



MLMP Updates

An e-newsletter of the Monarch Larva Monitoring Project



Winter 2022

As we await news from Mexico on how overwintering colony numbers reflect the data we collected on the breeding grounds in 2021, this winter's newsletter includes important monitoring reminders, updates to our data sheets, information about our upcoming training workshops, a summary of our 2021 monitoring season data, an interview with researcher Jack Whisenant, and a selection of great photos submitted to our gallery. We'll be back in touch after the release of winter data.

Important Reminders

Rearing Monarchs in California Requires a Permit

California is the only US state that requires a collecting permit for invertebrates. This includes any type of collection such as using them for scientific research or teaching, or collecting them to rear and release. More information on the California permit can be found on the CDFW website. Currently, MLMP does not have a blanket permit for our California volunteers, so we ask that you do not rear monarchs for our survival study. All other MLMP activities are allowed and encouraged in California, and we welcome your participation!

Updates to Activity #1C and Activity #3 Data Sheets and Instructions

In response to recurring data collection and data entry errors, we recently updated the Activity #1C and #3 data sheets and instructions. If you're planning on participating in these activities this year, please head to the 'Activities & Data Sheets' link on our website to download the updated data sheets.

What's different?

- **For Activity #1C:** Measuring Monarch Density, we've added instructions on how to record and summarize your data to simplify data entry into our data portal.
- **For Activity #3:** Estimating Monarch Survival, we've added detailed instructions on how collect your data and ship us your flies. We've received many packages of crushed and crumbled flies that were sent to us in plastic bags. Please send your flies in **hard containers** so their structure is preserved for identification. It is very difficult to identify flies that have been crushed in the mail. As a reminder: if you live in California, it is illegal to rear monarchs, and therefore you are unable to participate in this activity.

MLMP Training Workshops

Our first MLMP training workshop of 2022, held on January 22nd, had a special focus on monitoring in California. This is the first year that we've held workshops specific to different geographic regions, and it was a great success! We hosted 58 participants from all over California and were joined by Terry Smith from the **Pollinator Posse**, a group that creates pollinator-friendly landscaping and fosters appreciation of local ecosystems through outreach and education in Northern California. Terry and the Pollinator Posse have been hard at work building a group of dedicated volunteers to monitor for MLMP at sites around California.



If you'd like to join an upcoming training to hone your monitoring skills, or have friends who would like to get involved, check out our upcoming workshop listing on the next page. Registration costs \$45, which supports our work at MLMP and MJV. If you like to attend but the cost of registration is a barrier, please contact Katie-Lyn Bunney at kbunney@monarchjointventure.org or Julia Whidden at info@mlmp.org.

Virtual Workshop Listing

1. **Southern States—March 26, 2022**
 - 10:00—3:00 CST
2. **Western States—April 23, 2022**
 - 11:00—4:00 CST
3. **Northern States—June 4, 2022**
 - 10:00—3:00 CST



