Welcoming the Monarchs into Your Garden

Presented by Napa Master Gardeners
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University of California
Agriculture and Natural Resources
UCCE Master Gardener Program
Napa County

Master Gardener
University of California Cooperative Extension

UC Master Gardeners of Napa County
http://napamg.ucanr.edu/

Our mission: "To extend research-based knowledge and information on home horticulture, pest management, and sustainable landscape practices to the residents of California and be guided by our core values and strategic initiatives."

Find this presentation and additional resources on our web site:

UC Master Gardeners of Napa County

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Program Outline

- Introduction
- Description
- Habitat
- Milkweed
- Migration
- Lifecycle
- Questions
- Tour of Pollinator Garden
- Milkweed Seeds Handout
- Special Give Away

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Pollinators: Who, Why, and What?

Who are they?

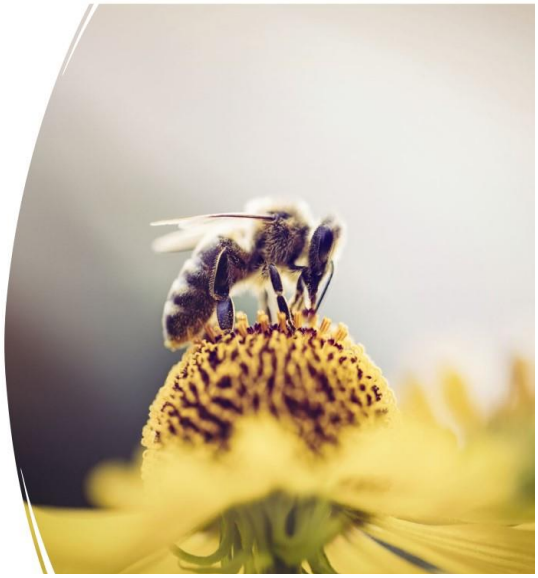
- Pollinators are any species that pollinates plants, examples of pollinators are birds, bats, bees, butterflies, beetles, and small mammals

Why should we care?

- Pollinators are critical for the sustainability of our ecosystems and natural resources
- About 75% and 95% of all flowering plants need pollinators
- Half of the world's oils, fibers, and raw materials rely on pollinators, and they help prevent soil erosion and increase carbon sequestration

What can we do?

- Help protect & create their habitat, avoid use of pesticides
- Right place, right plant – Go native!



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Butterflies: Who, Why, and What?

Who are they?

- Butterflies are winged fluttering flying insects belonging to the order Lepidopteran (butterflies and moths)
- Have large and often brightly colored wings, most active during the day, and feed on flower nectar using their proboscis -a long, straw-like tongue
- Cold-blooded, can't regulate their body temp and must migrate to warmer areas during winter

Why should we care?

- Decline of butterflies is well documented with several species now endangered
- Destruction of habitat, pesticide use, and climate change are contributing factors

What can we do?

- Grow pollinator-friendly flowers, provide areas for rest, and water for puddling, avoid pesticides, and inform others about the conservation

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Monarch Butterflies: Who, Why, and What?

Who are they?

- Eastern Monarchs – Migrates through eastern North America to overwintering areas in Central Mexico
- Western Monarchs – Breed in the western U.S. and migrate to both the California coast and Mexico

Why should we care?

- Eastern Monarchs – 80% decline in the population with 2023-24 the second worst year ever recorded due to loss of habitat in Mexico
- Western Monarchs – 95% decline in the population & 74% decline in the California overwintering population due to the human activity

What can we do?

- Grow host plants (milkweed) and native pollinator-friendly flowers for nectar
- Provide shelter, nesting sites, and water
- Avoid the use of pesticides
- Help increase awareness about conservation - tell a neighbor!

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Current Monarch Situation

Western Monarch Count Tallies: Thanksgiving (2023) and New Years (2024)
Thanksgiving counts were 233,394 at 256 overwintering sites and January counts were 116,000 at 169 sites. Decrease due to large storms. *(Xerces Society)*

Eastern Monarch Count Tallies:
Mexico overwintering grounds dropped by more than half.
(World Wildlife Fund -Mexico)

https://westernmonarchcount.org/map -of-overwintering-sites/

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Every year the Xerces Society does a Western Monarch count at overwintering sites along the California Coast and parts of Baja from Mid Nov - Mid Dec and again at the beginning of January.

