



Canadian Council
on Invasive Species

Conseil Canadien sur les
Espèces Envahissantes

Growing Community Science for Invasive Species Reporting in Canada 2020 Recommendations Report

Prepared by the Canadian Council on Invasive Species, March
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Community Science for Invasive Species in Canada - 2020 Recommendations Report

EXECUTIVE SUMMARY

Community science is key to engaging the public in various issues, including conservation-based issues such as invasive species. Based on research conducted by the Canadian Council on Invasive Species (CCIS), there are several lessons learned and key recommendations that should be employed to achieve successful community science engagement on invasive species in Canada. The top recommendation is the need to develop and implement a well-coordinated National Invasive Species Community Science program for Canada. This program would serve multiple purposes, including but not limited to, linking current community science initiatives from across Canada together resulting in coordinated invasive species data collection, engaging key target audiences through strategic communications activities to increase reporting and establishment of a volunteer recognition program, to further sustain and support those contributing to reporting.

Other key recommendations (expanded on throughout the report) include:

- A call on federal government to provide leadership and support for a strong community science program with federal government ensuring strong scientific expertise and verification.
- A call on the CCIS to provide a national non-government leadership role to facilitate and build a national community science portal and program that can be used by partners across Canada.
- A call on federal and provincial/territory governments and the private sector to work together to collaborate on developing shared protocols that support publicly accessible data on invasive species.

INTRODUCTION AND OBJECTIVE

Introduction

Community science (also known as citizen science, crowd science, crowd-sourced science, civic science, volunteer monitoring, or online community science) is scientific research conducted, in whole or in part, by amateur (or nonprofessional) individuals. Community science is sometimes described as "public participation in scientific research" participatory monitoring, and participatory action research whose outcomes are often advancements in scientific research, as well as an increase in the public's understanding of science.

Early detection, monitoring and rapid response are key in preventing the spread and impacts of existing and new invasive alien species (IAS). Increasing the number of people on the landscape who are trained in identifying and reporting invasive species will greatly

assist in the early detection and rapid response of invasive species, thus limiting their impacts and the costs associated with managing them. Therefore, by harnessing the energy and knowledge of Canadians and training them to become community scientists, we will greatly reduce the spread of invasive species across Canada, resulting in protecting of the environment, economy, and society.

The Canadian Council on Invasive Species (CCIS) researched existing community science programs in Canada and beyond (invasive species and/or conservation based), key information on the strategies employed in their success, as well as key information on lessons learned and challenges they have faced that would help inform community science initiatives (local and national) moving forward.

In addition to research on current programs, the CCIS hosted a Community Science Workshop in Ottawa, Ontario, that brought together various partners and key organizations (see Appendix A) to share lessons learned from current community science programs in Canada and to provide direct recommendations that could be using moving forward to strengthen community science for the purposes of invasive species reporting across Canada.

Objective

The objective of this report is to identify and recommend key actions to strengthen community science engagement in the reporting of invasive species across Canada.

This report includes research and analysis of community science programs and input from experts, including from the Community Science Workshop, held in March 2020 in Ottawa, Ontario.

KEY LESSONS LEARNED

The feedback from the Community Science Workshop, as well as research on existing programs, provided many lessons learned and insight into what has made current community science programs successful. The lessons learned can be applied when developing a National Invasive Species Community Science Program and may also help those who are in the process of developing community science programs in their province or territory. The following are the top 10 lessons learned followed by additional considerations:

The top lessons learned from existing programs includes:

1. Build on existing reporting tools and platforms – do not duplicate existing resources
2. Ensure clear objectives for the community science program
3. Provide meaningful roles and opportunities for volunteers
4. Ensure a volunteer recognition program - maintain and increase volunteer retention through a recognition program that provides incentives, prizes, challenges etc.
5. Provide training, tools, and resources to support volunteers – provide adequate reporting tools and training protocols through online and in-person; ensure resources are bilingual or multi-lingual

6. Reduce barriers to reporting and volunteering by keeping programs easy and straightforward
7. Provide easy online access to resources such as training protocols, invasive species identification information, current data, a list of current programs etc. through an online portal
8. Link and connect with other organizations who have complementary community science programs to maintain momentum, continue to share ideas and success stories etc.
9. Increase media, including social media presence to ensure uptake of the community science programs and reporting
10. Provide feedback and relay success – communicate with program volunteers on a regular basis and provide them feedback on their efforts; relay statistics on the data collected and the success of the program to the media and other target audiences

RECOMMENDATIONS FOR ENHANCING COMMUNITY SCIENCE FOR INVASIVE SPECIES IN CANADA

The feedback from the attendees of the Community Science Workshop, as well as from the research completed on existing programs, formed many recommendations that are necessary to significantly advance community science in Canada regarding invasive species reporting and tracking.

