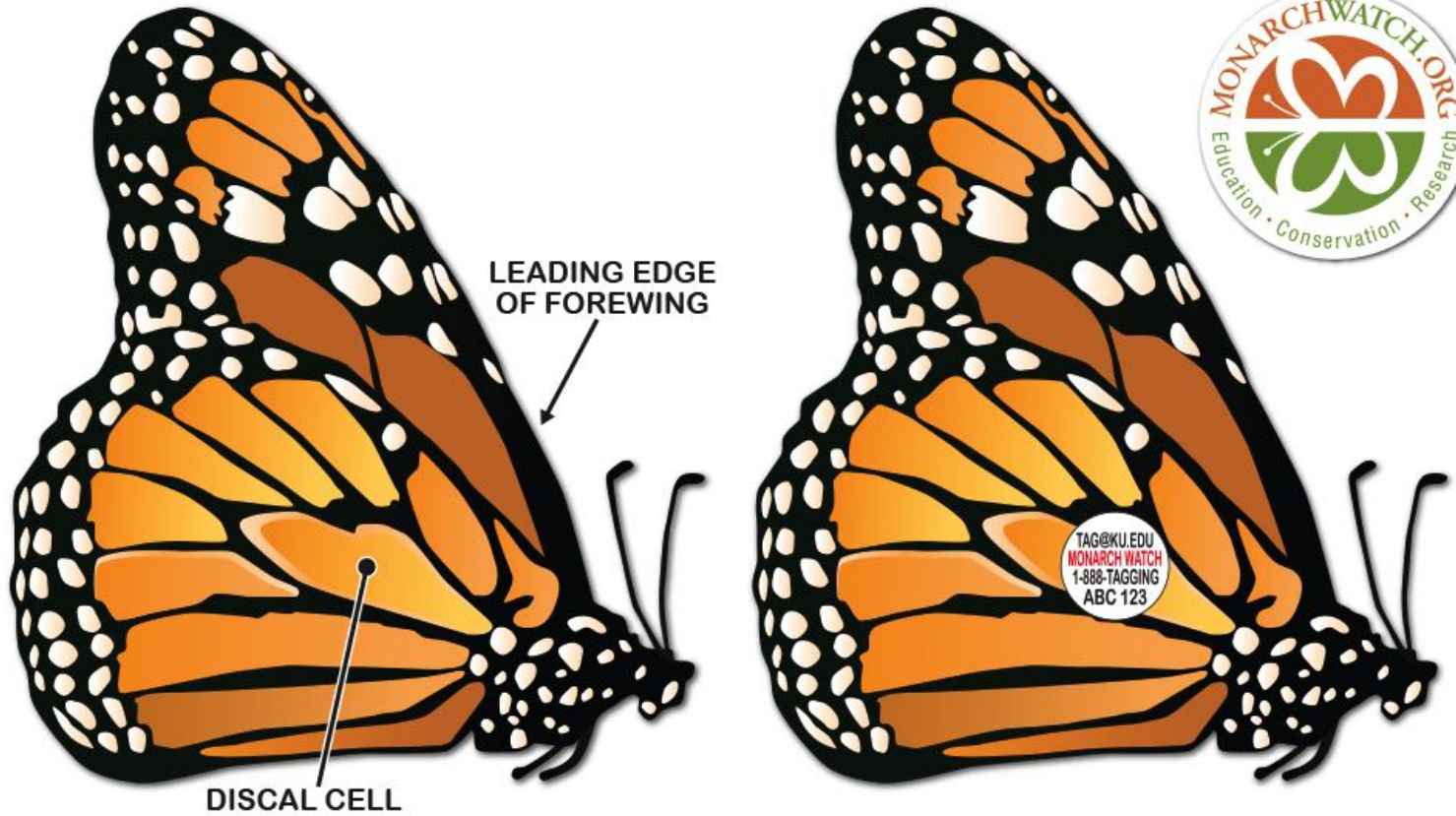


- The Monarch Larva Monitoring Project
- Tagging Monarchs
- Participate in Winter counts
- Raising Monarchs Responsibly



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## PROPER PLACEMENT OF MONARCH WATCH TAGS

[monarchwatch.org/tagging](http://monarchwatch.org/tagging)



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# What you can do:

- Create diverse habitat.
  - Year round Nectar Sources
  - Colorful
- Pesticide-free
  - Use IPM
- Plant local Milkweed



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- Monarch Watch <http://www.monarchwatch.org>
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[http://xerces.org/save-western-monarchs/?fbclid=IwAR29RpYlNi7tJxS116UeE9FPpkpxPexNkNCF2NJV\\_ks-AaC3p0lR7gsaPo](http://xerces.org/save-western-monarchs/?fbclid=IwAR29RpYlNi7tJxS116UeE9FPpkpxPexNkNCF2NJV_ks-AaC3p0lR7gsaPo)
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# Thank

# you!



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