



This is not a bee, it's a hoverfly (*Meliscaeva cinctella*), a harmless and helpful pollinator.

BUGQuest

Instruction Manual



Isaiah Dowling



Syd Cannings — Mt. McIntyre, June 1 2026



@BugQuestCanada

Contact:

bugquest.canada@gmail.com

519-824-4120 x58259

DNA barcode 'em all!

Overview

Welcome!

- QuestKit contents checklist
- Important dates

1

Choose Your Trap Site

- Explore your schoolyard — but think like a bug!
- Pick somewhere accessible & interesting

2

Prepare Quest Bottles

- Just add water! And the labels
- Write week numbers on bottles and lids

3

Set Up Malaise Trap

- Work as a team! Extra hands make it easier
- Record site info & take a photo of the trap

4

Attach First Bottle

- Complete **Trap Set-Up Confirmation Form**
- Write site info & start date in PENCIL

5

Collect Weekly Bottles

- Write end date & notes on labels
- Update **Collection Log Sheet**

6

Send Your Quest Data

- Have a recent trap photo & your BQKIT number
- Send your **Data Submission Form**

7

Ship Quest Bottles

- Store bottles in fridge or freezer until shipping
- Pack shipment securely & ship by **Nov 6**

8



September

S	M	T	W	T	F	S
		1	2	3	4	5
		6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Get QuestKit
Set Up Trap!

25

**LAST DAY
to Deploy**

October

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

**Pack up Trap
Ship Bottles**

Welcome to BugQuest!

This manual contains everything you need to successfully complete your BugQuest!

Inside, you will find step-by-step instructions for setting up your trap, collecting your insects, and returning your bottles so they can be DNA barcoded. By following these instructions, you and other participants across Canada will help us learn more about our national insect biodiversity while making the most of your BugQuest experience.

QuestKit

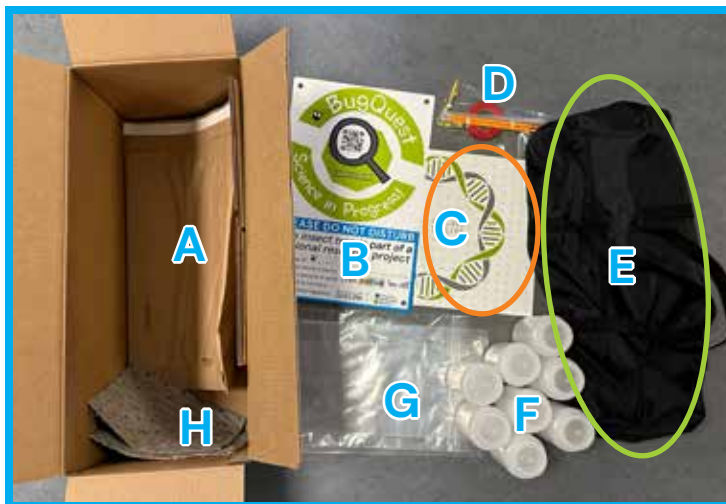
Contents Checklist:

What's in the Box:

- ☐ Return shipping boxes and/or envelopes **A**
- ☐ BugQuest: Science in Progress sign **B**
- ☐ Print materials **C**
- ☐ Small bag **D** with:
 - ☐ Reusable cable ties (for sign)
 - ☐ Flagging tape & pencils
- ☐ Malaise trap kit **E**
- ☐ 8-16 Bottles, pre-filled with salt **F**
- ☐ 4 Plastic bags (for return shipments) **G**
- ☐ 2 Absorbent pads (for return shipments) **H**
- ☐ Bonus materials (varies, not shown)

Write your
BQKIT# here for
easy reference!

