

## FACULTY OF SCIENCE / Department of Biological Sciences

iNaturalist Calgary Pollinators: Photographing Pollinators & Plants Guide

Bee a Community Scientist

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In partnership with the Office of Sustainability & Knowledge Engagement

[**https://ucalgary.ca/sustainability/our-sustainable-campus/bee-campus/bee-citizen-scientist**](https://ucalgary.ca/sustainability/our-sustainable-campus/bee-campus/bee-citizen-scientist)

[**https://biodiversity.ucalgary.ca/**](https://biodiversity.ucalgary.ca/)

# INTRODUCTION

We want to better understand *how many kinds* of pollinators are in The City of Calgary, and what flowering plants support these pollinators. Before beginning the iNaturalist [Calgary Pollinators](https://www.inaturalist.org/projects/calgary-pollinators) projects, we knew that Alberta is home to hundreds of different pollinators – more than 330 kinds of bees, as well as flies, beetles, wasps, and other insects. However, we did not know very much about Calgary’s pollinators or which pollinators visit which flowers in the city.

In 2020, we collaborated with The City of Calgary for students in an Entomology course in the Department of Biological Sciences to begin collecting information on which pollinators are in Calgary and which native wildflowers they visit. Even with 90+ students and faculty, we could not capture all the connections. Students from the course recommended that we expand our information-gathering team to all members of the Calgary community. In 2021, we launched the iNaturalist [Calgary Pollinators](https://www.inaturalist.org/projects/calgary-pollinators) Project. **We now have over 10,000 observations of over 400 pollinating insects!** We are using this information to inform planting guides for backyards, yards, roadsides, and restoration areas in The City of Calgary. You can find summaries and updates of our findings on our [Bee A Community Scientist](https://ucalgary.ca/sustainability/our-sustainable-campus/bee-campus/bee-citizen-scientist) website.

If you are in your backyard, or out for a walk in your neighbourhood or park, we invite you to observe and share photographs of insect pollinators in our iNaturalist [Calgary Pollinators](https://www.inaturalist.org/projects/calgary-pollinators) project. This **Photographing Pollinators & Plants Guide** explains how to join the 850+ observers already sharing their iNaturalist observations of pollinators with our project. We hope that you will get involved to help us learn more about the kinds of insect pollinators in our city!

MATERIALS

* Camera or smart phone camera
* iNaturalist [mobile app](https://vimeo.com/162581545) or site on your [computer](https://vimeo.com/167431843)

# STEPS

## Step 1: Create an iNaturalist account (<https://inaturalist.ca/>).

iNaturalist is a community of people from all over the world uploading photos of living things and helping one another identify them. iNaturalist has several [video tutorials](https://www.inaturalist.org/pages/video+tutorials) for using the site, and depending on which device you are using, they have one for using this site on your [computer](https://vimeo.com/167431843) and on the [mobile app](https://vimeo.com/162581545).

When joining the app:

* Select *iNaturalist Canada* as your network in the settings;
* If you would like to allow the study team and other scientists to use your photos in reports and presentations, set your copyright to one of the Creative-Commons options.

If you are already a member of iNaturalist, you can update these settings at any time by going to your “Settings.” You are also welcome to create a profile to introduce yourself to the community.

## Step 2: Watch for insect pollinators when you are outside

Any insect (bees, flies, wasps, beetles, butterflies, etc.) that touches a flower is a pollinator. You have the best chance of seeing pollinators on warm sunny days (>20°C) with little wind.

***Stay safe when observing pollinators:*** We recommend staying in public, well-lit areas, and going with at least one friend. Always stay on sidewalks or established trails and avoid touching any plants or insects. We suggest wearing well-fitted, supportive shoes; limiting sun exposure (wear a hat, long-sleeves, long-pants, and sunglasses); and bringing water and a snack. Be aware of your surroundings and stop in the event of bad weather or unsafe conditions. Lastly, always let someone know where you are going, when you will get back, and what to do if they do not hear from you in a given amount of time.

## Step 3: Take a photo of the insect and the flowering plant

When you see an insect visiting a flower:

* First, take a photo that includes the insect and the entire plant (to show the association).
* Next, take photos of the insect from as many angles as possible - ideally a top-down view, side view, and face view (to allow easier and more accurate insect identification).
* Then, take photos of the plant, including the flowers, leaf shape, and overall plant.

