

Monarch Research Project 2023 Report

Project Leaders:

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PROJECT GOALS

To provide volunteer opportunities and raise awareness for monarch butterfly conservation by participating in the below citizen science projects. Hopefully, the data we collect will help scientists shed light on what is happening with the monarch butterfly populations, especially in our local area.

SKILLS NEEDED

- Ability to fill out detailed reports
- Ability to correctly identify common milkweed
- Ability to determine the sex of adult monarch butterflies
- Ability to distinguish monarch larval instars using the guide provided
- Ability to bend and stoop to examine milkweed leaves low to the ground
- Ability to work in areas with little shelter from the sun and high temperatures



REQUIREMENTS AND EXPECTATIONS

- Volunteers and staff must be able to tolerate long periods of time outdoors in areas with limited shade
- Volunteers will be exposed to ticks, chiggers, mosquitoes, bees, wasps, poison ivy, bad weather, and other wildlife.
- Children are a big help chasing and catching butterflies and observing tiny caterpillars on the milkweed; however, a supervising adult needs to accompany them so that data is recorded correctly.
- Volunteers will work independently or in family teams with the guidance of a staff Naturalist.
- Volunteers and staff must understand that zero is important data and that we do not always see monarchs.



Calvert Stewards Ricky Stevens and Debbie Dugan tagging monarch butterfly.

VOLUNTEER DUTIES

- In early May, volunteers/staff will help determine milkweed density in the Battle Creek Cypress Swamp Meadow using random sampling.
- Weekly, May through September, volunteers will monitor 100 to 150 milkweed plants for monarch larva and the data collected by them will be reported to the Monarch Larva Monitoring Project.
 - This year monitoring started fully in June because of scheduling conflicts.
- From September to October, volunteers can capture adult migrating monarchs and put an ID sticker on them, as well as test them for disease. They can either do this at home or join the naturalist for tagging opportunities in our parks. This data will be reported to Monarch Watch and Project Monarch Health.
 - Volunteers who have completed at least 3 days of monarch monitoring throughout the season were offered the opportunity to go to Point Lookout State Park with staff to tag monarch butterflies. This is where hundreds of butterflies congregate before continuing their migration.
- A detail-oriented volunteer can assist with transferring paper data to the websites.



Calvert Steward Maggie Silverman and daughter Max (center) with Natural Resources Division staff at Point Lookout.

TRAININGS

- A **video training** created by Shannon Steele must be watched by volunteers before they are able to sign up for any Monarch Monitoring volunteer opportunities. Returning volunteers and staff are encouraged to review the video.
 - The video covers all the information needed about monarchs and completing the datasheets. It is a good overview of everything you could possibly need to know while participating in this project
- **On the job.** Within the first 5-10 minutes of the monitoring activity, the accompanying staff naturalist or knowledgeable volunteer will show new volunteers what to do and how to correctly fill out the data sheet. They will be on hand the entire time to answer questions as they arise.

SUGGESTIONS FOR VOLUNTEER TRAINING OR STAFF TRAINING

- Monarch Joint Venture. (These are all free.)
 - Monarch Butterfly Conservation Series

- <https://monarchjointventure.org/resources/monarch-webinar-series>
- Monarch & Pollinator Presentations
 - <https://monarchjointventure.org/resources/downloads-and-links>
- CTT BluMorpho GPS tags
 - <https://celltracktech.com/products/ctt-blumorpho>

PROJECT DATES

- In May, we determine the milkweed density for each study site. Only completed once each season.
- Weekly, May through September, we examine 100-150 random milkweed plants for monarch larvae in the study sites. Throughout this time up to 30 monarch caterpillars can be collected from the study site and raised through adulthood to collect monarch survivorship data. This was not completed this year because of rising research discouraging raising monarchs.
- Weekly, September through October, we tag monarchs and test them for disease at the following main locations: Cypress Swamp, the Gatewood Preserve, Biscoe Gray, and Point Lookout State Park.