BQKIT-Ø _ _ _ _

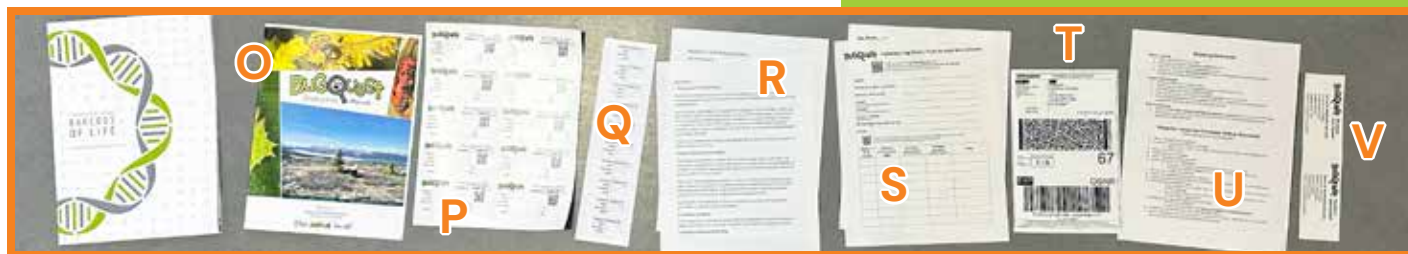


Malaise trap kit (large black bag):

- ☐ Malaise trap tent **I**
- ☐ 9 Support ropes **J**
- ☐ 16 Metal tent pegs **K**
- ☐ Trap carrying bag **L**
- ☐ Short tent pole **M**
- ☐ Long tent pole **N**

Print Materials (folder):

- ☐ Instruction manual **O**
- ☐ External sticker labels **P**
- ☐ Internal paper labels **Q**
- ☐ Policies & disclaimers **R**
- ☐ Collection Log Sheets **S**
- ☐ Return shipping labels **T**
- ☐ Shipping checklist **U**
- ☐ Address stickers **V**



Important Dates

- Receive QuestKit, set up your Malaise trap, and begin collecting bugs: **Early September**
Your trap must be set up and collecting by September 25
- Weekly bottle collections: **September – October**
- Ship bottles back: **End of October**

All collection bottles must be shipped by November 6

Where Should Your Trap Go?

Once your QuestKit arrives, it's time to become an insect explorer! One of the most important steps in BugQuest is choosing the right place to set up your Malaise trap. Where you place your trap will affect what insects you collect, so take some time to explore and choose wisely.

Before setting up, walk around your community, schoolyard, or natural area and look for different habitats. You might be surprised by how many ecosystems are nearby! This is a great opportunity to observe nature, map habitats, and think about how people and wildlife share the environment.

Quest Tip

Make sure you have all the proper permissions/collecting permits to set up the trap on the property you're considering (i.e. from landowners, site managers, etc.)



Accessibility: Easy to Reach, Safe to Stay

Your trap needs to be checked at least once a week, so choose a spot that is easy to access and safe to visit regularly. Ensure it will not be in the way of community activities or landscaping maintenance.

Community interest in the trap is a very important part of BugQuest. However, consider the risk of accidental disturbance or vandalism. If this is a concern, an alternative secure location — such as a participant's private property — may be used.

