



Designation: E1198 – 24

Standard Practice for Sampling Zooplankton with Pumps¹

This standard is issued under the fixed designation E1198; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

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 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

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

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D1129 Terminology Relating to Water

E1200 Practice for Preserving Zooplankton Samples

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of terms used in this standard, refer to Terminology D1129.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *macroplankton, n*—macroscopic plankton comprising of the larger planktonic organisms.

3.2.2 *plankton, n*—collection of organisms that drift with tides and currents.

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.

3.2.3 *zooplankton, n*—plankton consisting of small animals and the immature stages of larger animals.

3.2.3.1 *Discussion*—Some of these organisms, such as miniature crustaceans and protozoans, are very small. Others, such as jellyfish, are larger. Some fishes and shellfish begin their lives as eggs or tiny larvae. These eggs and larvae are also zooplankton.

4. Summary of Practice

4.1 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.

5. Significance and Use

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

5.1.1 Sample size is more accurately controlled than with nets.

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

5.1.3 Multiple or replicate samples can be more easily obtained.

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

5.1.5 Sampling efficiency does not decrease with sample size.

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

5.2.1 Pumps are bulky and require an electrical source.

5.2.2 Pumps are generally more costly than nets.

5.2.3 Pumps generally discriminate against collecting macroplankton.

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

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

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

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

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