



COCO Sampling Guidelines

Written by: S. Beal, 18 July 2024

Updated: 8 August 2025

Hello! Thank you for collecting samples for the Community-Oriented Coastal Observatory (COCO). Provided in this document is a list of required (and provided) equipment to collect the samples as well as sampling instructions, considerations, and troubleshooting methods. If you encounter any issues not listed in this document, please bring them to our attention. Thank you again for your participation in this monitoring program!

Equipment

- Smith-Root eDNA Citizen Scientist Sampler
- Battery and charger
- 3x Smith-Root 47 mm 1.2 μ M polyethersulfone self-preserving filter housings
- Gloves
- Garbage bag
- Metadata sheet
- Pencil + sharpener
- Permanent marker
- Flat-rate Canada Post shipping box(es), pre-labeled with return address

Instructions for sampling using the sampler

Note: prior to sampling, ensure the sampler battery is fully charged (ideally plug it in the night before)

1. Ensure 2 L vacuum bottle is secure in the sampler, lid is tight, and the vacuum tubing is attached (see Figure 1)
2. Using a permanent marker, label filter housing bag with sample site name, sample replicate number (1-3), and date
3. Using a pencil, fill out the provided metadata sheet: latitude and longitude, date, time, temperature, and weather conditions (e.g. sunny, rainy, overcast)

Note: you can use the Google maps app on your phone to get latitude and longitude by dropping a pin on the map, temperature, and weather conditions

4. Wearing clean gloves, open the filter housing bag and remove the filter housing

Video instructions (from Smith-Root)



Note: scroll down to the 'Description' section of the webpage for the video

5. Keeping the snorkel in the bag to maintain sterility, attach the snorkel to the opaque, beige end of the housing
6. Attach the yellow (barbed) end of the housing to the suction tubing of the sampler (see Figure 2)
7. Turn on pump
8. Place snorkel into water to begin sampling

Note: ensure the filter does not become submerged in the water – only the snorkel
9. Filter until water reaches the red line of the collection tank; once at the red line, remove snorkel/housing from water and invert filter housing
10. Allow pump to run through inverted filter for 30 seconds to air dry filter
11. Turn off machine
12. Remove snorkel and dispose of in garbage bag
13. Place filter housing back in the bag it came from and seal, removing as much air from the housing bag as possible
14. Open collection tank and discard filtrate water away from sampling site
15. Store filter housing bag out of direct sunlight
16. Repeat Steps 1 – 14 twice more at the same site, for a total of **three** replicate eDNA samples
17. Once all three replicates have been collected, place the filter housing bags and metadata sheet in the flat-rate Canada Post shipping box
18. Seal the shipping box and take to a Canada Post drop off location within **one week** of sample collection

