

Citizen Science in Ontario

Citizen Science is an exciting way for anyone to contribute to research. There are many opportunities in Ontario. A description of many of the available programs is provided below.

Some helpful links:

- Directory of Ontario Citizen Science through Ontario Nature: <https://ontarionature.org/docs/>
- Government of Canada Citizen Science Portal http://science.gc.ca/eic/site/063.nsf/eng/h_97169.html
- Global Citizen Science project finder <https://scistarter.com/>
- Bird surveys that use volunteers <https://www.canada.ca/en/environment-climate-change/services/bird-surveys/volunteers.html>

General Identification and Monitoring Programs

Natural Heritage Information Centre (NHIC), Government of Ontario

Web Link: <https://www.ontario.ca/page/report-rare-species-animals-and-plants>

Data Collected: Plant and Animal sightings

Comments: The Centre manages data about the location of species of conservation concern, plant communities, wildlife concentration areas, and natural areas in Ontario. Observations related to these elements can be reported. When an observation record is sent to the Natural Heritage Information Centre, it is reviewed and entered into the provincial record. Many agencies and researchers use the provincial record to plan, protect and study Ontario's natural heritage.

iNaturalist, Joint initiative by the California Academy of Sciences and the National Geographic Society

Web Link: <https://www.inaturalist.org/>

Data Collected: Plant and Animal sightings

Comments: iNaturalist is for recording observations of individual living things, particularly things that can be tied to a species name. It is an online social network of people sharing biodiversity information to help each other learn about nature. It's also a crowdsourced species identification system and an organism occurrence recording tool. Volunteers can use it to record their own observations, get help with identifications, collaborate with others to collect this kind of information for a common purpose, or access the observational data. The Seek app by iNaturalist allows you to scan the natural environment to identify organisms.

Great Lakes Marsh Monitoring Program, Bird Studies Canada

Web Link: <https://bsc-eoc.org/volunteer/glmmp/index.jsp?targetpg=index>

Data Collected: Presence and abundance of bird and amphibian species in Great Lakes coastal and inland marshes

Comments: The program is designed to collect information about the presence and abundance of bird and amphibian species in Great Lakes coastal and inland marshes, to contribute to our understanding of these species and their habitat needs. The Great Lakes Marsh Monitoring Program is a bi-national, long-term monitoring program.

General Identification and Monitoring Programs continued

NatureWatch (PlantWatch, FrogWatch, IceWatch, MilkweedWatch, WormWatch),

Naturewatch, David Suzuki Foundation, uOttawa, Wilfred Laurier University

Web Link: <https://www.naturewatch.ca/>

Data Collected: Plant phenology, Frog sightings, Ice presence, Milkweed and Monarch sightings, Earthworm sightings

Comments: NatureWatch is a community that engages Canadians in collecting scientific information on nature to understand our changing environment. Information submitted to the NatureWatch programs is pooled with information submitted by other participants across Canada. It is used by researchers at several Canadian universities to improve scientific knowledge of changes in Canada's biodiversity, climate, and the natural environment.

Currently, NatureWatch hosts the following nature monitoring programs, with more to come:

- ***FrogWatch:*** Learn about Canada's favourite amphibians while helping researchers and zoos monitor the health of frogs population and frog habitat.
- ***Ice Watch:*** The dates when ice appears and disappears provide important information about patterns in Canada's climate. Citizen scientists have been tracking changes in winter ice conditions over many years.
- ***MilkweedWatch:*** Milkweed is the primary food source for caterpillars of the monarch butterfly. Record locations and check from butterflies, caterpillars, eggs or chrysalises.
- ***PlantWatch:*** The blooming times of Canada's most easily recognized plant species help scientists to track changing climate trends and their impacts.
- ***WormWatch:*** Earthworms are very sensitive to soil disturbance, so learning more about the distribution of earthworm species can be used to help improve soil health and reclaim degraded sites

Adopt-A-Pond (Toronto Zoo) is the provincial coordinator of the FrogWatch program. For more information visit:

<http://www.torontozoo.com/adoptapond/FrogwatchOntario.asp>



Specific Animal Identification and Monitoring Programs

Clam Counter, Toronto Zoo

Web Link: <http://www.torontozoo.com/tz/mussels>

Data Collected: Freshwater Mussel Sightings

Comments: The purpose is to collect, record and store location and species information on Ontario mussels, including species at risk. Use the Clam Counter freshwater identification and reporting app to report sightings. Information gathered through Clam Counter is shared with partner organizations such as Fisheries and Oceans Canada to determine the status of freshwater mussel populations and to supplement conservation programs and initiatives.