Environment: Think Like an Insect

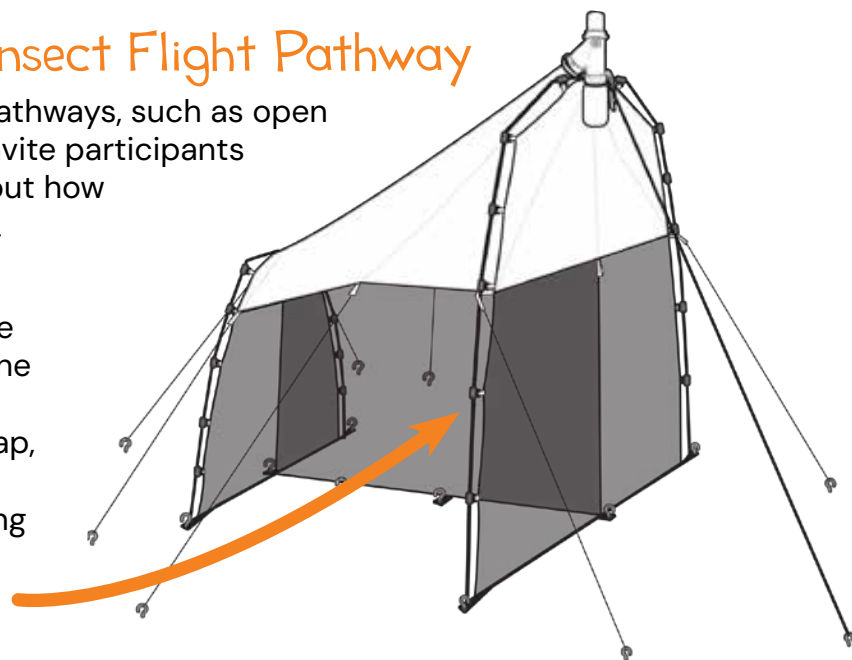
Now look closely at the habitat around your chosen spot. Insects are more active in certain areas, and your local knowledge will help you decide what's best. Great places for a Malaise trap include the edge of a wooded area, near a stream, or beside a garden.

Your trap will work best when placed on flat ground with short plants around it. Tall grass or thick vegetation near the trap opening can block insects from flying in, which means fewer insects to study.

Positioning: Catching the Insect Flight Pathway

Insects often move along natural flight pathways, such as open corridors in vegetation or animal trails. Invite participants to look for these pathways and think about how insects travel through their environment.

Think about how you can place the trap so that the middle mesh panel blocks the flight path, guiding insects upward into the collection bottle. By carefully selecting your site and positioning your Malaise trap, you will be working together to support meaningful insect collection while building skills in observation, inquiry, and environmental stewardship.



Bottle Preparation Guide

What you'll need:

- ☐ Collection bottles (pre-filled with 1/3 cup salt)
- ☐ External sticker labels
- ☐ Internal paper labels
- ☐ Tap water (~300mL / bottle)
- ☐ Permanent marker
- ☐ Pencil

What you'll do:

1. Make a salt water mixture by adding ~300mL of tap water to a collection bottle (~300mL = 10cm / 4 inches). If you do not have a liquid measure, use a ruler or the guide at the bottom of this page for reference.

Did You Know

The salt water mixture will help preserve the DNA in the insects!



2. Close the lid tightly and shake for 30 seconds to dissolve the salt. Some salt will remain undissolved.
3. Cut out the individual waterproof **internal paper labels**. Labels are provided in batches of ten, so you may have more labels than bottles.
4. Starting with the lowest BQ#, attach the **external sticker label** to the bottle with the matching **internal paper label** stuck slightly underneath (see image). The **internal paper label** will later be torn off and placed inside the bottle. Make sure the BQ# on both labels are the same.
5. Using a permanent marker, write "**Week #1**" on the lid and above the **external sticker label**. If you fill any information on the labels, use pencil.
6. Repeat steps 1 to 4 for the rest of the bottles, from lowest to highest BQ#, assigning week #2, week #3, etc.
7. Store prepared bottles away from sunlight until they are needed.



BQ#0003	
Store sample at -20°C?	
Sample #	BQ#00003
Collector	
Dates	
Province	
Site name	
Notes	
Lat	
Lon	
Elev	

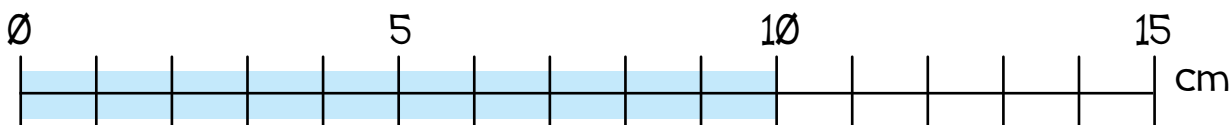
External Sticker Labels

Internal Paper Labels

Sample #	BQ#00003
Dates	
Site name	
Notes	
Sample #	BQ#00004
Dates	
Site name	
Notes	

Buggy Says

It is very important to use **PENCIL** on all bottle labels. The internal paper labels are printed on special fluid paper that is waterproof and weather-resistant.



