

9.4 PROTOCOL FOR SAMPLING INVERTEBRATES WITH A TRAVELLING KICK AND SWEEP – STREAMS

Overview

The Travelling-Kick-and-Sweep is the standard sampling method; it is typically applied by wading along transects through the habitat of interest, kicking the substrate to dislodge benthos, and collecting dislodged benthos by “sweeping” a hand-held net through the water. Most benthos biomonitoring surveys use a net mesh size between 250 micron and 1 mm but a 500 µm size is common. Samples should be collected at the same time of year at individual sites.

Sources

Ontario Ministry of the Environment (2005)

At a glance

*sweeping
motion*

1 Where possible, identify a sampling unit that contains 2 riffles and 1 pool. In sampling units containing multiple riffles or pools transects should ideally be located randomly. However safety and ease of access must always be considered.

2 Sample the farthest downstream transect in the Sampling Reach. Place a net downstream from you (commonly 500-µm-mesh with the net held close to the stream bottom). Start the timer and beginning at either the right or left bank, walk along the transect to the opposite bank, vigorously kicking the substrate to disturb it to a depth of ~5 cm. Sweep the net back and forth (both vertically and horizontally through the water column) and keep it downstream from, and close to, the area being disturbed so that dislodged invertebrates will be carried into the net. A good sweeping motion is particularly important in areas of slow current to ensure animals are collected in the net (the sweeping motion is less important when sampling in strong current). Kick-and-sweep about 10 m of the transect in about three minutes (this sampling effort may be reduced if benthos are known to be abundant).

3 In large rivers using the 3-minute/10 m guideline, sample short segments along the transect (essentially a point-transect approach), in a way that covers the range of current velocities exhibited across the channel cross-section (Figure 17). On the other hand, sticking to the 3-minutes/10 m guideline in small streams requires that several transects be positioned in the same riffle or pool (Figure 18).

4 Sieve the collected sample in the net. Rinse off and remove from the sample large material like rocks and wood. Release any non-benthic animals collected. Transfer net contents to a bucket. To prevent the net from clogging, material may need to be transferred several times as you sample each transect. Placing your bucket on the side of the stream where you start sampling allows frequent trips to the bucket without disturbing transect

sections not yet sampled.

5 Record sampling time (active sampling time only, time spent transferring net contents to bucket not included), distance, and all other information required on field sheet.

6 Move to the next upstream transect and repeat until all transects have been sampled. If non-wadeable portions of the channel cross section are encountered, sample only the safely wadeable portion.

7 Record the number of transects used, total distance traveled on each transect, total time spent collecting invertebrates, and wetted width at each transect as well as all other information on the field sheet.

8 Rinse the net and maintain any recovered benthos with the sample.

9 For large rivers (Figure 17), portions of the transect are selected randomly within each current speed stratum (labeled 1-5) to give an approximate 10 m and 3-minute composite sample for the transect.

10 For small rivers, additional supplementary transects are located immediately upstream from each pool and riffle transect to provide sufficient sampling distance (i.e., approximately 10 m).

11 Repeat until three sub-samples are collected.

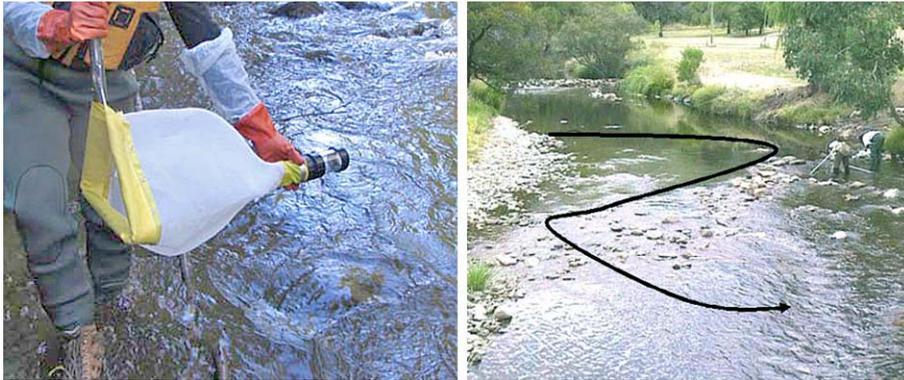


Photo 18 (left): Triangular shaped kick net sampler (400 micron mesh and removable cup) (Source: Environment Canada (2007))