Habitat Requirements

What they need - shelter, water sources, food, places for their eggs

- Nectar Bearing Flowers
- Milkweed for the eggs
- Corridors of Milkweed and nectar plants

https://www.monarchmilkweedmapper.org/

https://westernmonarchcount.org/map -of-overwintering-sites/

https://westernmonarchs.org/

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Habitat Loss is due to pesticides, climate change, development, fires and loss of their host plant, Milkweed.

Flowers Monarchs Love

- Butterfly Bush
- Cosmos
- Goldenrod
- Lantana
- Lilac
- Milkweed for their eggs
- Zinnia
- Aster

Calscape.org; Xerces Society

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Photo: The Spruce / Evgeniya Vlasova

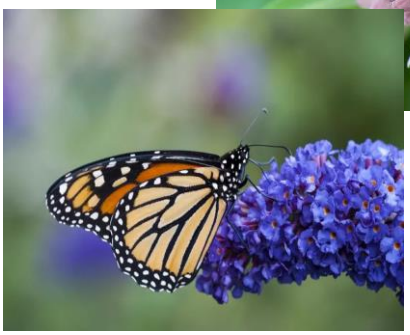

Photo: Ed Reschke/Oxford Scientific/Getty Images

Monarch butterflies consume nectar from a variety of flowers. Calscape.org is an excellent source of information on California native flora. The Xerces Society is all about Invertebrate conservation. Their link above will take you to their page about native Milkweeds.

Wildflower Seed Bomb Recipe

- 3 parts air dry clay
- 1 part soil
- 1 part seeds

Make pancake of clay, top with soil and the add seeds.
Fold and begin kneading until everything is mixed together. Add water if needed.
Pinch off small pieces and make into little balls about 1/2 - 1" in size.
Let air dry for 48 hours.
Toss them out into the yard. Works especially well right before rainfall.
Can be stored by wrapping in burlap with a tie. Can also do Milkweed in the fall.

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Make seed bombs for nectar flowers in the Spring and for Milkweed in the early Fall.

Milkweed

- What is milkweed?
- How many in USA? World?
- Common milkweed is a member of the Asclepiadaceae (milkweed) family. It is one of about 115 species that occur in the Americas. 12 species native to California, most in So. Ca and Mexico
- Varieties native to Napa County - narrow leaf, showy, and woollypod
- What happens when Monarch larvae ingest sap?

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Monarchs rely on multiple milkweed species as food sources for larvae. Milkweed is the “host plant” for Monarchs and without being able to eat milkweed, Monarch larvae would not be able to develop into butterflies.

Showy Milkweed (Asclepias Speciosa) is native to much of the western half of the US. In California, it is found in the Sierras and Coast ranges, from Tulare County to Modoc and Siskiyou Counties. It is a hairy, erect perennial that grows to about 4 feet tall.

Narrowleaf Milkweed (Asclepias fascicularis) is also a flowering perennial. It sends up many thin, erect stems that bear distinctive long, narrow, pointed leaves, which are often whorled about the stem, giving the plant one of its other common names, Mexican Whorled Milkweed.

Heart-leaf or Purple Milkweed (Asclepias cordifolia) is native to the western US, growing between 50-2000 M in elevation in the northern Sierra and Cascade ranges in serpentine soils. Many nurseries carry this plant.

Woolypod Milkweed (Asclepias erocarpa) is also known as Indian Milkweed and Kotolo Milkweed, and is native to Napa county.

Native Milkweeds

Asclepius fascicularis
Narrow Leaf Milkweed

Asclepius speciosa
Showy Milkweed
INVASIVE

Asclepius cordifolia
Heart Leaf Milkweed

Asclepias eriocarpa
Woolypod Milkweed
Indian Milkweed
Kotolo Milkweed

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Most milkweed species planted in North America need a cold moist stratification to encourage spring germination. Cold moist stratification is a technique used to simulate the real-world conditions a seed would receive outdoors after the frozen winter gives way to a warm, wet spring.

