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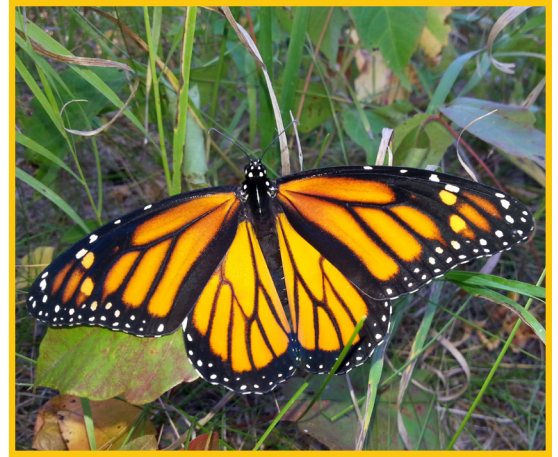


The Monarch Butterfly and other Pollinators

Monarch butterflies are beautiful to look at, but did you know that they also play an important role in the ecosystem? Pollinators like Monarchs are in trouble, but Biltmore is doing its part to help—and so can you!

What are Pollinators, and why are they important?

Pollinators are animals that carry pollen from flower to flower. Without their help, plants wouldn't be able to reproduce or make seeds, fruits, berries, and vegetables. Pollinators are responsible for 1 out of every 3 bites of food we eat. Monarchs are not the only pollinators in trouble. Bees are also dying out, but Monarchs have become a flagship species for all pollinators. This means that they have been chosen to help raise awareness about the struggle of all pollinators. They are the ambassadors for the conservation effort to stimulate action and generate support.



A Food Web

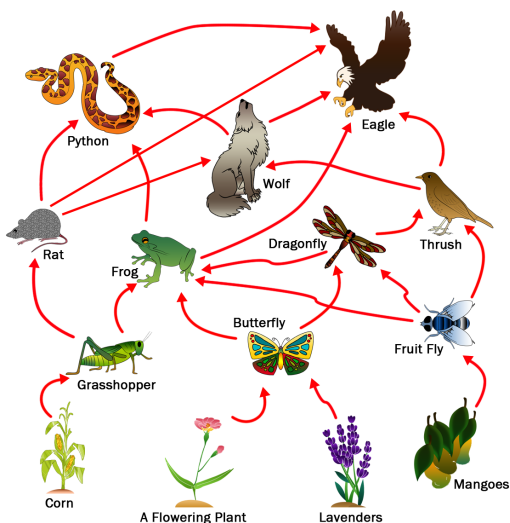


Photo provided by k8schoollessons.com

Pollinators' Role in Food Webs

- Monarch habitat is shared by other pollinators such as butterflies, moths, bees, insects, birds, bats, and many other animals. Monarchs are one piece of a complex food web and ecosystem.
- In a food web, every plant and animal is dependent upon each other for their existence. For instance, Monarchs need the milkweed plant to feed their caterpillars. The milkweed plants need the adult Monarchs and other pollinators to spread their pollen and create more plants. Plants attract other insects, butterflies, larvae, and worms which become food for birds, mice, lizards, frogs, and toads. They in turn become food for snakes, hawks, owls, raccoons, and foxes. Without the producers (plants) the consumers will die from lack of food attracted by the plants. Without the predators the smaller animal and insect population would become too large and consume all the plants. Without any plants the animals and people would die of starvation.
- If one piece of the web is disturbed, all other species are affected. This is why it is important to have a variety of plant and animal life to support a healthy ecosystem.

Why are Monarchs and other pollinators in trouble?

The Monarch population has reached record low numbers in recent years, and could become an endangered species.

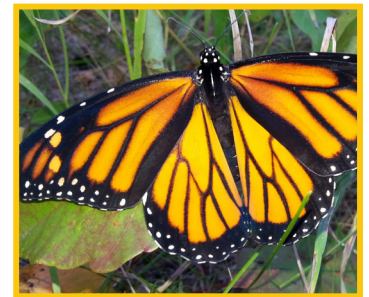


The Importance of Milkweed

- Monarch caterpillars only eat milkweed so this is where the adult Monarch female lays her eggs.
- Monarch caterpillars also use milkweed plants as shelter from predators such as birds, toads, and other insects.
- Milkweed plants are getting scarce due to the increased use of pesticides on farm crops, the loss of wild grasslands due to the growth of cities and subdivisions, the use of industrial chemicals and air pollution, the use of herbicides and frequent mowing along roadsides, and the loss of wildflowers due to the increase in lawns, managed parks, and formal gardens.
- Without milkweed plants, Monarchs can't successfully reproduce and the species declines.