Ontario Turtle Tally, Toronto Zoo

Web Link: <http://www.torontozoo.com/adoptapond/turtleally.asp>

Data Collected: Turtle Sightings

Comments: The purpose is to collect, record and store location and species information on Ontario turtles, including species at risk. A hard copy of the Ontario Turtle Tally Package is available along with online Turtles of Ontario guide to learn to identify turtles in the area. All data collected online is shared with the Natural Heritage Information Centre (NHIC) and the Ontario Reptile and Amphibian Atlas at Ontario Nature.

Neighbourhood Bat Watch, Quebec Centre for Biodiversity Science

Web Link: <https://batwatch.ca/>

Data Collected: Bat presence and abundance

Comments: The program is asking for the participation of citizens to locate bat colonies and count the number of bats living in them to support bat conservation and monitoring.



Insect Identification and Monitoring Programs

Bumble Bee Watch, Xerces Society, University of Ottawa, Wildlife Preservation Canada, Montreal Insectarium, Bee Spotter & The Natural History Museum London

Web Link: <https://www.bumblebeewatch.org/>

Data Collected: Bumble Bee sightings

Comments: Bumble Bee Watch is a collaborative effort to track and conserve North America's bumble bees. This citizen science project allows for individuals to: Upload photos of bumble bees to start a virtual bumble bee collection; Identify the bumble bees in your photos and have your identifications verified by experts; Help researchers determine the status and conservation needs of bumble bees; Help locate rare or endangered populations of bumble bees.

Journey North

Web Link: <https://journeynorth.org/>

Data Collected: Monarchs, Hummingbirds, Robins, Red-Winged Blackbird, Barn Swallow, etc.

Comments: Tracks migration events and provides an easy entry point to citizen science. Reported sightings are mapped in real-time as waves of migrations move across the continent. People report sightings from the field, view maps, take pictures, and leave comments.

eButterfly, University of Ottawa/Montreal Insectarium / Vermont Center for Ecostudies / University of AZ

Web Link: <http://www.e-butterfly.org>

Data Collected: Butterfly sightings

Comments: A real-time, online checklist and photo storage program, e-Butterfly is providing a new way for the butterfly community to report, organize and access information about butterflies in North America. e-Butterfly provides rich data sources for basic information on abundance, distribution, and phenology across North America.

Space for Life Insectarium, Montreal Insectarium

Web Link: <http://www.e-butterfly.org>

Data Collected: <http://espacepourelavie.ca/en/mission-monarch>

Comments: The goal of the "Mission Monarch" study is to inventory and describe habitats where these splendid butterflies reproduce, to see whether the number and distribution of milkweed plants has an impact on the significant decline in monarch butterfly populations in North America. Create an account on the Mission Monarch website and you're ready to head out and start counting milkweed plants. Check whether there are any eggs, caterpillars, pupae and butterflies, then enter your data.



Bird Identification and Monitoring Programs

Bird Counts, Bird Studies Canada

Web Link: <https://bsc-eoc.org/volunteer.jsp?lang=EN>

Data Collected: Bird sightings; different for each program

Comments:

- ***Christmas Bird Count:*** Volunteers conduct a one-day census of all birds seen and heard within a pre-defined area during the weeks before and after Christmas. Bird Studies Canada coordinates the Canadian portion of the Christmas Bird Count CBC. <https://bsc-eoc.org/volunteer/cbc/index.jsp?lang=EN>
- ***Great Backyard Bird Count:*** A global bird count over four days in mid-February. Volunteers of all skill levels observe birds for a minimum of 15 minutes /day on one or more survey days and report all the birds they see. These counts provide a snapshot of where birds are across the globe in late winter. <http://gbbc.birdcount.org/>
- ***Project FeederWatch:*** A program where volunteers observe and record information, at regular intervals throughout the winter, about the birds that visit their feeders. <https://feederwatch.org/>
- ***Project NestWatch:*** Data are collected for nest record schemes in all provinces and territories in Canada. Volunteers find and carefully monitor nests throughout the breeding season, checking nests every few days to record their status. Information on single visits to nests is also useful. <https://nestwatch.org/>
- ***Canadian Lakes Loon Survey:*** Tracking Common Loon reproductive success by monitoring chick hatch and survival. Participants dedicate at least three dates, visiting their lake once in June (to see if loon pairs are present), once in July (to see if chicks hatch) and once in August (to see if chicks survived to fledge). <https://bsc-eoc.org/volunteer/clls/index.jsp?lang=EN>
- ***Swifts and Swallows:*** Swallows, swifts, and nightjars are "aerial insectivores" - birds that specialize on eating flying insects. Over the last 40 years, aerial insectivores have undergone steeper declines than any other group of birds in Canada. Across the country, Bird Studies Canada is engaging communities in monitoring, stewardship, and conservation for aerial insectivores. <https://bsc-eoc.org/birdmon/ai/main.jsp>