See this [iNaturalist Photo Guide](https://cwf-fcf.org/en/resources/downloads/booklets-handouts/iNaturalist-Photo-Guide-Final.pdf) for getting great photos of insects and plants that can be identified. BugGuide.net has a [Bug Photographer’s Guide](https://bugguide.net/node/view/258535) specific to photographing insects for identification.

*Tip:* In general, you will find more pollinating insects between 10am and 4pm. However, insects move more slowly and can be easier to photograph early in the morning or later in the evening when it is cooler.

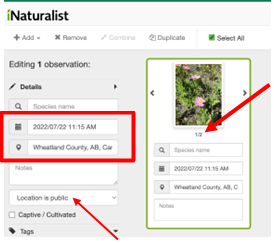
## Step 4: Upload your photos to iNaturalist to create observations

Follow [this tutorial to](https://www.inaturalist.org/pages/getting+started) **create two observations** on iNaturalist: one observation for your pollinating insect, and a second observation for the flowering plant the pollinator was on.

*Phone app or computer?* You can create these two observations on iNaturalist using the app on your phone (recommended) or by uploading your photographs using a computer. For detailed instructions on how to upload an observation using the iNaturalist app see [**Appendix A**](#_heading=h.rk7vyymd3j76). The benefit of using your phone in real-time is that iNaturalist can collect the location data for you, while if you upload later you will need to look-up the latitude and longitude. Regardless of how you create an observation, you can always edit your observations to add more photographs and information later.

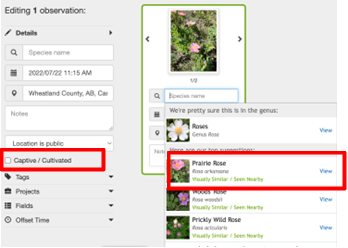
**4.1)** First, upload your plant observation photos to iNaturalist. Click the upload button.



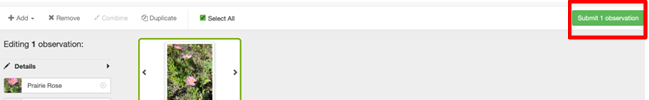
**4.2)** Drag and drop your photos to a single observation to upload them (dropping them within the same green rectangle). If you add them as individual observations, see Step 4.7 on how to combine them into a single observation. iNaturalist will prompt you to enter the required information for each observation. You will want to ensure that you provide at minimum the following:

* **Photograph** of your live insect and/or plant
* **Location, date, and time** (if using your phone app, this should happen automatically)
* **Privacy considerations:** If you are not comfortable with your sampling locations being publicly known (for example if you collected the specimen from near where you live) you can set your observation location to ‘obscured.’ This means that only the general location where the observation was taken will be publicly available (usually to neighbourhood for Calgary observations).

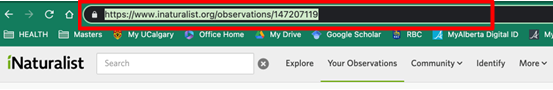
**4.3)** Click in the species name box to ID your plant. iNaturalist will give you recommendations if you are unsure what the plant is. You can also click on “view” to get more information about the suggested IDs.

If you take a photo of a cultivated plant (e.g., garden, landscaped area of a park, lawn), then you must check the box for “Was it captive / cultivated?”. You will see that these observations remain at “casual” grade but are still important to our study! You can answer “no” to “was it captive/cultivated?” for all insect pollinators.

**4.4)** When you have filled in all the appropriate fields for your plant observation, click submit. Copy the address for your completed plant observation, you will need this later.



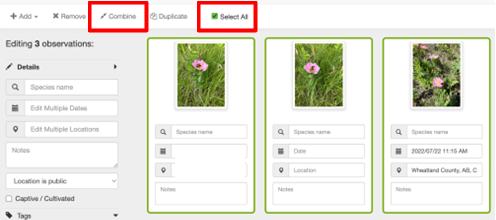
**4.5)** Go to your published observation and **copy the address in the search bar** for your completed plant observation, you will need this to associate your observation later.



