



All About Monarch Butterflies

Presented by Rebecca Schoenenberger
UCCE Master Gardener Santa Clara County



Master Gardener Program

Master Gardener program volunteers are trained by the University of California Cooperative Extension. Our mission is to develop, adapt and extend research-based horticultural information and educational programs to the residents of Santa Clara County.

Master Gardener Help Desk

- E-mail questions using our website: <http://mgsantaclara.ucanr.edu/help-desk>
- Call the Help Desk: 408-282-3105 (9:30 a.m. – 12:30 p.m. Monday through Friday)
- Bring specimens to the Master Gardener Help Desk Office during Help Desk 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, 1-4 p.m. In winter, please call before coming to Gamble.

About Monarchs

- Life Cycle & Metamorphosis
- Migration
- Habitat
- Threats
- Conservation

Life Cycle

- Egg
- Larvae (5 instars)
- Pupa
- Adult

Migration

- Eastern: Southeastern Canada, Eastern USA & Central Mexico
- Western: Southwestern Canada, Western USA

Pacific Wintering Habitat

- California Wintering Sites:

- ▶ Ardenwood Historic Farm, Fremont, CA
- ▶ Lighthouse Field State Beach Monarch Grove, Santa Cruz, CA
- ▶ Natural Bridges State Park, Santa Cruz, CA
- ▶ Pacific Grove Sanctuary, Pacific Grove, 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

Habitat

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

Western (California) Shelter Trees

- Monterey Pine - *Pinus radiata*
 - Fast growing, but short lived.
 - Limited Range
 - Pitch Canker Disease
 - Drought Stress
 - Habitat Destruction / Encroachment
- Monterey Cypress - *Hesperocyparis macrocarpa*
 - Fast growing
 - Susceptible to Cypress Disease or Cypress Canker (*Seiridium cardinale*)

Western (California) Native Milkweeds

- Narrowleaf Milkweed - *Asclepias fascicularis*
- Showy Milkweed - *Asclepias speciosa*

Other California Milkweeds

- *Asclepias albican* - White Stemmed Milkweed
- *Asclepias asperula* - Spider Milkweed
 - *Asclepias asperula ssp. asperula* - Spider Milkweed
- *Asclepias californica* - California Milkweed

- *Asclepias cordifolia* - Purple or Heartleaf Milkweed
- *Asclepias cryptoceras* - Humboldt Mountain Milkweed
- *Asclepias eriocarpa* - Indian Milkweed
- *Asclepias erosa* - Desert Milkweed
- *Asclepias latifolia* - Broadleaf Milkweed
- *Asclepias linaria* - Needle Leaf Milkweed
- *Asclepias myctainifolia* - Mojave Milkweed
- *Asclepias solanoana* - Serpentine Milkweed
- *Asclepias subulata* - Alamete
- *Asclepias vestita* - Woolly Milkweed
 - ▶ *Funastrum cynonchoides* var. *hartwegii* - Climbing Milkweed
 - ▶ *Funastrum hirtellum* - Hairy Milkweed
 - ▶ *Funastrum utahense* - Utah Vine

Creating Habitat - Nectar Plants

- Nectar Plants (non-Native)
 - Zinnia
 - Scabiosa
 - Marigolds
 - Dahlia
 - Bottlebrush
 - Lantana
 - Butterfly Bush - Buddleja
 - Cosmos
 - Echinacea

Creating Habitat - Nectar Plants

- Nectar Plants (Native)
 - *Achillea millefolium* - Yarrow
 - *Arctostaphylos* - Manzanita
 - *Ceanothus* - Wild Lilac
 - *Encelia farinosa* - Coast Brittlebush
 - *Ericameria* - Rabbitbrush
 - *Erigeron glaucus* - Seaside Daisy
 - *Eriogonum* - Buckwheat
 - *Peritoma arborea* - Bladderpod
 - *Ribes aureum* - Golden Currant
 - *Salvia clevelandii* - Cleveland Sage
 - *Salvia spathacea* - Hummingbird Sage
 - *Solidago californica* - Goldenrod

Threats

- Habitat loss & Degradation
 - ▶ Private Property
 - ▶ Pruning
- Pesticides
 - ▶ Bt - All Lepidoptera (primarily an issue in the corn belt)
- Climate Change
 - ▶ Tropical Milkweed becoming too poisonous for Monarchs
 - ▶ Unknown impacts ???