Setting The Malaise Trap

What you'll need:

- Malaise trap kit (large black bag)
- BugQuest: Science in Progress sign
- Reusable cable ties (for sign)
- Collection Log Sheet
- Flagging tape
- Mallet (optional)

Before you start:

- Watch our Trap Set-Up Video:
<https://bioscan.life/bugquest/videos/>
- Based on the important dates (p. 1) and local weather conditions, determine the best starting dates for your site.
- Make sure you can collect the bottles on the same day every week.



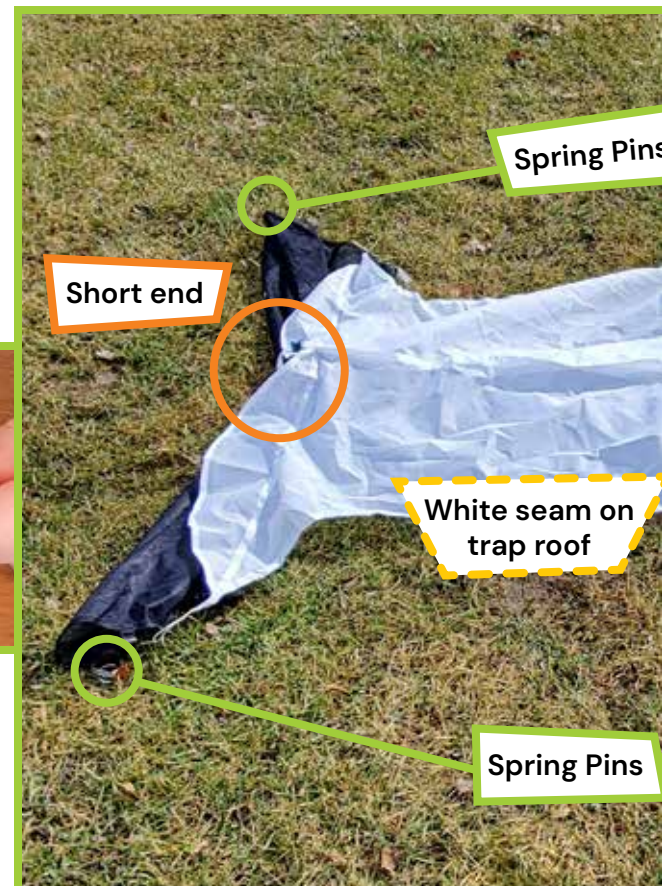
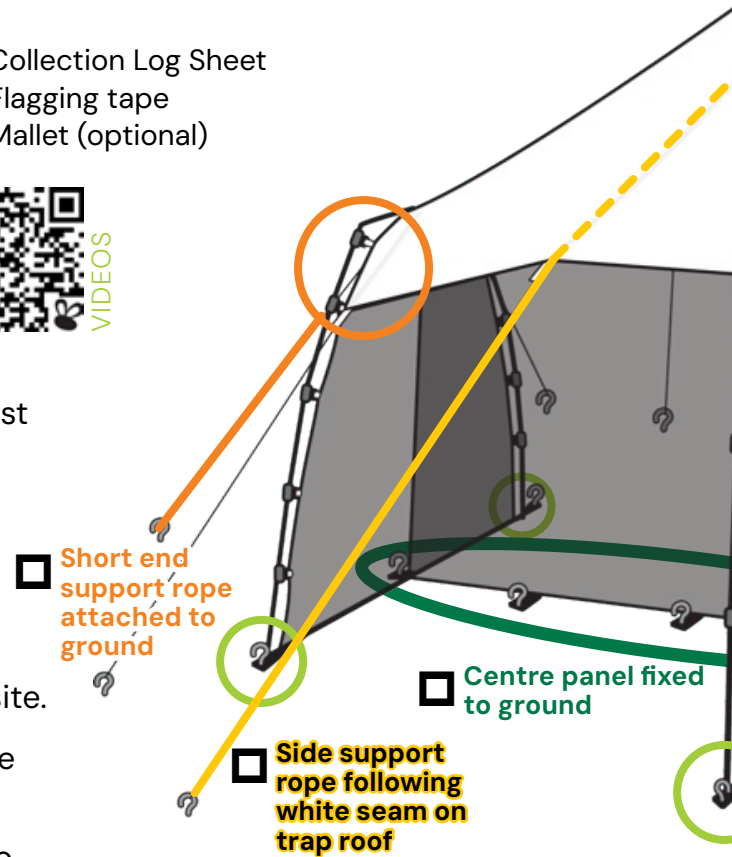
VIDEOS