To gain traction and ensure broad linkages, it was recommended that the CCIS lead and facilitate action on three key recommendations:

1. Develop and Implement a National Invasive Species Community Science Action Plan and Program.

A National Invasive Species Community Science Action Plan and Program needs to link and build on current programs across Canada. A National Invasive Species Community Science Program would be based on strong Action Plan that identifies key steps, timelines, roles, and outcomes including:

- Goals, objectives, and measures of success for a National Invasive Species Community Science program.
- Link with federal, provincial/territory governments and others to ensure strong verification, reporting protocols and data management system is in place.
- Develop and deliver formal training program that could be used across Canada.
- Establish linkages between existing programs across Canada to facilitate sharing of resources and avoid duplication.
- Develop and facilitate a Volunteer Recognition program which recognizes and supports provincial and territorial programs and augments and links communities across Canada.
- Facilitate the development of bilingual and multi-lingual resources.
- Link community reporting to action and celebrate successes.
- Develop and maintain a national community science ‘portal’ on invasive species.

- Establish links with key advisory representatives across Canada from all levels of government, indigenous, non-profit, industry and business, to ensure various perspectives are used to guide the development of the action plan.
- Build recommendations, and identify key actions, with associated timelines, for implementation.
- Host annual/bi-annual workshops/sessions with all levels of government, indigenous, non-profit, industry and business, to ensure momentum and follow-up to implemented actions. Feedback from the Community Science Workshop specifically identified the need for annual/bi-annual workshops to allow for connection, collaboration sharing of success stories, ideas for strengthening community science, identification of common issues to collectively work on and presentations from experts.
- Identify specific measures and indicators to gauge success moving forward.

2. Develop a National Community Science ‘Portal’ on Invasive Species

A publicly accessible National Community Science ‘Portal’ is needed to ensure partners, organizations and volunteers have easy access to important invasive species information, as well as important community science information. A National Community Science portal would consist of:

- A list of and access to, all the current complementary Community Science Programs in Canada, to serve multiple purposes: direct those looking to volunteer to their provincial or territorial programs, allow organizations who are implementing community science programs to connect with others to share information and avoid duplication and to allow the media to access programs and contact information.
- A list of and access to, all the invasive species reporting tools being used across Canada, to allow volunteers interested in reporting, but not joining an official program, to report in their province or territory.
- Links to important invasive species information like identification information, action plans, educational resources etc.
- Access to formal training and standard reporting protocols
- Success stories and lessons learned to avoid duplication and promote sharing and collaboration.

3. Develop a National Community Science Communications Plan

A National Community Science Communications Plan is needed to ensure effective awareness of the efforts of invasive species reporting in Canada and to increase volunteer uptake. The plan would consist of:

- Key target audiences that would play a key role into invasive species reporting and tracking – it is not a one size fits all approach (i.e. landowners, recreationists, hunters, youth, new Canadians) and identify how their activities that they already do, could help invasive species reporting.
- Targeted messaging and advertising to engage target audiences and promote their involvement i.e. through paid social media advertising, awareness weeks etc.

- Strategies on how to engage and communicate to the media (TV, radio, newspaper) to promote the programs, success stories, data collection, raise awareness of invasive species etc.
- Media resources and templates to support media coverage of local community science initiatives.
- Key government agencies to connect with and develop shared messaging.
- Key community science messaging that can be used consistently across Canada.

OTHER KEY RECOMMENDATIONS

4. Develop a national platform that provides publicly accessible geospatial data on key invasive species across Canada.

A national platform of key invasive species geospatial data is required to support consistent, invasive species reporting across Canada. The platform would provide consolidated invasive species data from across the various provinces and territories, as well as other key items including:

- Standard protocols for collecting and reporting data.
- Formal verification processes reports.
- Data that is confidential, would be kept confidential and various levels of access would be developed.

