



## WATER RESOURCES RESEARCH GRANT PROPOSAL

**Project ID:** 2004AZ57B

**Title:** Estimation of acute upper lethal water temperature tolerances of native Arizona fishes

**Project Type:** Research

**Focus Categories:** Conservation, Drought, Water Quality

**Keywords:** threatened and endangered species, fisheries, water temperature, water levels, rivers

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

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

**Federal Funds Requested:** \$8,102

**Non-Federal Matching Funds Requested:** \$16,203

**Congressional District:** All

**Principal Investigator:**

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### Abstract

Flow alterations, changes in riparian cover, and changes in stream habitat have affected stream temperature regimes throughout the southwestern United States. These changes have occurred on large river systems such as the Colorado, where temperatures are now many degrees colder than historically, and in smaller systems, such as the San Pedro, the Verde, and the Gila, where shallower water and less riparian habitat has resulted in wider diurnal fluctuations and raised water temperatures. Numerous studies conducted in other areas of the west have found that alterations in stream temperature can greatly affect the survival and habitat available to native fishes. Although most of Arizona's native fishes are listed as threatened or endangered (17 species in AZ) under the U.S. Endangered Species Act, little is known about their basic habitat requirements such as temperature tolerances. Because of significant changes in the thermal regimes of southwestern streams and rivers, the response of fishes to these changes is important. Therefore we would like to test the acute lethal temperature tolerances of the following Arizona fishes: spikedace *Meda fulgida*, loachminnow *Tiaroga cobitis*, longfin dace *Agosia chrysogaster*, speckled dace *Rhinichthys osculus*, Gila topminnow *Poeciliopsis occidentalis*, Gila chub *Gila intermedia*, roundtail chub *Gila robusta*, Yaqui topminnow

Poeciliopsis occidentalis sonoriensis, Sonoran sucker *Catostomus insignis*, and desert sucker *Catostomus clarki*. The information from this study will be useful to help biologists throughout the southwest to develop temperature criteria needed to protect and restore these sensitive native fish. These criteria could be combined with water temperature modeling to determine how changes in land-use practices might affect temperature, and ultimately the distribution and survival of the native fishes found there.