

## EXECUTIVE SUMMARY

The Manistee River Assessment is one of a series being prepared by the Michigan Department of Natural Resources, Fisheries Division, for river basins in Michigan. This assessment described fisheries and related resources, identifies issues that are of concern to fishery managers, and outlines management options to address those issues. The assessment provides an organized approach to identifying opportunities and solving problems. It provides a mechanism for public involvement in management decisions, allowing citizens to learn, participate, and help determine decisions. It also provides an organized reference for Fisheries Division personnel, other agencies, and citizens who need information about a particular aspect of the river system.

The document consists of four main sections: introduction, assessment, management options, and public comment and response. The assessment is the nucleus of the document. Physical, biological, and cultural characteristics of the watershed are described under twelve sections: geography, history, biological communities, geology and hydrology, channel morphology, soils and land use patterns, special jurisdictions, recreational use, dams and barriers, water quality, fisheries management, and citizen involvement.

Management options are provided. These options are consistent with the mission statement of the Michigan Department of Natural Resources, Fisheries Division and convey four approaches to correcting problems in a watershed. These include options to protect and preserve existing resources, options requiring additional surveys, opportunities for rehabilitation of degraded resources, and opportunities to improve areas or resources beyond existing conditions. Options are related primarily to aquatic communities; but wildlife, botanical, and social factors are noted where they are important and directly affect aquatic communities. Some options are simple, but most are complex, sometimes involving management of the entire watershed and taking many years to accomplish. Management options listed are not necessarily preferred by Fisheries Division, but are intended to provide a foundation for public discussion and comment, eventually resulting in the selection of acceptable management objectives for the Manistee River and tributaries.

The Manistee River is located in the northwest portion of Michigan's Lower Peninsula and drains an area about 1,780 square miles. The mainstem is 232 mi long, with a 671 foot drop in elevation from the source to Lake Michigan. Portions of eleven counties are included in the watershed: Antrim, Benzie, Crawford, Grand Traverse, Kalkaska, Lake, Manistee, Missaukee, Osceola, Otsego, and Wexford. There are three major tributaries: Bear Creek, North Branch of the Manistee, and Pine rivers. Other important tributaries include Goose, Portage, Big Cannon, Hopkins, Manton, Buttermilk, Wheeler, Slagle, and Pine creeks. Also, there are hundreds of other tributaries that empty directly into the mainstem or named tributaries.

The watershed was settled beginning in mid-1800s, near the mouth of the mainstem. Interior portions were not exploited until the late 1800s, when lumbering affected river habitat and adjacent uplands. Hydroelectric development followed in the early 1900s, along with placement of small dams on tributaries.

The Manistee River has one of the most stable flow patterns in the country, producing good conditions for fish reproduction and survival. These stable flows are from the watershed geology that provide excellent groundwater flows. The settlement agreement, between Consumers Energy Company, Michigan Department of Natural Resources, Michigan State Historic Preservation Officer United States Department of Interior-Fish and Wildlife Service, United States Department of

Interior-National Parks Service, and United States Department of Agriculture-Forest Service established stable flows for the lower portion of the mainstem that formerly had peaking high and low flows below the hydroelectric facilities.

An accurate description of the original fish communities in the Manistee River watershed is not available. Michigan grayling disappeared from the watershed shortly after 1900 despite efforts to culture it in hatcheries. The demise of the grayling was due to three factors: over fishing; habitat destruction; and introduction of exotics (brook trout). Muskellunge are another rare species originally more abundant in the Manistee River. It may be present today in very limited numbers. Lake sturgeon, a formerly abundant species that used high gradient waters now inundated by Tippy Dam for spawning, is making a comeback with stable flows.

Seventy-six species of fish made up the native fish community. Thirteen non-native species of fish have been introduced into the watershed through accidental and intentional introductions or migrations. One species, the Michigan grayling, has been extirpated. Three other species: pugnose shiner, tadpole madtom, and white bass are historic records and may be extirpated. Additional fish surveys are needed to accurately determine distributions of these and other species in the watershed.

Two species are listed as threatened in Michigan: lake herring and lake sturgeon. Lake herring are thriving in several inland lakes in the watershed. Lake sturgeon are found below Tippy Dam and in the Hodenpyl backwaters.

Comprehensive studies of invertebrates, amphibians, and reptiles in any portion of the watershed are unavailable. Information on special concern, threatened, and endangered species are in the Michigan Natural Features Inventory. Ten species of invertebrates are listed, eight have special concern status and two, Lake Huron locust and Karner blue butterfly, are proposed to be listed as threatened. Three reptile species, one snake and two turtles, are listed as special concern. Two mammals (martens-threatened and woodland vole-special concern) and eight bird species (three are endangered: Kirtland's warbler, loggerhead shrike, and king rail; and four are threatened: bald eagle, common loon, red-shouldered hawk, and osprey) are listed in the Natural Features Inventory.

