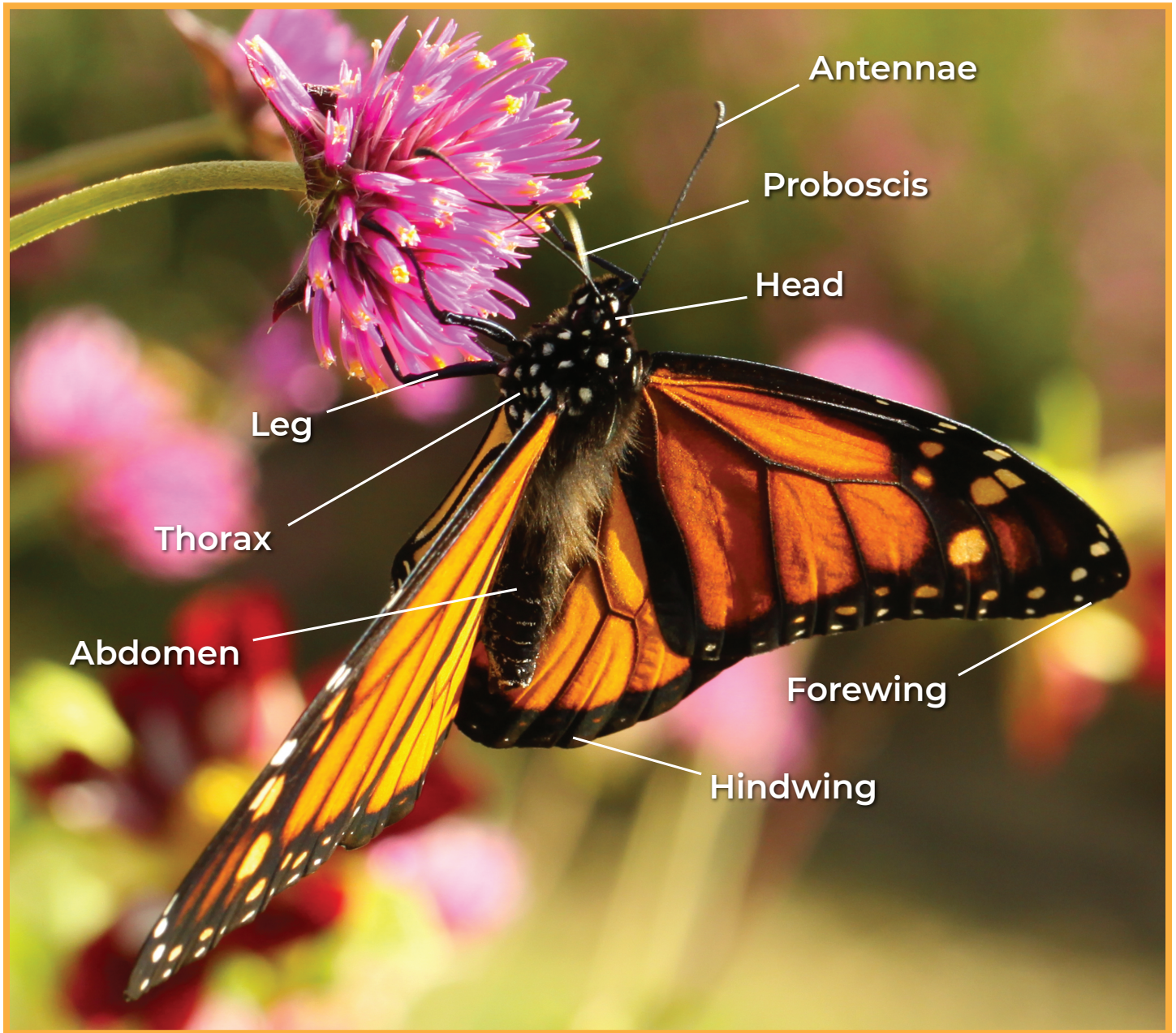


Western Monarch Mystery Challenge

Engaging kids and families on western monarch butterflies to help fill knowledge gaps

The Western Monarch Mystery Challenge is a project led by Washington State University and Tufts University in collaboration with University of California, Santa Cruz and The Xerces Society for Invertebrate Conservation.