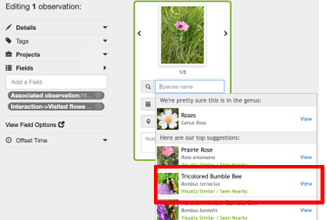
**4.6)** Now you will upload your insect/pollinator photos to iNaturalist. Click the upload button.



**4.7)** Drag and drop your photos to a single observation to upload them, dropping them within the same green rectangle. If you add them as individual observations you can press select all or click on all the observations while holding “shift,” and then click combine.



**4.8)** **Identify the insect.** Click in the species name box to ID your insect. iNaturalist will give you recommendations if you are unsure what the insect is. You can also click on “view” to get more information about the suggested IDs.

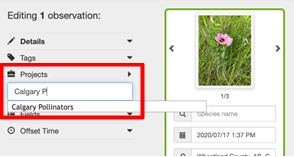


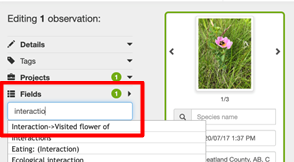
**Identification**

* For the pollinating insect identification, you can select “insect” or a more specific identification (e.g., “bumble bee”). Only identify what you feel confident of. Most insects can only be identified to family without magnification, and identifying a species typically takes years of practice! There are experts on iNaturalist who will help with your identifications. You can also practice your pollinator identification skills with our [Calgary Pollinator Identification Quiz](https://survey.ucalgary.ca/jfe/form/SV_e4ITW1ytDycYyLY).
* For the plant identification, we recommend using [Seek by iNaturalist](https://www.inaturalist.org/pages/seek_app) to help with plant identifications or the [Alberta Native Plant Council’s identification keys](https://anpc.ab.ca/?page_id=4721) for native plants. See [**Appendix B**](#_heading=h.vcqi0p8pct2c)for more resources to help identify plants and insects.

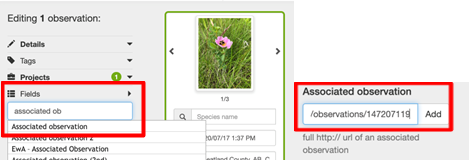
**There are two ways to add your observation to the Calgary Pollinators project. The first method continues from Step 4 and is explained in** [**Step 5a**](#_heading=h.f7wv0pi368y9)**, the second method tells you how to add an observation directly to the Calgary Pollinator Project (Step 5b).**

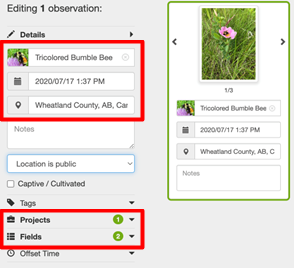
## Step 5a: Add your insect observation to our iNaturalist project.

**5.1a)** Search for “Calgary Pollinators” in the “Projects” field. 

**5.2a)** You will then need to add the interaction between the insect and the plant. Search for “Interaction -> Visited flower of” and type in the name of the plant that you previously identified.

**5.3a)** Link your plant observation. Click on “Fields” and type in “Associated Observation” then paste the link that you copied for your previous plant observation. ￼

If you forgot to copy the link or it is no longer copied to your clipboard you can edit your observation later and insert the link.

