



Standard Practice for Sampling Zooplankton with Pumps¹

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1. Scope

1.1 This practice covers the procedures for obtaining qualitative/quantitative samples of a zooplankton community by use of pumping systems.

1.2 *This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D4133 Practice for Sampling Phytoplankton with Pumps

E1200 Practice for Preserving Zooplankton Samples

3. Summary of Practice

3.1 Water is pumped from a discrete depth and passed through a net. The captured zooplankton are removed from the net and preserved as dictated by the objectives of the study.

4. Significance and Use

4.1 The *advantages* of collecting zooplankton with pumps are as follows:

4.1.1 Sample size is more accurately controlled than with nets.

4.1.2 Discrete samples can be more easily obtained both vertically and horizontally.

4.1.3 Multiple or replicate samples can be more easily obtained.

¹ This practice is under the jurisdiction of ASTM Committee D19 on Water and is the direct responsibility of Subcommittee D19.24 on Water Microbiology.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

4.1.4 The pumps are adaptable to a variety of ecosystems less than 30-m deep.

4.1.5 Sampling efficiency does not decrease with sample size.

4.2 The *disadvantages* of collecting zooplankton with pumps are as follows:

4.2.1 Pumps are bulky and require an electrical source.

4.2.2 Pumps are generally more costly than nets.

4.2.3 Pumps generally discriminate against collecting macroplankton.

4.2.4 Pump intake tubes may be avoided by the more motile zooplankton forms.

4.2.5 Requires a long, bulky, intake tube for deep water sampling.

4.3 There are several special considerations that should be observed when collecting zooplankton with a pump. They are:

4.3.1 Some pumps can fragment zooplankton and induce mortality due to their design.

4.3.2 The pump hose must be cleared before taking the next sample.

5. Apparatus

5.1 Pumping systems of various kinds have been used to collect zooplankton samples. Although a variety of pump apparatus have been used, the basic design consists of a pump, generally with a volume register, a base, and a concentrating net, such as a simple tow net sampler.³

6. Procedure

6.1 Pump water from a discrete depth and pass through a net.

6.2 Remove the sample from the net.

6.3 Preserve the plankton as described in Practice E1200.

³ The Wisconsin net sampler or its equivalent has been found satisfactory. Available from Wildco, 301 Cass St., Saginaw, MI 48602.