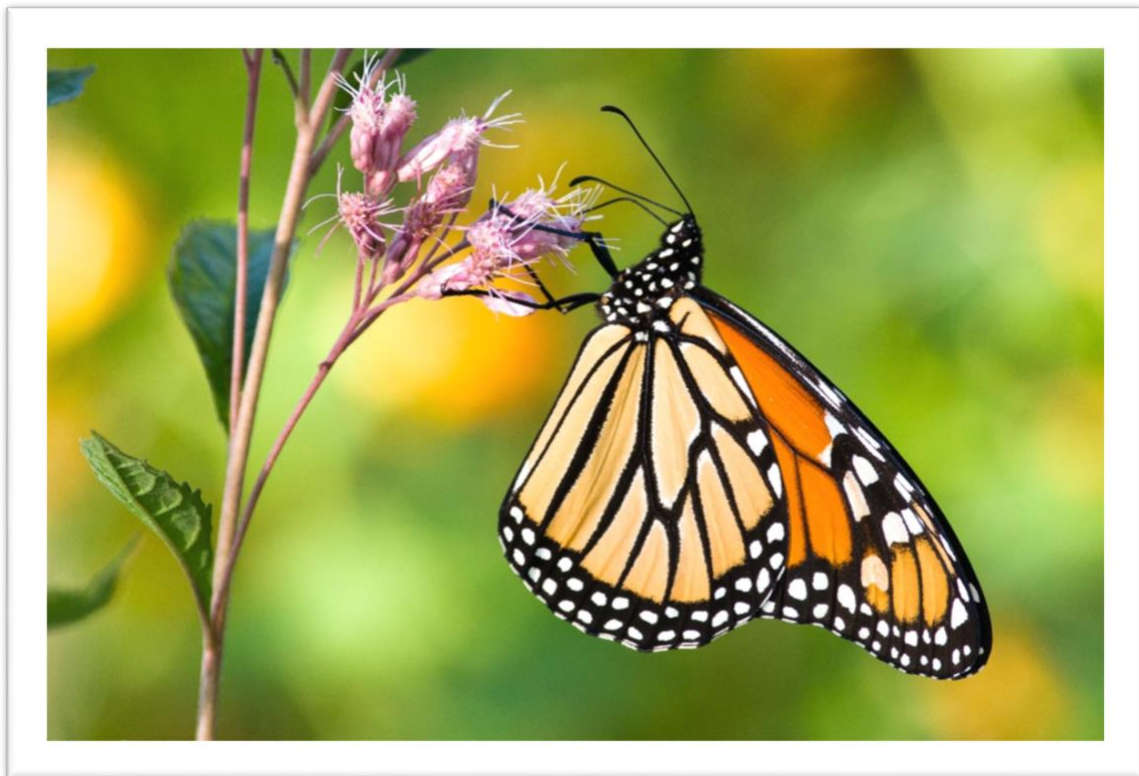


Collecting Monarch Observations

Hello Monarch Ambassador! Thank you for your interest in participating in monarch butterfly surveys this summer and fall!

Here's a description of the Canadian Wildlife Federation project, and how you can help to collect data. We have two research questions, each has an easy online data entry app (step-by-step included).

You can contribute as much or as little data as you like, we welcome and appreciate all contributions.



Monarch butterflies

Monarch butterflies have declined precipitously in recent years, losing more than 80% of their population since the mid 1990's. The continued declines have led the IUCN to recently list monarchs as endangered, while here in Canada it is expected that Environment and Climate Change Canada will soon up-list monarchs from Special Concern to Endangered.

At the Canadian Wildlife Federation, we aim to reduce the extinction risk of monarchs by:

- restoring habitat used by monarchs, and
- contributing to the knowledge of monarch ecology to help guide our conservation actions.

Conservation work targeting monarchs will also benefit hundreds and likely thousands of other species of insects, plants, and other organisms.

CWF Research Questions

The data you collect will contribute to answering one of two questions that will help with monarch conservation. You can contribute data to help answer one or both of the questions.

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Question 1: What factors, be it landscape or weather, influence monarch roost size and length of stay?

When monarchs migrate south to Mexico at the end of the summer, they actively migrate during the day and form roosts at night. These roosts, which are clusters of monarchs ranging from a single individual to many thousands, occur on trees or shrubs.