What Makes a Monarch a Monarch?



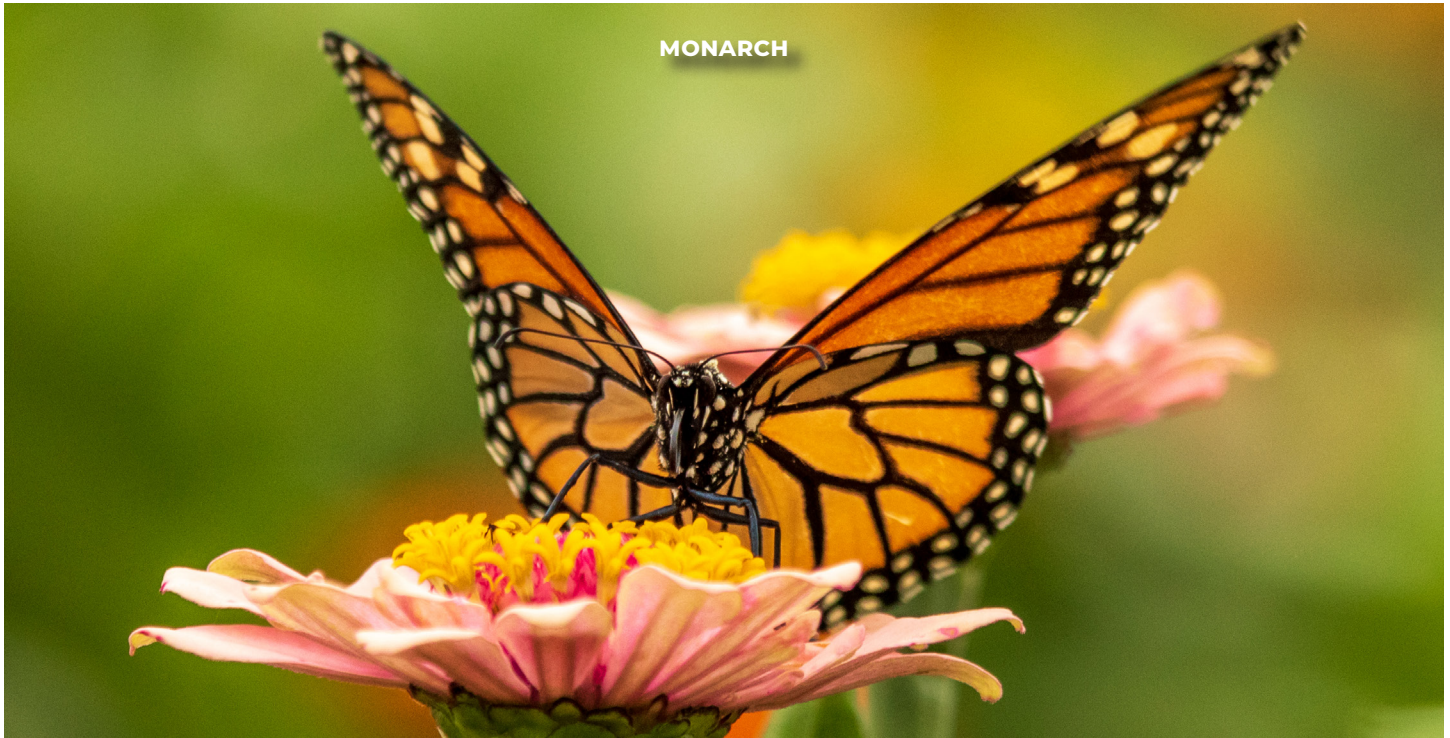
Like all butterflies, monarchs have 4 wings (2 forewings and 2 hindwings), a head, thorax, abdomen, legs, antennae, and a proboscis (a straw like tongue for drinking nectar). But what makes monarchs stand out from other butterflies are their unique traits and color patterns. Monarchs are orange butterflies with prominent black veins on their wings which are outlined with black borders and white spots. But this description sounds similar to other butterflies as well as monarchs.

