

# Living Lab Program for Climate Change and Conservation - Final Report



Project title: BC Parks iNaturalist Project

<https://inaturalist.ca/projects/bc-parks>

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## Research findings

- Thanks to generous contributions from the Living Labs Program and various other funders this past year, the BC Parks iNaturalist Team was able to gather nearly as much data in 2021 as in 2019 and 2020 combined (Table 1)!
- In 2021, our team located several rare species (Figures 1-4) and invasive species, discovered a species that is new to science (*Sminthurinus sp.*) (Figure 5), and found a recently discovered but still undescribed species (*Enchenopa sp.*) (Figure 6).
- We conducted 21 webinars, wrote 3 articles, and met with >40 BC Parks staff, ecological reserve wardens, and ecologists in the field in 2021 (see outreach document attached to email).
- Last year, the BC Parks iNaturalist Project Team recorded several species that had never previously been recorded on iNaturalist in B.C., Canada, or the world (Table 2).

Table 1. iNaturalist data collected in BC Parks by the BC Parks iNaturalist Team during project years (2019-2021). RG (Research Grade) indicates that the community agrees on the species-level identification.

| Year(s)               | 2019       | 2020       | 2021    |
|-----------------------|------------|------------|---------|
| Observations          | 75,047     | 105,279    | 178,075 |
| Species (RG)          | 2,324      | 2,834      | 3,098   |
| Invasive species (RG) | 49         | 54         | 58      |
| Rare species (RG)     | 96         | 149        | 193     |
| New species (RG)      | None known | None known | 2       |



Figure 1. Caribou (*Rangifer tarandus*) photographed by Jason Headley in Muncho Lake Provincial Park (<https://inaturalist.ca/observations/101349097>). Caribou are Vulnerable in B.C. as listed under the Provincial Conservation Status.



Figure 2. One of four nine-spotted lady beetles (*Coccinella novemnotata*) that Erin Springinotic photographed in Elephant Hill Provincial Park (<https://inaturalist.ca/observations/95295984>). The nine-spotted ladybeetle is Endangered in Canada as listed under the Species at Risk Act (SARA).



Figure 3. One of two bifid crestwort (*Lophocolea bidentata*) photographed by Lena Dietz Chiasson in Elk Falls Provincial Park (<https://inaturalist.ca/observations/85507846>). Bifid crestwort is designated as Unrankable in B.C. under the Provincial Conservation Status, indicating that further inventory of this species is needed.



Figure 4. Northern Rubber Boa (*Charina bottae*) photographed by Kate McKeown in Ellison Provincial Park (<https://inaturalist.ca/observations/86812527>). The northern rubber boa is a species of Special Concern in Canada as listed under the Species at Risk Act (SARA).



Figure 5. Undescribed globular springtail (*Sminthurinus* sp.) photographed by Tori Miller in South Okanagan Grasslands Protected Area (<https://inaturalist.ca/observations/92722398>). Tori uploaded this photo to BugGuide and a springtail expert, Frans Janssens, identified it as a new species (<https://bugguide.net/node/view/2033727>).



Figure 6. Undescribed treehopper (*Enchenopa* sp.) photographed by Ellyne Geurts in Steelhead Provincial Park (<https://inaturalist.ca/observations/96738989>). While this observation was not a discovery of a new species, it indicated a new location of this species that has yet to be named.

Table 2. Examples of species that were first recorded on iNaturalist in B.C., Canada, and the world by the BC Parks iNaturalist Project Team. A link to each iNaturalist observation is included in the scientific name.