Roosts may last a single night or multiple weeks and fluctuate in size over time. Our [previous research](#) (made possible by community scientists like yourself) examined how the landscape influenced roost site selection, however, the monarch roost sightings were single snapshots in time. **We would like to expand our knowledge about roost site selection by recording roost size (*i.e. the number of monarchs at a roost*) over time to try and determine the factors that influence roost size and length of stay.**

While roosts can be observed nearly anywhere in southern Ontario, they occur much more frequently along the shores of the Great Lakes. Locations such as Point Pelee on Lake Erie and Presqu'île Provincial Park on Lake Ontario are excellent locations to observe monarchs roosting for the night.



Monarchs roosting at Presqu'île Provincial Park (September 7, 2022).

WHEN to collect data: End of August through end of September. The peak time for monarch migration in southern Ontario is roughly the first two weeks of September. Roosts form in the evening, so are most likely to be found in the last few hours of light or at first light in the morning. *Roost surveys should be done within 3 hours before sunset, or within 1 hour after sunrise.*

WHERE to collect data: Anywhere in southern Ontario.

HOW to collect data: We do not expect participants to spend time specifically searching for monarch roosts (although you can!). **If you encounter a roost while out enjoying nature, walking the dog, biking to work, etc., then please submit information about the roost** and, if you can, revisit the roost location at a later date.

WHAT TO DO if you encounter a roost:

1. Submit the roost to iNaturalist using our Monarch Migration in Ontario project (www.inaturalist.org/projects/monarch-migration-in-ontario)

See Appendix 1 for help with iNaturalist.

2. If possible, revisit the roost location on subsequent days.

Whether it's one or three days afterwards, or every day for a week, anything helps.

3. Submit a new iNaturalist observation for each visit where monarchs are observed at the roost location.

The iNaturalist project will prompt which information to collect.

WHAT data to collect: if you can't use iNaturalist, then record and send us the following information (spreadsheet preferred, but any format will be accepted):

- **Location** (latitude and longitude from a phone or other GPS) of the roost observation.

- **Date and time** of the observation.
- Estimated **number of monarchs** on the roost.
- Whether it is a repeat observation of a previously observed roost.

Question 2: What are the main migration routes of monarchs in Ontario?

Migrating thousands of kilometers south to Mexico requires a lot of energy, so monarchs feed on nectar along their route. Ensuring monarchs have access to sufficient native wildflowers on their migration route is critical, but with limited conservation resources, it's useful to know where those resources are best used. We would like to determine the main migratory routes in Ontario to help direct conservation actions. To do this we would like to collect as many point counts across southern Ontario as we can.

Point counts take a short time to complete and can be done anywhere in southern Ontario, so we encourage you to complete a point count whenever you want. Waiting for the bus, a quick stop on a lunchtime walk, any time and any place (within the study period and area). *Although it's nice to be able to count a monarch, try to not complete a point count just because you first observed a monarch.* Point counts with no monarchs observed are just as important.

WHEN to collect data: End of August through end of September during daylight hours.

WHERE to collect data: Anywhere in southern Ontario.

HOW to collect data: Simply stay stationary for a minimum of 5 minutes and watch for monarchs. Try to complete point counts at locations where there are no visual obstructions (e.g. trees, buildings, etc.) to your view closer than 50 meters for at least 50% of your view. Binoculars can help, especially when trying to distinguish

between look-alike species such as viceroy butterflies (visit [this website](#) for information on how to tell the difference), but are not necessary.

Unfortunately, we can't use iNaturalist for point counts because it doesn't allow observations that have a count of zero. However, *we have created a survey form using the Survey123 mobile app (survey link: <https://arcg.is/1q5q500>) for the point count data. See Appendix 2 for information on how to install and use Survey123.*

Survey123 will prompt which information to collect.

WHAT data to collect: If you would like to do point counts but don't want to use Survey123, you can collect and send us the following information (spreadsheet preferred, but any format will be accepted):

- **Location**(latitude and longitude from a phone or other GPS) of the point count.
- **Date and time** of the point count.
- Estimated **portion of view that is not obstructed for 50 meters**. For example, if you are standing next to a building overlooking a field, it's likely that 50% of your view is obstructed.
- Record **each monarch observed**, and optionally, if the monarch is actively migrating, record the direction (degrees from north; for example E = 90, S = 180) in which the monarch is travelling. A compass or compass app is required to record the direction.