It can be easy to mix up monarch butterflies with other species that may have similar coloring, or wing patterns. On the next page you can practice identifying monarch butterflies. Above is a picture of a monarch butterfly with all of its body parts labeled. Can you see what makes a monarch butterfly different from other butterflies? And in what ways are they similar to other butterflies?

Practice identifying monarch butterflies on the next page!

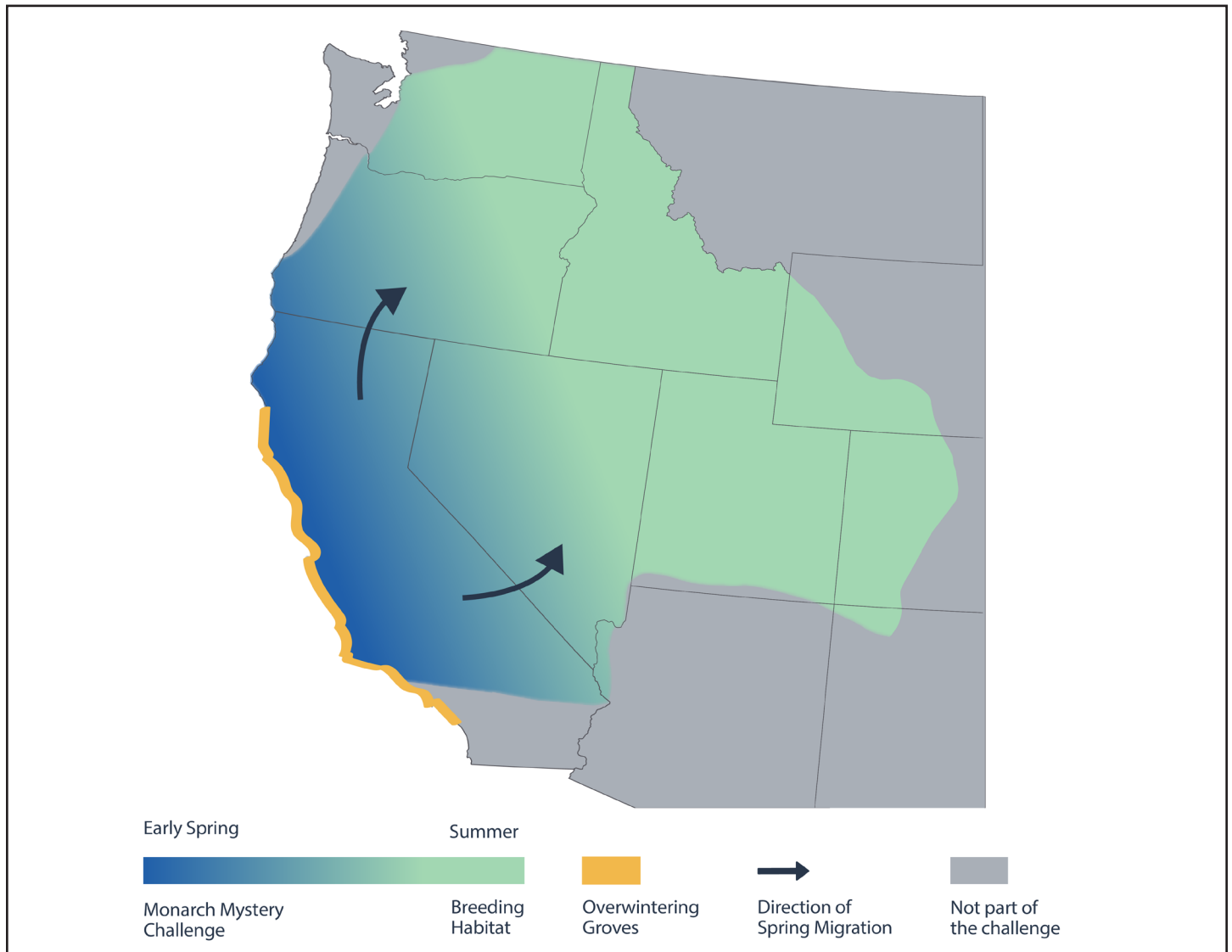
Can You Spot the Difference?