Other Problems for Monarchs

- Without a variety of wildflowers, the adult Monarchs cannot feed or drink nectar.
- Their winter sheltering spaces are disappearing. Eastern North American Monarchs travel to the same locations in Mexico each year to spend the winter. These overwintering sites are being threatened by the loss of forests due to legal and illegal logging for profit, and clearing land for farming.
- Climate change can also threaten their existence with extreme drought, severe storms, and changes in precipitation and air temperature. It is predicted that one of the many effects of climate change will be wetter and colder winters. If they are dry, Monarchs can survive below freezing temperatures but if they get wet and the temperature drops, they will freeze to death.
- If the temperature stays hot late into the fall, the Monarchs don't know to fly to a warmer climate. Then when the temperature turns cold, the Monarchs could freeze or starve from lack of vegetation. Monarchs depend on temperature to trigger migration and reproduction.



Female wing pattern.



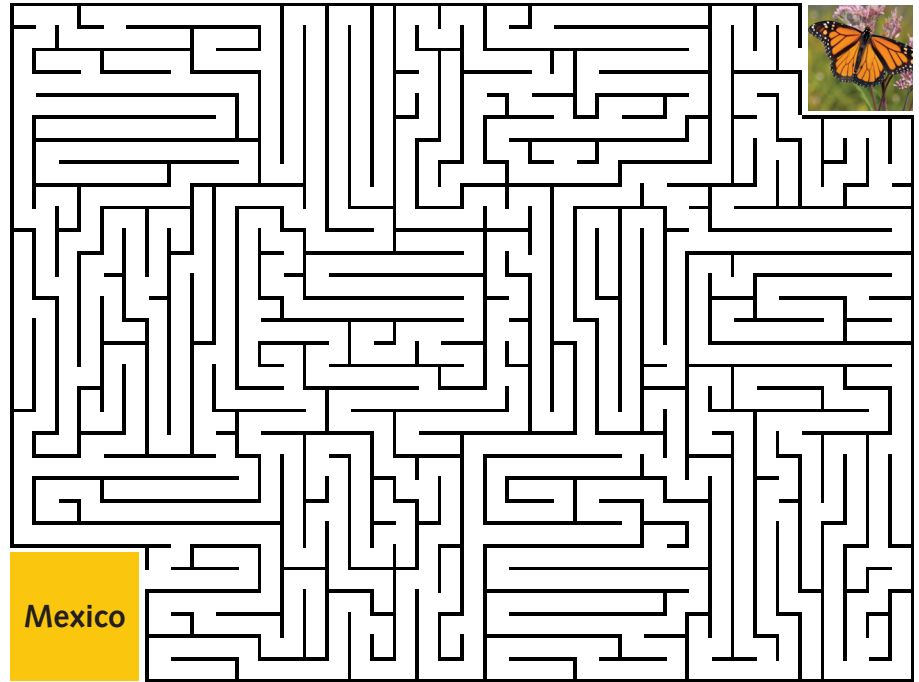
Male wing pattern. Note the black spot on each hind wing.



Fun Facts about Monarch Butterflies

Migration

1. Just as many bird species migrate south, North American Monarchs travel from their summer breeding grounds each fall to spend the winter in warmer locations. Monarchs who live east of the Rocky Mountains travel up to 3,000 miles to central Mexico! Monarchs west of the Rockies overwinter in southern California. Decreasing day length and temperatures, along with aging milkweed and nectar sources, trigger a change in Monarchs; this change signifies the beginning of the migratory generation.



2. Millions of Monarch butterflies make the trip down to Mexico to roost for the winter. During the migration tens of thousands will land on a single tree in certain areas along their migratory path. Monarchs can travel between 50–100 miles a day; it can take up to two months to complete their journey to winter habitats.
3. In 1986, the Mexican government created the Monarch Butterfly Biosphere Reserve which now protects 217 square miles of forests in the Sierra Madre mountains where hundreds of millions of Monarchs spend each winter. Local organizations are also working to stop the illegal harvesting of trees on the reserve to protect wintering habitat.
4. Upon reaching their destination in central Mexico beginning in early November, Monarchs roost in the millions on oyamel fir trees (also called sacred firs) on south-southwest facing mountain slopes. These locations provide cool temperatures, water, and adequate shelter to protect them from predators and allow them to conserve enough energy to survive the winter. The reverse journey begins in March when the Monarchs head north again, feeding and reproducing along the way.

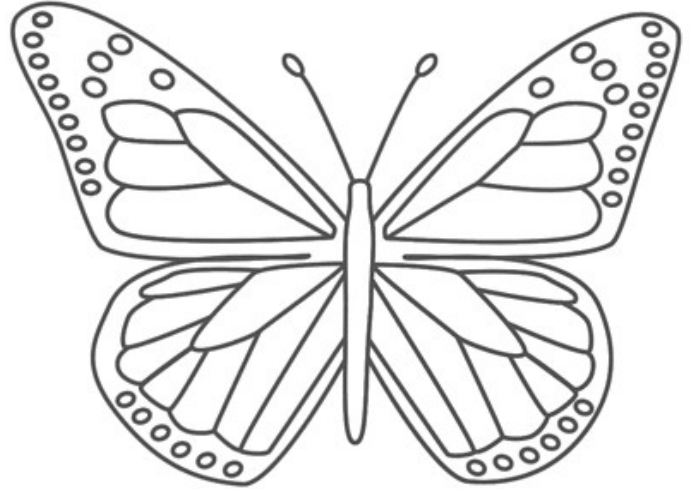
Monarchs can produce four generations during one summer.