If you have questions or require any clarifications, please let us know. Email rownetwork@cwf-fcf.org

Appendix 1

Using iNaturalist to submit monarch roost observations

Step 1: Install iNaturalist on your device (it is also possible to upload observations using the iNaturalist website).

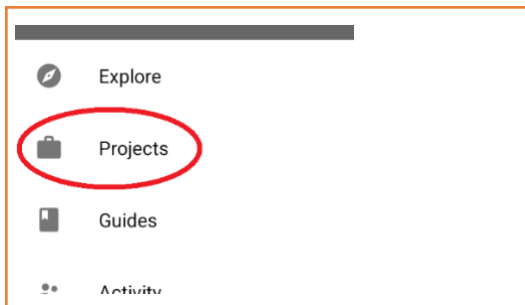
iPhone: <https://apps.apple.com/us/app/inaturalist/id421397028>

Android: <https://play.google.com/store/apps/details?id=org.inaturalist.android>

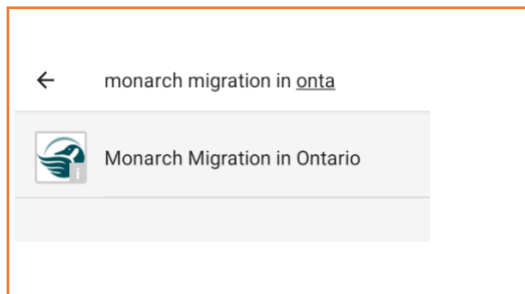
Step 2: Sign in to iNaturalist (or first create a free account) and join the “Monarch Migration in Ontario” project. To do this, click on the menu button at the top left.



Next, select “Projects”.



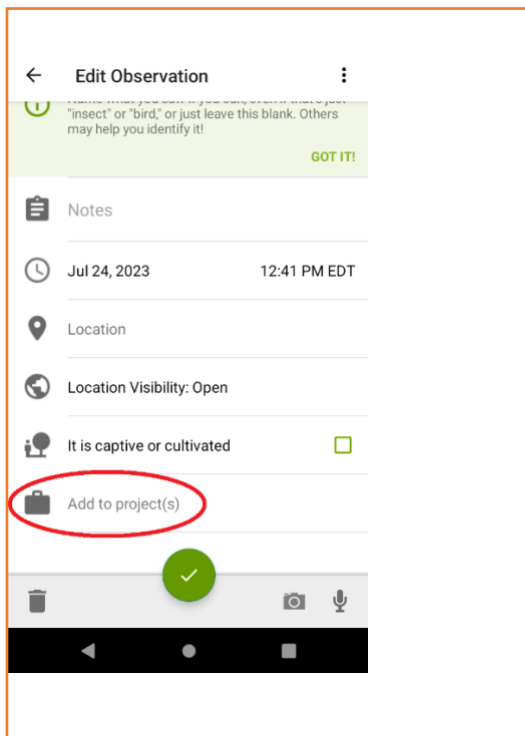
Search for and join “Monarch Migration in Ontario”.



Step 3: Back on the main iNaturalist menu, add a monarch observation by clicking on the + in the bottom right.



To add the monarch observation to the Monarch Migration in Ontario project, select “Add to project(s)” at the bottom of the observation page and select the appropriate project.



Fill out the details required by the project and submit the observation.

Thank you for entering your roost observations!



Appendix 2

Using Survey123 to complete a point count

Step 1: Install ArcGIS Survey123 on your device. It is also possible to submit survey forms from a web browser using the link in Step 2.