Look at all 5 butterflies on this page. The monarch butterfly is the first (top, largest) photo. The other four are a gulf fritillary (top left), western tiger swallowtail (top right), California tortoiseshell (bottom left), and the painted lady (bottom right). **What makes each butterfly different from the others?**



The Monarch Mystery

Did you know that scientists are trying to solve a mystery about the western monarch? Below is a map showing where western monarchs live. In the winter western monarchs live along the central coast of California then migrate east and north in the spring. But scientists are not sure exactly what the butterflies are up to between the months of February and April. This map shows where scientists think the butterflies spend the spring and summer, but they need your help to be sure.



Why is it important for scientists to solve this monarch mystery?

For more than 30 years fewer and fewer monarchs have been seen in the overwintering groves every year. A population that once was more than 8 million butterflies strong has dropped to less than 2,000 butterflies in wintering sites. Scientists hope that by learning more about monarch behavior between February and April they will be able to discover ways of helping the monarchs reproduce and increase the number of butterflies in the west. To do this, a team of scientists created the Western Monarch Mystery Challenge - and they are asking for your help.

**YOU CAN HELP SCIENTISTS SOLVE THE MYSTERY
BY LOOKING FOR MONARCHS IN THE SPRING!**

Western Monarch Mystery Challenge



Become a community scientist and help researchers by participating in the Western Monarch Mystery Challenge. Join the challenge by taking pictures of monarchs within the area highlighted in the map on the previous page. Make sure you get the permission of someone over the age of 18 first! Do not worry about your photos being far away or blurry. All photos help build up a catalog of data for scientists to use in their research. What is most important is a record of the monarch sighting including the date and location!

Getting your data and sightings to the Monarch Mystery team is simple - just email the photo directly to the team at MonarchMystery@wsu.edu, along with the date and location the photo was taken. Or to record your data on the go upload your

photos using [iNaturalist](#) - a fun app that helps scientists around the world.

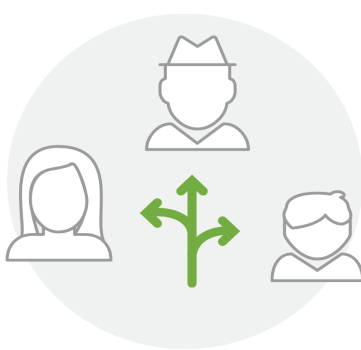
To use iNaturalist follow these simple steps after downloading the app and creating an account:

- 1) Take a photo of any living organism, such as an adult monarch butterfly.**
- 2) Upload the photos to iNaturalist.**
- 3) Add notes to your photos and talk to other users about their research.**

All of the data submitted by community scientists will be put in a database, the Western Monarch Milkweed Mapper, that everyone in the community can access. You can also submit your sightings directly to the database: <https://www.monarchmilkweedmapper.org/>.



1



2



3

Record your observations

Share with fellow naturalists

Discuss your findings

IMAGE SOURCE: WWW.INATURALIST.ORG/

Milkweed and the Monarch Life Cycle

Monarchs require milkweed sources throughout their life cycle.

1. Monarch eggs are only laid on milkweed plants
2. Monarch caterpillars only eat milkweed plants
3. A chrysalis is formed when the caterpillar is large enough
4. Adult monarchs eat the nectar produced by flowers, including milkweed

Below you will see photos of four different types of milkweed. These four are examples of milkweed species that are native to California and grow naturally in monarch habitats (image source: Stephanie McKnight & The Xerces Society):

- Heart-leaf milkweed (*Asclepias cordifolia*)
- Woollypod milkweed (*Asclepias eriocarpa*)
- Narrow-leaf milkweed (*Asclepias fascicularis*)
- Showy milkweed (*Asclepias speciosa*)

These are all great species to plant in your garden to attract butterflies.

