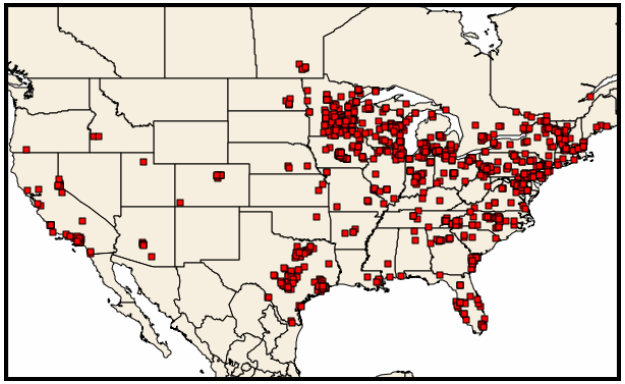
Join Our Network

People like you are monitoring monarchs all over the continent—start monitoring your milkweed patch now!

Long-term data from citizen scientists all over North America help to provide a more complete picture of the health of the monarch population.



Each dot represents a registered MLMP monitoring site. There are over 1200 registered sites throughout the United States, Mexico, and Canada.

Benefits of Monitoring

Collect data that will lead to a better understanding of monarchs and more effective conservation efforts.

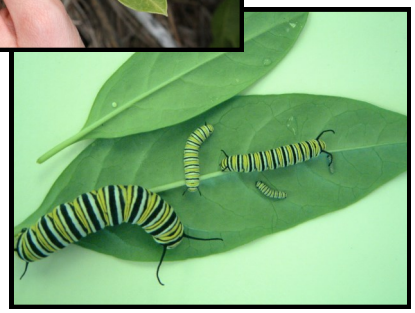
Become familiar with the complex community of organisms that call milkweed home!

Watch your site change from the beginning of the season to the end, and from one season to the next.

Contact Us
info@mlmp.org
612.625.8304
University of Minnesota
2003 Upper Buford Cir.
135 Skok Hall
St. Paul, MN 55108
www.mlmp.org

On Facebook:
www.facebook.com/monarchsMLMP

On Twitter:
www.twitter.com/MLMPCitSci



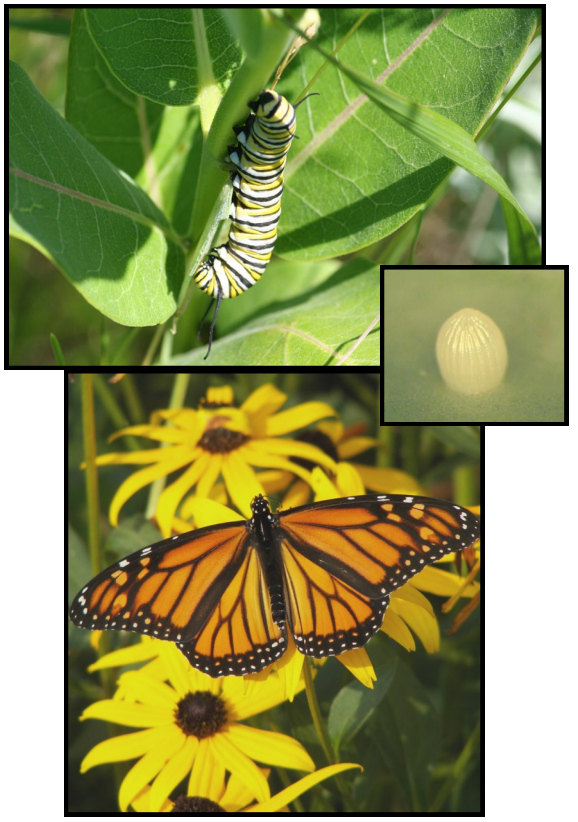
The Monarch SOS mobile app allows access to MLMP and monarch information while monitoring! Scan the QR code or visit www.naturedigger.com to learn more.

Made possible with support from the University of Minnesota Monarch Lab, University of Minnesota Extension, and the National Science Foundation.

Monarch Larva Monitoring Project

Volunteers and scientists working together to understand monarch butterfly populations across North America

www.mlmp.org



Become a Monarch Monitor Today!

What is the MLMP?

The Monarch Larva Monitoring Project (MLMP) is a citizen science project involving volunteers from across North America. It was developed in 1996 by researchers at the University of Minnesota to collect long-term data on larval monarch populations and milkweed habitat.

The data that you collect will be used by researchers and conservation managers to protect monarchs and their habitat.

"I really enjoy the weekly connection to the sites I monitor, and find that monarchs are a real focus of my life during the time that they're in Minnesota each year."
-MLMP Volunteer

The overarching goal of the MLMP is to better understand **how and why populations of breeding monarchs change** over time.

How can I Participate?

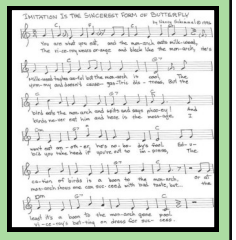
Find a Site with Milkweed
Milkweed is the only plant on which monarchs lay their eggs. Monitor milkweed in your backyard, a nearby park, or anywhere that has milkweed!

Monitor
Visit your site alone or with a group once per week. We provide datasheets for you to record your observations.

Share Your Data
Submit observations online—www.mlmp.org—and send hard copies to scientists at the University of Minnesota where your data are analyzed.

