

Continuous Water Temperature Monitoring in Wisconsin

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Biographical Sketch of Author

Cindy Koperski is a water quality biologist with the Wisconsin Department of Natural Resources in La Crosse, Wisconsin. Her job involves chemical, physical, and biological monitoring of streams in Crawford, La Crosse, Monroe and Vernon Counties. She also is responsible for reporting on the status of those waters. Her latest report is entitled The State of the Bad Axe - La Crosse River Basin, March 2002. She has been with the Department for 14 years.

Abstract

Since approximately 1995, WDNR staff have utilized new technological advances in continuous water temperature monitoring equipment. The small, low cost and waterproof devices have allowed biologists to collect continuous temperature data on hundreds of streams across the State. This monitoring effort was not cost efficient until recently due to high equipment costs - approximately \$5,000 per unit. Currently, a single unit (logger and deployment gear) costs just over \$100. This cost coupled with minimal staff time to deploy and download data has allowed biologists to collect vastly more continuous water temperature data than in the past. The devices are deployed in a variety of ways in streams across the state but equipment consists primarily of cable, PVC pipe, re-bar and sometimes a weight.

Wisconsin Department of Natural Resources staff use continuous water temperature data for a variety of reasons including: documentation of baseline water temperatures, determination of potential trout water, discernment between brown trout and potential native brook trout water, prioritization of in-stream habitat restoration efforts, documentation of temperature differences above and below structural dams and beaver dams, document effects of storm water discharges to cold water streams, aid in accurate calculation of ammonia limits for point source discharges, determination of cold, cool, and warm water stream categories, aid in development of statewide thermal limits, development of a cool water Index of Biotic Integrity for Wisconsin, development of a model to predict stream temperatures based on landscape factors, documentation of changes in water temperature after installation of urban and rural best management practices, aid in development of statewide thermal standards, and documentation of lake and impoundment stratification.