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Issue 2



**MONARCH
JOINT VENTURE**



**MonarchNet News
A Citizen Science Newsletter**

Upcoming Events

- [Monarch Monitoring Workshop](#) in Nevada, June 6 & 7, 2014. This workshop will be staffed by the South-west Monarch Study and the University of Minnesota Monarch Lab.

Can Citizen Scientists Do Research?

Can citizen science volunteers do real research? The resounding answer is yes! Citizen scientists collect and analyze data for a vast number of projects from tagging birds, monitoring the spread of invasive plants, listening for frogs, counting butterflies, or reviewing and classifying photographs of wildlife online, to name just a few. With the help of volunteers, scientists can gather data from a larger geographic area and often over a longer period of time than they could using a more traditional approach to data collection.



*Monarch monitoring workshop.
Kip Kiphart*

Citizen scientists come from all walks of life, from school children to retired scientists. However, dedicated citizen scientists do have some traits in common. They tend to pay attention to details, are curious about the natural world and like to document their findings.

So how accurate are the data gathered by this army of citizen researchers? David Delaney of McGill University decided to compare identification data on crabs collected by volunteers to those he collected himself as part of his thesis. The majority of the data collected by volunteers were accurate; even young children were correct 80% of the time. This is within the acceptable range for data collection (Cohn, 2008).

The work of citizen scientists has been seminal in the advancement of scientific knowledge, including our understanding of monarch biology and application of this knowledge to conservation. Citizen science programs, such as Journey North, have informed our knowledge of monarch migratory pathways and the timing of migration across years. The numerous samples collected by volunteers and analyzed by Project Monarch Health have given a good indication of disease loads during different stages of the annual life cycle of breeding, migration and overwintering. Data collected from the Western Monarch Thanksgiving Count have been incorporated into management plans that maintain the long term viability of overwintering sites in California. With the success of many different monarch citizen science programs and the involvement of dedicated volunteers, we are better able to disseminate information about monarchs and conservation actions to public and private land managers and citizens.

Ready to read more about citizen science? See Cohn, J.P., 2008. Citizen Science: Can Volunteers do Real Research? *BioScience* Vol 58 (3): 192-197.



Students collecting data, Monarch Larva Monitoring Project. Laura Molenaar

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The Different Types of Citizen Science Projects



5th instar caterpillars vary greatly in size. Kip Kiphart.

Citizen science projects are not all alike! Shirk et. al. (2012) identified different types of public participation in scientific research based on how involved volunteer scientists are in different aspects of the project. Most projects fall into three categories: contributory, collaborative, or co-created. In contributory projects, such as the Monarch Larva Monitoring Project and Project Monarch Health, volunteers collect data or samples in the field, but are not involved in the design of the project. In collaborative projects, scientists are responsible for facilitating the project, but citizen scientists are more involved; they set objectives, contribute to project design, and collect and interpret the data. Many of the programs that study monarch migration, such as the Western Monarch Thanksgiving Count and the fall roost surveys at Peninsula Point, Michigan and Cape May, New Jersey, are collaborative. In co-created projects, citizen scientists are involved in most or all phases of the project, often designing these projects with or without input from professional researchers. The Southwest Monarch Study is an example of a co-created project, currently managed by Gail Morris.

Each of these models provides different outcomes for the individuals and institutions involved. All citizen science projects can increase a participant's content knowledge, science skills and appreciation for the subject. Collaborative projects provide these benefits, and can further increase a person or communities' awareness of environmental issues and the complexities of data collection. Co-created projects require a high level of commitment for the volunteers responsible for the administration of the project, but have the potential to generate more social change.

More details at: Shirk, J. et. al., 2012. Public Participation in Scientific Research: Convergence on Effective Design Strategies. *Ecology and Society* 17(2):29.

Some Observations on Monarch Migration

By Richard RuBino

Richard RuBino is a retired Florida State University professor and former coordinator of the Fall Monarch Migration Tagging project at St. Marks National Wildlife Refuge. Richard gives us some observations on the spring migration of monarchs through the vicinity of Tallahassee, Florida.

The Eden Spring Augmentation Project, in Tallahassee, Florida, has tagged over 2,050 monarchs in the last 13 years. As part of the project, we have made many observations on the monarch migration. For example, we have documented that the spring monarch migration season for Tallahassee normally occurs from mid-March to mid-May and that the initial wave of the migration may be the offspring of monarchs that have overwintered along the northern Gulf Coast, not in central Mexico. This assumption merits further study. Two monarchs tagged as part of the project have been found in Georgia and Virginia, respectively, indicating that monarchs from Tallahassee travel up the East Coast.

Our observations suggest that weather has an impact on monarch migration. Drought and other severe weather, especially when combined with late cold spells, retard the growth of milkweed and nectar plants, thus discouraging monarch migration through the area. This is of special concern if conditions affect a large portion of the geographic area, making it more difficult for monarchs to find resources. We also found that late cold spells can delay the maturation of monarch larvae.

We are grateful for long-term efforts, such as those led by Richard RuBino in the southeast, that help ensure that overwintering monarchs from Mexico arrive to suitable milkweed habitats in the U.S.