Submit Anecdotal Observations
Anecdotal observations can be submitted by anyone. These can be sightings of monarchs (eggs, larvae, or adults), milkweed, or other interesting observations at locations not registered as MLMP monitoring sites.

Share Photos, Art, or Experiences
Sign up for our monthly e-newsletter to keep up with research and share your monitoring stories with the rest of the MLMP community. You can also submit photos, artwork, poetry, or even music on our website.



Who can be Involved?

Anyone can join the MLMP! Kids, adults, youth groups, or families—monitoring monarchs provides a fun learning experience for all. Join other volunteers from across North America to help us understand and protect monarch butterflies.

"My enthusiasm to monitor, and raise monarchs is contagious to family, friends, and visitors. Teaching young and young-at-heart about one of nature's magical wonders is truly rewarding."
-MLMP Volunteer and Trainer

Join a team of volunteers from across North American in an effort to understand monarch populations!

www.mlmp.org

NECTAR PLANTS

Nectar plants provide nourishment to adult pollinators.

Bee Balm *(Monarda)*
Blooms midsummer-fall. Grows 1-4 ft. tall with a 2 ft. spread. Used in containers, beds, borders. Deer resistant.
Ⓝ **P** $$

Blazing Stars *(Liatris)*
Blooms throughout summer. Grows 2-5 ft. tall with a 1-2 ft. spread. Used in containers, beds, borders.
Ⓝ **P** $$

Coneflowers *(Echinacea)*
Blooms summer-fall. Grows 2-4 ft. tall with a 1-2 ft. spread. Used in containers, beds, borders.
Ⓝ **P** $$

Cosmos *(Cosmos)*
Blooms summer-fall. Grows 2-5 ft. tall with a 1-2 ft. spread. Used in containers, beds, borders.
A $

Goldenrod *(Solidago)*
Blooms summer-fall. Grows 2 in.-6 ft. tall with an 8 in.-3 ft. spread. Used in containers, beds, borders, slopes. Deer resistant.
Ⓝ **P** $$

Ironweed *(Vernonia)*
Blooms summer-fall. Grows 2-8 ft. tall with a 2-3 ft. spread, depending on variety. Used in containers, beds, borders.
Ⓝ **P** $$

Joe-Pye Weed *(Eutrochium)*
Blooms late summer. Grows 2-6 ft. tall with a 2-4 ft. spread. Used in containers, beds, borders, ground cover. Deer resistant.
Ⓝ **P** $$

Lantana *(Lantana)*
Blooms summer-fall. Grows 4 ft. tall with a 4 ft. spread. Used in containers, beds, borders, slopes, ground cover. Deer resistant.
A $

Rugosa Rose *(Rosa rugosa)*
Blooms late spring-early summer. Grows 4-8 ft. tall with a 4-6 ft. spread. Used in containers, beds, borders. Deer resistant.
P $$$

Zinnias *(Zinnia)*
Blooms throughout summer. Grows 1-4 ft. tall with a 1 ft. spread. Used in containers, beds, borders. Deer resistant.
A $

Ⓝ Plant is native to the Upper Midwest. **P** Plant is a perennial. **A** Plant is an annual.

Ready to Get Started?

To register your garden, visit us online at plantgrowfly.com.

E: plantgrowfly@blankparkzoo.org
P: 515-974-2612

BLANK PARK ZOO
IOWA'S WILDEST ADVENTURE

BREVARD ZOO

wit's end gardens

POLK COUNTY CONSERVATION

REAP

REIMAN GARDENS
IOWA STATE UNIVERSITY

For a full list of our partners, visit blankparkzoo.com.

Photos courtesy of Reiman Gardens & UNI Tallgrass Prairie Center.

Planting Your Garden

Plant. Grow. Fly.

BLANK PARK ZOO

From the Ground Up

First, consider your space.

Your garden can be as big as your backyard or as small as a single pot. Every garden is important and no effort is too small! To qualify as an official Plant.Grow.Fly. garden, be sure to include at least one host plant and one nectar plant from our list. When choosing where to plant your garden, favor sunny, wind-sheltered areas, as pollinators and their plants need full sunlight for at least six hours per day.

Next, choose your plants.

With the help of experts at Iowa State University's Reiman Gardens, we have developed this list of host and nectar plants that support the butterfly species of the Upper Midwest. Most of these plants are native to the region, making them easier to maintain and better adapted to our climate. The best gardens combine both nectar and host plants, encouraging pollinators to spend more time in your garden!

Start planting!

Butterflies are attracted to large splashes of color in the landscape. Planting groups of 3-5 of the same plant is important when creating these color splashes. Purchase plants of different heights, creating tiers within your garden. Choose plants with varying blooming times to provide resources throughout the entire season. See our sample garden plans on our website.

Grow green.

Make informed decisions when purchasing your plants. Ask the greenhouse if their plants are grown locally and if herbicides or pesticides have been applied. Native and non-hybrid cultivars are preferred. We want your garden to be a safe and bountiful place for pollinators to reproduce and collect nutrients.

The birds and the bees.

While your garden will be a sanctuary for butterflies, it will also help other local wildlife such as bees, birds, and mammals by providing more high-quality habitats!

For more information on planting your garden and finding seeds or plants, visit plantgrowfly.com.

