

13.0 PROTOCOL FOR PHYTOPLANKTON SAMPLING

Overview

Phytoplankton collection in the open water of a lake consists of surface and/or deep grab sampling. A Van Dorn bottle is the most common tool for collecting the deep samples for enumeration. In specific situations a net may be used as well. Care must be taken with net collection, numerous species can pass through even the smallest mesh sizes, colonies can be disrupted by the net, and fragile species may burst from excessive pressure.

Sources

British Columbia MWLAP (2003) , EMAN (Undated a)

At a glance

Qualitative sampling

- 1** Use a 10- μ m Nitex® mesh or similar phytoplankton net that is fitted with a stopcock at the lower end to allow opening and closing. The mouth of the net has a canvas collar fitted with a metal bridle that attaches to the sampling line.
- 2** Lower the net to a given depth, allow it to settle for 15 to 30 seconds and then pull it slowly to the surface. Pulling the net too fast will cause a bow wave and the net will be less efficient.
- 3** Position the mouth of the stopcock into a sample-collecting bottle and then drain the sample. Repeat three to four times if necessary.
- 4** Qualitative net sampling will yield presence/absence information and can aid in the identification of rare species but is not appropriate for accurate counting or biomass estimates.

Quantitative sampling

- 1 Surface Samples:** Anchor the boat at the designated sample site. Alternately, if the water is too deep or a buoy is not present, the person in the stern will have to maintain position while the person in the bow takes the samples.
- 2** Obtain a labeled, 1L sample bottle and remove the lid without touching the inner surface of either the bottle or lid.
- 3** Reach out an arm length from the boat to take the sample. Ensure that the person in the stern is providing counterbalance (working over the opposite side of the boat).
- 4** Sink the bottle under the surface and *move towards the current* move it slowly towards the current (the direction the boat is facing) until the bottle is entirely full. Standard sampling depths for “surface” water samples are 0.1 m and 0.5 m.
- 5** Preserve the sample with 3 mL of Lugol’s solution (3-4 mL per 1 litre of sample). A general guideline is that there be sufficient Lugol’s added to adjust the color of the sample to resemble weak tea.
- 6 Samples at Depth:** Open the Van Dorn sampler by raising the end seals.

- 7** Set the trigger mechanism.
- 8** Lower the sampler to the desired depth (epilimnion, hypolimnion or thermocline: the location of which should have been determined by prior DO/temperature profile data collection. Ensure that the dead end of the rope is tied to the boat.
- 9** Send the messenger down to “trip” the mechanism that closes the end seals.
- 10** Retrieve the sampler to the surface.
- 11** Transfer the water sample from the Van Dorn bottle to labeled, 1 L sample containers via the drain valve.
- 12** Preserve the sample with 3 mL of Lugol’s solution (3-4 mL per one litre of sample).
- 13** Recap the bottle and place in the cooler.

Other Sources

Nova Scotia Environment and Labour (1996)