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Magazine profile on
[Citizen Scientists](#)**



Monarch overseeing data collection. Richard Rubino

Program Highlight: *Southwest Monarch Study*

The Southwest Monarch Study (SWMS), an example of a co-created project, is an all-volunteer monarch citizen science organization based in Arizona. The SWMS started in 2003 as a tag and release program. The program has grown in size and scope to accommodate a surge of interest in monarchs in the southwest. Tagging and monitoring have expanded into Arizona, Nevada, New Mexico, Utah and other nearby states. Nearly 2500 monarchs are tagged by the SWMS volunteers every year.

The SWMS has an active Board of Directors that represent different parts of Arizona. Volunteers perform all the work, from planning events, gathering milkweed seeds, negotiating with government officials, and creating educational materials. Volunteers also monitor nectar and host plant rich sites all over Arizona, and look for changes from year to year.

As citizen science programs go, the SWMS is unique, because it is not affiliated with any one university or professional researcher. However, SWMS volunteers work with the academic community regularly, and see themselves as an extension of this community in the field. They have an Academic Advisory Board and strong ties to various monarch researchers. To keep data collection uniform, they follow well-established protocols. SWMS citizen scientists are currently writing an academic paper and will submit it to an academic journal in the near future.

Conservation of monarch habitat is a priority for the SWMS. Through numerous public presentations and workshops, they educate people about gardening for monarchs and creating Monarch Waystations. To keep up with the public demand for milkweed resulting from their outreach work, the SWMS has contracted with a local nursery to grow eight different types of native milkweed for purchase in the state.

Citizen science programs have made contributions to our knowledge of monarchs, and the SWMS is no exception. For starters, they have contributed to our knowledge of overwintering biology. Recoveries of tags indicate that most monarchs in Arizona overwinter in Mexico with the Eastern monarch population, however some fly to California; this appears to be linked to summer weather patterns. In addition, they have learned that monarchs overwinter in several locations in the greater Phoenix area along the Salt River and also along the Colorado River. These findings will help prioritize areas for conservation.

The SWMS has also studied monarch health and behavior. Volunteers have sent over 300 samples to the University of Georgia's Project Monarch Health to be tested for OE (*Ophryocystis elektroscirrha*, a protozoan parasite), and found that OE levels are very low in Arizona compared to western populations. In the field, they have seen monarchs puddle in seeps and rivers in dry environments, a behavior not seen in more humid parts of the country. Lastly, they are wondering if non-breeding monarchs in Arizona are in a state of oligopause (reproductive dormancy that results from mild or moderate seasonal changes), rather than diapause (reproductive dormancy resulting from a more extreme seasonal climactic change, such as winter), given the speed with which they get back to breeding with a rise in temperature, as early as mid-January in warm winter years.

With so many eyes in the field, we expect more great work in the seasons ahead!



Monarchs drinking water, El Rosario, Mexico. Gail Morris

Visit Southwest Monarch Study on [Facebook](#), or www.swmonarchs.org/



Fifth instar caterpillar in Arizona. The SWMS Facebook Page.

Volunteer Spotlight: Gail Morris

Gail Morris is the volunteer coordinator of the Southwest Monarch Study, board member for the Monarch Butterfly Fund, and Monarch Watch Conservation Specialist for Arizona. Gail is also a Master Gardener, and a storm spotter for the National Weather Service. She loves the opportunity to explore and learn new things!

Gail moved to Arizona in the 1970s, where she learned to love the desert landscape. Today, she cannot imagine living anywhere else! In 2006, Gail took a sabbatical from her job as a Pastoral Associate, and never went back. Instead, she immersed herself in learning more about monarchs, participating in monitoring workshops, tagging and counting butterflies, and following their migration. She also read all the literature on monarchs she could get her hands on. She decided to dedicate her time to monarch citizen science and conservation, and spread the information throughout the southwest.

What is her advice for someone trying to get started in monarch conservation? “Try it!” There are so many opportunities to participate, and it is best for every person to do what is most interesting to them. Have just a little time? Try tagging in the Fall. For those who grow milkweed in their yard, the Monarch Larva Monitoring Project may be perfect! Her advice is to try a few different things to find your niche.

Recently, Gail and her husband traveled to Mexico to visit the monarch sanctuaries and purchase tags from the local people who recover them. She describes her walk through the forests as an amazing experience. Here are some of her observations on her stay in Mexico:

“We visited El Rosario three times this year a few days apart and each time was different. Our favorite was watching the monarchs explode in the sunlight, filling the skies. All you could hear was the flapping of wings everywhere. There was more orange than blue sky, all in a flurry of flight. They flew everywhere and we watched monarchs begin to move down the mountain to the llano. They covered creeks and nearby nectar. They landed on our arms and backs for a brief respite - we could feel their feet massage our heads. (An) incredible experience, so beyond words.”

“The people are so poor and yet so generous. Everyone is kind and helpful and welcoming. I don't think we try hard enough to understand the local communities where they are. We look through the lenses of our experience here in the United States. We have so much - TV, good phones, fast and quick internet, even beating in our homes at our finger tips. None of this is a given near the overwintering site. We need to be more sensitive to the local culture and enlighten people in a kind way so the ownership of the forest begins with them.”

We want to hear from you!

If you are a monarch citizen scientist, send us an article about your experiences! Also, write to us at citizenscience@monarchjointventure.org with what you would like to see in the newsletter.

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!



Gail Morris in El Rosario, Mexico. Gail Morris

Do you want to advertise a monarch citizen science event? Send us a line, and we can include it in the next newsletter.



Monarchs flying overhead, El Rosario, Mexico. Gail Morris