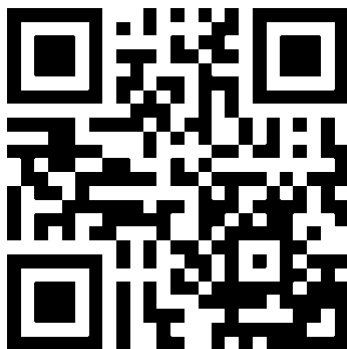
Android: <https://play.google.com/store/apps/details?id=com.esri.survey123>

iPhone: <https://apps.apple.com/us/app/arcgis-survey123/id993015031>

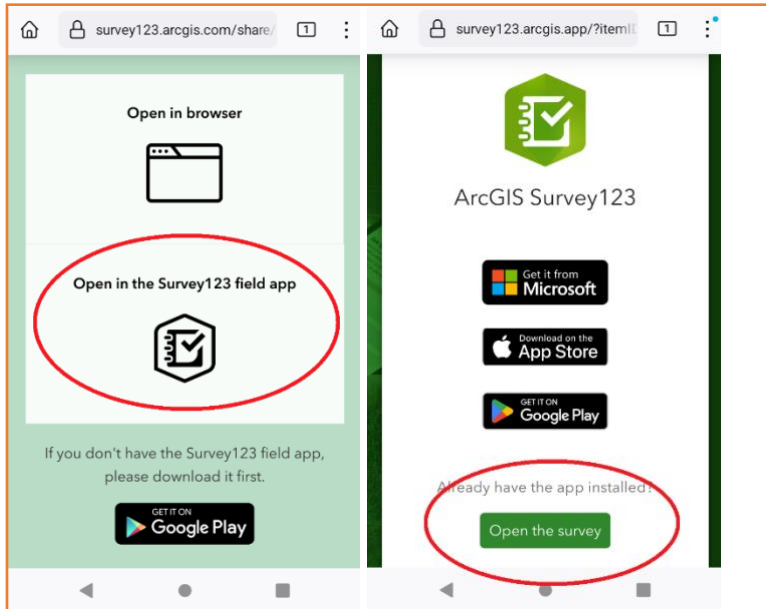
Step 2: Follow the following link to access the survey on your device:

<https://arcg.is/1q5q500>

QR version:

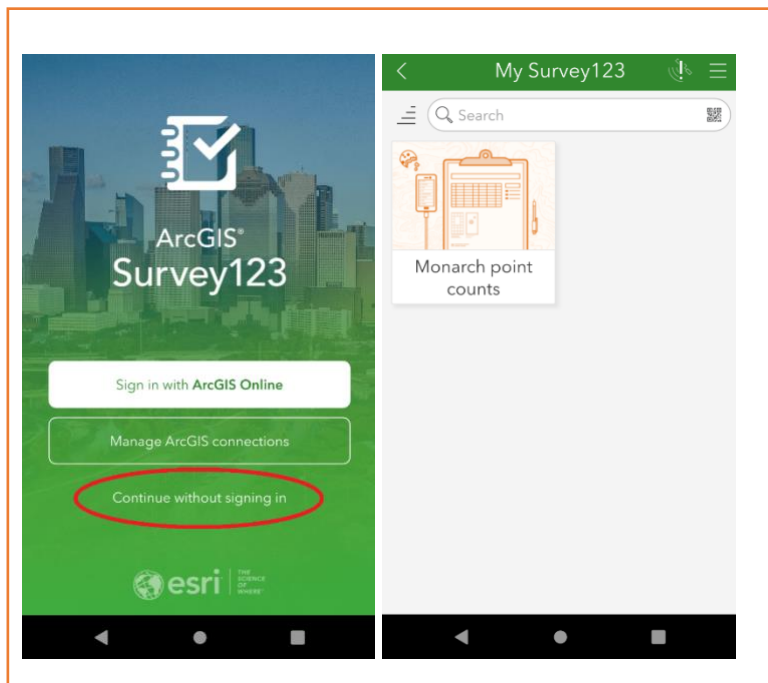


The link will prompt whether to open the survey in the browser or in the app. It is preferred that the survey is filled out using the app, but that is not strictly necessary. If you already installed the app, select the “Open the survey” button.

