



Citizen Scientist

Grades 11-12 Science/Technology

Do you have what it takes to be a **citizen scientist**? Scientists worldwide need your help! Contribute to real scientific research projects by collecting data, taking pictures and making observations in your own backyard and neighbourhood.

Materials

- Notebook
- Pencil/Pen
- Ruler
- Camera (a phone camera will work just fine)
- GPS receiver (a cell phone will work)
- Computer or mobile device with an internet connection (required for some projects)

Privacy Considerations: Each project will have its own privacy considerations depending on the involvement required. Some projects require you to set up a free account online. Please read the project description and all fine print carefully before agreeing to participate.



What is citizen science?

Citizen science is people like you helping scientists collect data and contribute to our understanding of the world. This short [SciShow video](#) describes the awesome power of citizen science!

Becoming a citizen scientist allows you to practice the skills you have developed as a science student. The materials you'll need to get started will depend on the project that you are interested in participating in, but for many projects you'll only require your keen powers of observation and a place to record what you see. Some projects may require a camera or basic scientific tools such as a ruler, calculator or magnifying glass.



“ Citizen science is the practice of public participation and collaboration in scientific research to increase scientific knowledge. Through citizen science, people share and contribute to data monitoring and collection programs. ”

- National Geographic



“ Citizen science and crowdsourcing let us ask new questions, collect data and make scientific advancements with your help. ”

- National Centers for Environmental Information



DID YOU KNOW?

The National Audubon Society's Christmas Bird Count is one of the oldest examples of citizen science in North America. It's been running since 1900, and now has over 2000 volunteer groups collecting information about local populations of birds, which helps to preserve and protect these populations. Many New Brunswickers participate in bird count events each year.

How do I find a project to participate in?

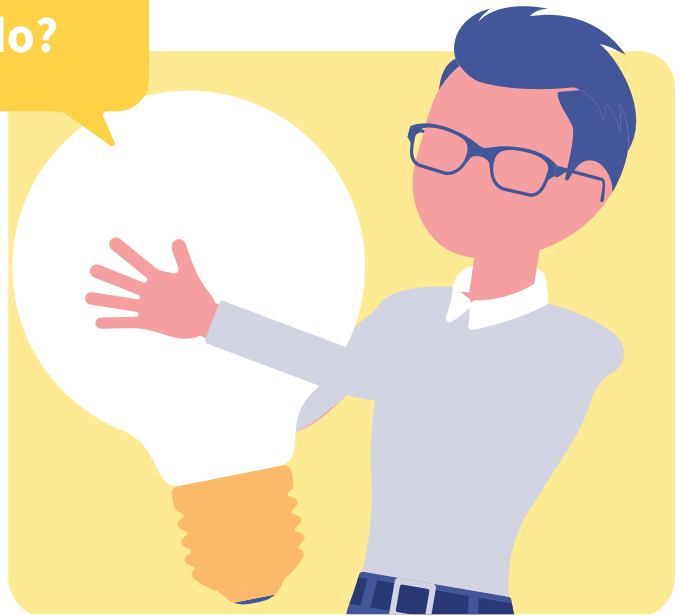
Citizen scientist projects are plentiful and diverse. They can involve activities like recording rainfall amounts in your area or tracking and recording the diversity of wildlife in your backyard. Some projects involve photographing ladybugs and others ask for information about endangered species like bumblebees. Here are a few websites where you will find citizen science projects to work with:



SciStarter Finder	Easily search for projects you are interested in. Try typing “indoors” in the Location field when searching for a project.
Zooniverse	Zooniverse is an international platform for “people-powered research” – also known as citizen science.
California Academy of Sciences	This site offers several printable templates to help you plan and record your observations.
WildPaths Maritimes	WildPaths Maritimes is a volunteer citizen science project created by the Nature Conservancy of Canada (NCC) to help protect wildlife moving between New Brunswick and Nova Scotia. This project uses a mobile citizen-science app called iNaturalist . The iNaturalist app can be used for many other citizen science projects across Canada.
Birds Canada Bird Blitz	This project could be modified to a backyard bio blitz and expanded to include other types of animals and plants. It suggests picking a day in May. The Birds Canada site offers projects by region, downloadable bird identifier guides, tally sheets, etc.
Worm Watch	Why would you want to find and monitor worms in your area? Because the information can help scientists protect habitats and soil health.