HOST PLANTS

Host plants provide a site for butterflies to lay eggs and serve as food for growing caterpillars.

Pussytoes *(Antennaria)* Blooms April-June. Grows up to 1 ft. tall with a ¾-1½ ft. spread. Low maintenance ground cover. Host to American Lady. Ⓝ **P** $$

Asters *(Symphyotrichum)* Blooms in fall. Grows 1-5 ft. with a 1-4 ft. spread. Used in containers and beds. Host to Pearl Crescent and Silvery Checkerspot. Ⓝ **P** $$

False Indigo *(Baptisia)* Blooms late spring. Grows 2-4 ft. tall with a 2-4 ft. spread. Used in containers and beds. Host to Silver-Spotted Skipper and Wild Indigo Duskywing. Ⓝ **P** $$

Lupine *(Lupinus)* Blooms early to midsummer. Grows 2-3 ft. tall with a 1-2 ft. spread. Used in containers, beds, and on slopes. Deer resistant. Host to Eastern Tailed Blue and Gray Hairstreak. Ⓝ **P** $$

Milkweed *(Asclepias)* Blooms and grows throughout summer. Grows 2-4 ft. tall with a 2-3 ft. spread. Used in containers and beds. Deer resistant. Host to Monarch. Ⓝ **P** $$

Native Grasses Host to Wood Nymph, Northern Wood Satyr, Northern Pearly Eye, Crossline Skipper, Delaware Skipper, Least Skipper, Little Glasswing, Sachem Northern Broken Dash, Peck's Skipper. Ⓝ **P** $$

Violets *(Viola)* Blooms spring, fall, winter. Grows 1-12 in. tall with a 6 in. spread. Used in containers, beds, and groundcover. Deer resistant. Host to Great Spangled Fritillary, Regal Fritillary and Variegated Fritillary. Ⓝ **P** $

New Jersey Tea *(Ceanothus americanus)* Shrub. Blooms May-July. Grows 2-4 ft. tall with a 3-5 ft. spread. Host to Spring Azure, Summer Azure and Mottled Duskywing. Ⓝ **P** $$$

Herbs: Dill, Fennel, Curly Parsley Annual or perennial depending on variety. Blooms late spring-summer. Used in containers and beds. Host to Black Swallowtail. $

Purple Prairie Clover, *(Dalea purpurea)* Herbaceous perennial. Grows 1-3 ft. with a 1-1½ ft. spread. Blooms June-August. Used in containers and beds. Host for Southern Dogface, Reakirt's Blue. Ⓝ **P** $$

Black-Eyed Susan *(Rudbeckia)* Annual and perennial varieties. Blooms midsummer-fall. Grows 2-10 ft. tall with a 1-3 ft. spread, depending on variety. Used in containers and beds. Deer resistant. Host to Silvery Checkerspot. Ⓝ $$

Sunflowers *(Helianthus)* Annual and perennial varieties. Blooms throughout the summer. Grows 3-10 ft. tall with a 3-4 ft. spread. Used in beds and borders. Host to Painted Lady and Silvery Checkerspot. Ⓝ $

Penstemon *(Penstemon)* Annual and perennial varieties. Blooms spring-late summer. Grows 8 in.-6 ft. tall with a 8-20 in. spread, depending on variety. Used in containers, beds, slopes and as ground cover. Host to Buckeye. Ⓝ $$

Flip to back to see List of Nectar Plants. »

Ⓝ Plant is native to the Upper Midwest.
P Plant is a perennial.

2 Install a Pollinator Habitat Sign

☐ Please send me pollinator habitat sign(s) at $25 each (including S&H to U.S. addresses).

For international rates, visit www.xerces.org.

9" x 12"; hard-wearing aluminum. Hardware for hanging not included.

Shipping Address

Name _____

Street _____

_____

City/ State/ Zip _____

Phone *or* Email _____

☐ Check enclosed (U.S. checks only, payable to the Xerces Society); *or*,

☐ Please charge my VISA/MC/DIS for $_____

All information below is required to process the credit card.

Number _____

Expiration Date _____/_____

Signed _____

3 Spread the word!

Go online to find more information about how to help pollinators, and for fact sheets that you can download and share, available at: www.BringBackthePollinators.org

XERCES SOCIETY for Invertebrate Conservation

Three Steps You Can Take to Bring Back the Pollinators

XERCES SOCIETY for Invertebrate Conservation

WHY

Bees and other pollinators are essential to a healthy environment, yet are declining in many places. Eighty-five percent of flowering plants, including many crops, need a pollinator to reproduce. As much as one-third of our food supply relies on the work of bees. Beyond farms, pollinators are a vital part of our ecosystems.

ABOUT

The Bring Back the Pollinators campaign is based on four simple principles: grow pollinator-friendly flowers, protect and provide bee nests and caterpillar host plants, avoid pesticides, and spread the word. Why these four principles?

1. Flowers provide the nectar and pollen resources that feed pollinators.
2. A home for growing pollinators is essential. You can leave patches of bare ground and brush piles or install nesting blocks for native bees, and plant caterpillar host plants.
3. Pesticides are harmful to pollinators, especially insecticides. Herbicides reduce food sources by removing flowers from the landscape.
4. Talking to your community will encourage more people to join this important effort, helping even more pollinators!

