



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2004DE49B

Title: Fish communities as indicators of water quality: quantifying the response of aquatic systems to pollutant inputs in Delaware headwaters

Project Type: Research

Focus Categories: Water Quality, Non Point Pollution, Management and Planning

Keywords: biological indicators, water quality, fish communities

Start Date: 06/01/2004

End Date: 02/28/2005

Federal Funds Requested: \$3,500

Non-Federal Matching Funds Requested: \$7,000

Congressional District: At-large

Principal Investigator:

Dewayne Fox

Abstract

Since Delaware is a coastal state dominated by wetland and aquatic habitats, water quality is a top priority. Following the approval of the Clean Water Act more than two decades ago, scientists have been trying to answer questions about the state of our nation's waters. One method commonly used is to directly observe the aquatic community. The aquatic community can manifest the affects of pollutants that would normally go unnoticed. Fish assemblage structure can help in setting protection and restoration goals, determining what should be monitored, prioritizing stressors and water bodies, as well as assessing management strategies in place (EPA, 2002). Since aquatic organisms reside full time in the stressors, their demographics are changed in order to survive. The objectives of this work are to assess water quality of Delaware riverine headwaters through composition and population parameters (e.g. growth and relative abundance) of the resident fish assemblages. The project is based on historic work involving the use of the index of biotic integrity to assess stream degradation from attributes of fish assemblage in the Midwest (Karr, 1981). This work can prove a valuable metric for resource managers as they continue to monitor water quality in Delaware. It combines multiple biological response characteristics into an indicator of cumulative environmental impacts on water quality through analysis of the fish assemblage. The use

of fish assemblages as water quality indicators could become a useful tool for management. Not only will the project determine if fish assemblages can be used for water quality assessment in Delaware, but it will also determine how the water quality of Delaware streams changes over the course of a summer and how fish growth responds to those changes.