



## WATER RESOURCES RESEARCH GRANT PROPOSAL

**Project ID:** 2003ND25B

**Title:** Comparative Study of Fossil and Extant Fish Growth: Including Analyses of Mean Annual Temperature in the Geologic Record

**Project Type:** Research

**Focus Categories:** Surface Water, Wetlands, Climatological Processes

**Keywords:** Climatic change, Fossil records, global warming, Fish Growth

**Start Date:** 03/01/2004

**End Date:** 02/28/2005

**Federal Funds:** \$14,640

**Non-Federal Matching Funds:** \$29,281

**Congressional District:** 1

**Principal Investigator:**

Allan Ashworth

### **Abstract**

This Fellowship research will focus on the comparative growth of several groups of fish. Specifically, we will contrast growth of fish in the fossil record to that of living fish to determine mean annual temperature change in the geologic record. The analyses are important for fishery biologists and ecologists in North Dakota who are interested in the implications of climatic change on surface water resources and fish. For example, we will study a fossil glacial lake site in North Dakota that has produced fossil specimens of contemporary species of fish. The environment of the fossil lake changed from a cool wet climate with tamarack, black spruce, birch and aspen to a contemporary prairie-pothole region. The change occurred over a period of thousands of years thus giving us insight into ecological processes that are affected by current climate changes. North Dakota boasts some of the best long-term data sets in the form of a fossil record to measure the effect of climatic warming on a single population of fish. A fossil lake bed near Jamestown, ND will provide perhaps thousands of years of continuous data of fish growth during a warming climate.