ACTION

Take the pledge and join this campaign. With the Bring Back the Pollinators core values, pollinator conservation can be adapted to any location; whether you tend a community garden or a suburban yard, work in a city park or on a farm.

We make the commitment to you that we will work every day to protect pollinators and their habitat. Will you make a similar commitment to the pollinators? Take the pledge online, BringBackthePollinators.org, or fill out the form to the right and mail it in. Thanks!

The Xerces Society
628 NE Broadway, Suite 200
Portland, OR 97232
855-232-6639 • info@xerces.org • www.xerces.org

Regional offices in California, Massachusetts. Minnesota, Nebraska, New Jersey, North Carolina, Texas, Vermont, and Wisconsin.

Cover photograph by Mace Vaughan, The Xerces Society.

1 Sign the Pollinator Protection Pledge

To bring back the pollinators, I will:

- ☐ Grow a variety of pollinator-friendly flowers which bloom from spring through fall,
- ☐ Protect and provide bee nest sites and caterpillar host plants,
- ☐ Avoid using pesticides, especially insecticides, and
- ☐ Talk to my neighbors about the importance of pollinators and protecting their habitat!

Where are you protecting habitat?

(Please circle the one that applies.)

Farmland
Natural Area
Home Yard/Garden
Public Space
Other: _____

How much habitat are you protecting:

(Please give a conservative estimate of the amount of habitat you have installed or protected for the benefit of pollinators.)

_____ square feet
or
_____ acres

_____
(Signature)

_____
(Printed Name)

_____
(City/ State/ Zip)

Would you like to receive conservation updates from the Xerces Society?

_____
(E-mail)

Gardeners are URGED to participate in the Community Market on Saturday mornings during the months of July and August.

740-544-6439

TheGemCity.org

Toronto Community Gardens

Toronto Coalition for
REVITALIZATION
"Building our Future on the Strength of our Past"
P.O Box 121 Toronto, Ohio 43964

STAMP

TORONTO Community GARDENS

CORNER OF
N. 4TH & CLARK

Brought to you by;
The City of Toronto
Coalition for Revitalization
Main Street Gallery

GARDENING
CHEAPER THAN THERAPY
AND YOU GET TOMATOES

BENEFITS OF COMMUNITY GARDENS

Community Organizing

• Community gardens increase a sense of community ownership and stewardship.
• Community gardens foster the development of a community identity and spirit.
• Community gardens bring people together from a wide variety of backgrounds (age, race, culture, social class).

• Community gardens build community leaders.
• Community gardens offer a focal point for community organizing, and can lead to community-based efforts to deal with other social concerns.

Green Space

• Community gardens add beauty to the community and heighten people's awareness and appreciation for living things.
• Community gardens recycle tree trimmings, leaves, grass clippings, and other organic wastes back into the soil.
• Community gardens provide a place to retreat from the noise and commotion of urban environments.
• Development and maintenance of garden space is less expensive than that of parkland.
• Scientific studies show that crime decreases in neighborhoods as the amount of green space increases.
• Community gardens have been shown to actually increase property values in the immediate vicinity where they are located.

TheGemCity.org

Youth

Community gardens offer unique opportunities to teach youth about:
• Where food comes from
• Practical math skills
• Basic business principles
• The importance of community and stewardship
• Issues of environmental sustainability
• Job and life skills
• Community gardening is a healthy, inexpensive activity for youth that can bring them closer to nature, and allow them to interact with each other in a socially meaningful and physically productive way.

Children are invited to take part in the "Outdoor Garden Art Gallery

One of the community leaders talks to a group of students and advisers on how they can be involved in the garden project.

If you would like to be a gardener, sponsor, volunteer, child artist or would just like more information on the Community Gardens of Toronto contact Jeremy Troski "Garden Master" at the Main Street Gallery located 307 Main Street, Toronto Ohio 740-537-3451 or George Komar , President of the Toronto Coalition for Revitalization 740-544-6439.

Find us on Facebook — ***The Community Gardens of Toronto, Ohio***

Toronto Coalition for REVITALIZATION
"BUILDING OUR FUTURE ON THE STRENGTH OF OUR PAST"

Your School and Pollinators

Schools, Pollinators, and You!

Kids love bugs! Your school is a living laboratory where students can learn through observation and hands-on learning. These skills are developed through the Pollinator Partnership (P2) Education Programs that emphasize language arts and math requirements as well as science curriculum, all developed to the highest education standards.

P2 has created free hands-on learning materials for you and your school to build a school garden, and connect to other schools to encourage pollinator education and enrich classroom education. Resources available for free on www.pollinator.org include standards based curricula, lesson plans, posters, and much more!

Getting Started

How can your school get involved?

By visiting our website, www.pollinator.org/education.htm you will find support to:

- **Integrate** pollinator education into your classroom using our Nature's Partner's curriculum - full of fun activities, photographs, and modules for grades 3–6
- **Assign** students' roles to plant and tend a pollinator friendly garden on campus
- **Order** the **Pollinator School Garden Kit** and other fun and educational posters and brochures for your students to help them visualize the importance of pollinators. Go to **www.pollinator.org** for more details.

The **North American Pollinator Protection Campaign (NAPPC)** is a collaborative body of over 140 organizations that work for the protection of pollinators across Mexico, Canada and the United States.
The **NAPPC Education Task Force** produced this brochure for your use and information. Feedback is welcome. For more information please contact **info@pollinator.org** or **415-362-1137** or visit **www.pollinator.org**.