About the Workshops

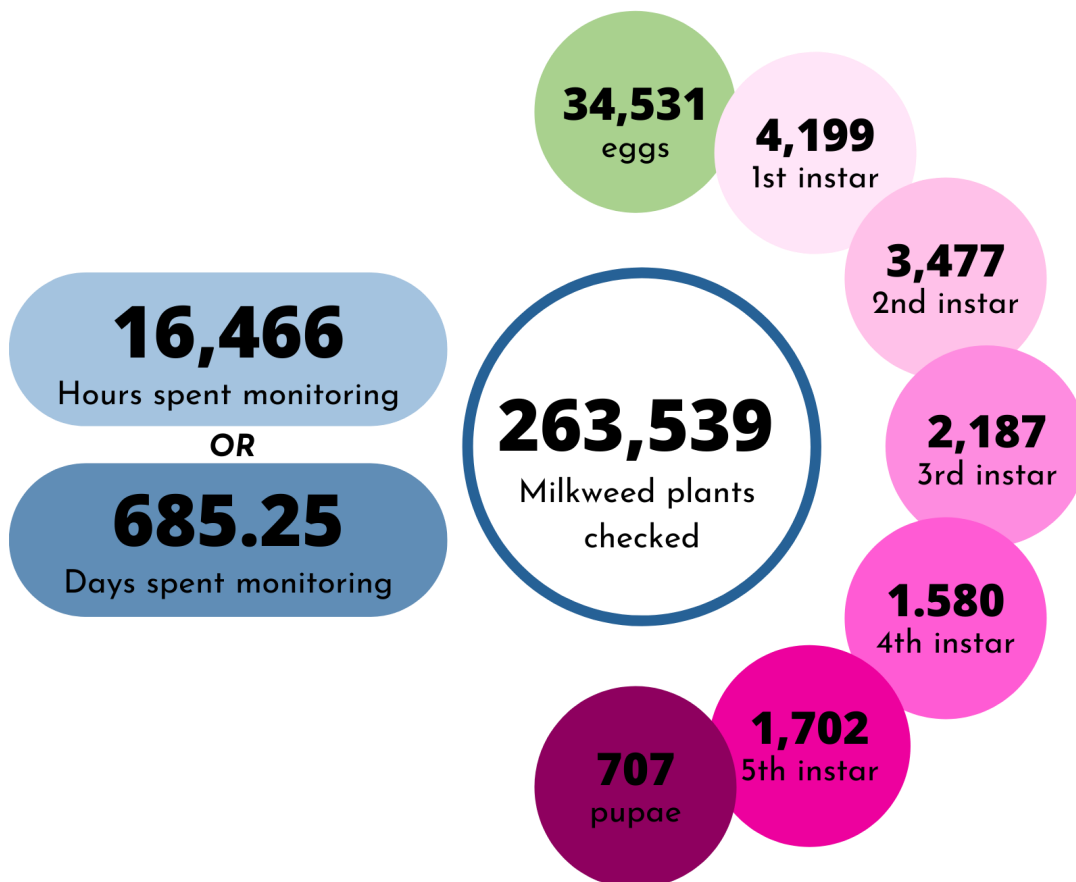
The MLMP training sessions, organized by the Monarch Joint Venture and the UW-Madison Arboretum, are one-day workshops designed to inform participants on how to collect data that contribute to our knowledge about the monarch population. Participants learn about monarch biology, monitoring procedures, and data entry protocols, and are able to ask monarch experts their questions about monarchs and monitoring.

This session will be relevant for both newcomers and individuals who are already participating in the MLMP or another monarch citizen science project! Citizen science volunteers are critical to informing and inspiring monarch conservation. The four-hour training will be conducted in two parts with a one-hour break between them.



2021 Monitoring by the Numbers

Now that 2021 has come to a close, we've been able to summarize the incredible data collected by our dedicated citizen scientists. While we provided an update on 2021 data in our Fall Newsletter, the data reported represented January – September 2021. Take a look at the figure below to see the highlights, including a whopping **16,466 hours spent monitoring by our citizen scientists at their sites across 32 states, 2 provinces in Canada, and 2 provinces in New Zealand.**



Q2. What are the most important physical features you look for in identifying the flies?

The clearest signs for this group of flies (pictured right) are the bristles on different parts of their bodies: both the number and how they are arranged, as well as looking for "hairy" or "hairless" eyes, and arrangements of hairlike structures on the front of their faces. Lots of "hairy" things on these flies. Some you can tell the species from 10 feet away, but some are quite similar and need a closer look at the tiny differences.



Q3. Where are the flies stored? Will the data be used for anything outside of MLMP?

All flies will be kept in sealed insect boxes in the Wisconsin Insect Research Collection (WIRC) inside sealed cabinets. This provides a double-barrier against insect pests and mold that might threaten the collection.

The data in the WIRC will be available for anyone who is interested in using them for any ecological questions they might like to ask. This goes for any specimen in any natural history collection - they are all snapshots in time to piece together a picture of our ecological landscape through history.

Q4. What part of our Activity #3 project interests you most?

I love participating in curation projects: making information and specimens easy to access and organizing them by species to see what we can learn. Curating the flies so they are nicely mounted, identified, and accessible for research is one of my favorite aspects of museum work.

Q5. How many different species of flies have you recorded so far from samples that our citizen scientists have sent in? Is this a surprising result?

We've tallied 6 identified species of tachinid flies so far and one known but undescribed species, as well as occasional tiny parasitoid wasps, and a couple instances of very small non-tachinid flies that I am still working on identifying. What is surprising is sometimes there are multiple fly species in a single larva!

Q6. Tell us a bit about your work. What are you studying? Is this work part of your research?

I am conducting a state survey of Tetratomidae: the polypore fungus beetles. These under-studied beetles live in big stair-stepper fungi on the sides of dead trees, and I'm gathering information from historical specimens to find where they are in Wisconsin and conducting surveys to fill in the knowledge gaps. Understanding what we have here is the first step to figuring out how to best conserve these species.

Q7. You're also an artist who previously studied scientific illustration. How do you integrate your art into your research?

