

...but it could be sick with Ophryocystis elektroscirrha (OE), a parasite that infects monarchs.



Photo: Pat Davis

Monarchs infected with OE can have millions of parasite spores (**left**) on the outside of the bodies. Infected monarchs cannot fly as well or live as long as healthy monarchs. In severe cases, they get stuck in the chrysalis. The parasite spreads when caterpillars eat a milkweed leaf or egg case contaminated with parasite spores – starting a new infection.

Project MonarchHealth

Citizen scientists for *Monarch Health* help track the spread of OE parasites in wild monarchs across North America.



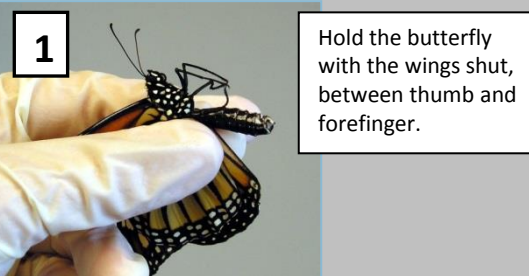
Photo: Fitz Clarke

Volunteers release monarchs unharmed after testing for OE.

How to test a monarch for parasites in 3 steps

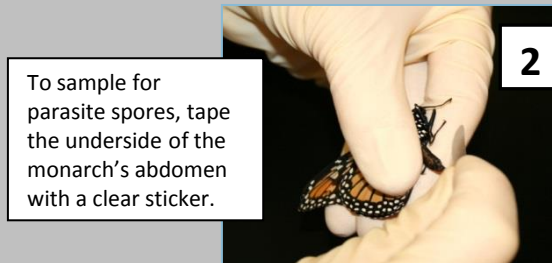
You can request a free Monarch Health sampling kit by emailing us at monarch@uga.edu

To obtain adult monarch butterflies from the wild, volunteers either catch adults with a butterfly net or rear caterpillars until they become adults. Sampling for parasites is quick and straightforward.



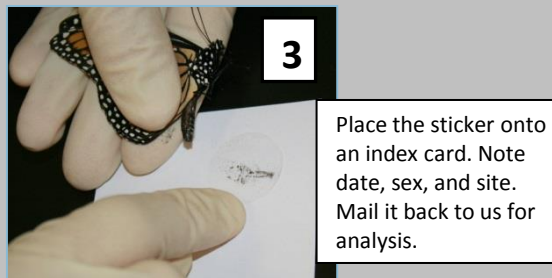
1

Hold the butterfly with the wings shut, between thumb and forefinger.



2

To sample for parasite spores, tape the underside of the monarch's abdomen with a clear sticker.



3

Place the sticker onto an index card. Note date, sex, and site. Mail it back to us for analysis.

We will observe your samples for parasites at the University of Georgia and share the results with you.

Working together, volunteers and scientists monitor changes in monarch disease over time and identify factors that affect butterfly health.



Citizen scientists:

- Collect parasite data all over the United States.
- Send to the lab at the University of Georgia for microscopic analysis.

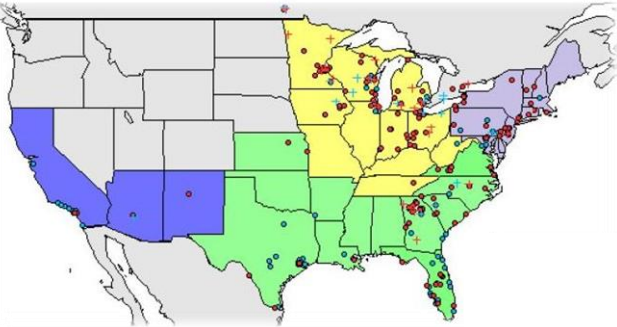
Scientists:

- Analyze samples.
- Share data with each volunteer and produce an annual report.
- Write scientific papers using volunteer data to advance ecological knowledge.

This collaboration has led to important discoveries, such as how long-distance migration helps to lower parasite infection and keep monarchs healthy.



Monarch Health: Collaborative research to engage citizen scientists and advance knowledge about monarch parasites across North America



The map shows locations of our 2006-2013 volunteers, across 28 states and 2 Canadian provinces. Citizen scientists have submitted over 18,000 samples since the project started.

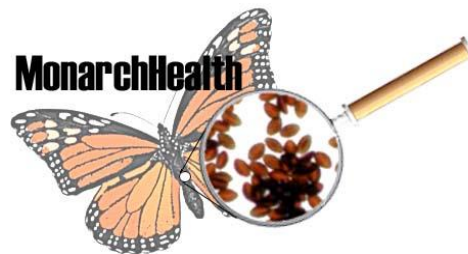
- Volunteers are essential to *Monarch Health* and other large-scale research projects on migratory animals.
- *Monarch Health* participants can be people of all ages and skills including families, retirees, classrooms, and nature centers.
- Citizen scientists receive research kits and detailed instructions to collect parasites.
- Sampling can be done at any site with wild monarch butterflies or from raised caterpillars.
- Volunteers mail data to scientists to aid in increasing ecological understanding about the parasite OE in monarch butterflies.
- This is an ongoing study—we need your continued help to assemble a long-term data set on monarchs and their parasites.

Scientific publications based on *Monarch Health* data:

- Bartel et al. 2011, in the journal *Ecology*: “Monarch butterfly migration and parasite transmission in eastern North America”
- Satterfield et al. 2015, in the journal *Proceedings of the Royal Society B*: “Loss of migratory behaviour increases infection risk for a butterfly host”

Other monarch citizen science programs:

- Monarch Larva Monitoring Program (www.mlmp.org)
- Journey North (www.learner.org/jnorth)
- Monarch Watch (www.monarchwatch.org)
- Monarchs Across Georgia (www.monarchsacrossga.org)



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A citizen science project for you or your organization to monitor the health of wild monarchs

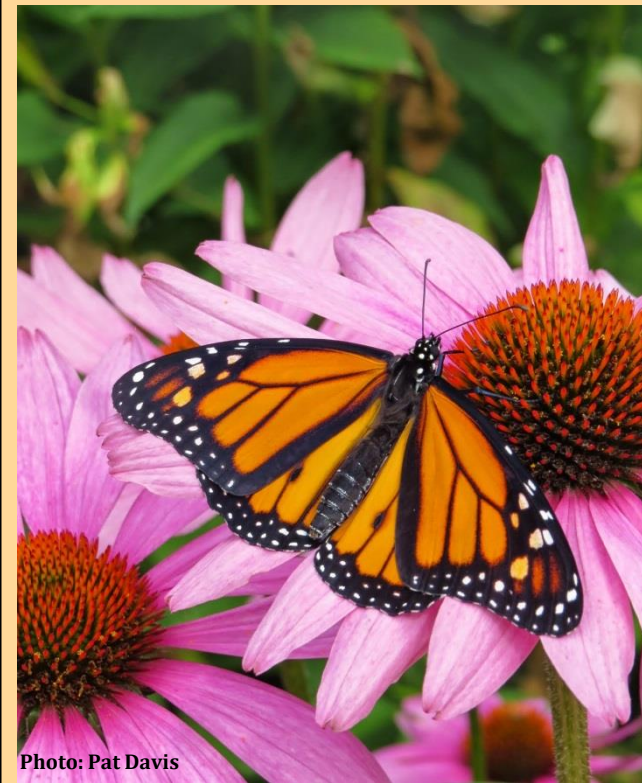


Photo: Pat Davis

This monarch may look healthy...