

## **Predicting Biological Potential in Connecticut Streams using a Geographic Information System**

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This project expands on prior work relating impervious land cover and drainage basin characteristics by expanding the list of watershed variables to establish the best predictors of current biological condition for freshwater streams in Connecticut. We developed a regression equation to predict macroinvertebrate multimetric index (MMI) scores using data collected by Connecticut DEP from 153 study sites and 43 watershed variables. The three most important watershed variables in explaining variation in MMI were impervious land cover, watershed size, and a measure of diversion quantity and these three variables described 61% of the variance in predicted MMI. This equation can be used to map the expected MMI score for stream segments in the State of Connecticut.

Two potential uses of this model will be discussed. In absence of actual benthic macroinvertebrate data, predicted MMI scores from this model can be used to identify streams that have "better than necessary" aquatic life and can be useful for selecting streams for Tier 2 Antidegradation Reviews under the Federal Clean Water Act. In addition, the model can also be used to provide a benchmark to compare monitored sites to identify waters that are not meeting expectations to prioritize waters for future Stressor Identification work by CTDEP.