I studied scientific illustration at California State University–Monterey Bay, and decided to specialize in entomological illustration by continuing graduate studies in entomology. I am currently making a visual key for identifying fungus beetles for my thesis, and I revamped and illustrated the lab manual for Comparative Vertebrate Anatomy (Zoo 430) while I was the lab coordinator TA. All scientific illustration work is art that explains science, so it is natural to continue doing illustration work as I progress in studying insects and teaching science courses.

Jacki's Help with Activity #3 Instructions

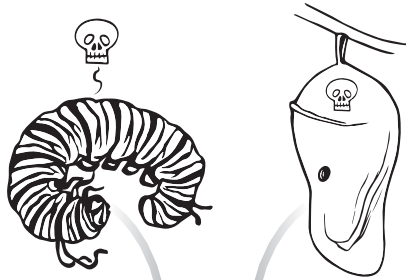
In addition to Jacki's help with identifying flies for our Activity #3 project, they also recently made beautiful illustrations to better depict the process of collecting data and sending flies in to us at the UW-Madison Arboretum. Check out their work on the next page, and head to [@jacki.whisenant](https://www.instagram.com/jacki.whisenant) on Instagram or their website www.jwhisenant.com to see more of their other projects!





Activity 3: Estimating Monarch Survival - Parasitoid Collection Protocol

Emergence from monarch larva or chrysalis



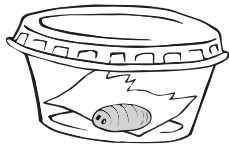
1 Monarch dies as caterpillar, J-form, or chrysalis, and fly larvae (maggots) emerge.



2 *note date of emergence of larvae on data sheet



3 Larvae pupate. Flies pupate differently than butterflies and don't shed their last larval skin, which forms a hardened casing called a puparium.



4 Put a small piece of tissue in the container with the pupa to absorb any fluid and prevent mold. Multiple pupae can be in the same container if they came from the same monarch.



5 Fly will remain in pupal form for ~2 weeks (sometimes longer).



6 *note date of eclosion/ emergence of adult fly on data sheet



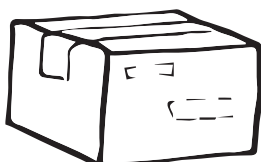
7 Wait 24 hours (or wings won't fully unfurl)



8 Freeze fly to dispatch it



9 Add loosely crumpled tissue to the hard container to protect the specimen from rattling around during transport (not a cotton ball: cotton tangles and pull off the legs)



10 Ship flies to MLMP

Monarch Larva Monitoring Project
University of Wisconsin-Madison Arboretum
1207 Seminole Highway
Madison, WI 53711

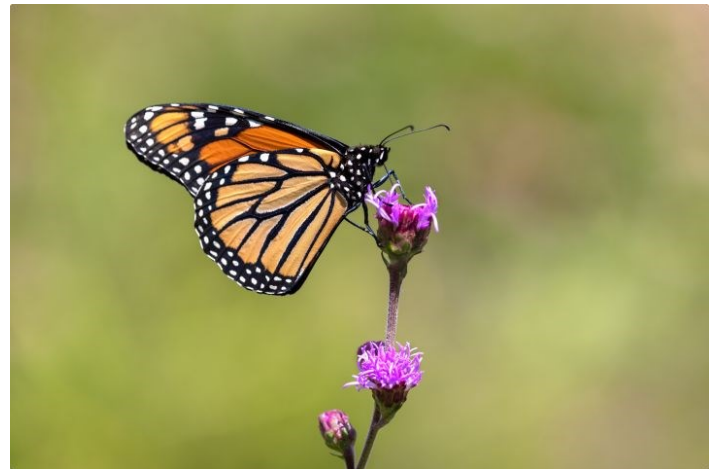
Photo Gallery

Citizen scientists from across the continent submitted great photos to our MLMP gallery this past fall. See a few of our favorites below, and don't forget that you can submit your own under "Gallery" on our website into a variety of categories, including art, milkweeds, monarch adults, monarch eggs, monarch larvae, monarch pupa, monarch predators and parasites, monitoring, sites, rearing monarchs, and more!

All photos submitted below were taken by Jennifer Strom in Minnesota. Thank you for these stunning shots, Jennifer!



"Adult monarch on *Asclepias incarnata*"



"Adult monarch on *Liatris ligulistylis*"



"Adult monarch on *Echinacea*"



"Two views of adult monarchs on *Liatris ligulistylis*"

You can support MLMP in many ways!

Please consider supporting our collective conservation efforts with a donation that supports training, materials, and maintenance of the data you collect. You can make a financial contribution today [here](#).

Have a story from your site or art to share? We'd love to hear from you!

info@mlmp.org | www.mlmp.org

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