

## Baseline Benthic Macroinvertebrate and Habitat Data

Sixty-six sites were sampled for benthic macroinvertebrates and evaluated for habitat (Tables 2a and 2b). Those 14 sites that did not have these analyses completed, but were sampled for water quality were too deep for ICE protocols or conditions were too unsafe for data collection. Of the sites sampled for benthic macroinvertebrates, five samples had no taxa present and 69% of the samples were dominated by the pollution tolerant family chironomidae.

While the ICE protocol is appropriately used to identify when a stream is impaired, its application to determine degree of impairment is limited especially in mine drainage impacted waters. For example, in order to calculate an IBI a sample must consist of  $200 \pm 40$  individuals, a condition which rarely occurs in mine drainage impacted waters. Furthermore, in mine drainage impacted streams that do have  $200 \pm 40$  individuals, a large percentage of taxa are often comprised of the Plecopteran (stonefly) genera *Leuctra* and *Amphinemura*. Although Plecopteran are largely considered pollution sensitive, these taxa are considered acid tolerant and their presence can erroneously inflate IBI scores.

Of those project sites that had individuals present, only four had individual counts of  $200 \pm 40$  and one of these streams, Rupley Run, was dominated by the acid-tolerant genera *Leuctra* and *Amphinemura*. Therefore IBI scores were only calculated for three streams and those scores indicated impaired conditions. However, although not attaining the required number of taxa for a calculated IBI score, several streams did contain notably high numbers of pollution sensitive taxa suggesting that if their total numbers were slightly higher they might be potential candidates for an unimpaired classification and should be further investigated. These streams include Birch Island Run, Chest Creek at Mahaffey, Babb Creek, Tangascootack Creek,



Photo: R. Dunlap

*Sampling for benthic macroinvertebrates.*



Photo: R. Dunlap

*Orange Trichoptera found in an unnamed AMD-impacted tributary in Clearfield Creek during the Project.*

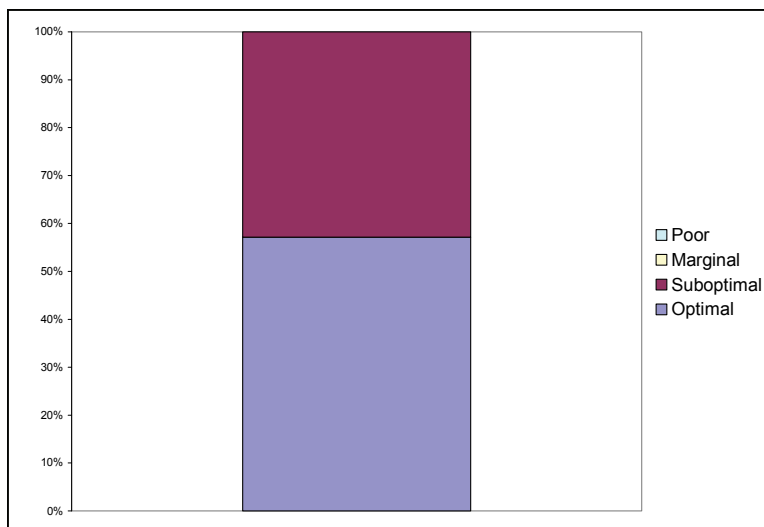


Photo: R. Kester

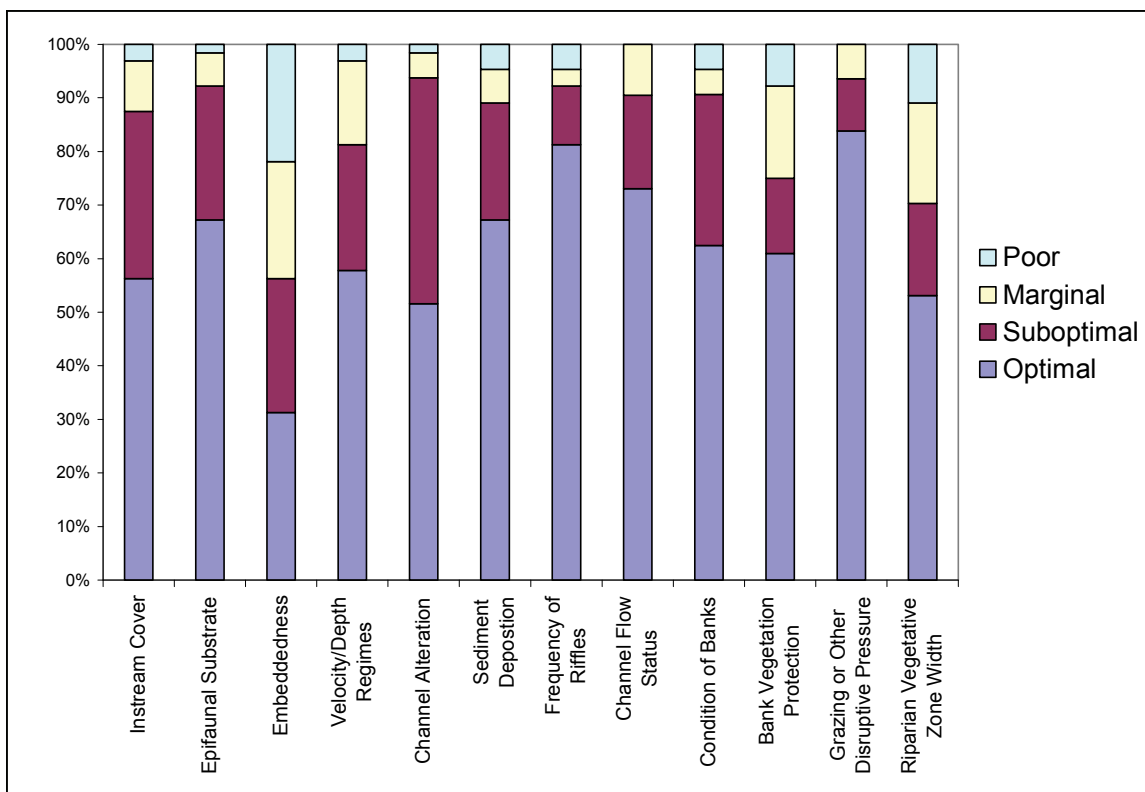
*Plecoptera found in an unimpaired stream in the West Branch Susquehanna watershed.*

Black Stump Run, Devils Run, Big Run, and Sterling Run. Since the time of data collection for this Project, Babb Creek and Sterling Run were removed from the Commonwealth's list of impaired waters further corroborating this assumption.

Habitat evaluations indicate that habitat is generally not the limiting factor throughout the study area. Fifty-six percent of all the sites had total scores above 180 indicating optimal habitat and 44% had scores indicating suboptimal conditions (Figure 11). None of the sites sampled had a total score indicative of marginal or poor habitat. The "embeddedness" parameter consistently scored lower than other habitat parameters as a result of the metal precipitation associated with AMD (Figure 12).



**Figure 11**— Percentage of habitat sites considered optimal (total score >180 and suboptimal (total score between 179 and 120).



**Figure 12** — Percentage of habitat parameter evaluated at each site as either poor, marginal, suboptimal, and optimal.