



## Standard Practice for Sampling Zooplankton with Pumps<sup>1</sup>

This standard is issued under the fixed designation E 1198; 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 ( $\epsilon$ ) 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 *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:*<sup>2</sup>

D 4133 Practice for Sampling Phytoplankton with Pumps

E 1200 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.

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.<sup>3</sup>

### 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 E 1200.

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee E47 on Biological Effects and Environmental Fate and is the direct responsibility of Subcommittee E47.01 on Aquatic Assessment and Toxicology.

Current edition approved April 1, 2004. Published April 2004. Originally approved in 1987. Last previous edition approved in 1998 as E 1198 – 87 (1998).

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

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

 **E 1198 – 87 (2004)**

*ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.*

*This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.*

*This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or [service@astm.org](mailto:service@astm.org) (e-mail); or through the ASTM website ([www.astm.org](http://www.astm.org)).*