# The Fish Community and Fishery of Big Manistique Lake, Luce and Mackinac Counties, Michigan in 2003–04 with Emphasis on Walleyes, Northern Pike, and Smallmouth Bass

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## Introduction

Michigan Department of Natural Resources (MDNR), Fisheries Division surveyed fish populations and angler catch and effort at Big Manistique Lake, Luce and Mackinac County, Michigan from April 2003 through March 2004. This work was part of the Large Lakes Program, which is designed to improve assessment and monitoring of fish communities and fisheries in Michigan's largest inland lakes (Clark et al. 2004).

The Large Lakes Program has three primary objectives. First, we want to produce consistent indices of abundance and estimates of annual harvest and fishing effort for important fishes. Initially, important fishes were defined as species susceptible to trap or fyke nets and/or those readily harvested by anglers. Our goal is to produce statistics for important fishes to help detect major changes in their populations over time. Second, we want to produce growth and mortality statistics to evaluate effects of fishing on species which support valuable fisheries. This usually involves targeted sampling to collect, sample, and mark sufficient numbers of fish. We selected walleyes *Sander vitreus*, northern pike *Esox lucius*, and smallmouth bass *Micropterus dolomieu* as special-interest species in this survey of Big Manistique Lake. Finally, we want to evaluate the suitability of various statistical estimators for use in large lakes. For example, we applied and compared three types of abundance and three types of exploitation rate estimators in this survey of Big Manistique Lake.

The Large Lakes Program will maintain consistent sampling methods over lakes and time. This will allow us to build a body of fish population and harvest statistics to directly evaluate differences among lakes or changes within a lake over time. Big Manistique Lake is only the ninth lake to be sampled under the protocols of the program; thus, we were limited in our ability to make valid comparisons among lakes. As the program progresses, we will eventually have a large body of netting data collected under the same conditions that will facilitate comprehensive analyses.