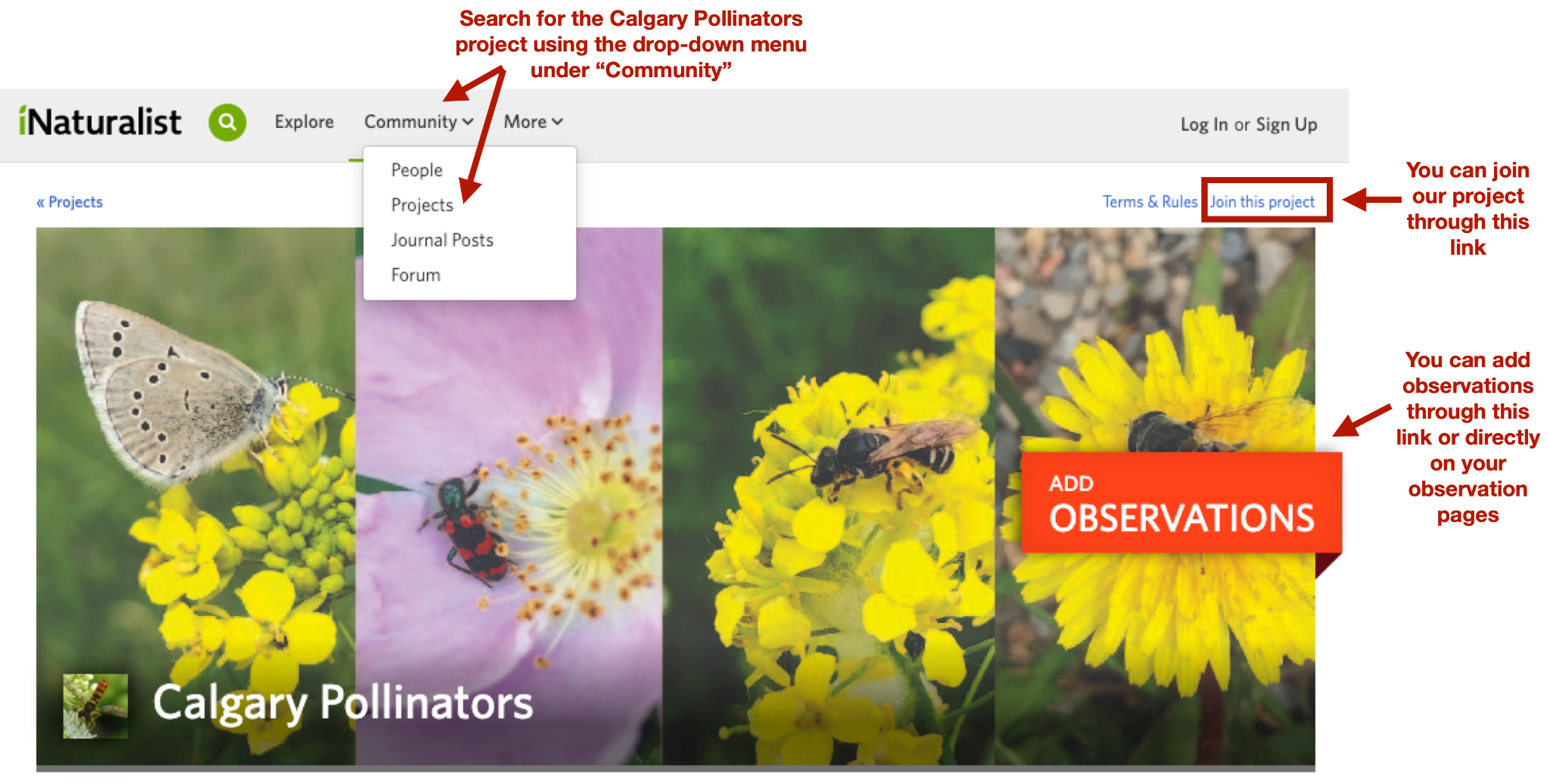


**5.4a)** You should now have all the necessary information you need for your observation in the Calgary Pollinator Project.

**5.5a)** Submit your observation. Congratulations, you are now a community scientist! 

## Step 5b: Add your insect observation directly to our iNaturalist project - [Calgary Pollinators](https://www.inaturalist.org/projects/calgary-pollinators).

When you create an observation, you will see an option to “Add to project.” If you become a member of the iNaturalist Calgary Pollinators project (click “Join Here”) on the main page), you will see an option to add your observation to the Calgary Pollinators project. You can also search for the project if you are not a member (we recommend becoming a member to make this step simple!). Learn more about adding observations to a project [here](https://forum.inaturalist.org/t/adding-observations-to-a-traditional-project-wiki/13190).