Avoid Tropical Milkweed *Asclepias curassavica* or *A. tuberosa*

- Can harbor OE -*Ophryocystis elektroscirrha* a deadly parasite
- Does not go Winter dormant
- IF you must have it cut to ground in Fall (Oct. - Nov.), and repeatedly through Winter.
- Providing year round larval food sources may send mixed signals. This may have a negative effect on migration.
- Climate Change: With temperature rising Tropical Milkweed is becoming too toxic (cardenolides) for Monarchs.

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

Conservation - Action Items:

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

Conservation - What you can do:

- Create a diverse habitat.
 - ▶ Year round Nectar sources
 - ▶ Colorful

- Pesticide-Free
 - ▶ Use IPM (Integrated Pest Management) methods & avoid chemical use.
- Plant your locally Native Milkweed only!
- Do not plant Milkweed if you live within 5 miles of Winter Sites.

Resources and references

- All photos by Rebecca Schoenenberger, unless noted otherwise.
- Monarch Joint Venture: a coalition of groups working to save the monarch migration <https://monarchjointventure.org/>
- The Late, Great Monterey Pine Forest 04/16/98 By Douglas McWhirter. Monterey County Weekly http://www.montereycountyweekly.com/news/local_news/disease-and-development-threaten-the-monterey-pine/article_749ffaeb-3614-5600-be90-821dfd13ffcf.html
- Calflora <https://www.calflora.org>
- Monarch Watch <http://www.monarchwatch.org>
- Xerces Society <http://xerces.org/monarch-nectar-plants/>
- http://xerces.org/save-western-monarchs/?fbclid=IwAR29RpYINi7tJxS116UeE9FPpkpxPexNkNCF2NJV_ks-AaC3p0lR7gsaPo
- Effects of the protozoan parasite ophryocystis elektroscirrha on the fitness of monarch butterflies (*Danaus plexippus*). Oberhauser & Altizer. US National Library of Medicine <https://www.ncbi.nlm.nih.gov/pubmed/10388550>
- The Journey North - Answers from the Expert Spring 2014 <https://journeynorth.org/tm/monarch/ExpertAnswer14.html>
- Global warming can turn monarch butterflies' favorite food into poison - LSU. Science Daily. <https://www.sciencedaily.com/releases/2018/04/180403120004.htm>
- Cypress Disease. Author: Leonard Cicerello. <https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=22724&fbclid=IwAR2gHufe7uWUoP4W9SIPkb-fBE1AJ0EfJng0JOP1vPiWBjioiMa4wXa835I>
- Will Neonicotinoids on Milkweed Hurt Monarchs? Steven Frank. NC State Extension. <https://entomology.ces.ncsu.edu/2017/05/will-neonicotinoids-on-milkweed-hurt-monarchs/>

The University of California prohibits discrimination or harassment of any person on the basis of race, color, national origin, religion, sex, gender identity, pregnancy (including childbirth, and medical conditions related to pregnancy or childbirth), physical or mental disability, medical condition (cancer-related or genetic characteristics), ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services (as defined by the Uniformed Services Employment and Reemployment Rights Act of 1994: service in the uniformed services includes membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services) in any of its programs or activities.

University policy also prohibits reprisal or retaliation against any person in any of its programs or activities for making a complaint of discrimination or sexual harassment or for using or participating in the investigation or resolution process of any such complaint.

University policy is intended to be consistent with the provisions of applicable State and Federal laws.

Inquiries regarding the University's nondiscrimination policies may be directed to the Affirmative Action/Equal Opportunity Director, University of California, Agriculture and Natural Resources, 1111 Franklin Street, 6th Floor, Oakland, CA 94607, (510) 987-0096