MONARCH VOLUNTEERS

- 2021 Volunteer Hours: 50.57
- 2022 Volunteer Hours: 34.00
 - Cheryl Cox hours not included
- 2023 Volunteer Hours: 27.08
 - Maggie Silverman
 - Debbie Dugan
 - Laura Garifo
 - Ethan Garifo
 - Ricky Stevens
 - Cox family
 - Riley Brown
 - Alex Caniglia
 - Amber Ewing
- Although the number of volunteers have increased, hours have decreased. I believe this is because of lack of communication with volunteers to log their hours this year.

MENTIONABLE VOLUNTEER SUCCESSES

- Maggie Silverman volunteered most of the hours with 17.08 hours.

VOLUNTEER APPRECIATION & RECOGNITION

- Tagging day at Point Lookout State Park on October 6, 2023, from 10am-12pm.
- Volunteers that came to the tagging day received milkweed ornaments.
- For 2024, I would like to get monarch themed tokens of appreciation for all volunteers.
- Will could organize a volunteer appreciation picnic at Point Lookout State Park.
- We made ornaments for everyone at Point Lookout this year, but we would like to have small items for one-time volunteers and something more for active volunteers. These could include:
 - Milkweed seeds as small tokens with a card for first volunteer day of the year.
 - Milkweed Seeds
 - Monarch Butterflies Note Cards
 - Two-tone accent gusseted tote bag from 4imprint 25 for \$11.25 each
 - H2go Surge Aluminum Sports Bottle from 4imprint 48 for \$7.59 each

SUMMARY OF 2023 ACTIVITIES

MONARCH LARVA MONITORING PROJECT:

<https://monarchlab.org/mlmp>

Our mission is to better understand the distribution and abundance of breeding monarchs and to use that knowledge to inform and inspire monarch conservation. The Monarch Larva Monitoring Project (MLMP) is a citizen science project involving volunteers from across the United States and Canada in monarch research. It was developed in 1997 by researchers at the University of Minnesota to collect long-term data on larval monarch populations and milkweed habitat. The project focuses on monarch distribution and abundance during the breeding season in North America. As an MLMP volunteer, your contributions will aid in conserving monarchs and their threatened migratory phenomenon, and advance our understanding of butterfly ecology in general. You can learn more about monarch conservation here.

MEASURING MONARCH DENSITY

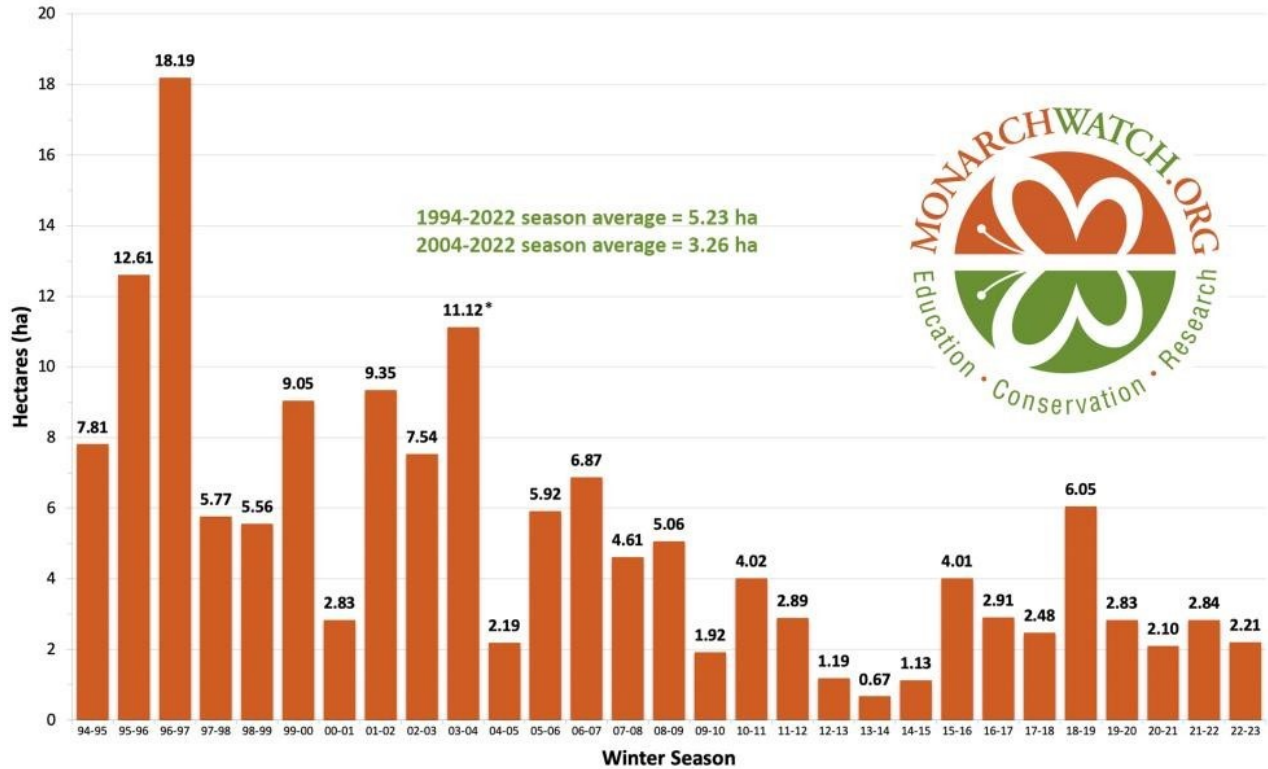
From June 5, 2023 to August 28, 2023 Calvert Stewards, Interns, and other Calvert County Natural Resources staff monitored about 150 milkweed plants each week in the Cypress Swamp Meadow. The purpose was to look for and collect data on monarch eggs, caterpillars, and pupa.

