

**ABSTRACT**

Growth of brown trout has declined in the Mainstream Au Sable River, Michigan, since the early 1970s. Many anglers of the Au Sable River have become interested in possible genetic improvement of the brown trout stock as a method for increasing the number of trophy-sized fish. Wild brown trout from streams in the western United States have been suggested as the source for "genetically fast-growing" brown trout. Data on age, growth, density, and other parameters were assembled and reviewed for an array of western "blue-ribbon" trout streams. A variety of western and Michigan stream segments were ranked based on the growth characteristics of their brown trout populations. Selection of wild riverine stocks for possible importation and testing in Michigan waters was based primarily on factors such as growth, potential disease threats, absence of recently stocked brown trout, and potential availability. A two-phased experimental design to compare the survival and growth potential of selected Montana strain brown trout and Mainstream Au Sable River brown trout in Michigan waters was developed and described. The feasibility of this proposed study will ultimately depend upon the cooperation of the State of Montana and the disease status of the wild brown trout stocks.