Shark Sightings	The Department of Fisheries and Oceans encourages everyone who encounters a shark to report the sighting.
Citizen Science Portal Canada	This site links to many diverse citizen science projects that you can get involved in at different times of the year. Use the hashtag #ScienceAroundMe to share your experience.
City Nature Challenge	Canadian cities compete in a friendly challenge to document urban biodiversity. Join the challenge by taking photos within your city and posting them to iNaturalist.ca or the iNaturalist app.
Frog Watch	Watch and listen for frogs and toads to help scientists monitor the health of wetlands in Canada.
National Geographic	The National Geographic entry on citizen science contains several links and descriptions of ongoing projects in North America.
eBird	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.
Litterati	With the Litterati app, you photograph a piece of litter, discard it properly and tag the photo. Then you invite others and challenge them to do the same. Not only does this help clean up the earth, it produces data that reveals patterns and potential roadmaps to a litter-free world.
Globe at Night	Globe at Night is an international citizen-science campaign to raise awareness of the impact of light pollution. You easily measure and submit your night sky brightness observations on a computer or smart phone.
Abeilles citoyennes	En Français seulement. This project is building an inventory of the biodiversity of bees.

So, what are you asking me to do?



1. **Find and register** with one or more citizen scientist project(s).
2. **Prepare.** Find a notebook to use as a journal or create a digital version. In your journal, document the website/organization and project you've decided to participate in. Be sure to date your entries.
3. **Observe.** What you see? What do you hear? Use your senses to gather information.
4. **Record.** Describe the organism or phenomenon you've chosen to research. Include relevant information such as size, weight and colour. (Be sure to include units of measurement.) Where does it occur? Take pictures and/or video if you can.
5. **Draw.** Make a diagram of your organism or phenomenon, its ecosystem, or other context.
6. **Research.** Using the internet, local experts and/or books, find out more about your chosen topic. Document your findings in your journal. Don't forget to record your sources.
7. **Gather.** Whatever data the project asks you to collect, gather it, organize it, graph it if relevant, and record it in your journal.
8. **Report.** Be sure to document your findings with the organization you've registered with.
9. **Compare.** Research either within your particular project's website or with comparative data found elsewhere. Record a comparison of data in your journal. For example, if you are recording bird return dates, how does your data compare to data from nearby observers or to observers in other parts of Canada?
10. **Interpret and predict.** Examine the data you've collected and what you've found online. Make a prediction based on what you know and what you've found. For example, does the graph of your data tell you something? Is the slope constant or is it changing? Is there linear or exponential growth? Does a line of best fit tell you something about the future?
11. **Map.** Where does your research take place? Describe the ecosystem or context of the thing you are studying. What is its habitat? What is the latitude and longitude of your findings?
12. **Share.** Find someone in your community who is an expert in or has a special connection to what you are researching. Consider people in scientific occupations, First Nations communities, and other citizen scientists. Prepare some questions and conduct an interview over the phone or via video chat. Share your findings and discuss your interpretations and predictions.

- 13. Present.** Consider how you want to share your findings. Options may include building a website, sharing a video, building a PowerPoint with voice recordings, keeping a blog, tweeting daily updates, etc.
- 14. Connect.** A very effective way to make global connections between the work you and other citizen scientists are doing is to explore the *United Nations Sustainable Development Goals*. How does your work contribute to one or more of the sustainable goals? It is also interesting to compare your data and observations with findings of learners around the world.
- 15. Call others to action.** Public Service Announcements (PSAs) are created by non-profit and government groups to persuade people to take action on a particular issue. Communicating your cause effectively will allow more people to understand and care about an issue. Create a PSA about the benefits of becoming citizen scientists. Your PSA can be done as a poster, infographic, podcast, video, or any other method you choose. A couple of things to consider when creating a PSA:
- What is your message?
 - Who is your target audience? How will you appeal to them?
 - What is the best way to share your message?



Qu'est-ce que je peux faire en français?

On a une très belle ressource à explorer! Vous êtes les scientifiques, vous allez faire de la recherche avec vos compétences en observation.

1. Il faut créer un compte au site **Idello.org**, mais ça vaut la peine! Problèmes à enregistrer? Contactez votre enseignant de français.
2. **Cliquez ce lien**. De toutes ces belles vidéos, trouvez un clip qui est lié à votre projet.
3. Expliquez (à **l'écrit** et à **l'oral**) comment le contenu de la vidéo est lié à votre étude pour le projet. Bonne chance!



I want more!

- Develop your observation skills and help scientists map the brain by playing the online game **Eyewire**.
- Try out this **energy use calculator** to estimate your annual energy use and cost to operate specific appliances and electronics. Estimate how much you could save by not using some of your favourite appliances.
- **SETI@home** is one of the first citizen-science projects to use the internet. First made public in 1999, SETI@home uses computers in the Search for Extraterrestrial Intelligence (SETI). You can still take part in the search by joining the project and downloading free software.