- The first three generations will have life spans from 2–6 weeks and will continue moving north. During this time they will mate and have the next generation that will continue the northward migration.
- The fourth generation is different and can live up to nine months. These are the butterflies that will migrate south for the winter to either Mexico or southern California.
- Most Monarch butterflies that emerge after mid-August in the eastern U.S. do not reproduce. They begin to migrate south in search of the overwintering grounds—a place where they have never been before.



More cool facts about Monarchs

5. Monarchs fly at speeds ranging between 12 to 25 miles an hour.
6. Monarch butterflies store a poison called Cardiac Glycosides that they ingest as a caterpillar by feeding on the leaves of the milkweed plant. The Monarch's bright colors warn birds and other predators that they are toxic and taste bad.
7. Their process of communication uses colors and scents. Chemicals discharged from the hind wing glands help the males to attract a mate.
8. The female Monarch lays about 250-500 eggs per day at the rate of one egg at a time. Some females lay more than 1,000 eggs!
9. Monarchs use their eyes to locate flowers, they use their antennae to smell nectar, and receptors called "tarsi" in their feet to determine sweetness.



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MONARCH WORD SEARCH

Find the words listed below:

- Antenna
- Butterfly
- Caterpillar
- Chrysalis
- Eggs
- Endangered
- Habitat
- Larvae
- Metamorphosis
- Migrate
- Milkweed
- Monarch
- Nectar
- Pupa
- Waystation



Helping Monarch Butterflies survive

The Monarch Watch Tagging Program

The Monarch tagging program is a large-scale citizen science project that was initiated in 1992 to help understand the dynamics of Monarch fall migration through mark and recapture. Tagging helps answer questions about the origins of Monarchs that reach Mexico, the timing and pace of the migration, mortality during the migration, and changes in geographic distribution. Each fall, Monarch Watch distributes more than a quarter of a million tags to thousands of volunteers across North America who tag Monarchs as they migrate through their area. These “citizen scientists” capture Monarchs throughout the migration season, record the tag code, tag date, gender of the butterfly, and geographic location, then tag and release them. At the end of the tagging season, this data is submitted to Monarch Watch and added to their database to be used in research.

Monarch Way Stations

To minimize the impact of climate change and other threats, it is important to maintain corridors of suitable Monarch and milkweed habitat, and ensure that any pressures on their populations are minimized. A Monarch Waystation is an intentionally-managed garden that provides food and habitat for the Monarch butterfly population as they head north and south in their migration.

Creating a Monarch Waystation can be as simple as adding milkweed plants and nectar sources to existing gardens or maintaining natural habitats with milkweed. No effort is too small to have a positive impact.

To show your support of Monarch conservation, you can have your Monarch habitat certified as an official Monarch Waystation by Monarch Watch. Your habitat will be included in the Monarch Waystation Registry, an online listing of Monarch Waystations worldwide, and you will be awarded a certificate bearing your name and your habitat’s unique Monarch Waystation ID number. Visit their website at www.Monarchwatch.org.

As of April 29, 2019, 23,507 Monarch Waystation habitats have registered with Monarch Watch!

Biltmore Registered as a Monarch Waystation!

- In the spring of 2019, Biltmore registered with Monarch Watch and began planting acres of milkweed plants to help sustain the Monarchs as they migrate.
- Biltmore is also involved in tagging and releasing Monarch butterflies to help with the citizen scientist monitoring program
- Since we already maintain dozens of flower gardens with a wide variety of plants, including native milkweed, we are a perfect stopping spot for butterflies and all pollinators. Our plants provide both sustenance and shelter.





What can kids do?

- You can help Monarchs by planting milkweed and wildflowers for them to eat. Plant your Monarch habitat in your own backyard or encourage your school to plant one.
- Your classroom could petition the city to plant milkweed plants in its local parks. Your town could become part of the Monarch waystation corridor.
- You can research and learn about pollinators and share what you learn with other people.
- Encourage your teacher to get your class involved as citizen scientists. Your class could collect several Monarch chrysalises and watch them hatch in an aquarium. When the butterflies emerge they can be tagged and released into the wild and monitored.
- Monarch Watch has milkweed grant programs that provide free milkweed plants for restoration projects and free milkweed for schools and educational non-profits.

Find an object at Biltmore that starts with each letter of the word **MONARCH**

M _____

O _____

N _____

A _____

R _____

C _____

H _____

Four stages of the Milkweed plant:

1. Emerging green leaves



2. Milkweed flower



3. Drying seed pod



4. Seeds being released