| Scientific name   | Common name                    | First in | Observer            |
|---|--------------------------------|----------|---------------------|
| <a href="#"><u><i>Aradus heidemanni</i></u></a>           | Flatbug                        | World    | Thomas Barbin       |
| <a href="#"><u><i>Carsonus aridus</i></u></a>             | Leafhopper                     | World    | Thomas Barbin       |
| <a href="#"><u><i>Desoria hoodensis</i></u></a>           | Smooth Springtail              | World    | Thomas Barbin       |
| <a href="#"><u><i>Dorytomus leucophyllus</i></u></a>      | Weevil                         | World    | Ellyne Geurts       |
| <a href="#"><u><i>Enchenopa</i> sp.*</u></a>              | Treehopper                     | World    | Ellyne Geurts       |
| <a href="#"><u><i>Malezonotus arcuatus</i></u></a>        | Dirt-colored Seed Bug          | World    | Lena Dietz Chiasson |
| <a href="#"><u><i>Nabis inscriptus</i></u></a>            | Damsel Bug                     | World    | Lena Dietz Chiasson |
| <a href="#"><u><i>Nasonovia grossa</i></u></a>            | Aphid                          | World    | Ellyne Geurts       |
| <a href="#"><u><i>Olethreutes galaxana</i></u></a>        | Olethreutine Leafroller Moth   | World    | John Reynolds       |
| <a href="#"><u><i>Sminthurinus</i> sp.*</u></a>           | Globular Springtail            | World    | Tori Miller         |
| <a href="#"><u><i>Tephritis teerinki</i></u></a>          | Fruit Fly                      | World    | Ellyne Geurts       |
| <a href="#"><u><i>Tinagma pulverilinea</i></u></a>        | Moth                           | World    | Brian Starzomski    |
| <a href="#"><u><i>Xenochaeta dichromata</i></u></a>       | Fruit Fly                      | World    | Ellyne Geurts       |
| <a href="#"><u><i>Agonopterix conterminella</i></u></a>   | Moth                           | Canada   | Ellyne Geurts       |
| <a href="#"><u><i>Agrotis antica</i></u></a>              | Moth                           | Canada   | John Reynolds       |
| <a href="#"><u><i>Chrysurissa densa</i></u></a>           | Cuckoo Wasp                    | Canada   | Brian Starzomski    |
| <a href="#"><u><i>Epicauta maculata</i></u></a>           | Blister Beetle                 | Canada   | Lena Dietz Chiasson |
| <a href="#"><u><i>Eucera edwardsii</i></u></a>            | Edwards's Long-horned Bee      | Canada   | Ellyne Geurts       |
| <a href="#"><u><i>Hecalus montanus</i></u></a>            | Leafhopper                     | Canada   | Lena Dietz Chiasson |
| <a href="#"><u><i>Hister militaris</i></u></a>            | Hister Beetle                  | Canada   | John Reynolds       |
| <a href="#"><u><i>Hoplinus echinatus</i></u></a>          | Stilt Bug                      | Canada   | Thomas Barbin       |
| <a href="#"><u><i>Lechriops californica</i></u></a>       | Weevil                         | Canada   | Lena Dietz Chiasson |
| <a href="#"><u><i>Marchena minuta</i></u></a>             | Jumping Spider                 | Canada   | Thomas Barbin       |
| <a href="#"><u><i>Micromus borealis</i></u></a>           | Brown Lacewing                 | Canada   | Lena Dietz Chiasson |
| <a href="#"><u><i>Nebria mannerheimii</i></u></a>         | Ground Beetle                  | Canada   | Kate McKeown        |
| <a href="#"><u><i>Nebria sahlbergii</i></u></a>           | Alps Ground Beetle             | Canada   | John Reynolds       |
| <a href="#"><u><i>Oxyna aterrima</i></u></a>              | Fruit Fly                      | Canada   | Ellyne Geurts       |
| <a href="#"><u><i>Oxyna palpalis</i></u></a>              | Fruit Fly                      | Canada   | Lena Dietz Chiasson |
| <a href="#"><u><i>Paraptochus variegatus</i></u></a>      | Weevil                         | Canada   | Kate McKeown        |
| <a href="#"><u><i>Pherbellia schoenherri</i></u></a>      | Fly                            | Canada   | Ellyne Geurts       |
| <a href="#"><u><i>Phidippus octopunctatus</i></u></a>     | Jumping Spider                 | Canada   | Thomas Barbin       |
| <a href="#"><u><i>Rhyssa alaskensis</i></u></a>           | Ichneumonid Wasp               | Canada   | John Reynolds       |
| <a href="#"><u><i>Sphenoptera jugoslavica</i></u></a>     | Metallic Wood-boring Beetle    | Canada   | Kate McKeown        |
| <a href="#"><u><i>Sthereus quadrituberculatus</i></u></a> | Weevil                         | Canada   | Ellyne Geurts       |
| <a href="#"><u><i>Stizoides renicinctus</i></u></a>       | Sand Wasp                      | Canada   | Lena Dietz Chiasson |
| <a href="#"><u><i>Triznaka signata</i></u></a>            | Striped Sallfly                | Canada   | Lena Dietz Chiasson |
| <a href="#"><u><i>Tychius lineellus</i></u></a>           | Weevil                         | Canada   | Thomas Barbin       |
| <a href="#"><u><i>Alopecosa pictilis</i></u></a>          | Wolf Spider                    | BC       | Lena Dietz Chiasson |
| <a href="#"><u><i>Bruchus brachialis</i></u></a>          | Vetch Bruid                    | BC       | Kate McKeown        |
| <a href="#"><u><i>Cosmobaris scolopacea</i></u></a>       | Beet Petiole Borer             | BC       | Ellyne Geurts       |
| <a href="#"><u><i>Diadasia australis</i></u></a>          | Southern Chimney Bee           | BC       | Ellyne Geurts       |
| <a href="#"><u><i>Hylobius pinicola</i></u></a>           | Weevil                         | BC       | Lena Dietz Chiasson |
| <a href="#"><u><i>Mulsantina hudsonica</i></u></a>        | Hudsonian Ladybird             | BC       | Ellyne Geurts       |
| <a href="#"><u><i>Rhysodromus histrio</i></u></a>         | Attractive Running Crab Spider | BC       | Ellyne Geurts       |
| <a href="#"><u><i>Sympistis dinalda</i></u></a>           | Moth                           | BC       | John Reynolds       |