WILDLIFE HABITAT COUNCIL℠

NAPPC

POLLINATOR PARTNERSHIP

How Pollinators Can Help Your School While You Help Pollinators

Prepared by the Education Task Force of the North American Pollinator Protection Campaign (NAPPC)

Why should educators and students care about pollinators?

Pollinators bring us nearly 1 of every 3 bites of food we eat and are vital in the reproduction of nearly 80% of the flowering plants on the planet. Our food, our forests, our farms and our future need good pollinator-friendly practices – and school is a great place to start.

What is pollination and who are the pollinators?

Pollination happens when pollen is moved within flowers or carried from flower to flower by the wind, by water or in some cases through self-pollination and by pollinating animals such as birds, bees, bats, butterflies, moths, beetles, or other animals.

What does pollination do?

The transfer of pollen in and between flowers of the same species leads to fertilization, and successful seed and fruit production for plants. Pollination ensures that a plant will produce full-bodied fruit and a full set of viable seeds, and in some cases it increases genetic diversity to strengthen the genetic make-up of the plant.

Why does pollination matter to us?

Worldwide, roughly 1,000 of the 1,200 plant species grown for food, beverages, fibers, spices, and medicines need to be pollinated by animals in order to produce the goods on which we depend.

Foods and beverages produced with the help of pollinators include apples, blueberries, chocolate, coffee, melons, peaches, pumpkins, vanilla, and almonds, to name a few.

In the U.S., pollination by honey bees, native bees, and other insects produces $40 billion worth of products annually.

Are pollinators in trouble?

Worldwide there is disturbing evidence that pollinating animals have suffered from loss of habitat, chemical misuse, introduced and invasive plant and animal species, and diseases and parasites.

Many pollinators are federally "listed species," meaning that there is evidence of their disappearance in natural areas.

The U.S. has lost over 50% of its managed honey bee colonies over the past 20 years.

A lack of research has hindered our knowledge about the status of pollinators.

Whenever we look closely at pollinator populations, we see problems – the monarch butterfly migration across North America is showing extremely low overwintering numbers, and at least 10 different bumble bee species in the U.S. are not being spotted with normal frequency, in fact 4 appear to have disappeared from their normal ranges.

Here are 5 things you can do to help pollinators:

- Plant a pollinator garden or buffer to provide habitat and forage for local pollinating animals.
- Reduce or eliminate your use of pesticides, and if you must use them, follow directions carefully. The way you apply and dispose of a pesticide can make a big difference for pollinators!
- Educate yourself about the native pollinators in your area, and view them as your ally in making a green and sustainable world.
- Make wise consumer choices; purchase organic produce, local honey, native plants and locally produced fibers whenever possible.
- Join P2 to increase public awareness about the importance of protecting pollinators.

Pollinator Partnership

The Pollinator Partnership (P2) is the world's largest organization devoted solely to the health of pollinators, critical to food and ecosystems, through conservation, education, research, and policy. P2 is a nonprofit 501(c) 3 headquartered in San Francisco, CA. For more information or to make a tax-deductible donation contact info@pollinator.org, call 415.362.1137, or visit www.pollinator.org.

Manage for BOTH Pollinators and Plants

Areas planted to attract pollinators need to be managed to protect both the plants and the pollinators in the area.

To protect the pollinators visiting the habitat you create, you should avoid or minimize the following:

- Tillage
- Insecticides and Some Fungicides
- Plastic Mulch
- Removal of Beneficial Plants

Little-Known Fact: Leaving natural areas protects and attracts native pollinators by providing food and a safe haven away from insecticides.

Assistance for New Jersey Farmers

Contact Jolie Goldenetz Dollar, Pollinator Habitat Restoration Specialist for the Mid-Atlantic Region, at the Cape May Plant Materials Center for help with pollinator conservation and native plant restoration.

Location: 1536 Route 9 North
Cape May Courthouse, NJ 08210
Phone: 609.465.5901, ext. 101
Email: jolie.dollar@nj.usda.gov.

Pollinator Habitat Funding

Funding for pollinator habitat is available through the following NRCS programs:

- Conservation Stewardship Program (CSP)
- Environmental Quality Incentives Program (EQIP)
- Wildlife Habitat Incentives Program (WHIP)
- Agriculture Management Assistance (AMA)

