

## DATA COLLECTION FOR JULY MONITORING PERIOD

### MCDEP SUMMER HABITAT DATA SHEET

The physical habitat assessment variables recorded during the Summer Index Period can be found on the MCDEP SUMMER HABITAT DATA SHEET and should be recorded on this sheet, as described below. Data sheet entries for all Summer Index Period physical habitat variables are based on observations within or from the 75 m site only, unless otherwise specified.

In all cases where it is necessary to differentiate the left bank of the stream from the right bank, the left and right are determined while facing downstream.

#### **Front of form:**

**Stream Character.** The Stream Character portion of the MCDEP Summer Habitat Data Sheet lists 15 stream features. For each feature, an A, P, or E should be recorded in the box next to the feature indicating whether the feature is absent, present, or extensive respectively in the 75 m stream site.

**Bank Erosion.** This is a useful measurement, so do it if you have time. The length and average height of erosion on both banks of the stream, within the 75 m site should be recorded along with the severity of erosion, on the MCDEP Summer Habitat Data Sheet. In braided streams it is possible to have the total extent of eroded bank add up to more than 75 m. Since the objective of this measure is to determine the total area of erosion present at the site, this is acceptable.

**Bar Formation and Substrate.** Boxes in this portion of the MCDEP Summer Habitat Data Sheet should be filled in completely to indicate if the bar formation is absent (fill in the box next to “None”), minor, moderate, or extensive; and the dominant substrate type(s) that make up the bars in the site. More than one substrate can be selected. However substrates comprising only a minor part of the substrate should not be selected.

**Exotic Plants.** The common names of any invasive plant species observed within view of the MCDEP site should be recorded. However, the riparian area within five meters of the stream on each bank should be thoroughly searched.

**Woody Debris.** Large woody debris are defined as any natural woody structures (e.g. logs, snags, dead tree trunks), with the exception of live trees that are at least 10 cm (4 inches) in diameter and more than 1.5 m (5 feet) long. The number of large woody debris, located in the wetted portion of the 75 m stream site (instream woody debris), is counted. The number of large woody debris in the stream channel or immediate riparian area, but not in the wetted portion of the stream (dewatered woody debris) are counted separately from instream woody debris. Only those dewatered woody debris from the immediate riparian area that (in the

opinion of the evaluator) are likely to become wetted during high flows, or fall into the stream channel should be counted.

**Root Wads.** Root wads that are on live trees with a chest high trunk diameter (DBH) of at least 15 cm should be counted. These should be counted along both banks of the stream within the 75 m site. Those root wads that are in the water (instream) are counted separately from those not in the stream (dewatered). However, only those dewatered root wads that provide stability to the stream bank or that are likely to become wetted during high flows should be counted.

### **Back of form:**

**Habitat Assessment Metrics.** Five metrics: instream habitat, epifaunal substrate, pool quality, riffle quality, and velocity depth diversity are rated on a scale of 0-20 using criteria provided on the Habitat Assessment Guidance Sheet (pages 44 and 45). The scores for each of these metrics are meant to characterize a distinct aspect of stream habitat. The instream habitat metric primarily addresses habitat for fishes and epifaunal substrate is meant to rate the suitability of habitat for benthic macroinvertebrates. The general quality of riffle and pool habitats are rated based primarily on the prevalence of sufficient depth and extent of these habitats. velocity/depth/diversity provides a measure of the how well fast, slow, deep, and shallow areas are represented in the stream.

**a) Instream Habitat.** Rated based on perceived value of habitat to the fish community. Within each category, higher scores should be assigned to sites with a variety of habitat types and particle sizes. In addition, higher scores should be assigned to sites with a high degree of hypsographic complexity (uneven bottom). In streams where ferric hydroxide is present, instream habitat scores are not lowered unless the precipitate has changed the gross physical nature of the substrate. In streams where substrate types are favorable but flows are so low that fish are essentially precluded from using the habitat, low scores are assigned. If none of the habitat within a segment is useable by fish, a score of zero is assigned.

**b) Epifaunal Substrate.** Rated based on the amount and variety of hard, stable substrates usable by benthic macroinvertebrates. Because they inhibit colonization, flocculent materials or fine sediments surrounding otherwise good substrates are assigned low scores. Scores are also reduced when substrates are less stable.

**c) Velocity/Depth Diversity.** Rated based on the variety of velocity/depth regimes present at a site (slow-shallow, slow-deep, fast-shallow, and fast-deep). As with embeddedness, this metric may result in lower scores in low-gradient streams but will provide statewide information on the physical habitat found in Maryland streams.

**d) Pool/Glide/Eddy Quality.** Rated based on the variety and spatial complexity of slow- or still-water habitat within the sample segment. It should be noted that even in high-gradient segments, functionally important slow-water habitat may exist in the form of larger eddies. Within a category, higher scores are assigned to segments which have undercut banks, woody debris or other types of cover for fish.

**e) Riffle/Run Quality.** Rated based on the depth, complexity, and functional importance of riffle/run habitat in the segment, with highest scores assigned to segments dominated by deeper riffle/run areas, stable substrates, and a variety of current velocities.

**f) Embeddedness.** The percent of riffle substrates surrounded by fine substrates, such as sand and silt, is recorded based on visual observation. Riffle substrates that are examined should include the area with the fastest flow within riffle or run habitats. If no riffle is present within the 75 m site, embeddedness can be rated based on the closest available riffle located in the same reach as the site (but should not be more than 75 m away from the upstream or downstream end of the site). Several substrates should be examined within the riffle to determine the approximate average condition within the fast part of the riffle. Substrates should be examined for embeddedness prior to disturbances (such as walking or netting) that are likely to dislodge fine materials from around larger substrate.

**g) Shading.** The percent of the wetted area of the 75 m site that is shaded by overhanging vegetation or other structures is approximated based on a visual assessment.

**h) Trash Rating.** The scoring of this metric is based on the amount of human refuse in the stream and along the banks of the sample segment.

Please note that some of these metrics are quite similar to (but not exactly the same as) the **MCDEP HABITAT ASSESSMENT FIELD DATA SHEET**. Both forms should be filled out.

**Habitats to be Sampled.** Collect 20 net samples and record how many samples were taken from each type of habitat preferred by benthic macroinvertebrates. The sampling should include a combination of habitats that support the most diverse macroinvertebrate community within a sample site. These habitats often include riffles when they are present. Other habitats, in order of preference, are root wads, root mats and woody debris and associated snag habitat; leaf packs; submerged macrophytes (aquatic plants) and associated substrate; and undercut banks. Other less preferred habitats include gravel, broken peat, clay lumps and detrital or sand areas in runs. Note that, among all the habitats listed above, those in moving water are preferred to those in still water.

Use the **ANS BENTHOS TAXONOMIC LISTING** to record the macroinvertebrates you find.