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**MONARCH
JOINT VENTURE**



**MonarchNet News
A Citizen Science Newsletter**

Upcoming Events

- The Monarch Joint Venture is planning a workshop in early June at River Fork Ranch Preserve, near Carson City, Nevada. Stay tuned for more details!



*Monarchs, El Rosario, Mexico.
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Welcome to our first edition!

Welcome to MonarchNet News, an E-newsletter dedicated to monarch and butterfly citizen science projects. Do you tag monarch butterflies during migration or monitor larvae in the summer? Perhaps you are curious about how the data collected by citizen scientists like yourself are used. If so, join us to explore different butterfly citizen science projects and meet volunteers from across the country who contribute so much to their conservation! Monarch citizen science and long-term monitoring have been key to our understanding of monarch biology and conservation. Therefore, The Monarch Joint Venture wants to increase monarch monitoring efforts, and the analysis of the resulting data. The goal of this newsletter is to provide a forum for sharing outcomes from these projects and encourage more volunteers to participate in monarch citizen science. This first edition is just an introduction; we look forward to your input on the content of future issues.



*Monarch caterpillar munching on
milkweed. Wendy Caldwell*

What is Citizen Science?

Citizen science, or public participation in scientific research, is the dedication of thousands of people who collect data in their spare time and share those data with researchers, public policy makers, friends, and neighbors. The term may be new, but the concept of citizen science is not. Amateur naturalists, armed with notebooks, binoculars, and nets, have been collecting and sharing data for hundreds of years. The advent of the internet, however, has revolutionized the way citizen scientists collect and report their data. Social media are expanding those possibilities even further.

Public participation in monarch citizen science has increased dramatically since 1990, and spans numerous programs and phases of the monarch annual cycle (see next page). Monarch citizen scientists monitor larvae, tag adults, and check for parasites; plant milkweed and nectar flowers; and report migrating monarchs.

Citizen Science Projects involving monarchs



Pollinators on a swamp milkweed (*A. incarnata*).
Wendy Caldwell

Four monarch monitoring projects (listed below) with a continental scale, and many regional and local programs (Fig. 1), are helping us learn about, and conserve, monarchs.

- **Journey North** relies on people from all over North America to report their sightings of monarchs during the spring and fall migrations. Data are used to create a record of yearly migration events, which are displayed online as live maps during each migration.
- **Monarch Health** volunteers test wild and reared butterflies for a protozoan parasite, commonly known as OE, which impacts monarch development and overall health. Monarch Health data shows that about 12% of monarchs sampled are infected with OE. Their annual migration may allow monarchs to flee areas of OE infestation, increasing the overall health of the population.
- **Monarch Watch** tracks the fall migration by providing volunteers with tags to attach to adult monarchs. Each year, thousands of participants tag tens of thousands of monarchs throughout the range of the eastern migratory monarch population. Information from the recovered tags can be used to estimate the origins, timing, and pattern of the migration, and understand influences of weather events.
- **Monarch Larva Monitoring Project** volunteers look for monarch eggs and larvae on milkweed, track milkweed emergence dates, monarch densities and infection by tachinid parasitoids.

Learn more about citizen science at <http://monarchjointventure.org/get-involved/study-monarchs-citizen-science-opportunities>