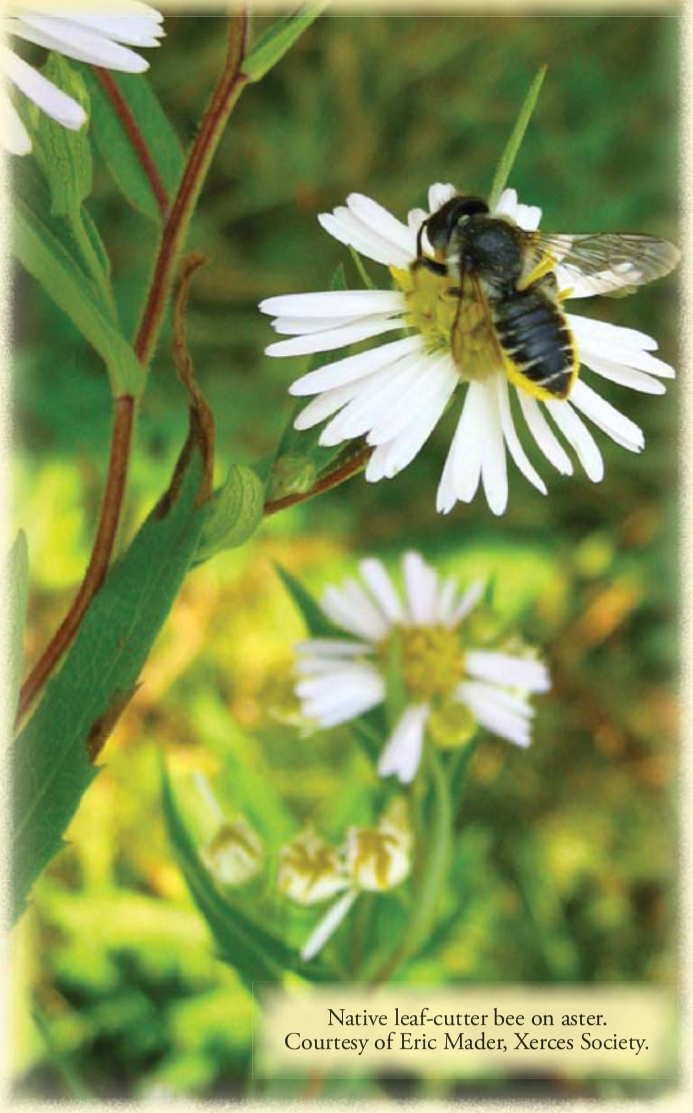
Through these programs, you can select any of the following conservation activities to help you attract and protect native pollinators on your farm.

- **Pollinator Plantings –** provide a food source and secure nesting for ground-nesting bees by establishing a variety of flowering plants. Use NRCS practices such as:
  - » **Conservation Cover**
  - » **Field Borders**
  - » **Early Successional Habitat**
  - » **Tree/Shrub Establishment**
- **No Till Planting –** protects ground-nesting pollinators by reducing ground disturbance.
- **Pest Management –** protects pollinators by reducing pesticide applications.
- **Buffer Plantings -** marginal areas around organic farms can include pollinator plantings.

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service
www.nj.nrcs.usda.gov

May 2011

Attracting Native Pollinators to Your Farm



Native leaf-cutter bee on aster.
Courtesy of Eric Mader, Xerces Society.

The Importance of Pollinators

One out of every three mouthfuls of food and drink we consume is available because of pollinators. Although there are many animals that play a role in the pollination of our food, bees are the most important of these pollinators.

Historically, the agriculture industry has used managed hives of European Honey Bees for pollination. With the recent decline of this species due to colony collapse disorder, it is important to diversify the pollinators we use for crop production and supply valuable pollinator habitat. This habitat benefits both native bees and honey bees.

Native Bee Pollinators Can Help!

Whether you are producing fruits, vegetables, or both, it is beneficial to attract and protect native pollinators.
Native bees can provide the following benefits:

- More effective flower pollination than honey bees, on a bee-per-bee basis
- More active during cooler and wetter conditions compared to honey bees
- More abundant and larger fruit production because of buzz pollination
- Increase in crop yields because of added pollination service
- Reduction of dependence on and costs related to rented commercial bees, such as the European Honey Bee.

Buzz pollination results in more abundant and larger fruit production.

Mace Vaughan, Xerces Society

Attracting Native Pollinators

PROVIDE THE BASICS: Food, Shelter, and Protection from Insecticides

➢ Food: Pollen and Nectar from Flowers

Plant pollinator-friendly flowering plants to attract native bees. These plantings should include native plants with varied bloom times to maximize the diversity of pollinators and provide a food source throughout the entire growing season.

These plantings can be part of a field border, riparian buffer, marginal production area, or a hedgerow.

➢ Shelter: Three Types of Bee Nests

Matthew Shepherd, Xerces Society

Two-thirds of all native bees are solitary *ground-nesting*. For these bees, limit tillage to only those areas where it is needed to avoid disturbing ground nest sites.

Since *wood-nesting* solitary bees make individual nests in beetle tunnels in snags (standing dead trees) or artificial nest structures, nesting tubes can be placed in habitat areas.

Mace Vaughan, Xerces Society

For *cavity-nesting* social bees, such as the bumble bee, make sure your landscape has some unmowed or wild areas, especially adjacent to hedgerows or forest edges.

Little-Known Fact: Most native bees are unlikely to sting because they don't have a communal nest to protect. The yellow jackets and other stinging wasps that eat rotting fruit or hang around picnic areas are not bees, nor are they significant pollinators *(Xerces Society).*

➢ Protection from Insecticides

Pollinators can be negatively affected or killed by pesticides, especially insecticides. To protect and attract pollinator populations, it is very important to limit or avoid using insecticides.

If you do need to use insecticides, carefully protect the pollinator habitat areas by:

- Minimizing use
- Using the least toxic formulation (see chart below)
- Avoiding application to flowering plants
- Always following the label
- Spraying during dry and calm conditions
- Spraying right after dusk when bees are least active if possible.

When using insecticides, choose the formulation that is least toxic to bees.