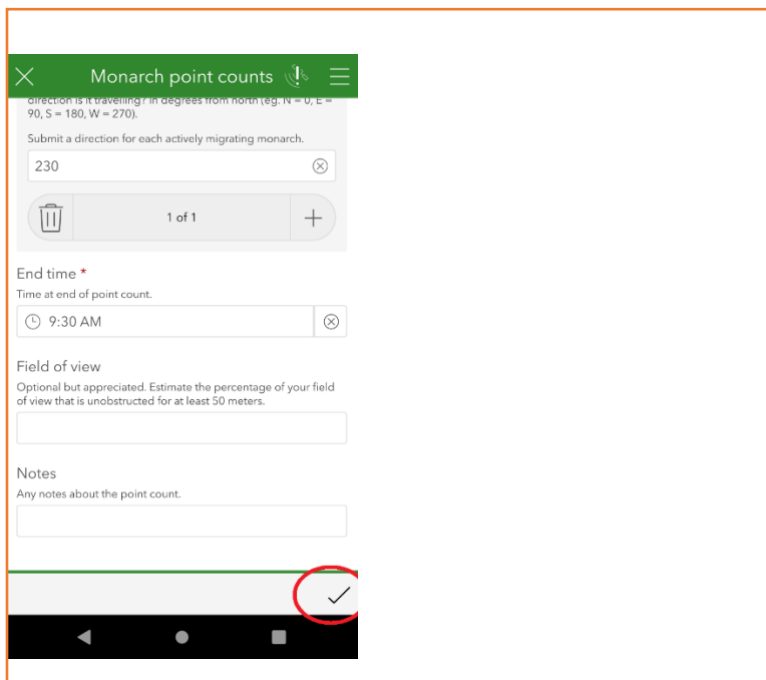


Step 3: Survey123 will open and it will prompt you to log in. Select “Continue without signing in”. You will be able to fill out the survey.

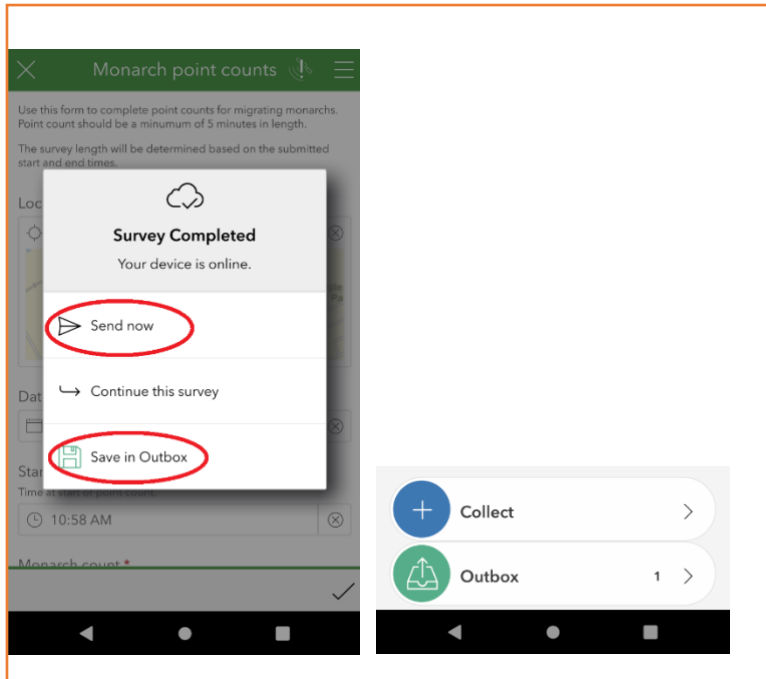
The next time you open Survey123 select “Continue without signing in” and the survey will already be ready to use on your device.



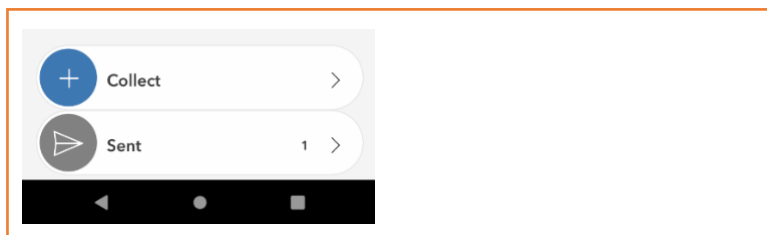
Step 4: Fill out the survey while you do a monarch point count and submit using the checkmark at the bottom right of the screen.



If you have access to mobile data, you can submit the survey immediately. If you do not have mobile data or prefer not to use it, you can “Save in Outbox” and submit once internet is available (by clicking on the “Outbox” button that will appear below the “Collect” button).



Once a survey is sent, a “Sent” button will appear and you can review and, if necessary, edit and resubmit your already sent surveys.



Thank you for entering your point count data!

