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Compilation of Databases on Michigan Lakes

James E. Breck

Michigan Department of Natural Resources
Fisheries Division
Institute for Fisheries Research
212 Museums Annex Building
Ann Arbor, MI 48109-1084

Abstract.–In order to do the best job of fisheries management, fisheries biologists need ready access to relevant information. This report describes databases that have recently been compiled and progress in making the information more available to fisheries biologists through development of relational databases and a geographic information system (GIS). The following 14 datasets have been converted to relational database tables: water bodies from the Michigan lake inventory of Humphrys and Green (N = 32,121); Michigan coldwater lakes (N = 1,345); names of Michigan lakes appearing on U.S. Geological Survey topographic maps (N = 6,904); water quality data for lakes with a public access site and a surface area of at least 50 acres (N = 730); Schneider's compilation of lake morphology and water quality (N = 387); Schneider's compilation of Lower Peninsula lakes sampled for fishes with large seines (N = 229); lake characteristics from Fusilier's atlas and gazetteer of Michigan lakes (N = 297); lakes sampled in the Michigamme Project (N = 66); watershed area and perimeter for natural lakes at least 100 acres in area (N = 831 individual lakes and 40 multi-lake groups); names of Michigan lakes sampled as part of the U.S. Environmental Protection Agency's National Acid Precipitation Assessment Program (N = 172); list of reports published by Fisheries Division as research, technical, special, and status of the fishery resource reports (N = 2,404); public boat launch sites on inland lakes (N = 920); Laarman's compilation of fish length at age (N = 26,086 records representing 1,135 lakes and 18 species); and names of inland lakes with angler creel survey data (N = 183 lakes, N = 596 lake-year combinations). Metadata were prepared for these data sets. One critical task in this project was assigning a unique lake code to items in various data sets so that multiple sources of information about particular lakes could be linked. Another critical task was assigning the unique lake code to GIS lake points and polygons so that values from various data sets could be displayed as maps. This compilation of databases also contains a collection of digital images of lake maps. Over 160 lake maps have now been converted for use in GIS analyses and for calculation of lake volume and mean depth. These compiled data sets can now be used in the development of decision-support tools for lake and fisheries management, such as estimation of lake fetch and thermocline depth and estimation of walleye population characteristics from lake variables.

In order to do the best job of fisheries management, fish biologists need ready access to relevant information. Much useful information on Michigan lakes has been collected by various workers under different studies for a variety of purposes, however such information is contained in multiple documents, some of which are not widely available (e.g.,