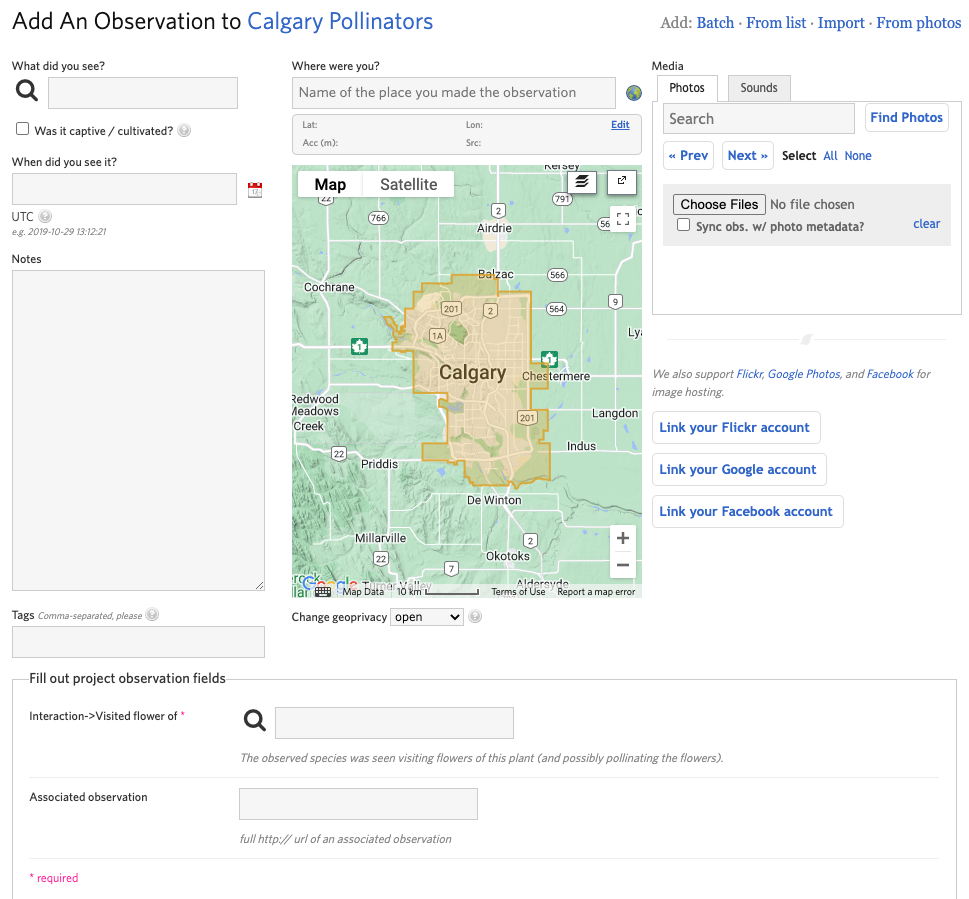


**3**

**2**

**1**

**5.1b)** Once you click “ADD OBSERVATION” on the Calgary Pollinators page you will be brought to this page. Click on “From photos,” to add the photos of your insect/pollinator and plant. Further instructions for adding your observation can be found in [**Step 5a**](#_heading=h.f7wv0pi368y9)**.**



To add your **insect observations** to the Calgary Pollinators project, they must:

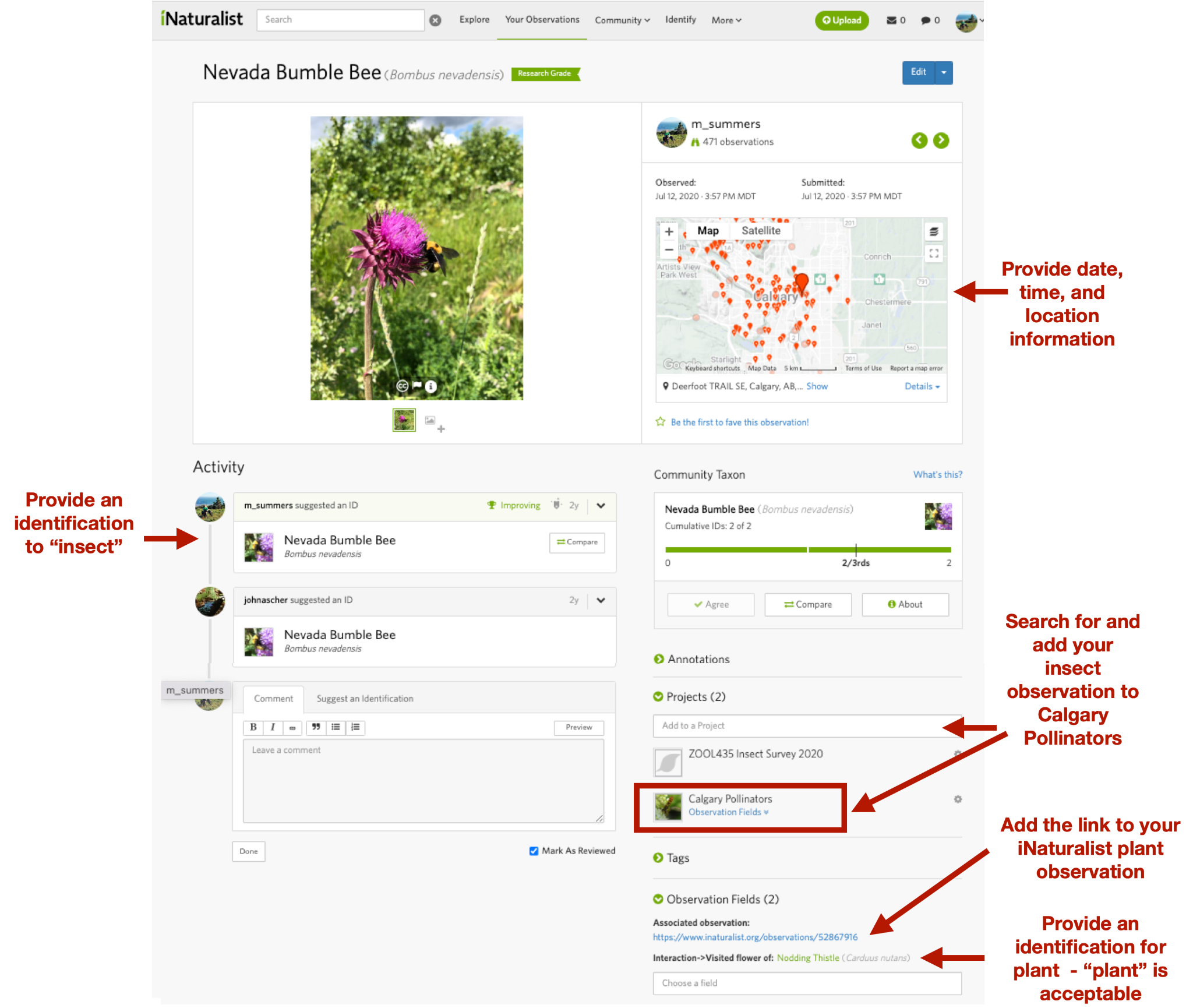
* + be identified as “Insect” or a more specific group (e.g. bumble bee, butterfly)
  + have the location (latitude and longitude)
  + have the date
  + have the Observation Field “Interaction->Visited flower of” (see details on this below)

If your observation meets these requirements, when you “Add to project” and select Calgary Pollinators, you will be prompted to provide the following information:

* Observationfield “Interaction->Visited flower of”: type in and select the plant the insect was visiting (if you do not know the plant’s identity, you can select “Plant”). Note, if you later learn the identification of the plant, you can update this identification field.
* Observation field “[Associated](https://www.inaturalist.org/observation_fields/1718) [observation](https://www.inaturalist.org/observation_fields/1718)”: copy and paste the URL for the plant observation associated with this insect pollinator. Adding the associated observation for your plant can help you get a more refined plant ID.

You can add any observations that meet these criteria to our project (even observations you made before you learned about the project)!

**An example of an insect observation (website version) added to Calgary Pollinators project.**



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# How your data will be used and acknowledged

By contributing your information and data, you hereby:

* Acknowledge that any data submitted will be made available for general academic and research purposes, including but not limited to, use, modification, and redistribution for further scientific research. Therefore, you hereby grant the University of Calgary nonexclusive permission to use your contributions in any way required to fulfil the requirements of the study and for any academic and research related purposes.
* Your contact details may be used solely for the purposes of the study, to query about the data you have submitted, and to send you information about the study.
* Acknowledge that any provided information is subject to the Freedom of Information and Protection of Privacy Act (Alberta).

