



NATIONAL LAKE

Blitz

FIELD GUIDE

A "HOW TO" GUIDE FOR LAKE BLITZ
VOLUNTEERS

LAND ACKNOWLEDGEMENT

Living Lakes Canada acknowledges that our water stewardship work originated in the traditional, ancestral, and unceded territories of the Ktunaxa, Lheidli T'enneh, Secwépemc, Sinixt and Syilx Nations. Today, Living Lakes Canada's work spans across what is known as Canada.

This acknowledgement means that we understand the role and responsibility that Indigenous Peoples across Canada have to this land and the water that flows through it, and respect that relationship by uplifting their voices in water stewardship.

THANK YOU

We want to send you a big thank you for helping gather data on lake ecosystems.

Your efforts will contribute to a snapshot of lake health and biodiversity across Canada while encouraging and amplifying nationwide water and lake stewardship.

Thank you to our funders and partners for making this program possible!

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QUICK GUIDE

1. Open your **Lake Blitz Observation Form** on the Survey 123 app and grab one of your data cards.
2. Mark your site location and enter the site ID.
3. Hang thermometer in the shade to record air temp after **2-4 minutes**.
4. Hold thermometer at water surface for **2 minutes** and record temperature in water.
5. Lower thermometer into water at least 75 cm for **2 minutes** and record measurement and depth of reading.
6. Take your water colour photo in 1-metre deep water.
7. Take your lake photos (**once between May to September, or if you notice any changes**).
8. Record any wildlife, invasive species, or issues and concerns observations and take photos.
9. Hit the submit on the Lake Blitz Observation Form or enter your data on your computer.

HOW TO SHARE YOUR OBSERVATIONS

Data cards

Record your data on the cards provided. Enter your data and upload photos to the Lake Blitz Observation Form at lakeblitz.livinglakescanada.ca.



Mobile app

Use the Lake Blitz Observation Form on the Survey 123 mobile app to enter your data while at your monitoring site.



THE MOBILE APP

Getting Started

- Head to the app store on your iOS or Android device and download the free Survey 123 app.
- To connect the Lake Blitz Observation Form to Survey 123, scan the QR code or click the link at lakeblitz.livinglakescanada.ca.
- Open the survey in the app, and it will save for future use.
- You do not need to create a log-in, simply select “Continue without signing in” each time you want to enter data.

No cell service?

The app can save your data until you are back in service. Once your data is entered press the check mark in the bottom right corner, and select "Save in Outbox".

Contact us for support:
lakeblitz@livinglakescanada.ca

LAKE BLITZ OBSERVATION MAP

Every time you enter data using the Lake Blitz Observation Form, your data points are instantly uploaded to the Lake Blitz Observation Map.

How to use the map:

- Head to lakeblitz.livinglakescanada.ca to view the Lake Blitz Observation Map.
- Click the blue icon to see a summary of observations within the cluster. Each cluster contains multiple monitoring sites.
- Zoom in to a cluster for a more detailed view of specific monitoring sites and data collected at these locations.
- Explore each monitoring site summary by clicking “Browse Features” at the bottom of the pop-up window.
- Choose any monitoring day to see the temperature and photo data collected.

Check out the [“How to use the Lake Blitz Observation Map”](#) video for a tutorial!

SAFETY

When going out to monitor, make sure to follow these safety tips:

- Wear a life jacket when near deep water, or in a boat.
- Do not sample alone, and always tell someone where you are going.
- Avoid potential hazardous areas (e.g., wildlife is present, construction zones, steep areas, or during poor weather).
- Do not trespass onto private property.
- Never drink untreated water.
- Do not touch harmful algae blooms or pollutants.

Working around water can be risky, so please follow these guidelines and understand that you are responsible for your personal safety.

PICKING A SITE

Suggestions for selecting a monitoring site:

- It is nearby, or you visit it often (human-made lakes are included).
- Located on public property, or your own property.
- You can easily and safely measure water temperature at least 1 metre deep (docks are great features).
- There are features to mark your monitoring location such as signposts, dock ladders or any permanent structures.

If you are monitoring from a boat or paddle board, try to use a similar location in the water by lining up with a permanent feature from shore, measuring the temperature and taking watercolour photos there.



WHEN TO MONITOR

Days

- Lake Blitz monitoring days are **twice a month on the second and fourth weekend** of each month. However, volunteers can choose different dates as long as they are **two weeks apart**.
- Volunteers will receive a program calendar showing monitoring days and other exciting events!

Time

- Monitoring times can be anytime of day, but should be consistent.
- Pick a time of day to monitor such as mornings, afternoons or evenings.

Consistency is important so that your data can be compared year to year.

Can't commit to all the sampling days?

Consider creating your own sampling team with friends, family, coworkers or neighbours. Assign certain weekends to your team to make sure your lake has a full dataset!

STEP 1: SITE LOCATION

Follow the steps below to mark your site location:

Mobile

- Make sure your location is marked on the map by tapping the map window on your phone.
- Use the target icon to find your location, then press the target again to lock in your coordinates.
- Exit the map by tapping the **upper left corner** of your phone's screen.

Desktop

- Make sure to allow location services on your browser.
- Zoom out (-) on the map to locate the sampling location at your lake.
- Click on the location you sampled from.
- The blue marker will appear and lock in your coordinates.

Site ID

- Make a site ID for your sampling location.
- Choose your initials and the site number.
 - (e.g. John Doe would be JD1)

STEP 2: TEMPERATURE

Use the thermometer in your kit to measure air and water temperature:

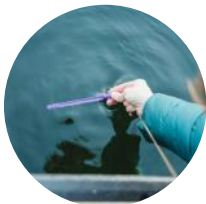
Air Temperature

- Hang your thermometer in a shady spot or in your bodies shadow.
- Wait until the thermometer stabilizes before reading the temperature (2-4 minutes).



Surface Water Temperature

- Place your thermometer at the surface in 1-metre deep water for 2 minutes.
- Wait until the thermometer stabilizes before reading the temperature with the thermometer still in the water.



STEP 2: TEMPERATURE

Below Surface Water Temperature:

This reading tell us what the lake temperature is below the surface.

- Lower your thermometer into the lake about 75 cm or more depending on your site.
- Hold it in the water for 2 minutes.
- Pull the thermometer up and record the measurement right away (readings will change quickly once out of the water).
- Use your tape measure to record the distance from the end of your thermometer to where the cord becomes dry.
- Record both values in the mobile app and/or data card.

This is an adapted protocol. Deep temperature measurements are often taken using probes or a Van Dorn sampler.

STEP 3: LAKE PHOTOS

Take photos in the app or upload them later by using your favourite photo sharing method (ex. airdrop or email):



Water Colour

- Take a photo of water at 1-metre depth at a 45-degree angle with the sun at your back. Minimize reflection from the water.



Across the lake

- Take a photo in front of you capturing the shoreline.



Left shoreline

- Snap a photo to your left.



Right shoreline

- Snap a photo to your right.

To edit the name of each photo, select image options below the image and choose “rename”.



STEP 4: WILDLIFE OBSERVATIONS

Take a look around and note any wildlife that use the lake as habitat.

- Select one or more of the categories below:

None

Reptiles

Mammals

Amphibians

Fish

Birds

Molluscs

Insects

- Enter the common name for the wildlife species you see (e.g. Mallard duck or Canada goose).
- Try and snap a photo of the animal to back up your observations.



STEP 5: INVASIVE SPECIES

Do you notice any invasive species at your sampling location?

Invasive species are plants and animals introduced to an area that push out native species. They often spread quickly and can have major impacts on lake biodiversity.

- Inspect these areas for invasive species:
 - the shoreline (including shallow water and surrounding vegetation)
 - the dock (posts and sides of platform)
 - the open water (if on dock or in boat)
- Use the invasive species ID guide on pages 14-22 for some common species.
 - For a complete list of invasive species, visit your local invasive species groups website.
- Back up your observations with photos.

Are you new to plant and wildlife ID? There are apps that can help (e.g. iNaturalist).

INVASIVE SPECIES: PLANTS

Purple loosestrife

- Up to 2 m tall
- Square, 4-sided stem with opposite leaves
- Several spikes with purple flowers



Lythrum salicaria



Impatiens glandulifera

Himalayan Balsam

- 2 m or taller
- Hollow, purple-red stems
- Pink to purple, flowers in the shape of a police helmet

Hydrilla

- Long-stemmed aquatic plant with leaves in whorls/spirals around the stem of 3-8
- Flowers are white
- Common aquarium plant



Hydrilla verticillata

INVASIVE SPECIES: PLANTS

Yellow flag iris

- Up to 1 m tall
- Bright yellow flowers
- Sword shaped leaves
- Can cause skin irritation



Iris pseudacorus



Tanacetum vulgare

Common tansy

- Up to 1 m tall
- Umbrella-like clusters of yellow, disc-shaped flowers
- Fern-like foliage
- Can cause skin irritation

Japanese knotweed

- Bamboo-like stems up to 3 m tall
- Clusters of delicate, cream to white flowers



Reynoutria japonica

INVASIVE SPECIES: PLANTS

Eurasian watermilfoil

- Green, feather-like leaves in whorls/spirals of 3-5
- Rhizomes (underwater roots/stems) reddish-brown
- Small pink/red flowers in summer



Fish and Wildlife Service
Myriophyllum spicatum



Phragmites australis

Phragmites

- Up to 5 m tall
- Tan bamboo-like stalks
- Brown seed heads
- Can be hard to distinguish between native and invasive

Flowering Rush

- 1-1.5 m tall with 5-10 cm flower stalks
- Clusters of pink flowers
- Grows in shallow waters
- Triangular cross section leaves



Butomus umbellatus

INVASIVE SPECIES: PLANTS



Nymphaea odorata

Fragrant Water Lily

- Round glossy green leaves float on surface of water
- Flowers are white or pink
- **Native in Ontario**

Water Soldier

- Leaves are 40 cm long, sword shaped and are very sharp
- Resemble an aloe plant
- Flowers are rare but are white with three petals



Stratiotes aloides



© Invasive Species Centre

Trapa natans

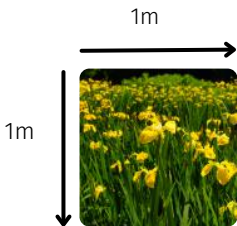
European Water Chestnut

- Up to 3-5 m in height
- Small 4-petalled white flowers
- Green leaves with sharp toothed edges
- Seeds are 3-4 cm wide with barbs

ESTIMATING INVASIVE SPREAD

Take a look around your sampling area and estimate the size of the invasive plants spread:

- Do the plants cover an area of:
 - Less than 1m x 1m?
 - Between 1m x 1m and 9m x 9m?
 - More than 10m x 10m?
- Enter your best guess for up to 3 plant species in the Lake Blitz Observation Form or your data card.
- Use the measuring **tips** below to help you eyeball the spread of each plant:



Tip:

1m = 3.28 ft

1m = 1 yard

The average school bus is about 10 metres long.

INVASIVE SPECIES: ANIMALS



Cyprinus carpio

Asian carp (Fig. 1) and Common carp (Fig. 2)

- Large silver to olive green body, with brass or grey on the sides and back
- Barbels on mouth (Fig. 2)
- Thrive in warm, shallow lakes with lots of vegetation
- Invasive in Ontario

Goldfish

- 15-20 cm long
- Long dorsal fin going from middle to tail
- No scales on the head
- Resemble common carp but have no barbels
- Invasive across Canada



Carassius auratus



Esox lucius

Northern pike

- Over 1 m long
- Pointed head
- Silver belly and white spots
- Dorsal fin sits very far back, near the tail
- Invasive in Southern BC
- Native in Ontario

INVASIVE SPECIES: ANIMALS



© T.Lawrence, GLFC

Petromyzon marinus

Sea lamprey

- Over 50 cm in length
- Eel-like fish
- Mouth is a large sucker with sharp rings of teeth
- Feed on fish host
- **Invasive in Ontario**
- **Native to the Atlantic Coast**

Round goby

- 6-16 cm long
- Round snout
- Covered in scales
- Dark brown or olive with black spots
- **Invasive in Ontario**



Source: Invasive Species Centre
Neogobius melanostomus



Myocastor coypus

Nutria

- 1 m long including round tail
- Resembles a beaver or muskrat
- White muzzle with whiskers
- **Invasive in BC**

INVASIVE SPECIES: ANIMALS



(© M. El Damir)
Potamopyrgus antipodarum

New Zealand Mudsnail

- Very small
- Shells are grey or brown and have 7-8 whorls that are usually 6 mm in length
- More narrow and long than native species
- Invasive in BC and Ontario

Zebra and Quagga mussels

- Up to 4 cm long
- D-shape with dark banding across shell
- Strong strings that attach to surfaces
- Invasive in Ontario, Quebec and Manitoba



Dreissena polymorpha (Zebra)
Dreissena bugensis (Quagga)



(© N.M. Burkhead)
Corbicula fluminea

Asian clam

- 2.5 cm wide when mature
- Brown to tan in colour
- Deep ridges across shell
- Invasive in BC and Quebec (St. Lawrence River)

INVASIVE SPECIES: ANIMALS



Trachemys scripta elegans

Red-Eared slider

- Up to 28 cm long
- Broad red stripe behind ears
- Underside of shell is yellow with brown patches
- **Invasive in BC and southern Ontario**

Rusty crayfish

- Up to 13 cm long
- Green, gray or brown bodies with two rust-red patches on their backs
- Large claws with black tips
- **Invasive in southern Ontario**



© D. Watkinson, DFO
Orconectes rusticus



Lithobates catesbeianus

American bullfrog

- Up to 20 cm in length
- Pale to olive green with brown spots
- Fold of skin that curves around eye
- Invasive in BC
- **Native to southern Ontario, southern Quebec, New Brunswick and Nova Scotia**

REPORT INVASIVE SPECIES

If you see any freshwater aquatic invasive species, primarily Zebra and Quagga mussels, call your province or territories' reporting line below:

- Alberta 1-855-336-2628 (BOAT)
- British Columbia 1-888-933-3722
- Saskatchewan 1-800-667-7561
- Manitoba 1-877-867-2470
- Newfoundland 1-709-864-6773
- New Brunswick & PEI 1-866-759-6600
- Northwest Territories 1-867-767-9055
- Nova Scotia 1-800-563-7711
- Nunavut 1-867-975-7706
- Ontario 1-800-563-7711
- Quebec 1 877 346-6763
- Yukon 1-800-661-0408, ext. 5721

Interested in doing more invasive monitoring ?

- Visit canadianinvasives.ca/take-action/report to check out resources and reporting apps used by invasive groups in every province and territory!

STEP 6: ISSUES AND CONCERNS

Do you see any visible issues and concerns?

Make sure to record any of the common issues and concerns that impact lake ecosystem health:

- **pollution** (e.g., visible garbage, and chemical or fuel spills)
- **presence of algae** (e.g., cyanobacteria/ blue-green algae blooms)
- **shoreline changes** (e.g., plant removal, substrate modification or erosion)
- **wildlife concern** (e.g., dead animals, habitat loss or decreased evidence of species)

Take up to 6 photos to support your observations.

Be sure to report any pollution or dumping to your regional polluters reporting line.



DATA ENTRY

Mobile App

Once you have filled out the Lake Blitz Observation Form simply press the submit button and your data will be uploaded to the Lake Blitz Observation Map.

Desktop

Once the data card is complete and all your photos are taken, your data can be entered into the Lake Blitz Observation Form on your desktop.

Head to lakeblitz.livinglakescanada.ca and upload all of your photos and enter your data points.

Check out your new data point on the Lake Blitz Observation Map and see all of the data coming in from across Canada.

If you need to make any edits to your submission, contact lakeblitz@livinglakescanada.ca and we can update it for you.

Check out the [“How to Upload Data to the Lake Blitz Observation Form”](#) video for a tutorial!

CONTACT US

If you have any questions or feedback about the National Lake Blitz, contact our Lake Blitz Program Manager at the email below:



lakeblitz@livinglakescanada.ca

Visit our website for additional resources such as videos, helpful guides and a FAQ section.



lakeblitz.livinglakescanada.ca

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