5. Develop key resources and support initiatives on a national and regional basis.

Proper training, tools, and resources to support volunteers will result in greater participation and increased retention. The National Community Science Action Plan and Program could serve as a template/support provincial/regional action plan. Other strategies include:

- Develop resources that communicate the values of community science, tackle perceptions.
- Ensure resources are bilingual and/or multilingual.
- Collaborate with other organizations looking to achieve the same goals and objectives – identify key partners to work with (private landowners, industry, indigenous)
- Recognize and incorporate indigenous knowledge into programs and information.
- Develop strong resources for reporting, tracking, identification, control, and management.

6. Identify and track indicators of program success.

It is important to clearly define what success looks like through the definition of goals and objectives. Implement specific measures of success such as:

- Number of reports of invasive species/year
- Decline in number of invasive species or decline in infested area
- Workshop evaluations results
- Number of commitments made to report invasive species

- Number of times a reporting application is downloaded
- An increase in volunteers
- Number of species prevented i.e. number of species being reported stopped provincially or territorially at boat inspection stations etc.
- Hectares of restored areas
- Dollar value of prevented infestations
- Social media (shares, likes, followers etc.)

7. Effectively engage target groups/volunteers in reporting invasive species.

Engaging a diverse group of target audiences will mean more reporting. Suggestions include:

- Develop program(s) that engages a diverse group of key target volunteers (ages, interests etc.)
- Develop targeted messaging to increase their participation.
- Determine a clear goal for the volunteers to achieve.
- Ensure volunteer retention through things like incentives, recognition, follow-up etc.
- Ensure volunteer training is simple and straightforward.
- Create a volunteer recognition program.
- Hold training workshops held and count participants (national, provincial, territorial, local)

8. Other

- Increase government support at all levels to increase reporting - consider tax incentive for those who participate in reporting.
- Establish linkages with other programs and messaging beyond Canada's borders.
- Develop national list of all the reported invasive species in Canada to inform organizations invasive species databases.

Appendix A. Community Science Programs in Canada – Analysis and Recommendations Moving Forward

A wide number of community science programs were researched to identify systems, successes, challenges, and lessons learned. The following is a highlight from a few key programs, while recognizing that there are many others.

1. Canadian Wildlife Federation

About: The Canadian Wildlife Federation's mission is to conserve and inspire the conservation of Canada's wildlife and habitats for the use and enjoyment of all.

The Canadian Wildlife Federation conducts its activities through a cooperative approach – working with people, corporations, non-government organizations, and governments to inspire collaboration in achieving wildlife conservation.

Strategies leading to successful community science engagement:

- A reporting application (iNaturalist) found to be successful in engaging and retaining users (provides information out of field books into a place where it can be useful for to make a difference for conservation data available in real time, can find out what others are seeing around you, can help in identifying occurrences).
- Have taken data from the reporting application (iNaturalist) and have begun to analyze their audience i.e. age, gender, location, to develop targeted messaging to increase engagement.
- Promote and host interactive annual events, i.e. BioBlitz that encourage reporting
- Target youth through their pollinator conservation challenge for schools (have combined a hot-topic issue with a challenge with prizes for increased participation).

Challenges, lessons learned and recommendations moving forward

- Based on their research and data from the BioBlitz events, in 2019, they had just over 10,000 participants but only 1360 submitted observations (just over 10%). identified barriers to participating included:
 - Need for online tools including how-to-guides, videos, and infographics, to be able to train communities on how to use iNaturalist
 - Need to develop a help section in iNaturalist.ca
 - Need to identify local/regional champions
- Need to identify the 'hook' – there was a jump of 5000 sign-ups after a 2min CTV interview about image recognition capabilities
- Feedback to volunteers is key
- Need to provide tools, direction, and guidance
- Need to collaborate and include multiple organizations
- Need to identify a sense of purpose

2. Parks Canada

About: Parks Canada community science is a collaboration between External Relations and Visitor Experience Directorate and Protected Areas Establishment and Conservation Directorate. Their community science activities provide:

- Opportunities for the public to be actively involved in science and conservation
- Meaningful data for Parks Canada
- Expansion of opportunities for meaningful connections with Parks Canada places.