Prior to 2020 we were finding on average up to 1.3 monarchs per milkweed plant. That number dropped significantly in 2020 to 0.32 monarchs per plant. In 2021 that number started to increase to 3.3 monarchs per plant. In 2022 our numbers have dropped to 0.2 monarchs per plant. By 2023 the numbers dropped to 0.067. From June-July we weren't finding anything. Once it was August, we did see an increase in 4th and 5th instars. Looking back though through the results of every year we have participated in this study shows an overall decline in the number of monarchs. 2021 was more successful than 2020, but there was still a significant decrease of monarch activity in 2022 and 2023. We were finding only 4th and 5th instars it seems there was something causing us to miss them at smaller instar stages.

Some possible reasons we saw less monarchs than 2022:

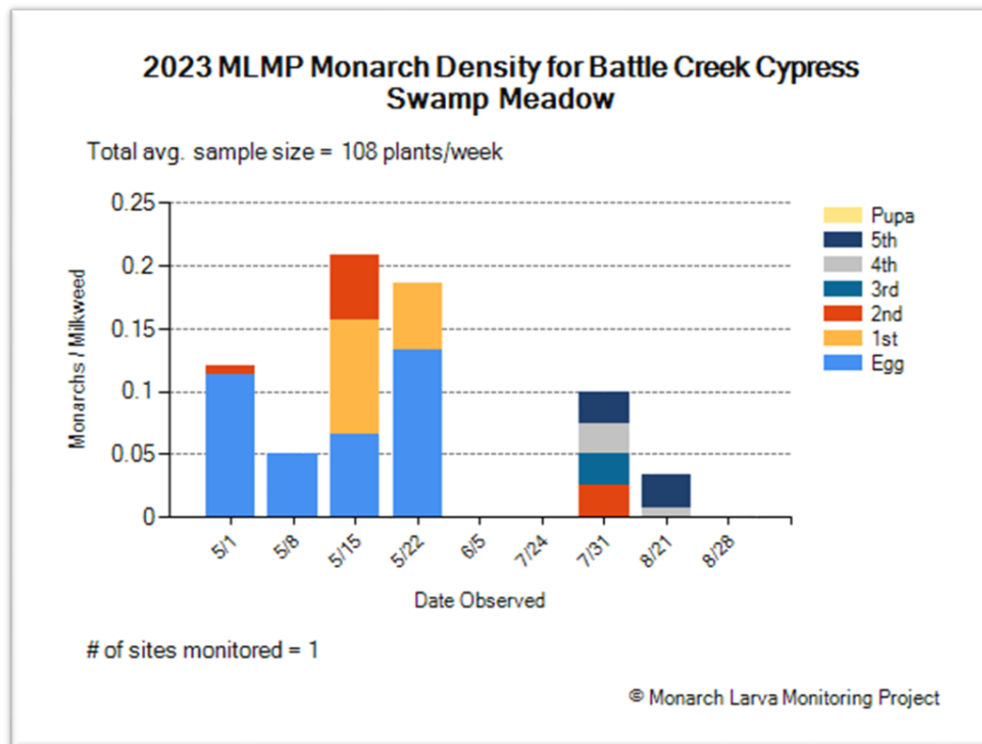
- The Battle Creek Cypress Swamp meadow was not bush hogged for the past 2 years.
- Plants were not being maintained throughout the summer.
- Dry summer causing Milkweed plants to die sooner.
- Overwintering populations in Mexico have been in decline (see below).
- Some data sheets seemed to have been lost, causing less data to be entered.