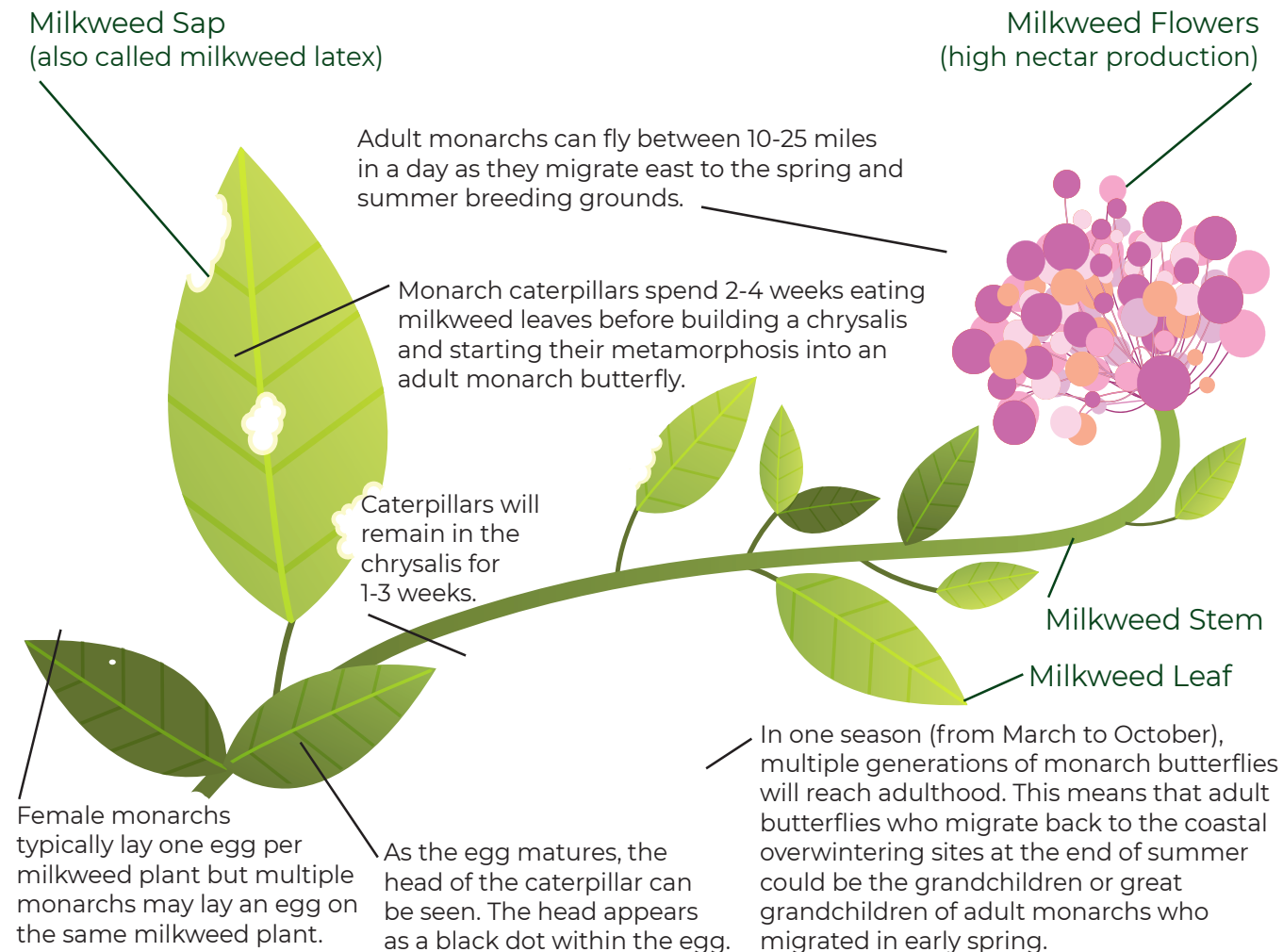
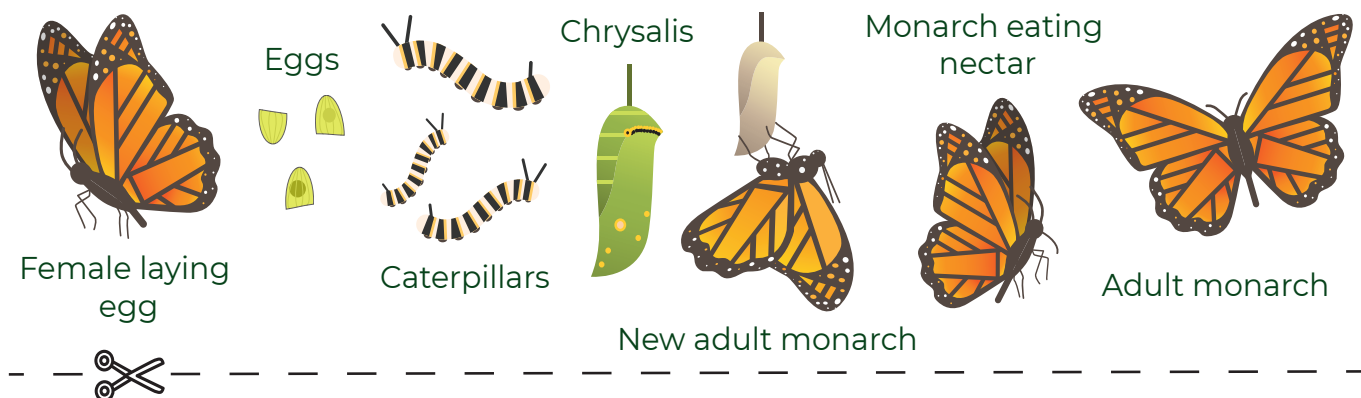
Without access to healthy milkweed plants western monarchs cannot reproduce. This is why scientists are also interested in learning more about milkweed plants. Scientists suspect that milkweed will be one of the keys to solving the mystery.



