Step by Step Monitoring Guide

Xerces Society's Western Monarch Count

Last Updated Oct 7, 2024

Step 1: Complete the Annual Volunteer Registration Form

Whether you are a new or returning Western Monarch Count volunteer, please complete the annual volunteer registration form prior to engaging in any Western Monarch Count activities.

Step 2: Connect with a Regional Coordinator

Work with your regional coordinator to create a monitoring plan for the upcoming overwintering season. Be sure to identify which overwintering sites you will monitor for the official survey periods and who your monitoring partner will be – your regional coordinator can help you sort out these details! All volunteers need to confirm their overwintering site coverage with a regional coordinator before monitoring.

Step 3: Attend a Training

If you are a new volunteer, you will need in-depth training with a regional coordinator or experienced volunteer. Online training videos are available on this website and offer a good starting point. However, in-person training should be prioritized whenever possible. Oftentimes, regional coordinators will host group training events for volunteers; check the Events page on this website for more information about upcoming training events and opportunities.

Step 4: Review & Prepare Your Survey Materials

Get ready to count butterflies! After connecting with your regional coordinator and attending a training, use the following checklist to ensure that you are prepared for the upcoming Western Monarch Count survey season. At any time, you may reach out to your regional coordinator or email Xerces at wmc@xerces.org for additional support and guidance.

1. ***Gather site-specific information.*** Note the unique Site ID # for each overwintering site you plan to monitor and any special instructions for accessing and/or navigating the site. Use the interactive map on the Western Monarch Count website to find information like Site Names and Site ID # for the sites you plan to survey. Contact your regional coordinator if you need help with this.

2. ***Prepare your datasheets.*** You may choose to either set up the Survey123 app on your smartphone/iPad or print out paper datasheets for the Monarch Count and Habitat Assessments.
3. ***Read through the survey protocol.*** The protocol guidelines provide standardized instructions for conducting Monarch Count and Habitat Assessment surveys. They include an equipment list, outline the appropriate weather conditions, and explain the types of data you will collect.
4. ***Practice surveying at home or a nearby overwintering site.*** After reading through the protocols and datasheets, grab your binoculars and head outside to give it a try! Practice estimating butterflies by picking a branch in a large tree, then count the individual leaves on the branch as if they were monarchs. This will let you practice focusing your binoculars and also experience what it feels like to look up high in a tree for an extended period of time. Next, try filling out both the Monarch Count and Habitat Assessment datasheets to the best of your ability. Troubleshoot any questions or issues that arise with your monitoring partner or regional coordinator. If you practice beforehand, you will be far less likely to experience complications in the field. Plus, you'll boost your chances of having an enjoyable, stress-free experience!
5. ***Mark your calendar.*** With your monitoring partner(s), identify a few dates and times to meet at the overwintering site(s) to conduct surveys. Remember, you'll need to monitor your site(s) at least once or twice per monitoring period for a total of three to six visits throughout the season. Since the official survey periods overlap with several major holidays *and* the rainy season, be sure you and your monitoring partner mark off several back-up dates in your calendars, too.
6. ***Review "Things to Know Before You Go" on the volunteer information page.*** Take proper precautions to plan for your safety and wellbeing while engaging in WMC volunteer activities. Bring enough water and food to sustain your activities, prepare for adverse weather conditions, and let a trusted emergency contact know when, where and with whom you will be monitoring.
7. ***Learn about overwintering monarchs.*** With any extra time or interest, you can brush up on your monarch knowledge by exploring the About page and Frequently Asked Questions page, as well as the various learning materials organized under the "Resources" tab on the Western Monarch Count website.

Step 5: Monitor Your Site

Make sure you are conducting your monitoring efforts under the right conditions by referring to the survey protocol. In short, you and your monitoring partner should conduct your Monarch Count survey in the early morning when temperatures are cool so that monarchs

remain clustered from the night before and are easy to accurately count/estimate. We recommend surveying by or before 10am to meet protocol standards. Temperature is less important for the Habitat Assessment surveys, so you should plan to conduct the Monarch Count first. You and your monitoring partner can take separate notes in the field, but you should work together to submit *a single datasheet* for each survey you conduct together.