eBird Canada Cornell Lab of Ornithology

Web Link: <https://ebird.org/canada/home>

Data Collected: Bird distribution, abundance & habitat use

Comments: eBird is the world's largest biodiversity-related citizen science project, with more than 100 million bird sightings contributed each year by eBirders around the world. eBird data documents bird distribution, abundance, habitat use, and trends through checklist data collected within a simple, scientific framework. Birders enter when, where, and how they went birding, and then fill out a checklist of all the birds seen and heard during the outing.

Invasive Species Monitoring Programs

Budworm Tracker, Healthy Forest Partnership

Web Link: <http://budwormtracker.ca/#/faq>

Data Collected: Spruce budworm

Comments: The spruce budworm is the most destructive insect in eastern Canadian forests. Citizen scientists play a major role in providing insight into why populations rise and spread the way they do.

EDDMapS (Early Detection and Distribution Mapping System), Ontario Federation of Anglers and Hunters, Invasive Species Centre, Ontario's Invading Species Awareness Program, Government of Ontario

Web Link: <http://www.eddmaps.org/ontario/>

Data Collected: Invasive Species

Comments: EDDMapS documents the presence of invasive species. EDDMapS encourages users to participate by providing Internet tools that maintain their personal records and enable them to visualize data with interactive maps. Users simply enter information from their observations into the standardized on-line data form, which allows specific information about the infestation and images to be added. Information entered is immediately loaded to the EDDMapS website for verification.

Ontario's Invading Species Hotline, Ontario Federation of Anglers and Hunters

Web Link: <http://www.invadingspecies.com/invading-species-reporting/> 1-800-563-7711

Data Collected: Invasive Species

Comments: Call and speak with an invasive species expert to report a sighting or to inquire about invasive species information.



Water Quality Monitoring Programs

Water Rangers

Web Link: <https://waterrangers.ca/en/>

Data Collected: Water quality indicators

Comments: Their mission as Water Rangers is to build the tools to help citizens and scientists easily record/analyse water data to learn about problems, share discoveries and engage neighbours. Water Rangers' water quality kits were designed for experienced and inexperienced water quality monitors. The tests teach participants about water health indicators.

Lake Partner Program, Government of Ontario

Web Link: <https://desc.ca/programs/LPP>

Data Collected: Water quality samples and measurements

Comments: The Lake Partner Program is Ontario's volunteer-based, water-quality monitoring program. The Ontario Ministry of the Environment, Conservation and Parks coordinates this program from the Dorset Environmental Science Centre (DESC) in partnership with the Federation of Ontario Cottagers' Associations. Each year, more than 600 volunteers monitor water quality in almost 550 inland lakes at over 800 sampling locations. Volunteers collect water samples and return them, postage paid, to DESC. All analyses are performed in the DESC Water Chemistry Laboratory. The resulting data are used by members of the public, partner agencies, government and academic researchers and private consultants to assess and report on water quality in lakes across Ontario. Total phosphorus, calcium and water clarity data are published each January on the provincial Lake Partner Program webpage.



Weather Monitoring Programs

CoCoRaHS Canada (Community Collaborative Rain, Hail and Snow Network)

Web Link: <https://cocorahs.org/Canada-About.aspx>

Data Collected: Measure rain, hail and snow

Comments: Each time a rain, hail, or snowstorm occurs, volunteers take measurements of precipitation from their registered locations (reports of 'zero' precipitation are encouraged too!). The reports are submitted to the website and are immediately available for viewing. The data are used by the National Weather Service, meteorologists, hydrologists, emergency managers, city utilities, insurance adjusters, the U.S. Department of Agriculture, engineers, mosquito control, ranchers and farmers, outdoor and recreation interests, teachers, students, and neighbors in the community.

SnowTweets, Naturewatch, University of Waterloo

Web Link: <https://twitter.com/AttnNatureWatch/status/949307313655107586>

Data Collected: Snow depths

Comments: NatureWatch is a community that engages Canadians in collecting scientific information on nature to understand our changing environment. Information submitted to the NatureWatch programs is pooled with information submitted by other participants across Canada. It is used by researchers at several Canadian universities to improve scientific knowledge of changes in Canada's biodiversity, climate, and the natural environment. Measure snow in your yard, then tweet the measurements and your postal code (e.g. #snowtweets 2.5 cm at K0H 1S0). Go to <http://snowtweets.uwaterloo.ca/> to see the results.