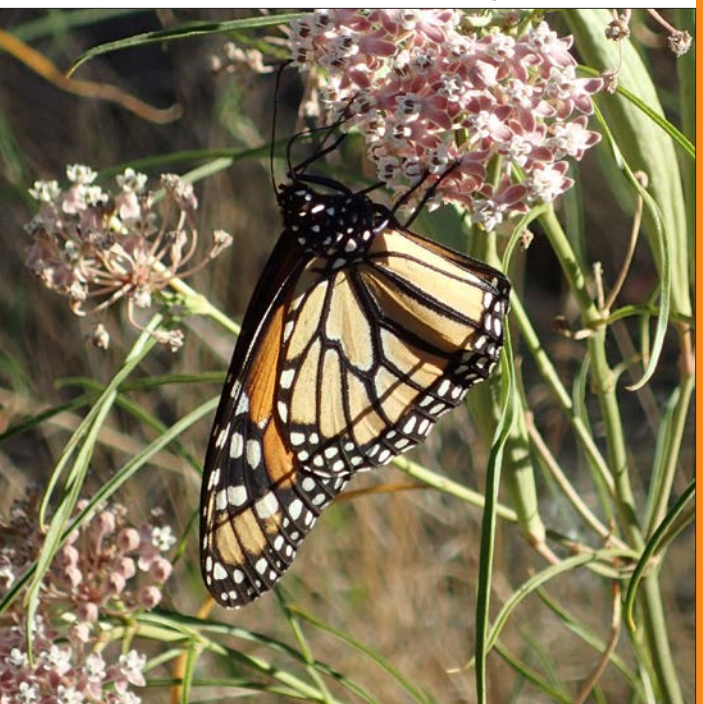
Formulation	Toxicity to Bees
Dust	Most Toxic
Wettable Powder	
Flowable	
Emulsi able Concentrate	
Soluable Powder	
Solution	
Granular	Least Toxic

Monarch Ecology

The monarch butterfly is well-known for its long-distance seasonal migration and its spectacular winter gatherings. While many monarchs migrate to central Mexico, monarchs in western states also migrate to the California coast, which is the only place in the United States that regularly hosts the awe-inspiring sight of thousands of monarchs gathered for the winter. These days, most of California's monarchs cluster in groves of nonnative eucalyptus, although they prefer native trees such as Monterey pine, Monterey cypress, and redwood. Many of these native trees are now less common on California's coast, which may explain why monarchs tend to be seen on eucalyptus.

In the spring, monarchs disperse across California and the West, searching for milkweed plants on which to lay their eggs. Monarch caterpillars will only eat milkweed to grow and develop into adults. Several generations are produced throughout the spring, summer, and fall, with the last generation migrating to the California coast in the fall. Remarkably, monarchs overwinter in the same groves of trees as prior generations. How they navigate to these groves each year remains a mystery.

Monarch nectaring on narrow-leaved milkweed, a key caterpillar host plant in western states. (USFWS Pacific Region.)



XERCES SOCIETY for Invertebrate Conservation

The Xerces Society is a nonprofit organization that protects wildlife through conservation of invertebrates and their habitat. To protect western monarchs, the Xerces Society is working with multiple partners, to:

- Understand where monarchs are breeding in the western United States in order to prioritize restoration and active management efforts,
- Increase production of native milkweed seed to help reverse loss of milkweed in important monarch breeding areas,
- Protect, manage, and restore coastal California overwintering habitat,
- Empower citizen scientists and land managers to track and conserve western monarchs and their habitats, and
- Provide technical guidance to public and private agencies and citizens on monarch habitat restoration and enhancement.

www.xerces.org/monarchs

MONARCH JOINT VENTURE

The Monarch Joint Venture is a partnership of federal and state agencies, nongovernmental organizations, and academic programs that are taking a science-based approach to protecting the monarch migration across the Lower 48 U.S. states. The MJV is achieving this goal through a combination of: 1) monarch habitat conservation; 2) education; and 3) research and monitoring to inform monarch conservation efforts.

www.monarchjointventure.org

PACIFIC GROVE MUSEUM of NATURAL HISTORY

The Pacific Grove Museum of Natural History inspires discovery, wonder, and stewardship of the natural world. The Museum highlights the miraculous life and endangered migration of monarch butterflies throughout the California Central Coast, and provides education and interpretation at the Monarch Grove Sanctuary in downtown Pacific Grove.

www.pgmuseum.org

Support for the Xerces Society's western monarch conservation projects comes from Xerces Society members as well as Alice C. Tyler Perpetual Trust, Bay and Paul Foundations, Hind Foundation, CS Fund, the Disney Conservation Fund, the Edward Gorey Charitable Trust, Endangered Species Chocolate, Monarch Joint Venture, the Turner Foundation, Inc., and U.S. Fish and Wildlife Service.

(Front photo: The Xerces Society/Carly Voight.)