Strategies leading to successful community science engagement:

- Host annual BioBlitz activities to provide opportunity for experts and volunteers to count and record species that live in a specific place.
- Transitioned BioBlitz events from a national approach to a more regional, field level organized activities, creating a more hands-on experience and facilitating a local connection to the area.
- Adapted resources to suit the needs of their audiences. For example, the BioBox, formerly known as “BioBlitz in a Box” was developed to create the opportunity of a portable, low-maintenance activity that could be easily adjusted based on the number of participants, their age group, and the region - participants race against the timer to identify as many specimen in the box as they can. It is an effective tool to engage and create awareness around the concept of being connected to nature from any setting.
- Created hands-on activities where they can i.e. Swim with Salmon at Fundy National Park where community scientists can join Parks Canada biologists as they track the populations of endangered inner Bay of Fundy Atlantic Salmon by conducting snorkel surveys.

Challenges, lessons learned and recommendations moving forward:

- Ability to accommodate the ever-growing demands for opportunities to be involved in science and conservation efforts, often due to the capacity challenges.
- Perceptions surrounding events are often that they must be “big” events, however, this is misleading - they can still be effective at a smaller scale as well.
- Expectations are not always realistic - hosts should understand the background and skill levels of their volunteers and how they can contribute.
- Linkage between community science and effective data collection can be challenging - some sort of quality assurance is critical for the data of the project to be useable.
- Develop communication tools to promote projects and connect with volunteers.
- Continue to collaborate with external partners and hold workshops to facilitate conversations and share best practices.
 - Strengthen linkage between community science and data collection because community science can make a significant contribution to decisions and conservation outcomes through monitoring, invasive species identification, species lists, and so on.

- Community science is not meant to replace science, but instead provide the opportunity for the public to contribute and to be inclusive of various volunteer backgrounds.
- Continue to use and support this method of data collection because the more we continue to promote and support programs like iNaturalist the more frequent the data will be updated and the more reliable it becomes.

3. Community Science in Eastern Ontario – Nature Conservancy of Canada

About: The Nature Conservancy of Canada leads and inspires others to join them in creating a legacy for future generations by conserving important natural areas and biological diversity across all regions of Canada.

Strategies leading to successful community science engagement:

- Prioritizing areas to focus on due to financial restriction.
- Made stewardship the heart of NCCs mission.
- Developed framework for stewardship actions at areas of focus and what community scientists can and cannot help with.
- Host at least 1-2 workshops a year to teach participants something (how to monitor trail, how to identify bird sounds).
- Identified parts of natural areas that people will relate to i.e. high-traffic natural areas creates an opportunity for engagement; focus on one on one properties when they can.
- Added 28 of NCC conservation properties in Ontario, as well as 17 of NCC's priority natural areas, to the iNaturalist database in order to encourage Ontarians to help the non-profit monitor and manage some of its key conservation lands - streamlines how community scientists get data to them.
- Embraced existing technology to take the administration pressure off of them.
- Planned a training session for how to use iNaturalist to get community scientists more comfortable with it.

Challenges, lessons learned and recommendations moving forward:

- Difficult to keep people engaged.
- Winter is hard to maintain momentum.
- People need to feel their work is appreciated i.e. hangout swag, thank you note, exclusive events.
- Document your volunteer efforts.
- Train people - technology can be scary, volunteers need adequate training.
- Self guidance does not always work. Without being told what task to do, and what timeframe it needs to be done by, sometimes the work does not get done.
- Requires a lot of administration time to organize volunteers, but great for tasks they do not have funding to do.
- Need to target youth.
- Social media is a great way to reach people and make them feel informed
- Use iNaturalist to engage people - they also get in return by being able to track their own reports and know their efforts are being utilized in a large database of

information.

4. British Columbia Community Science Workshop (2020) bcinvasives.ca

About: A Community Science workshop was held in BC jointly hosted by the BC Parks Foundation and the Invasive Species Council of BC. This provincial workshop with speakers from across Canada and the US came together to help identify key strategies leading to successful community science engagement.

The following summarizes the key findings:

- Recognized that community scientists may not be as accurate and reliable as that done by specialist and that creating public engagement with biodiversity issues is a matter of helping people feel empowered/hopeful for the future and showing them how to act.
- Require a volunteer commitment - ½ to 12 days each year.
- Volunteers have ability to follow a data collection protocol.
- Created an in-depth learning experience for volunteers.
- Identified target audiences:
 - Seniors: more free time, potential source of funding
 - Garden clubs: intrinsic motivation, take responsibility for their land
 - High school students: most need volunteer hours to graduate
 - Ecotourism: engaging with tourists to record observations, engaging with tourism outfits to inform their guests
 - Churches: Many service-oriented groups looking for good work

Challenges, lessons learned and recommendations moving forward:

- While robust community science efforts are ongoing, and the data are used in research projects, there is a lack of connection between researchers and community scientists.
- Increased connectivity could lead to mentorship, increased data quality.
- Involving youtubers or Instagram influencers in project can help expand youth engagement.
- Volunteer trade shows or summits would connect volunteers with new projects and engage people who are not yet volunteering.
- Need for centralization, as community science apps and projects are very fragmented and localized.
 - A portal that categorizes projects and apps by interest, location, and level of expertise could help match volunteers with projects.
- Bring together technical experts to advise on the development and updating of applications and other technology with goal of increasing use.
- Need ongoing financial support which could be leveraged by use of volunteers
 - Funding will help with finding salaried staff time to provide continuity.
- Programs must have meaning – ensure the data is useful/being used.

5. Ontario Federation of Anglers and Hunters – Invading Species Awareness Program

About: The Ontario Federation of Anglers and Hunters is a non-profit organization that promotes and encourages the conservation of fish and wildlife, their habitats, and the ecosystems that support them, to ensure sustainable benefits for all Ontarians. The Invading Species Awareness Program is a key program of the OFAH and a 28-year old partnership with the Ontario Ministry of Natural Resources and Forestry that generates education and awareness, facilitates monitoring and early detection and supports surveillance, control, and response.

Strategies leading to successful community science engagement:

- Have identified early on that it is not a one size fits all approach; it is multi-pronged approach dependent on who we are talking to and what we are asking them to do.
- Recognized that it's important to connect with and engage members of the community involved in activities through which invasive species can be introduced/spread.
- Identified target audiences - knowledgeable landowners, hunters, anglers, outdoor enthusiasts
- Developed simple, varying levels of engagement.
- Listened to the needs of their audiences i.e. developed an Underwater Guide to Aquatic Invasive Species at the request of a scuba diving club interested in reporting unusual species seen while diving.
- Provided necessary tools to facilitate engagement and reporting i.e. Ontario reporting application and 1.800 hotline.
- Implemented data verification protocols and systems.
- Focused on community engagement, but also harnessing the increased surveillance capacity that come with utilizing volunteers.
- Created solid foundations of their programs so they can continue, without their coordination and capacity.

Challenges, lessons learned and recommendations moving forward:

- Help people help you identify key target audiences and tailor this community science program to what they are already doing.
- Make it easy and simple for volunteers to participate.
- Work together – ensure collaboration is being utilized.
- Provide fundamental tools i.e. training guide, reporting resources, websites etc.

6. Nature PEI – Spiders of Prince Edward Island Community Science Project

Nature PEIs goals are:

- Protect, insofar as humanly possible, the flora and fauna of the province.
- To promote, encourage, and enjoy the study of natural history.
- To create in the public mind a greater appreciation of the value of our wildlife and its habitat.

- To hold educational meetings and demonstrations designed to further public knowledge of our natural history.
- To assist, work with, and support other organizations, government bureaus or other agencies having similar or allied objects.

Strategies that led to a successful community science project:

- Identified a clear purpose of the project which was to increase list of spiders for PEI.
- Consulted and involved local experts before the project began.
- Developed a clear project plan and framework, consisting of ten steps for developing the community science network, including:
 - building a team
 - identifying key audiences
 - securing funding
 - developing and maintaining IT infrastructure
 - recruiting volunteers (newspaper ads)
 - managing volunteers
 - retaining volunteers (provided them feedback)
 - collected, managed and analyzed data, including identifying a target of how many reports they wanted (aimed for 1000, but got 4300)
 - worked with others (combined results from another, separate project that began in 2013)
 - communicated the results and evaluated the program outcomes (increased public interest in spiders, obtain more funding next time)

Challenges, lessons learned and recommendations moving forward:

- Opportunistic collecting, not suitable for estimating abundance, density, or long-term monitoring.
- Result was presence-only observational data (location, occurrence of species).
- Some variation in data quality, exceptionally low cost.
- Public engagement was spectacular.

7. Texas Invasives

About: Texas Invasives is partnership to manage non-native invasive plants and pests in Texas. The partnership includes state and federal agencies, conservation organizations, green industry, academia, and other private and public stakeholders who share in the common goal of protecting Texas from the threat of invasive species.

Strategies leading to successful community science engagement:

- Identified clear goals and a coordinated approach.
- Implement a coordinated response to address invasive species issues on a statewide level.
- Provided a venue for sharing information about key invasive strategies.
- Created public awareness of the problems posed by invasive species in Texas.