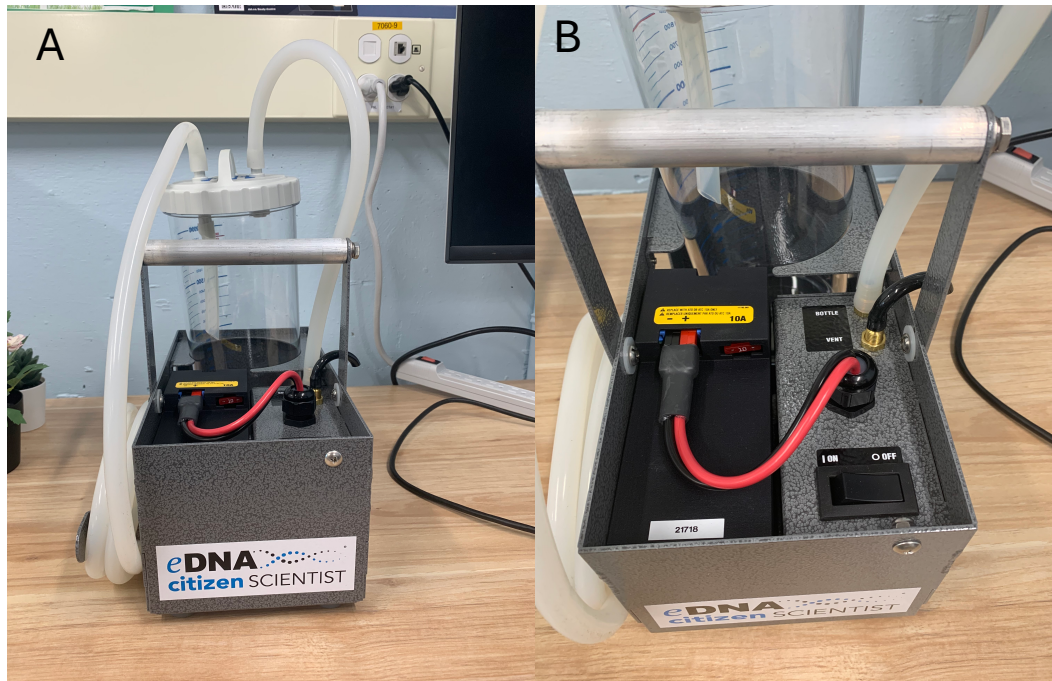


Figure 1 eDNA sampler set up (A) and view of tubing connection (B)

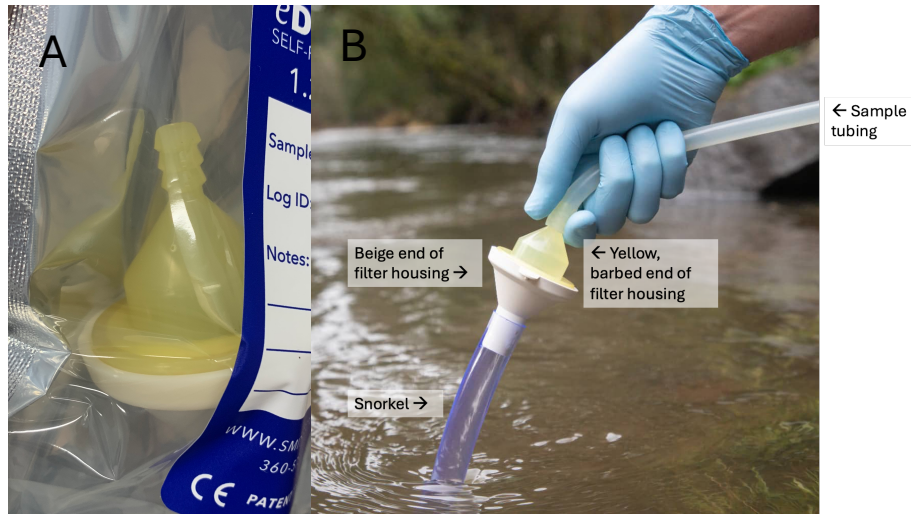


Figure 2 barbed end of the filter housing to be attached to suction tubing (A) and connected filter housing (B; image credit: [Smith-Root](#))

Sampling Considerations

- Use fresh gloves for each new filter
- At each sampling site, collecting eDNA samples in triplicate allows for:
 1. Increased Reliability and Accuracy
 2. Detection of Rare Species
 3. Quality Control and Validation
 4. Minimizing False Negatives
 5. Statistical Robustness
 6. Detecting Spatial Heterogeneity

Troubleshooting

Unfortunately, sometimes sampling does not always go according to plan. Below please find some common issues and their corresponding fixes. In the event none of these resolve your issue, please make a note of the problem on the metadata sheet and record the total water volume you were able to filter through the problematic filter housing.

- ***Water is no longer moving through the tubing and into the collection tank***
 - The filter is likely clogged. This can happen where there is a lot of debris in the water. Once 10 minutes total filtering time has passed, invert the filter and try to air dry for 30 seconds before turning off the machine. Shake as much water out of the snorkel/filter as possible before detaching snorkel and placing the filter housing back in its bag.

If you have identified a problem with the sampler, please let us know! 😊

Please fill out one metadata sheet per sampling day (i.e. one sheet per three replicate samples)

Metadata

Name of sample collector: _____

Site name: _____

Date: _____

Time of sampling: _____

Latitude: _____

Longitude: _____

Air temperature: _____

Weather conditions: _____

Notes: _____