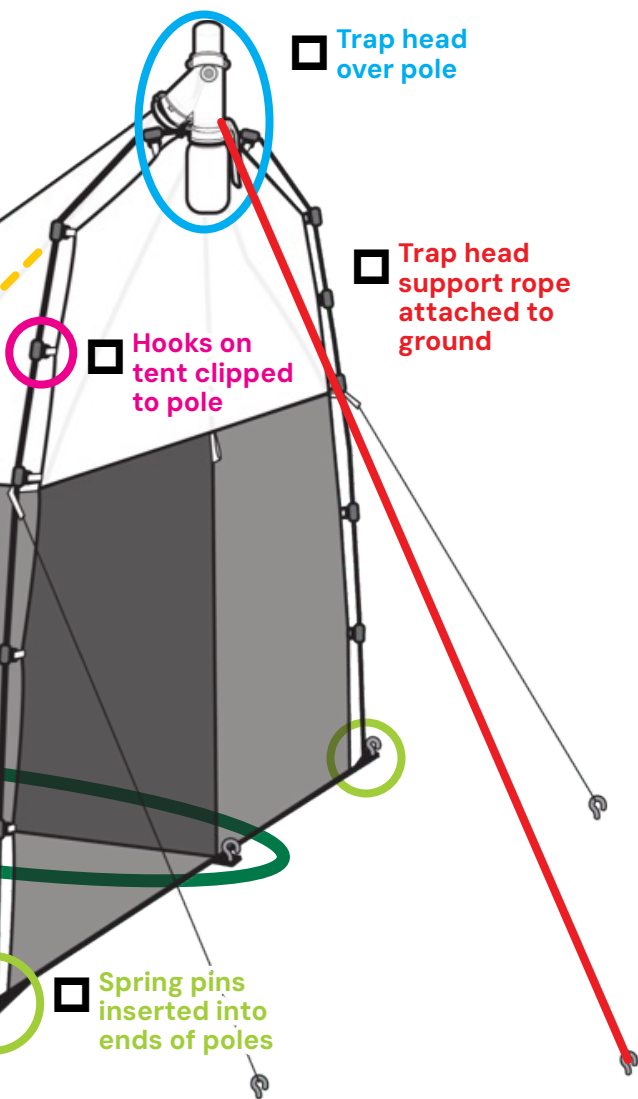
At the trap site:

- Bring the **Malaise trap kit** to the selected site.
- Lay the trap tent flat on the ground with the white side facing up.
- Assemble the short and long tent poles into two large U-shaped frames. Ensure each segment of the poles is securely fitted to each other.
- Start with the long tent pole and the tall trap head end. Insert the **spring pins found at the bottom corners of the tent** into the ends of the pole. Some force may be required to push the pins into place.