# Stay safe

You are under no obligation to participate or continue with this activity at any time.

You are not entering into an employment relationship with the University and are not entitled to receive a salary or any employee benefits.

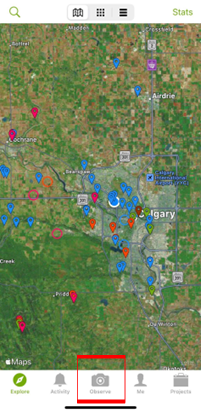
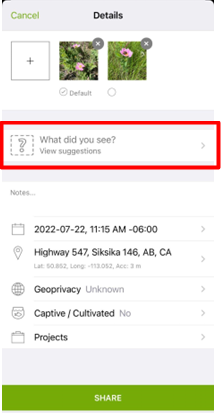
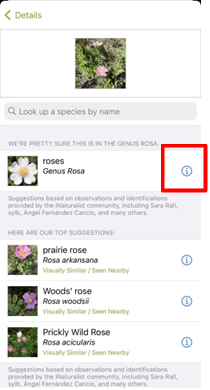
You are responsible for your own health and safety and should not put yourself or others in danger. You should never undertake any activity if you have concerns about your own or others’ health and safety. If you have any such concerns, you should stop the count.

When selecting a location, you will follow these guidelines:

* keep to areas that are publicly accessible.
* there is no need to seek out remote sites
* do not work alone
* before undertaking any survey activity, consider the health and safety risks associated with the individual survey sites and whether the circumstances and medical conditions expose them to particular risks
* take precautions to minimise risks, including wearing appropriate footwear and protection from the sun

# Appendix A

# Calgary Pollinators - How to Add an Observation - APP VERSION

1. Open the iNaturalist app to upload your photos and create an observation!

Click observe and upload photos from your camera roll.

**Tip:** You can choose to add your plant observation or your pollinator observation in any order.

Just make sure to add your plant ID as an associated field to your pollinator ID when you are done!

1. Identify your plant! Click on “What did you see?” Look at the suggestions to help identify your plant.

iNaturalist will give you recommendations if you are unsure about the identity of the insect.

You can also click on the (i) to get more information about the suggested IDs.

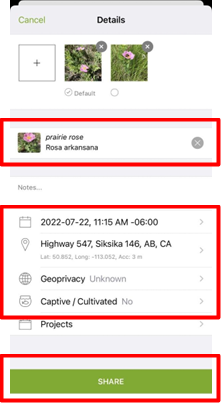
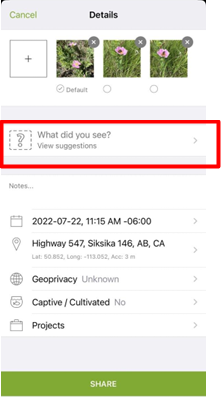
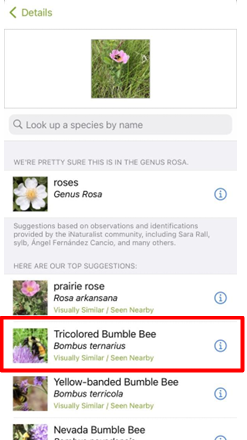
If you are unsure of the species level ID, just ID to the Genus or even Family level.

1. Select the appropriate ID for your plant. Add any other relevant information.

Is the plant cultivated? Add the location, date, and time.

Add notes about the observation (optional).

1. When you are done, **share your plant observation**!

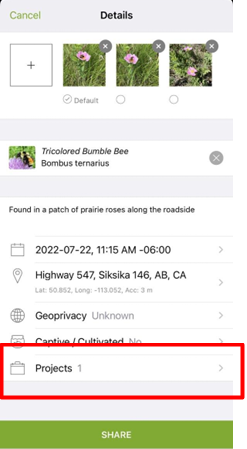
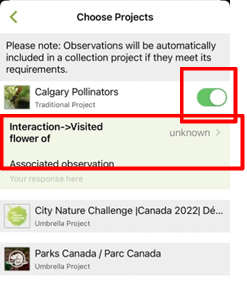
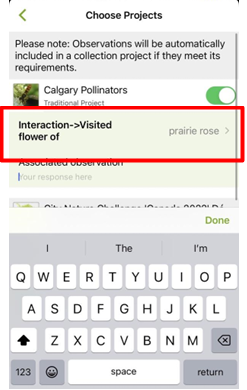
1. In a **new observation**, add photos of the insect visiting the plant that you just shared.
2. Identify your pollinator! Click on “What did you see?”

iNaturalist will give you recommendations if you are unsure what the insect is.

