



Designation: D 4558 – 02

Standard Practice for Collecting Benthic Macroinvertebrates With Drift Nets¹

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1. Scope

1.1 Drift nets are useful for collecting macroinvertebrates that actively or passively enter the water column or that are dislodged from the substrate; naturally or by stress. They are particularly well-suited for synoptic surveys because they are light weight and easily transported.

1.2 Thousands of organisms, including larvae of stoneflies, mayflies, caddisflies, and midges and other Diptera, may be collected in a sampling period of only a few hours.

1.3 The drift net efficiently collects organisms originating from all types of substrates and a wide spectrum of microhabitats in lotic (flowing) waters.

1.4 The device is restricted to flowing rivers or streams with a current velocity of more than 0.05 m/s.

1.5 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

D 4387 Guide for Selecting Grab Sampling Devices for Collecting Benthic Macroinvertebrates²

D 4556 Guide for Selecting Stream-Net Sampling Devices for Collecting Benthic Macroinvertebrates²

3. Summary of Practice

3.1 The typical drift net consists of a bag of nylon or nylon monofilament; a variety of mesh sizes can be used depending on the objectives of the study. The U.S. Standard No. 30 (0.595-mm mesh openings) net is often used for collecting macroinvertebrates.

3.2 The frame typically consists of a 0.045-m² (15 by 30-cm) brass rod structure anchored into the stream bed by a pair of steel rods.

3.3 Cable clamps are used to secure the nets to the rods.

3.4 The average volume of water passing through the net is

determined by measuring the water velocity at the mouth of the drift net with a Pygmy Price Current Meter³ (or equivalent) several times, and recording the total time the drift net is set in the water column. Several readings are taken, and the mean is used.

3.5 The efficiency of the net is determined by the simultaneous measurement of the water velocity passing by the set drift net.

3.6 The drift net frame can be fitted anteriorly with a mouth reducing rectangular plexiglass enclosure (Rutter and Ettinger **(1)**⁴) to increase filtration efficiency.

3.7 The type of drift net and mesh size utilized will depend on the objectives of the study and the physical characteristics of the flowing water.

3.8 Alternatives to the typical drift net include the water-wheel drift sampler (Pearson and Kramer, **(2)**) which might be useful in large rivers or streams which can be reached by automobile.

3.9 An automatic drift sampler (Muller, **(3)**) can be constructed that eliminates the need for an attendant at the sampling site during collection of as many as eight consecutive samples.

3.10 A modified emergence-trap drift sampler (Mundie, **(4)**; Cushing, **(5)**) is useful in streams with extremely high drift, where water is very turbid, or where a long sampling period is desired without clogging.

3.11 The drift collection usually represents a wide spectrum of the habitats found in a stream.

3.12 A benthic sample shows only what taxa were existing in the particular area (usually some fraction of a square metre, etc.) that was sampled.

3.13 The great variation among benthic samples, even in a limited area, illustrates the necessity of several samples and the influence of selecting the collecting sites.

3.14 One drift sample might be adequate for collecting the majority of invertebrate taxa in a stream reach, whereas a large number of benthic samples would be needed to cover the variety of bottom habitats even in a uniform reach of the stream.

¹ This practice is under the jurisdiction of ASTM Committee E47 on Biological Effects and Environmental Fate and is the direct responsibility of Subcommittee E47.03 on Sediment Assessment and Toxicology.

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² *Annual Book of ASTM Standards*, Vol 11.05.

³ The Pygmy Price Current Meter, or its equivalent, has been found satisfactory. Available from Kahl Scientific Instrument Corp., P.O. Box 1166, El Cajon, CA 92022-1166.

⁴ The boldface numbers in parentheses refer to the list of references at the end of this practice.