- Developed integrated components of the program including website, mobile app, data collection/mapping program, early detection, and rapid response (EDRR) system, facebook page, monthly e-newsletter.
- Trained a cadre of community scientists to find and report locations of select local invasive plant species in Texas.
- Produced and managed a usable database of invasive species information
- Developed extensive training program to train communities to identify and report specific "high consequence" pests as part of Early Detection and Rapid Response plan.
- Reports are sent to experts for validation and action and reporting is made simple.
- Training is made easy by being free, available in person and online, interactive.

Challenges, lessons learned and recommendations moving forward:

Challenges include:

- Continued participation
- Limited demographic participation
- Making workshop interesting
- Restricted to public land reporting (95.8% is private land)
- Concentrated in metropolitan areas
- Reporting leads to duplicated reporting
- Doesn't deal with treatments/removals
- Need for continued and steady funding

Lessons include:

- Need to make it easy: limit workshop plant ID to about 10 local species, limit and simplify data collection, use a mobile app and make sure it does not require a login.
- Proactively set up workshops and advertise.
- Make workshops engaging with hands-on activities, "field trip".
- Emphasize importance of good photographs for validation.
- Identify leaders in the satellite groups.
- Emphasize how data will be used: close the loop.

8. Wild Spotter™ - US Forest Service

About: Wild Spotter is operated by a partnership between the University of Georgia, Wildlife Forever and the US Forest Service with the aim of engaging and empowering the public to help find, map, and prevent invasive species in America's wilderness areas, wild rivers, and other natural areas. People can become a Wild Spotter community scientist volunteer, download the Mobile App, and help protect America's Wild Places.

Strategies leading to successful community science engagement:

- Developed a national platform/website that contains identification materials, survey, inventory and mapping protocols, community science and volunteer recruitment and coordination information and information on where to look and what to look for.
- Based on use of one reporting application – EDDMapS, that has been uniquely

designed for the project, has the same consistent branding as the website, provides supporting information for those in the field, is available on android and apple; data that is uploaded is shared publicly and validated through the reporting platform

- Undertaken extensive marketing and promotion, including media (video, social, print, radio, web, television, etc.), presentations (conferences/tradeshows), networking and list-serves and developed targeted marketing to diverse groups
- Developed an extensive volunteer recruitment and coordination strategy.
- Created a recognition and support program for volunteers (Training, technology, awards, etc.) Provided a seasonal Wild Spotter coordinator at each of the “Wild Places” to help recruit and manage community scientists. Each “Wild Place” promotes Wild Spotter and helps connect volunteers locally.
- Ensured partnerships and recruitment occurs at all levels (local to national).
- Have a full-time coordinator hired at UGA to work directly with each National Forest

Challenges, lessons learned and recommendations moving forward:

- Volunteer incentives are highly recommended (e.g., Project starter-kits), certificates, pins, stickers, etc. to help thank volunteers for their support.
- Need to add custom features for specific Wild Places.
- Increasing the number of official Wilderness Areas and Wild & Scenic Rivers to the Wild Spotter system.
- Adding new mapping layers and features to the Mobile App on continual basis.
- Increasing the functionality for species recognition and identification on the Mobile Apps.
- Expanding Partnerships, Marketing, and Volunteers.

Appendix B. Community Science Programs Websites

Program	Website
Canadian Wildlife Federation	https://www.cwf-fcf.org/en/
Parks Canada	https://www.pc.gc.ca/en/nature/science/impliquez-involved
Nature Conservancy of Canada	http://www.natureconservancy.ca/en/
Ocean Wise	https://ocean.org/
Invasive Species Council of BC	https://www.bcinvases.ca/
Bird Studies Canada	https://www.birdscanada.org/
Invading Species Awareness Program	http://www.invadingspecies.com/
Nature PEI	https://naturepei.ca/
Texas Invasives	https://www.texasinvasives.org/
WildSpotter	https://wildspotter.org/
Canadian Parks Council	http://www.parks-parcs.ca/
Ontario Reptile & Amphibian Atlas Program - Ontario Nature	https://ontarionature.org/programs/community-science/reptile-amphibian-atlas/
Early Detection Rapid Response Network Ontario	https://edrrontario.ca/
Community Scientists	http://www.communityscientists.ca/Community_Scientists.html
Ocean Networks Canada	https://www.oceannetworks.ca/learning/get-involved/community-science