Total Area Occupied by Monarch Colonies at Overwintering Sites in Mexico



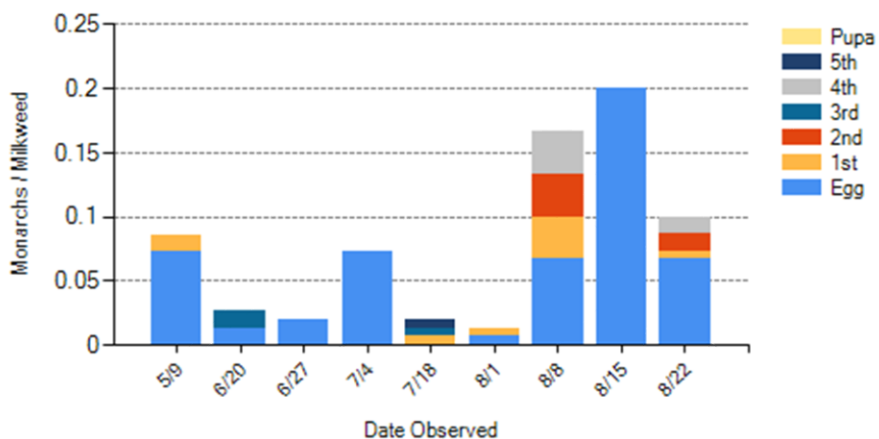
1994-2003 data collected by personnel of the Monarch Butterfly Biosphere Reserve (MBBR) of the National Commission of Natural Protected Areas (CONANP) in Mexico. 2004-2022 data collected by World Wildlife Fund Mexico in collaboration with the National Commission of Natural Protected Areas (CONANP), the National Autonomous University of Mexico (UNAM), and the MBBR. * Represents colony sizes measured in November of 2003 before the colonies consolidated. Measures obtained in January 2004 indicated the population was much smaller, possibly 8-9 hectares. CT

Results



2022 MLMP Monarch Density for Battle Creek Cypress Swamp Meadow

Total avg. sample size = 137 plants/week

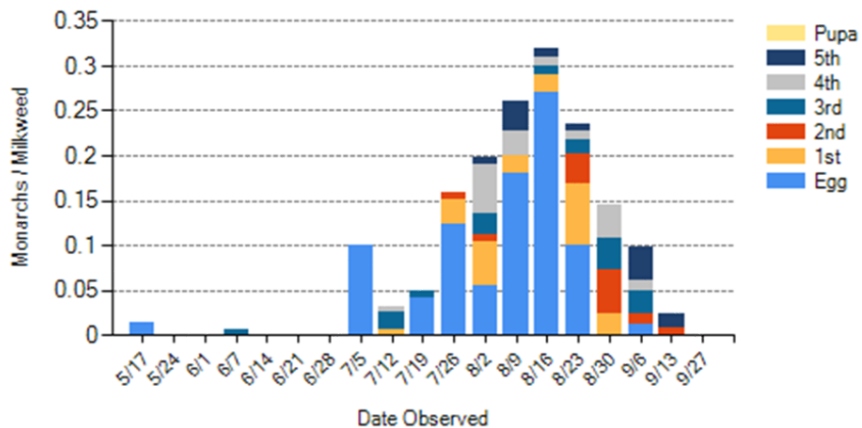


of sites monitored = 1

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2021 MLMP Monarch Density for Battle Creek Cypress Swamp Meadow

Total avg. sample size = 133 plants/week



of sites monitored = 1

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ESTIMATING MONARCH SURVIVAL

We decided again this year not to do this activity because of the increase in data that rearing monarch is not best for the population. Research has been showing that rearing monarchs indoors can cause breakouts of disease, killing all the monarchs, and that they are less equipped to live in the wild as they have become used to indoor climate control. Even outside keeping monarchs together in close proximity can increase disease in the population shows the research.