|                                       |            |    |                     |
|---------------------------------------|------------|----|---------------------|
| <u><i>Tournotaris bimaculatus</i></u> | Weevil     | BC | Lena Dietz Chiasson |
| <u><i>Zoogenetes harpa</i></u>        | Boreal Top | BC | Ellyne Geurts       |

\* Indicates a species that is new to science or undescribed

## Methods summary

- Travel to as many provincial protected areas as possible and conduct wander-and-encounter surveys to photograph every species in a variety of habitats
- Identify the observations and upload the biodiversity data to iNaturalist
- Conduct webinars, speak with park users to encourage the community and BC Parks staff to join iNaturalist and add their wildlife observations

## Key outcomes for BC Parks

- This project produces baseline biodiversity data in each protected area that is surveyed by the BC Parks iNaturalist Team
- Once the biodiversity data is uploaded, BC Parks staff have access to species lists for each park, each region, and the province which can be used to:
  - Educate the public about the local (or regional, provincial) flora and fauna
  - Determine the locations of rare and invasive species to help inform management decisions (e.g., determine if campground expansion will encroach on a rare plant species)

## Relevance to BC Parks management

iNaturalist data can be used to help assess the suitability of an area for a new outhouse, building, or a campground expansion, or when managing invasive species:

1) Go to **iNaturalist.ca**

2) In the search bar, type the name of your park (e.g., Miracle Beach Provincial Park) and click **View Observations** next to the project with the BC Parks logo

3) From the **Observations** page, you can zoom in to an area of interest on the park map to view all observations made there, or you can search for a specific species (e.g., a species-at-risk or an invasive species) to view all observations of that species made across the park, etc. It is important to note that data collected by the BC Parks iNaturalist Team are collected through wander and encounter surveys and do not reflect every individual plant and animal on the ground.

Data can be downloaded from iNaturalist by clicking **Filters**, filling in your parameters, and clicking **Download**.

## Project's challenges/opportunities

To gain access to remote areas so that we can survey them and to secure campsites in popular areas, it would be very helpful to be able to get in touch with local Parks staff, Park Operators, and ecological reserve wardens in advance of our arrival to an area. We have had some success securing camping in non-reservable campgrounds by reaching out to PO

staffing companies. Jen Grant was also a huge help to the project by letting regional BC Parks staff know the iNaturalist Team would be coming to their area (thanks, Jen!).

### Conclusions/next steps

We would like to say a huge thank you to the Living Labs Program for your support which has helped make this program such a success!

We are working with BC Parks, the BC CDC, and other scientists to set priority areas for the 2022 field season. We are hoping to focus on areas that are likely to be most drastically altered by climate change in the shortest time frame. So far, we have preliminary plans to survey old-growth forests on Vancouver Island and areas within the Chilcotin Plateau which are modeled to have novel climates that have never previously existed in BC by the end of the century.

### References and links

Blogs, resources, and updates on the BC Parks iNaturalist Project can be found at [www.bcinat.com](http://www.bcinat.com)