Urban and agricultural development are minor in the watershed. However, the number of rural homes and seasonal dwellings are on the rise. Upland erosion into watercourses is significant. Water withdrawal for irrigation is not a factor on the mainstem, but is an issue on some tributaries. Hundreds of road and stream crossings exist and are major sediment producers.

Sixty-three dams and impoundments are located in the watershed. Two major backwaters, both operating hydroelectric dams, are located on the mainstem. Most other dams are small recreational structures on tributaries. All dams are detrimental to the overall health of the river because they impound high gradient habitat, eliminate areas of river habitat, raise water temperatures, trap sediment, nutrients, and large woody debris, kill fish, block fish movement, and fragment aquatic habitats. Five dams are wildlife floodings sited on cold water tributaries and are candidates for removal.

Overall water quality in the Manistee River is very good. Deep permeable sands and limited development have served to preserve water quality. The stream bed quality however is degraded in many portions due primarily to human activity. Chemical contaminants causing public health advisories on eating fish in the watershed include mercury, PCBs, chlordane, and PAHs. DDT, DDE, and dioxins are other chlorinated organic chemical contaminants in fish that can affect the health of wildlife species. Organic contaminants in fish have been reduced significantly since the 1970s and are primarily found in species that use Lake Michigan for part of their life history. Mercury is a

concern for inland fish species and levels do not appear to be decreasing; atmospheric emissions appear to be the predominant source of mercury.

Fishing and canoeing are the two most popular recreational uses of the Manistee River. Other forms of outdoor recreation include camping, picnicking, hiking, cross-country skiing, bird watching, trapping, and hunting. Certain types of fishing are limited on the mainstem due to blockage by hydroelectric dams.

The Manistee River and tributaries are all mostly trout streams. From the headwaters to M-72, the wild trout fishery is good and improving. The reach from M-72 to Smithville is also good, but natural reproduction is supplemented with annual brown trout stocking. Between Smithville and Hodenpyl Dam, the brown trout fishery is good, with walleye and smallmouth becoming more abundant. The reach between Hodenpyl and Tippy Dams is high gradient, containing a mix of brown trout, walleye, and smallmouth bass. The area below Tippy Dam is a potamodromous fishery for steelhead and salmon. There are walleye and smallmouth present in this area, but primarily below High Bridge Road. The two backwaters offer a good walleye, pike, smallmouth bass, and panfish fishery. All tributaries, except one or two, have good to excellent resident trout fisheries. Bear Creek is similar to the mainstem below Tippy Dam in that it is primarily a potamodromous fishery. The Pine River is unique in that it is an excellent fishery for brook, brown, and non-migratory rainbow trout. The North Branch of the Manistee is a good wild brook trout stream.

Although there are ongoing bank stabilization projects on the mainstem, Bear Creek, and the Pine River, there remains great potential for additional enhancement and rehabilitation. The scope of projects range from remediating road and stream crossings to addition of large woody debris (primarily in the mainstem) to implementing and enforcing best management practices for all activities. All of these activities would increase natural reproduction and reduce reliance in the stocking of trout. Stocking of muskellunge below Tippy Dam is recommended. Fish passage over the two hydroelectric dams would more fully use the rivers potential, while increasing natural reproduction and angler catch.

Many agencies have regulatory responsibilities that affect the river system. These range from small local governments to large federal bureaucracies. The Federal Energy Regulatory Commission has authority over hydroelectric dams. The US Fish and Wildlife Service, US Forest Service, US Department of Agriculture, Natural Resources Conservation Service, and US Environmental Protection Agency have responsibilities for land and natural resources management. The Michigan Departments of Natural Resources and Environmental Quality manage many natural resources and regulatory activities.

Local governmental interests, along with the eleven counties, include 67 townships and 18 cities, villages and towns. Local agencies conduct zoning and other land management activities. County drain commissioners have responsibility for legally designated drains. Several organized local fishing and hunting groups and recreational groups have shown an interest in management of the watershed. Lake Michigan sport-fishing groups and river guides are intensely interested in the river due to migratory fish species that seasonally use the river.

The first draft of this assessment was made available to the public through direct mailings and posting in local libraries from July through December 1996. Comments from three public meetings and written comments were incorporated into the final assessment. A fisheries management plan will be written based on the final assessment and public comment received. Updates of both the assessment and management plan will occur.