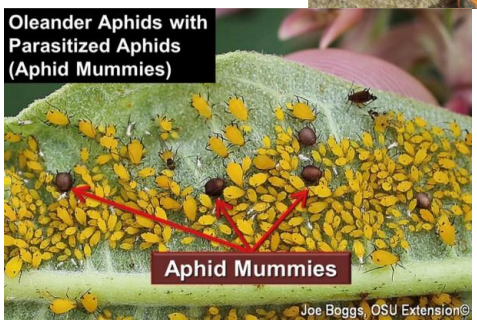
To do this the seeds are wrapped in a moist paper towel and sealed in a plastic bag, then stored in a refrigerator for several weeks. The cold breaks down the “shell” covering the seed. Once ready to germinate, they can be spread on seed starting mix and covered with a moist paper towel and placed on a heating mat. When a small root appears, they are ready to be planted – Press them into potting soil and cover with a damp paper towel and let nature take its course.

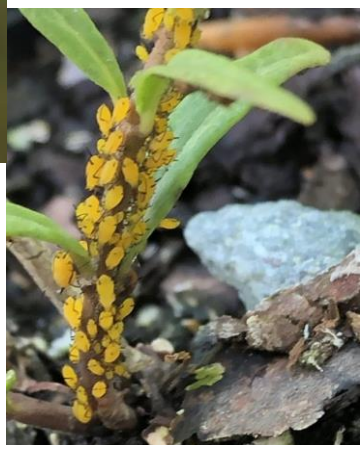
Gomphocarpus physocarpus

Hairy Balls, Balloon Plant

Gomphocarpus physocarpus, commonly known as hairy balls, balloon plant, balloon cotton-bush, bishop's balls, nailhead, or swan plant, is a species of plant in the family Apocynaceae, related to the milkweeds. The plant is native to southeast Africa, but it has been widely naturalized. It is often used as an ornamental plant.

Milkweed Aphids





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These tiny yellow insects are Oleander aphids, and they really like milkweed. They were introduced to the US when Oleander was first imported. If you grow milkweed, you will see them. They are all female and reproduce by cloning.

Other bugs find them delicious (top photo) and control them generally. Do not use pesticides to get rid of them – you can hose them off or squeeze them off if they bother you. They are said to give off a scent which attracts butterflies to the milkweed.

The aphids feed on the seeds within the milkweed pod but are not considered a pest since milkweed spreads easily. One way to save the pod of seeds in the presence of the aphids is to cover the pod with a shear organza bag. Once the pod opens you can harvest the seeds.

Tropical Milkweed

- Controversial–jury is still out on the use of tropical milkweed
- UC Davis professor Hugh Dingle, emeritus professor of entomology
- Art Shapiro, distinguished professor of evolution and ecology

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Asclepias curassavica is commonly known as Tropical Milkweed. It is native to the American tropics and has a pantropical distribution as an introduced species. Other common names include bloodflower or blood flower, cotton bush, hierba de la cucaracha, Mexican butterfly weed, redhead, scarlet milkweed, and wild ipecacuanha.

Tropical Milkweed doesn't die back in winter. This is a problem because it can confuse the Monarchs and they continue to breed and produce young. And because the plants over-winter they can carry the bacteria OE which causes birth defects in the butterflies. If you see a black Monarch pupa, then it is probably infected with OE.

The Monarch

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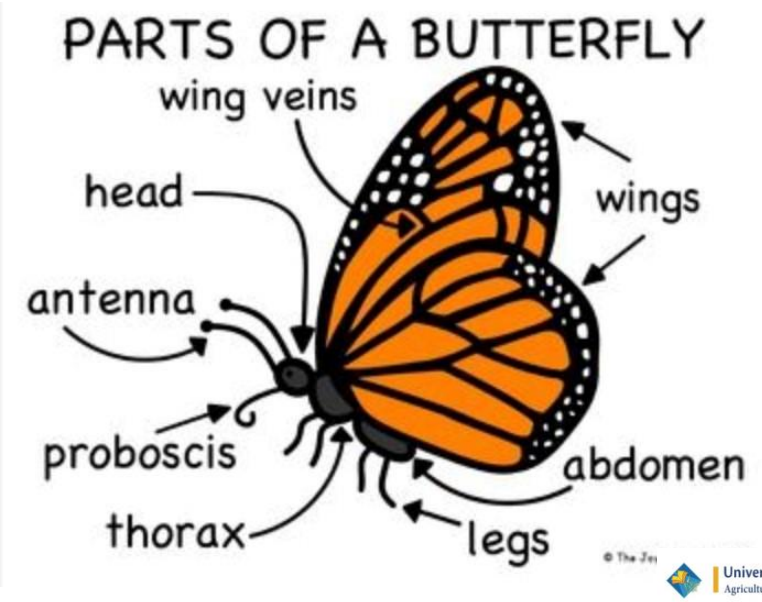

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Proboscis

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The proboscis is a straw-like tongue that is used to collect nectar.