PROJECT MONARCH HEALTH

Monarch Health is a citizen science project in which volunteers sample wild monarch butterflies to help track the spread of a protozoan parasite across North America.” Volunteers and staff can catch wild adult monarchs and test them for parasites (being sure to mark their wing with a sharpie so they don’t test the same one), or they can collect them in the 4th&5th instar stage and rear them to adulthood, then test, mark & release them. At the same time, they can record data for MLMP. As an additional complication, at the end of August, any adults that emerge can also be tagged for MonarchWatch.

<http://www.monarchparasites.org/>

Data sheets and samples were mailed in November 2023 to:

Project Monarch Health c/o Sonia Altizer
Odum School of Ecology
University of Georgia
Athens, GA 30602-2202

Results

We were able to sample 25 monarch butterflies; 84% had no sign of infection of OE while 8% of the butterflies were highly infected. In 2019, 5.24% were heavily infected and in 2022 19.8% were highly infected; we did not submit samples in 2020 or 2021. Overall, in 2023 a decrease in heavily infected monarchs was found.

MONARCH WATCH: [HTTPS://WWW.MONARCHWATCH.ORG/](https://www.monarchwatch.org/)

The Monarch Watch Tagging Program is a large-scale citizen science project that was initiated in 1992 to help understand the dynamics of the monarch's spectacular fall migration through mark and recapture.

Tagging was originally used by Dr. Fred Urquhart of the University of Toronto help locate overwintering monarchs and later to determine where monarchs came from that wintered in Mexico. Our long-range tagging program at Monarch Watch continues to reveal much more. Tagging helps answer questions about the origins of monarchs that reach Mexico, the timing and pace of the migration, mortality during the migration, and changes in geographic distribution.

It also shows that the probability of reaching Mexico is related to geographic location, size of the butterfly, and the date (particularly as this relates to the migration window for a given location).”Volunteers & Staff catch-tag-release or raise-tag-release monarchs to help MonarchWatch with the above mission. In Maryland, we shouldn't

begin tagging Monarchs until the last week of August because there is a chance that monarchs caught earlier may not be the final migratory generation.

In 2023, this project was completed by the Cheryl Cox at a private farm and by staff and volunteers at Cypress Swamp Meadow. Data were submitted in December 2023.



Maggie Silverman holding a tagged monarch.



5th instar found at Gatewood Preserve.

Tagging Results

- Cheryl Cox tagged 81 adult monarch butterflies.
- Staff and volunteers tagged 25 adult monarch butterflies.

CYPRESS SWAMP MEADOW MANAGEMENT

In 2023, the meadow had the paths cut in May.

Management Plans for 2024:

In 2024 there are plans to have the meadow burned. Once that is completed we will monitor plant growth and decide if anything besides the paths need to be cut.

IDEAS FOR 2024

- Send better reminders to have volunteers log their hours.
- Will work on project advertising ideas to increase volunteer participation.
- Trim the meadow in late June or early July to allow new milkweed to grow and prepare for the higher densities of monarchs we get later in summer.
- Increase monitoring at Gatewood Preserve meadows.
- Submit social media post highlighting the program.
- Seek funding and donations for CTT BluMorpho.

Supporting Calvert County's nature parks and natural spaces



CALVERT STEWARDS

VOLUNTEER PROGRAM

A partnership between Calvert Nature Society and Calvert County Natural Resources Division

2023 Annual Report

Date of Issue March 2024

CALVERT STEWARDS VOLUNTEER PROGRAM
c/o Natural Resources Division
2880 Grays Road
Prince Frederick, MD 20678
(410) 535-5327

Volunteer Portal: <https://calvertstewards.galaxydigital.com/>

Calvert Nature Society: www.calvertparks.org

Calvert County Natural Resources Division:
www.calvertcountymd.gov/NaturalResources