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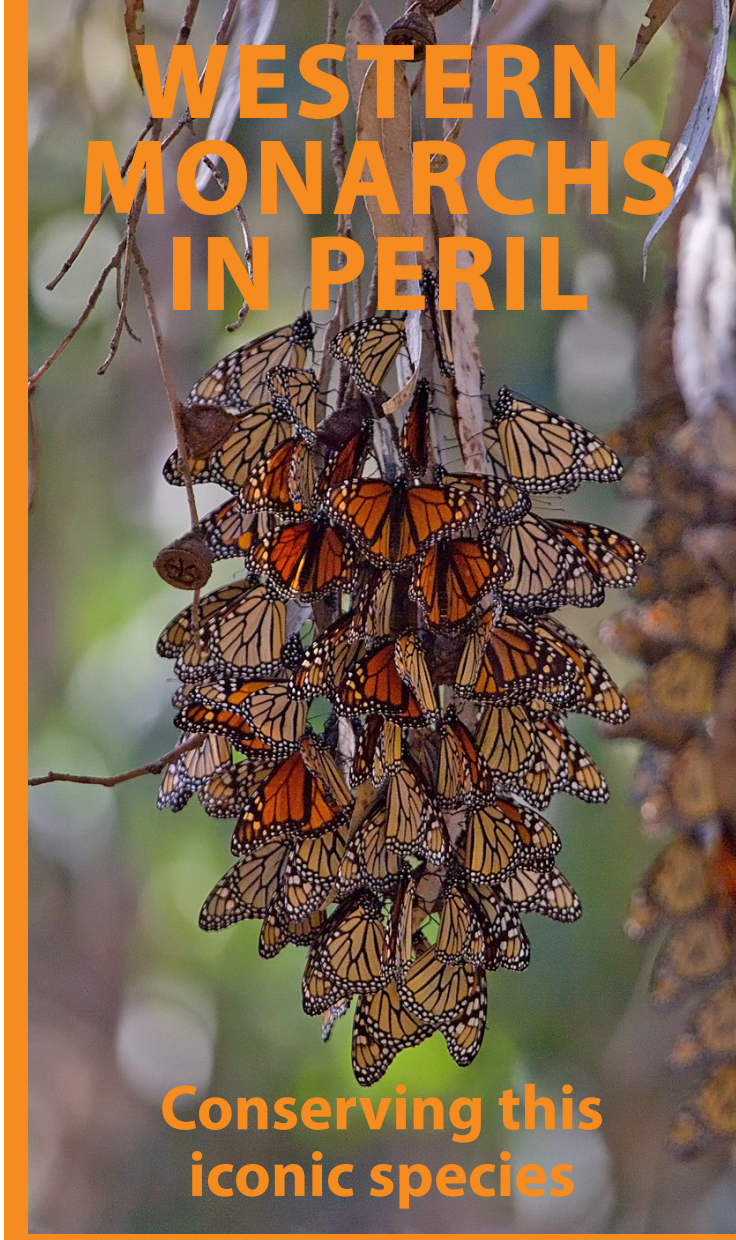
WESTERN MONARCHS IN PERIL



Conserving this iconic species

Hundreds of thousands of monarch butterflies spend the winter in tree groves along the coast of California. They travel from as far north as Canada, but with a 74% decline in the numbers since the late 1990s, the future of this migration is at risk.

Read about how you can help!

Monarchs in Decline

The future of the western monarch migration is at risk. Since 1997, citizen scientists have monitored California's overwintering monarchs, revealing a 74% decline in the population since the late 1990s. This underscores the need to gain a clear understanding of the status of monarchs and their habitat, and to take conservation action.

Scientists suspect monarchs are disappearing because:

- **Breeding habitat is being lost and degraded** due to herbicides and insecticides, urban and rural development, and the intensification of agriculture, as well as long-term drought, which may be linked to climate change;
- **Overwintering groves are being destroyed** by development; and
- **The quality of overwintering habitat is declining** as trees in the monarch groves age.

Overwintering cluster in Monterey pine. (The Xerces Society/Candace Fallon.)

Monarch caterpillar on showy milkweed. (The Xerces Society/Candace Fallon.)

Six Things YOU Can Do To Help Protect Western Monarchs and Their Habitat

1. **Plant native milkweed in its historic range.** This can be in your backyard, at your workplace, or at your school. Nonnative tropical milkweed, although widely available, should not be planted because it may interfere with the monarchs' natural breeding and overwintering cycles and increase monarch parasites. We also recommend against planting milkweed within 5–10 miles of an overwintering site, as it may confuse monarchs into breeding out of season. Use our Milkweed Seed Finder to find plant suppliers: http://www.xerces.org/milkweed-seed-finder/.
2. **Plant native flowers.** Monarchs need nectar to provide energy to migrate, breed, and overwinter. Flowers can be planted anywhere, including overwintering sites. See http://www.xerces.org/monarch-nectar-plants/ for lists of good flowers to use in your area.
3. **Avoid using insecticides and herbicides.** These may kill or harm butterflies or caterpillars and the plants that monarchs use for nectar or breeding.
4. **Consult with a monarch expert before cutting or trimming any trees,** if you live near an overwintering site or monarchs roost on your property. Monarchs are very choosy about the overwintering sites they use. Improper tree trimming or removal may result in unsuitable habitat for overwintering monarchs.
5. **Become a citizen monitor.** The Xerces Society is looking for volunteers to:
   - visit overwintering sites to monitor monarch populations for the Western Monarch Thanksgiving Count, www.westernmonarchcount.org; and
   - report monarch and milkweed observations across the West through the Western Monarch Milkweed Mapper, www.westernmonarchmapper.org.
6. **Support monarch conservation efforts.** Volunteer for or donate money to projects and nonprofit organizations that protect monarchs.