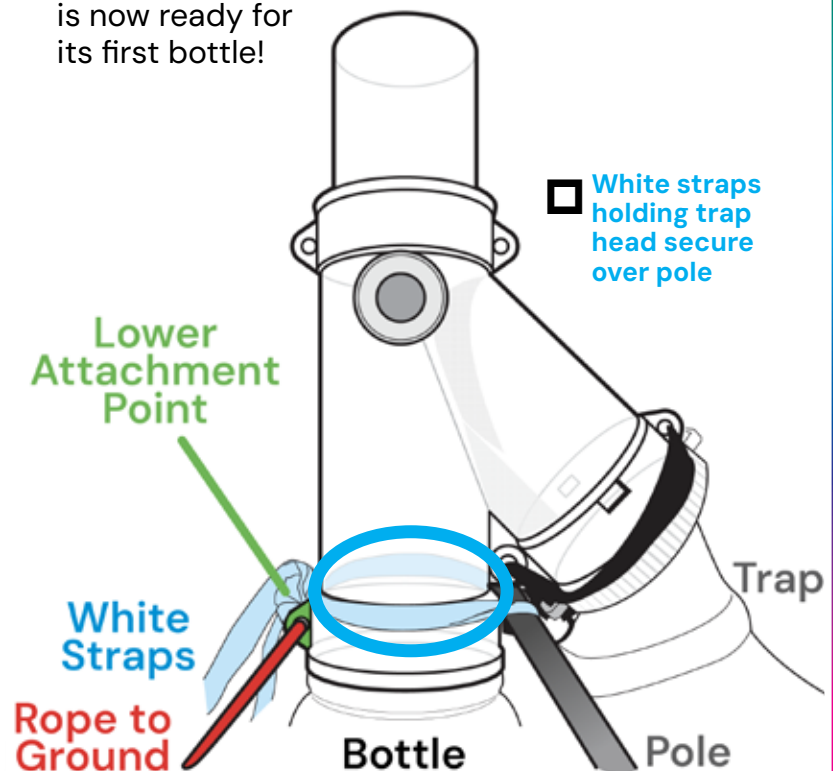


- Clip the **hooks on the tent around the pole** to form a mesh panel.
- Repeat steps 6 and 7 for the short end of the trap using the short tent pole.





- With two people, stand up both the trap head end and short end of the trap. Ensure that the **trap head is over the long pole** and fasten it with the white strap already attached to the tent.
- Tie a **support rope to the lower attachment point** on the trap head and stake the other end of the rope into the ground with a metal tent peg.
- At the short end of the trap, tie a **support rope to the white tent loop** and stake the other end of the rope into the ground.
- Adjust the base of the trap so the trap body is fully stretched. **Stake the trap to the ground** using the metal tent pegs (8 total), including the **2 attachment points in the middle panel**.
- Attach the remaining support ropes and adjust to achieve proper trap shape and tension. Secure the support ropes to the ground with metal tent pegs (8 ropes and tent pegs). For the side support ropes, **follow the white seam line** along the trap roof.
- Attach flagging tape to each support rope to help prevent tripping.
- Once the trap is upright, attach the BugQuest: *Science in Progress* sign to the tall trap head end of the trap (or a nearby wall or stake) using the reusable cable ties or extra rope.
- The Malaise trap is now ready for its first bottle!



The First Quest Bottle

What you'll need:

- ☐ Prepared **week #1** bottle (external & internal labels attached, filled with salt water, **p. 3**)
- ☐ Collection Log Sheet
- ☐ Computer, tablet, or phone
- ☐ Pencil

What you'll do:

1. Record the **GPS coordinates, elevation, site description**, and other site location details on the **Collection Log Sheet**. Choose a **unique site name** that will be shared on the QuestHub map.
2. Take some photos showing the **entire trap**, and **how it is placed within your site**. These photos are important because they allow us to confirm that your trap has been set up correctly and is optimally placed for insect collection.



Buggy Says

Writing and recording **everything** is possibly the **most important step!** This helps keep track of all your bugs!



