NOTICE: This standard has either been superseded and replaced by a new version or withdrawn.
Contact ASTM International (www.astm.org) for the latest information

Designation: E1199 – 87 (Reapproved 2012)

Standard Practice for Sampling Zooplankton with a Clarke-Bumpus Plankton Sampler[1]

This standard is issued under the fixed designation E1199; 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 quantitative samples of a zooplankton community by use of a Clarke-Bumpus plankton sampler.

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]

D4134 Practice for Sampling Phytoplankton with a Clarke-Bumpus Plankton Sampler

E1200 Practice for Preserving Zooplankton Samples

3. Summary of Practice

3.1 The sampler is towed from a moving boat at a specified depth. The sampler uses a net for the collection and concentration of zooplankton. The actual volume of water entering the sampler is measured by a calibrated flowmeter. The zooplankton are preserved as dictated by the objectives of the study.

4. Significance and Use

4.1 The *advantages* of the Clarke-Bumpus plankton sampler are as follows:

4.1.1 It will sample a discrete depth or multiple depths, depending upon the sampling design.

4.1.2 It is a slow to medium speed sampler requiring a towing speed of three to five knots.

4.1.3 The sample size can be easily controlled.

4.1.4 The sampler is lightweight and can be used without auxiliary equipment.

4.1.5 It has a relatively high filtration efficiency factor of 0.88.

4.1.6 It is a versatile sampler and can be used in all but the shallowest waters.

4.1.7 The flowmeter records the amount of water that passes into the net.

4.1.8 Overspill of water at the mouth of the net due to excess speed of towing is of minimal consequence.

4.2 The *disadvantages* of the Clarke-Bumpus plankton sampler are as follows:

4.2.1 The flowmeter requires frequent maintenance including calibration and lubrication.

4.2.2 It is not suitable for use in very small areas or shallow waters.

4.3 There are several *special considerations* that shall be observed when using a Clarke-Bumpus sampler. They are:

4.3.1 The flowmeter should be calibrated and serviced frequently to ensure efficient and accurate operation.

4.3.2 The sampler is relatively fragile, particularly the closing device and flowmeter. This necessitates careful deployment and recovery procedures.

4.3.3 Following each collection, the net must be thoroughly washed.

4.3.4 Special attention must be given to the strength of the cable and its attachment to avoid loss of the sampler.

4.3.5 The sampler should not be used in beds of macrophytes, in waters containing submerged objects, or close to the bottom.

4.3.6 The net should be inspected frequently for pin-size holes, tears, net deterioration, and other anomalies.

4.3.7 Following use, the wet net should be suspended full length in the air in subdued light and allowed to dry.

5. Apparatus

5.1 The Clarke-Bumpus zooplankton sampler is a 5-in. diameter by 6-in. long brass tube consisting of a metal frame in which an interchangeable conical plankton net is attached at the mouth and at the cod end.[3] This sampler is available in

[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.

Current edition approved Dec. 1, 2012. Published December 2012. Originally approved in 1987. Last previous edition approved in 2004 as E1199 – 87 (2004). DOI: 10.1520/E1199-87R12.

[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] Clarke, G. L., and Bumpus, D. F., *The Plankton Sampler—An Instrument for Quantitative Plankton Investigations*, American Society of Limnology and Oceanography, Special Publication No. 5, Revised 1950.

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. United States