Puddling

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“Puddling” is an often-seen behavior of migrating Monarchs. They will stop and drink wherever they can, both for hydration and for essential minerals, such as sodium.

Monarch Wings

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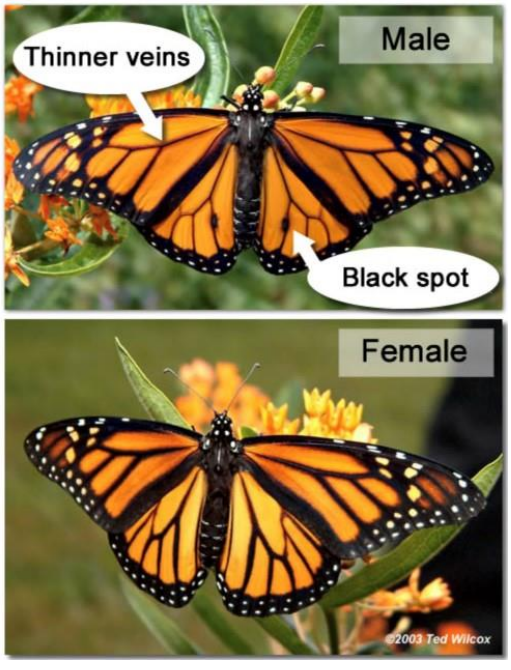
When looked at under magnification, the smooth-appearing wings of Monarchs are covered with many scale-like structures.



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Male Monarchs have thinner wing veins than females. The males also have 2 distinct black spots on their lower hind wings.

Monarch's Defenses

- Glycoside
- No bones
- Hard to chew
- Camouflage

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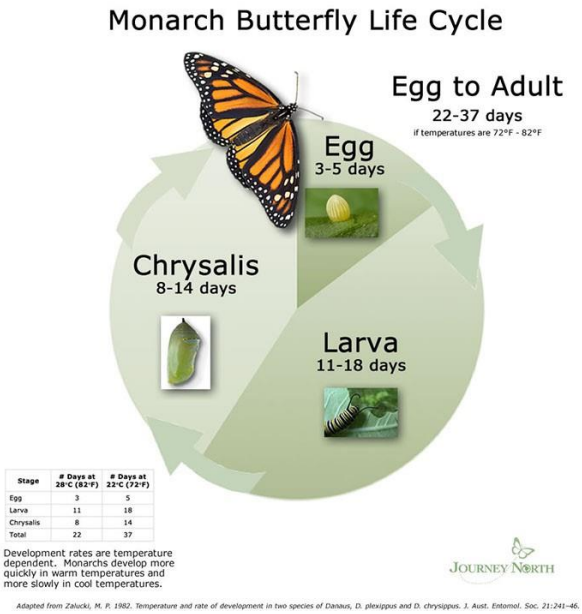
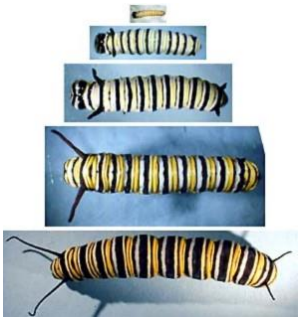
The Monarch eggs are laid and hatch only on milkweed and the larval stages eat only milkweed as they grow and molt. Milkweed contains a glycoside that imparts a bad taste to the larvae and to the adult butterflies. Would-be predators learn to leave them alone.

Monarch larvae molt four times and each stage is larger and more colorful than the previous. The 5th and larval stage builds a pupa or chrysalis, for the final phase of development into a butterfly.