Dr. Kelly Wallace — North Bay, May 1 2026



Matthew Morris, PhD — Calgary, April 30 2026

3. Using the **Collection Log Sheet** and **trap photos**, complete the **Trap Set-Up Confirmation Form** (https://bugquest.fillout.com/deployment_feedback). This will let us know that you started collecting, so we can update your status on the QuestHub!
4. Select your **week #1** bottle. Write the **site name, location information**, and **start date** on both the **external sticker label** and **internal paper labels** using a **PENCIL**. Make sure the site name is consistent across the entire sampling season and all documentation.
5. Leave the **internal paper label** attached to the outside of the bottle for the collection period, you add more information (end date and notes) after collection is done.
6. At the trap, take the lid off the **week #1** bottle and save it for next week. Then screw the bottle onto the open end of the trap head and tie it to the trap with the white straps. Review the trap set-up video if needed.
7. Return one week (7 days) later with the **week #1** lid and next week's bottle.



The Rest of the Bottles

What you'll need:

- ❑ Prepared collection bottle (external & internal labels attached, filled with salt water, **p. 3**)
- ❑ Collection Log Sheet
- ❑ Freezer / Refrigerator
- ❑ Collection bottle lid from previous week
- ❑ Pencil

What you'll do:

- Return to the trap one week (7 days) later with the previous week's lid and this week's bottle. **Make sure you go on the same day each week.**
- Carefully untie and unscrew the previous bottle and close it with the matching lid. Please make sure the attachment ring remains on the trap head and reattach if needed.
- Screw the next bottle (e.g., week #2, week #3, etc.) onto the open end of the trap head and **tie it down with the white straps.**
- On the completed bottle, write the end date and any notes on both the **external sticker** and **internal paper labels** using a **PENCIL**. **Tear off the internal paper label** and **place it inside the bottle** with the salt water and insects — don't worry, it can get wet, it is fluid-safe paper.
- Now record your observations. Use the **Collection Log Sheet** to note any important details or any scientifically significant events (e.g. trap was down at collection, bottle was dry, weather information, trap disturbances, etc.).



Week # / N° de semaine	Bottle # / N° de bouteille (BQ#)	Start Date / Date de début (yyyy-mm-dd / aaaa-mm-jj)	End Date / Date de fin (yyyy-mm-dd / aaaa-mm-jj)	Notes
e.g. 1	BQ#00001	2026-09-14	2026-09-21	Light rain, repaired long pole

- Store samples in a **standard household freezer or refrigerator** (between +4°C and -20°C). Avoid exposure to heat, light, or changing temperatures. If freezing or refrigeration is not possible, contact bugquest.canada@gmail.com before making other arrangements.

- Repeat the above steps every week for the rest of the collection bottles.

- At the **end of the collection season**, take more photos **before taking your trap down**, remove the sign and reusable cable ties, and store them with the rest of your **Quest Kit**.

- Make sure your trap is dry and free of debris before packing it back into the bag.

- Proceed to **Send Your Quest Data (p. 8)** and see the **Shipping Guide (p. 9)** for details on how to send your bottles to the BugQuest Team!

Quest Tip

Protect your insect DNA!

- ✓ Do not drain the bottles
- ✓ Do not touch the insects inside
- ✓ Keep bottles in the fridge or freezer before shipping

Send Your Quest Data

What you'll need:

- ☐ A recent photo of your trap (before taking it down for the season)
- ☐ **Completed** Collection Log Sheet
- ☐ Computer, tablet, or phone

What you'll do:

1. Using your completed **Collection Log Sheet**, enter the details of the site(s) and bottles that you are shipping into the digital **Data Submission Form**:
https://bugquest.fillout.com/digital_collection_form.
2. When entering the **Trap Manager Details** please use the same information as in the **Trap Set-Up Confirmation Form (p. 6)**. The **BQKIT number** must match.
3. For **Site Entry** submissions your **Site Name(s)** should also be the same. The updated site description and photo(s) will help us see how the environment around the trap has changed over the collection period.



DATA SUBMISSION FORM

Did You Know -

We are asking for the same info in a lot of different ways. Data repetition protects against single points of failure and helps catch errors!



Dr. Kelly Wallace — North Bay, June 19 2026



Matthew Morris, PhD — Calgary, June 26 2026

4. Each collection bottle must be entered individually, being sure to enter the **unique bottle number** (e.g. BQ#00001) exactly as it appears on the **Collection Log Sheet** and bottle labels.
5. Double-check the bottle labels to be sure everything matches, and make sure the **internal paper label** has been torn off and placed inside the bottle with the salt water and insects. That way we can track and send your bugs to the lab even if the **external sticker label** is damaged.
6. Complete all bottles for each site, making sure that all bottles are recorded on the **Collection Log Sheet** and **Data Submission Form**.
7. Review your submission details, double-checking the **BQKIT number** (e.g. BQKIT-0001, found on your QuestKit box or in email correspondence) and **unique bottle numbers** (e.g. BQ#00001). Then submit the form!

Ship Back Your Bottles

What you'll need:

- ❑ Return shipping label (Purolator)
- ❑ BugQuest address sticker
- ❑ **Completed** Collection Log Sheet
- ❑ Absorbent pad
- ❑ **Completed** collection bottles
- ❑ Shipping box/padded envelope
- ❑ Large plastic bags
- ❑ Packing tape



VIDEOS

What you'll do:

1. Confirm that the digital **Data Submission Form** has been completed. This **must** be submitted before we receive your shipment — without this information, the BugQuest Team cannot properly analyze your bottles.
2. Ensure all bottle lids are tightly secured.
3. Put one of the provided absorbent pads at the bottom of a large plastic bag. Place your bottles into the plastic bag on top of the paper towels. Close the plastic bag and seal it with tape.
4. Place the sealed bag into a second large plastic bag (provided) and seal it with tape. Proper packing will help prevent your bottles from spilling or leaking in transit.
5. Take a picture of your **Collection Log Sheet** for future reference and place the **Collection Log Sheet** and the packed bottles into your box or padded envelope.
 - **For boxes:** Close and seal securely with packing tape.
 - **For padded envelopes:** Fold the top of the envelope as far down as possible to limit free space around the bottles. Use the self-adhesive seal to close the envelope and secure it with tape.
6. Attach the provided Purolator return shipping label sticker and a BugQuest address sticker to the outside of the package.
7. Ship your package **via Purolator**:



Buggy Says

To arrive at the lab safely, your bottles should be packed with the absorbent pad, double-bagged, and sealed with tape before you put them into their mailing envelope or box.



Quest Tip

Please send shipments out Monday–Wednesday, avoiding statutory holidays. This will help bottles get back to the lab ASAP to protect the DNA.

- **Wherever possible, please drop off your package** at your nearest Purolator shipping location (purolator.com/en/shipping/find-shipping-centre). This will help lower costs so we can study more bugs!
- **If pickup is required, go to** purolator.com/en/shipping/schedule-manage-pickup and select “Schedule a Pickup” to arrange a pickup. Alternatively, you can arrange a pickup by calling 1-888-SHIP-123 (1-888-744-7123).

If you encounter any shipping issues or are unable to ship with Purolator contact the BugQuest Team to discuss alternative methods.

What Happens Next?

Now that you have completed your part of the Quest, the BugQuest Team will be hard at work analyzing your bugs. Track our progress and learn more on the interactive QuestHub: bioscan.life/bugquest/hub/

Results will be emailed to participants in 2027.



QuestHub

This is the caterpillar of the Crowned Slug Moth, *Isa textula*. It may look cool, but don't touch! Those fluffy 'hairs' can inflict an itchy, painful sting.

Side Quests

Keep exploring after BugQuest is done!
Learn more about how you can...

- ✓ Collect
- ✓ Observe
- ✓ Identify
- ✓ Record
- ✓ Conserve

... the environment around you!



BONUS



Kaan Yucel @knycll_photography

Mini-Quests

Enhance your BugQuest Experience!

- ✓ Divide your class into teams for trap-related tasks (weather, photographers, inspectors, record keepers, social media, and so on!)
- ✓ Take photos with your Malaise trap through the season to document environmental changes around the trap (i.e., changes to vegetation)
- ✓ Take some fun photos with your trap too!

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