Where do the Monarchs Belong?

Monarchs need milkweed plants throughout their life cycles. Below is a diagram of a showy milkweed (*Asclepias speciosa*) plant and fun facts about the monarch butterfly life cycle. Oops... it looks like our diagram is missing the monarchs and caterpillars! Can you help the monarch eggs, caterpillars, and butterflies find their way to the part of the milkweed they need at their current life cycle stage? Try to match each monarch image with the fun facts below. Cut out each monarch, caterpillar, and egg, and then paste them onto the plant.

When you finish, the scientists leading the Western Monarch Mystery Challenge would love to see your completed diagram along with any other monarch related projects, crafts, or notes you have taken about your monarch experiences. Please have an adult help you send photos and videos to the team at MonarchMystery@wsu.edu!



**The Western Monarch Mystery Challenge
is a project led by Washington State
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collaboration with University of California,
Santa Cruz and The Xerces Society for
Invertebrate Conservation.**

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International, Western Association for Fish
and Wildlife Agencies, and National Fish
and Wildlife Foundation.**



Western Monarch Mystery Challenge

For more information about the Western Monarch Mystery Challenge, visit:



[@MonarchMystery](#)



[@WesternMonarchMystery](#)



[@WMonarchMystery](#)

<https://labs.wsu.edu/conservation-biology/western-monarch-mystery-challenge/>

For more information on the western monarch, visit:

<https://xerces.org/western-monarch-call-to-action>

<https://www.westernmonarchcount.org>

<https://www.monarchmilkweedmapper.org>

For more information on monarch conservation across North America, visit:

<https://monarchjointventure.org>

<https://wafwa.org/>



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How are you
celebrating
Western
Monarch
butterflies?



Share your butterfly experiences
on Facebook @monarchmystery



Save the Monarchs.
One observation
at a time.



Join the Community

People are helping scientists learn about the western migratory monarch population by sharing photos of these butterflies during the spring (February - April). You too can join the cause and become part of something big as a community scientist and monarch advocate.

Three Ways to Participate

Sign Up With
monarchmilkweedmapper.org

Contact Us At
MonarchMystery@wsu.edu

Use The App
inaturalist.org/projects

Stay informed about the latest Western Monarch news, research, and developments at:
labs.wsu.edu/conservation-biology/western-monarch-mystery-challenge

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