- Normal life cycle of **Napa** Monarchs
  - Egg - 1 week
  - Larvae - 16 days
  - Chrysalis - 16 days
  - Total - about 5 weeks
- Migration life cycle, last generation of the year



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During the 10 days of the chrysalis phase, a rapid change happens as the caterpillar undergoes a remarkable transformation, called metamorphosis, to become the beautiful Monarch butterfly. The Monarch will fly away from the pupa and feed on flowers and enjoy its short life of about 2 to 6 weeks.

This first generation of monarch will die after laying eggs for the second generation. The second generation of monarchs are born in May and June and the third generation is born in July and August. Each generation of butterflies dies after laying eggs for the next generation.

The fourth generation of Monarchs is different than the first three generations. The fourth generation is born in September and October and goes through the same process as the first, second, and third generations but does not die after 2 to 6 weeks and does not lay eggs. Instead, this generation migrates to warmer climates along the California coast and Northern Mexico and will live for 6 to 8 months until it is time to migrate north again.

The fourth generation only becomes reproductive once it starts migrating back to the north in February and March. Its offspring become the year's first generation, and the multi-generation lifecycle begins again as the butterflies progress northward.

Environmental Cues

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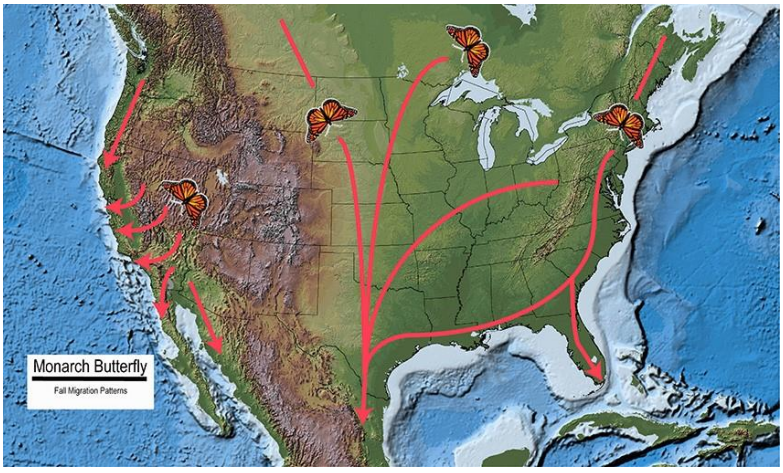
It is thought that a combination of the position of the sun and the Earth's magnetic field help cue and direct the Monarchs on their migratory path.

Migration



Monarch Butterfly Fall Migration Patterns. Base map source: USGS National Atlas.

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The Western Monarch population migrates from the Pacific Northwest and the mountain states and overwinters along the Pacific coast of California and Baja California.
The Eastern Monarch population migrates from Canada and the US Northeast into the Sierra Madre mountains of Mexico, where it overwinters.

Nectar Corridors

Photo of the Haagen Dazs Honey Bee Haven garden, UC Davis, Christine Casey, director 40

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The migrating butterfly's primary food source is flower nectar. Planting a variety of flowers in our gardens helps to provide corridors of nectar for these butterflies.

Roosting Sites

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During migration and overwintering, Monarchs will roost together in trees by the tens of thousands. This helps them keep warm and provides protection from predation.

Overwintering Sites in California

Monarch butterflies (Danaus plexippus) resting on a tree branch in their winter nesting area. Taken in Santa Cruz, California.
(GomezDavid/Getty Images)

Where to see monarchs near the Bay Area

Coastal groves and eucalyptus trees provide a temperate and protected environment for the butterflies during their hibernation. So, if you want to see their bright colors, you'll want to head south on Hwy 1 from the Bay Area.

A few places in California where monarchs frequently find refuge in colder winter months:

- Pacific Grove's butterfly grove near Monterey
- Natural Bridges State Beach in Santa Cruz
- Lighthouse Field State Beach in Santa Cruz
- Pismo State Beach in San Luis Obispo

Some lesser-known sites in Alameda county in the Bay Area where monarchs have been seen in the past include:

- The Ardenwood Historic Farm in Fremont
- Berkeley Aquatic Park in Berkeley
- Albany Hill Park in Albany

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We Are Connected

- Vulnerability of overwintering Monarchs
  - Weather
  - Municipal and commercial development = habitat loss
- Vulnerability of migrating butterflies
  - Weather
  - Development
  - Pesticides
- Nectar Corridors
  - Road map home

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Monarchs are a species on the brink! Much of their population loss is due to human activities. Human municipal and agricultural development results in habitat and nectar corridor loss, as well as pesticide exposure. Reduced populations are more vulnerable to weather events. Climate change also appears to be spurring more extreme weather.