You can also click on the (i) to get more information about the suggested IDs.

1. Now that you have identified your insect, make sure to share the date, time, and location

of your observation. Feel free to add any notes.

1. Add your observation to the Calgary Pollinator Project.

Click on “Projects” and select “Calgary Pollinators.”

It will ask you to input the **“Interaction -> Visited flower of.”**

Add the name of the plant you identified earlier.

\*If “Calgary Pollinators” does not show up, go back to the landing page, and click on “Projects”

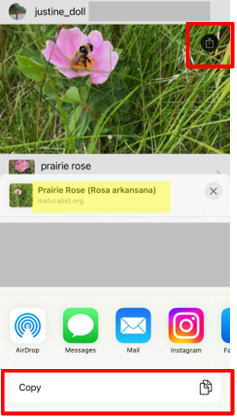
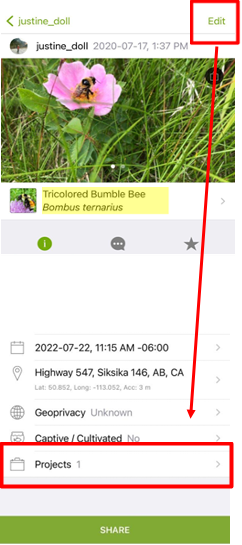
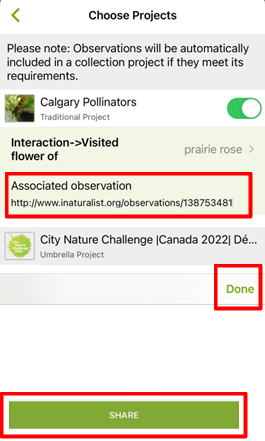
in the bottom right-hand corner. Search up “Calgary Pollinators” and join the group.

1. Add thecorrect interaction and press “Done.”

You will add the associated observation after you are finished.



1. Now that you have identified your insect and added it to the project you can **share your observation!**
2. Next you need to link your observations together.
3. Go back to your **plant observation** and click on the share icon. A list will pop up, select “copy.”
4. Go back to your **pollinator observation** and select “edit.”
5. Click on projects.

1. Click to type in the “Associated observation” field, long press, and select paste.

It should paste the link to your plant observation. Then click done.

1. Select share to update your observation. **The observation is complete!**

# Appendix B

## Online Resources for Identifying Plants and Pollinators

## Interfaces geared towards the identification of insects:

* Pollinating Insects of Alberta: Visual Guide to Common Terrestrial Orders

<https://prism.ucalgary.ca/handle/1880/115621>

* iNaturalist <https://www.inaturalist.org/home>
* iNaturalist Calgary Pollinators Guide <https://www.inaturalist.org/guides/15081>
* Bumble Bees of Calgary: A key and illustrated guide for identification of the bumble bee

species found in Calgary, Alberta <https://prism.ucalgary.ca/handle/1880/113505.2>

* Bee Machine <https://beemachine.ai/>
* FlyGuide <https://sites.google.com/view/flyguide>
* Butterflies of North America <https://www.butterfliesofamerica.com/index.html>

### Interfaces geared towards the identification of plants:

* iNaturalist <https://www.inaturalist.org/home>
* “Picture This” app [Picture This App](https://www.picturethisai.com/app?gclid=CjwKCAiAoL6eBhA3EiwAXDom5mYb3ODSPPDwUHQ5PZrgpiz5Ui90p8NJ-9VXsri2Em5eFQLqFOQVJxoCHRQQAvD_BwE)
* Pl@nt Net at <https://identify.plantnet.org/>
* Seek by iNaturalist <https://www.inaturalist.org/pages/seek_app>
* iPhone photo app:

