Welcome to the Cape Cod Pond Watcher Program!

Thank you for joining the Cape Cod Pond Watchers! Your efforts help gather important data to understand and protect our local freshwater ponds. Whether you're an expert or a first-time observer, this program gives you the chance to connect with nature and make a meaningful contribution. By recording data on plants, animals, and environmental conditions, you're helping to create a valuable long-term record of life in and around our ponds - both locally and across the Cape. Thank you for being a citizen scientist!

Field Data Sheet – Additional Information

You can enter your observations either by using the **paper field sheet** or the **Survey123 app when it becomes available**. The app can be used in the field, or if you prefer, you can enter the data from your paper sheet into Survey123 later on from your desktop. Information on how to use Survey123 will be found in the **Survey123 User Guide** *(The Survey123 database and User Guide are currently in progress)*.

1. **General data**

Pond Location (Name, Town, GPS Coordinates)
Please provide the **pond name** and **town** to help us identify the location. If the pond doesn't have a name, **GPS coordinates** are crucial. To get coordinates from Google Maps, press and hold on the location until the red pin appears, then scroll down to find the latitude and longitude in decimal degrees format (e.g., 41.7065° N, 70.2304° W). If it is not possible to get coordinates, please describe the location using street names or other landmarks.

Pond ID
You can find a list of ponds and their IDs on the APCC Bio-survey website (https://apcc.org/our-work/education/freshwater-ponds/cape-cod-pond-watchers-bio-survey-program/).

Time Tracked
Record the **Date** and the **Start and End Times** of your pond visit. This helps give context to the number of observations made and helps us track how much time volunteers like you have dedicated to this program.

Temperature
If you have a thermometer, recording air and water temperatures is helpful! These data points help provide a full context of the environmental conditions during your visit and are useful for long-term ecological studies to track the temperature of ponds throughout the season and over the years.

Substrate

Is the bottom of the pond sandy or soft organic muddy? Many ponds have sand added to create a beach, but what we are curious about is the natural substrate of the pond, off to the edges of the beach area.

Water Level

If you are unsure about the water level, compare it to nearby markers or reference points you can observe (e.g., shoreline vegetation, sediment lines, structures). If you've visited before, take into consideration how the water compares to previous visits.

Surface Scum

Surface scum refers to floating algae, including cyanobacteria. If you spot scum, describe its size, color, and texture. Be cautious if it looks like cyanobacteria (it may appear greenish, blue, or brown) and report it to cyano@apcc.org, including photos, date and location. For more info and example photos of cyanobacteria scums, visit the APCC's website (https://apcc.org/our-work/science/community-science/cyanobacteria/).

Foam

Surface foams develop in freshwater and marine environments when water movement causes dissolved organic matter to act as surfactants, trapping air and separating from the water phase into fluffy, concentrated surface material. There are both natural and contaminant-sourced surface foams. Identifying where and when foams occur will aid researchers who are interested in studying biological and chemical composition of surface foams

2. **Vegetation Observations**

The first section is all about **plants** you see in and around the pond. Here's what to look for and how to record it:

a) **Plant Name** – Identify plants as best you can (try to get the genus/species level). Helpful resources include A Guide to Aquatic Plants in Massachusetts (PDF), A Guide to Selected Invasive Non-native Aquatic Species in Massachusetts (PDF), iNaturalist (https://www.inaturalist.org/) and Seek (https://www.inaturalist.org/pages/seek_app).

b) **Where did you observe the plant?** In this column we are looking for answers like "On the shoreline", "Emerging from the water", "Floating on the water", or "Submerged in the water". This will help to give context for the plants you have identified and will enable the categorizing of plants with different habitats in the database.

c) **Was the plant's distribution sparse, dense or patchy?** This information is important, especially when considering endangered or invasive species. If an endangered species is identified, please consider taking it a step further and fill out an observation form with MA NHESP (https://www.mass.gov/how-to/report-rare-species-vernal-pool-observations). Such an

observation is important and supports protection for the habitat. If a strong presence of invasive species is identified, this may support prioritizing a restoration project at a given pond.

d) **Photo** – Did you take a photo? Photos are always helpful for confirmation! If you did capture one, please send it to pondwatchers@apcc.org, along with your name, the pond name, the date and your species identification or upload it directly to your Survey123 form.

Plants can be excellent bioindicators of a pond's health, as their distribution and abundance reflect water quality and environmental conditions. By tracking plant species, you help provide important insights into the overall ecological balance of the pond.

3. Animal Observations

Next, keep an eye out for wildlife in or around the pond—including mammals, reptiles, amphibians, fish, mollusks, birds, insects! Record your sightings with the following details:

a) **Animal Name** – Be as specific as you can when identifying animals. Some great resources for identification include iNaturalist (https://www.inaturalist.org/), https://www.inaturalist.org/projects/massachusetts-freshwater-mollusk-survey, A Guide to Selected Invasive Non-native Aquatic Species in Massachusetts (PDF), or Seek (https://www.inaturalist.org/pages/seek_app).

b) **Where did you see the animal?** In this column we are looking for answers like "On the shoreline", "On the water surface", "In the water", "In the air", or "In a tree".

c) **If you didn't see the animal, what evidence did you find?** This is your chance to be a detective and search for bird nests, snail tracks, footprints, scat, shells or sounds. A great resource for identifying bird vocalizations is the Merlin app (https://merlin.allaboutbirds.org/)

d) **Photo** – If possible, take a photo! We know animals can be trickier to photograph, but we appreciate anything you can capture. If you get a good shot send it to pondwatchers@apcc.org, along with your name, the pond name, the date and your species identification.

e) **Tracking animals**, including their tracks, scat, and nests, paints a fuller picture of the biodiversity of the pond.

Thank You!
Your efforts are invaluable in monitoring and protecting Cape Cod's freshwater ponds. Please email your completed paper field sheets and photos you may have to pondwatchers@apcc.org or keep them until Survey123 database is ready to accept entries. We appreciate your time and dedication to this important work. Happy observing!