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Click on pic or https://www.youtube.com/watch?v=Cz3U639xvOg to view.

Be a Monarch Advocate

- Plant a butterfly garden with milkweeds - native plants - flowers - water source
- Avoid use of harmful chemicals

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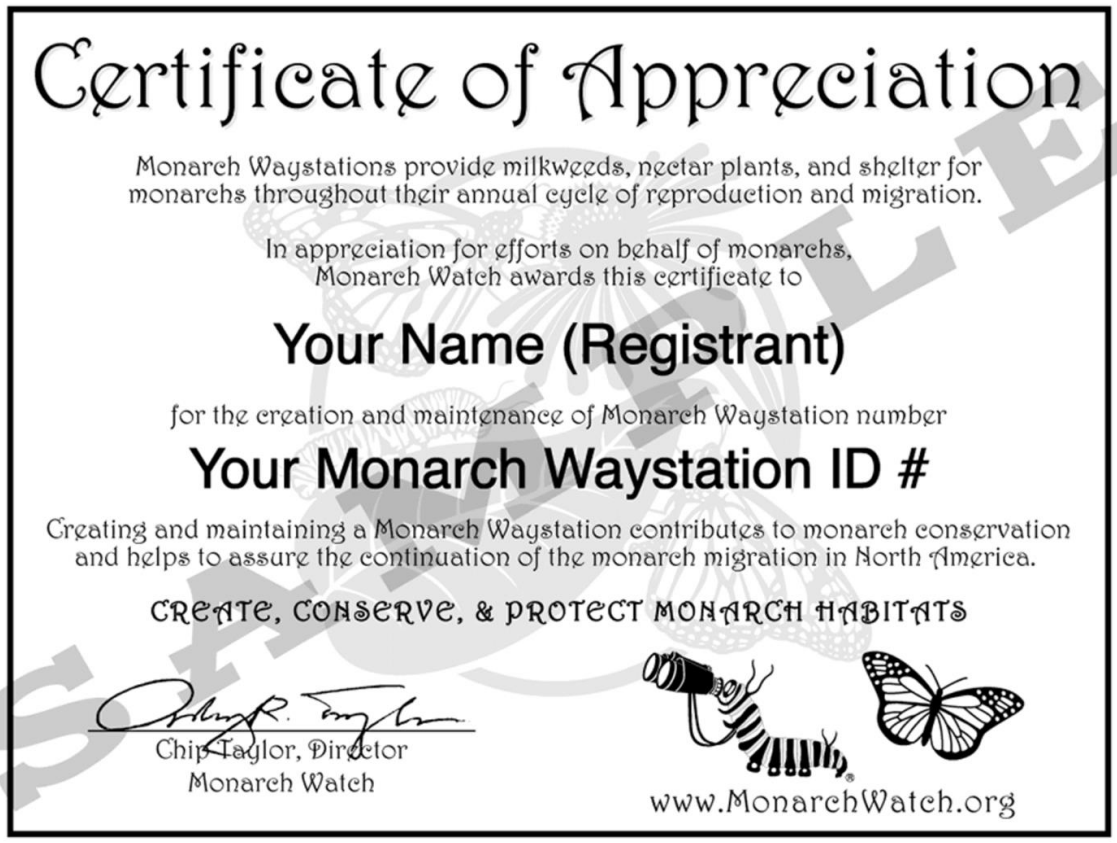
You can get certified as a Monarch Habitat by going to the Monarch Waystation website. An application on the site will tell you what is required and there is a fee. You can also purchase a sign to post near your waystation.



References

U.S. Forest Service

Monarch Butterflies

Citizen Science Opportunities

Monarch Life Cycle

Migration and Overwintering

Habitat Requirements

https://www.pollinator.org/guides_code

https://www.amnh.org/content/search?SearchText=butterflies

All about butterflies | Department of Horticulture (uky.edu)

Western Monarch Society

Xerces Society

Land Trust of Napa County

Thank you for viewing our presentation!