Photo 19 (right): Kick net transect through a riffle (Source: Environment Canada (2007))

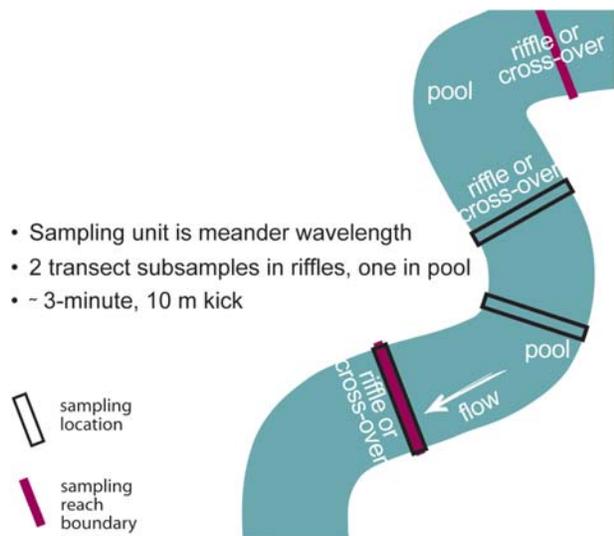


Figure 15. Travelling kick-and-sweep-transect method for wadeable or partially wadeable streams (Source: Ontario Ministry of the Environment (2005))

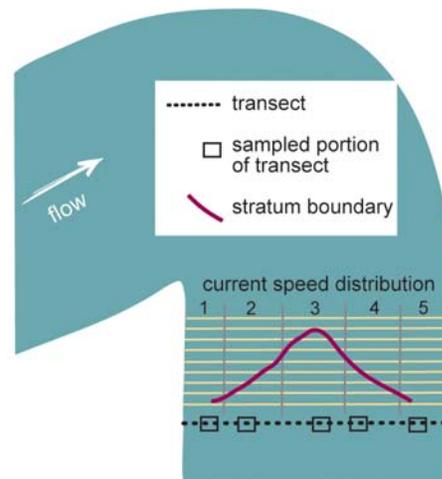


Figure 16. Large river transect kick method (Source: Ontario Ministry of the Environment (2005))

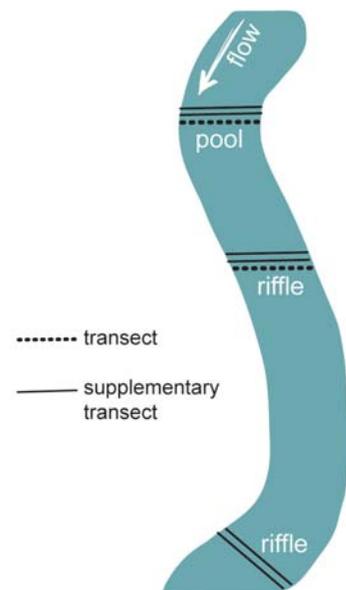


Figure 17. Small river transect kick method (Source: Ontario Ministry of the Environment (2005))

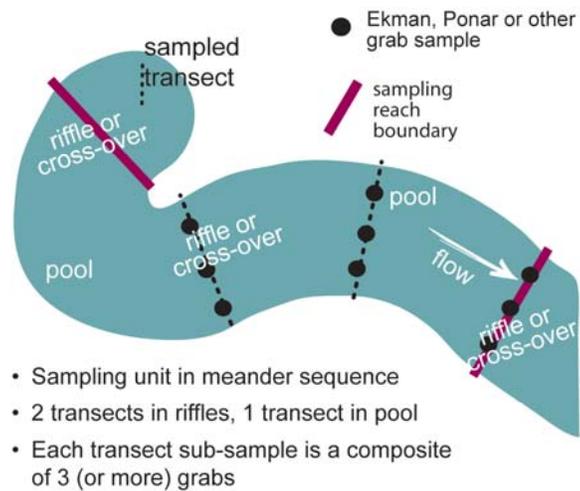


Figure 18. Grab sampling method for non-wadeable streams (Source: Ontario Ministry of the Environment (2005))