Checking monarchs for OE, San Luis Obispo, CA.
Wendy Caldwell

Monarch Annual Cycle and Monitoring

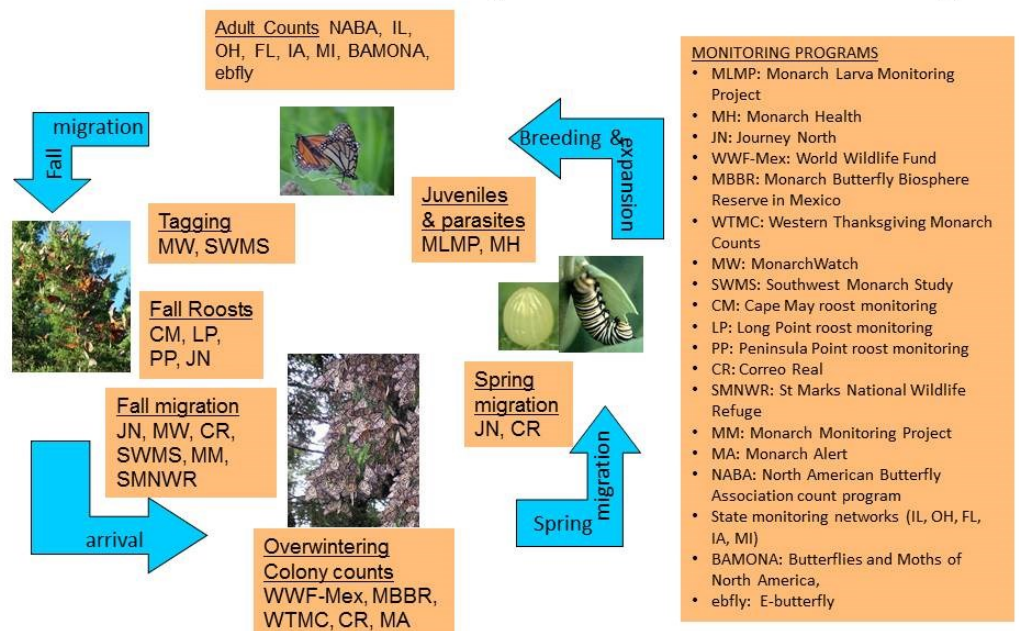


Figure 1: Monarch monitoring covers all stages of their annual life cycle (breeding, migration and overwintering), thus giving us details on the entire cycle.

The Monarch Joint Venture goes to California

In December 2013, MJV partners, including coordinators from Monarch Alert, Monarch Watch, and the Monarch Larva Monitoring Project, gathered in San Luis Obispo, California to host a workshop that focused on western monarchs and citizen science. Analyses of monarch monitoring data show that California and surrounding states are in need of more citizen science volunteers to better document the western monarch population. The location is also a priority for conservation of the western North American monarch population, since overwintering sites are found in nearby habitats along the Pacific coastline.

Monarch enthusiasts, hobby gardeners, museum staff, docents, and teachers from all over California gathered to learn about monarchs and citizen science. The workshop was hands-on and interactive; everyone had the chance to learn data-collection protocols in the classroom and the field. Instructors demonstrated sampling techniques for the Monarch Larva Monitoring Project, and participants learned to use Monarch Health procedures to test adult butterflies for the protozoan parasite, *Ophryocystis elektroscirrha* (OE).

The workshop culminated on Sunday with a trip to two overwintering colonies, Halcyon Hills, and the larger Pismo Beach Monarch Butterfly Grove. Participants used their newly acquired skills to collect data in the field. They estimated the number of individuals in each colony, and tested adults for OE. Each participant was able to tag a monarch; tagging helps to inform scientists about movement between sites during the overwintering season and migrations. Everyone got to be a part of science in action! This workshop is just the beginning. We plan to engage many more citizen scientists to monitor monarchs through future workshops just like this one.

See Citizen Science in Action

Want to learn more about citizen science? Link to this video about citizen science from the University of Minnesota Extension.

<http://www.extension.umn.edu/environment/fwce/conservation-education/citizen-science/about/>

Coming up...

In our next edition, hear about some of the latest studies that use citizen science data, and meet a volunteer citizen scientist who is making an impact in her community!

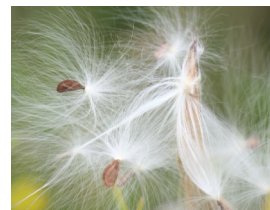
In the meantime, we want to hear from you! If you are a monarch citizen scientist, send us an article about your experiences, and we can publish it in a future newsletter. Also, write to us at citizenscience@monarchjointventure.org with what you would like to see included in the newsletter. Please add MonarchNet News to the subject line.

Help us spread the word. Send this newsletter to friends who may be interested, and encourage them to “Get Updates” under News & Events on the MJV website!



Monarchs roosting on eucalyptus, Halcyon Hills.
Wendy Caldwell

Would you like to be a part of a citizen science project? Stay tuned for information on workshops in your area!



Milkweed seeds.
Wendy Caldwell