Avoid monitoring on days when heavy precipitation or strong winds are forecasted. Additionally, avoid counting monarchs on extremely warm days or during the middle of the afternoon. You'll know if it's too warm or too late in the day if you arrive at your site and observe a considerable number of monarchs flying around the grove. When this happens, you should still conduct your Monarch Count and Habitat Assessment surveys, but you should also schedule a return visit for another morning when conditions better match the protocol guidance. Habitat Assessments can be conducted at any time of day and are most helpful during the overwintering season while clustering monarchs may be present.

You and your monitoring partner might start your survey by walking around or "scouting" the overwintering site. Use your binoculars to identify if and where monarchs are present in the grove. If you observe only a handful of monarchs, you may be able to count each butterfly individually and report that number on your datasheet. However, if there are hundreds or even thousands of monarchs present, you will want to follow the instructions below to estimate and record each cluster separately:

1. ***Identify and agree upon a cluster to estimate with your monitoring partner.*** It's important that you are both referencing the same group of butterflies since you will be comparing your numbers for accuracy.
2. ***Once you have identified a cluster, individually count the number of monarchs in a small section or area, then extrapolate that number out to arrive at count estimate for the entire cluster***. Repeat this process one or two more times for the same cluster, but count from different angles on the ground. Take the average of your individual counts to find your final estimate.
3. ***Compare your final estimate with that of your monitoring partner's***. If both of your final estimates are within a 20% margin, you can record the average of your counts in the datasheet. If your estimates are not within 20%, discuss why and then start the count again.
4. ***Repeat this process until you and your monitoring partner have made estimates for all monarch clusters present at the site.*** Tally the total number of clustered butterflies and note it on your datasheet.

5. ***Sunners, loners, fliers, and grounders are tracked separately.*** The sum of these numbers is added to the total number of clustered butterflies to produce the grand total monarch count.
6. ***Dead monarchs should not contribute to the grand total***. Only living monarchs should be included in the grand total. However, there is a spot on your datasheet to report the number of dead monarchs observed at the site.
7. ***If you find a tagged monarch, take a photo and note down the tag number and sticker color.*** Cameras with a long lens or phone adapters for binoculars work well for capturing these close-up shots of tagged monarchs. If you cannot decipher the tag number, still report the presence of a tagged monarch and the sticker color in your datasheet.

Together with your monitoring partner, fill out the rest of your datasheets (Monarch Count and/or Habitat Assessment) as thoroughly as possible. Include weather conditions, date and time, observer names, cluster locations and any potential or observed threats or disturbances to the overwintering site.

Now that you've completed a count survey, consider returning to the site again in a week or two to note how the clustering monarchs' number or location have changed. Overwintering sites are dynamic places, and depending on the weather and other factors, monarch arrivals and departures can vary quite a bit. Surveying during the official count periods allow scientists to compare data in a standardized way across years, but there is value in additional counts outside of these official survey periods as well!

Step 6: Submit Your Data

Please submit your WMC data within a day or two of monitoring an overwintering site. Even if you observe zero monarchs, we still want to know; this information is just as important! Please avoid sending in multiple datasheets for the same survey. You and your monitoring partner should work together to decide who will submit the data. You can submit data using the Survey123 app or online forms on the WesternMonarchCount.org website.

Step 7: Share Your Experience & Check Back for Updates

Share your observations, questions, photographs and successes with other volunteers across the state via our Facebook page. Check the WesternMonarchCount.org website in February or March to see the results of the season's counts. After volunteers have submitted their datasheets, the Xerces Society will compile the data and post the results on the Western Monarch Count website. An email announcement will also be sent out.