

EXECUTIVE SUMMARY

Introduction

This is one in a series of river assessments being prepared by the Michigan Department of Natural Resources, Fisheries Division, for Michigan rivers. This report describes the physical and biological characteristics of the Black River, discusses how human activities have influenced the river, and will serve as an information base for managing the river's future.

River assessments are intended to provide a comprehensive reference for citizens and agency personnel who need information about a river. These assessments provide information to help identify opportunities and solving problems related to aquatic resources in watersheds. It is hoped that this river assessment will increase public awareness of environmental challenges for the Black River and serve to promote a sense of public stewardship and advocacy for the resources of this watershed. The ultimate goal is to increase public involvement in the decision making process to benefit the river and its resources.

This document consists of four parts: an introduction, a river assessment, management options, and public comments and responses. The river assessment is the nucleus of the report. The characteristics of the Black River and its watershed are described in twelve sections: geography, history, geology and hydrology, soil and land use patterns, channel morphology, dams and barriers, special jurisdictions, water quality, biological communities, fishery management, recreational use, and citizen involvement.

The management options section of the report identifies a variety of challenges and opportunities. These management options are categorized and presented following the organization of the main sections of the river assessment. They are intended to provide a foundation for public discussion, setting priorities, and planning the future of the Black River.

Geography

The Black River drains an area of 710 square miles in Michigan's Thumb, north and west of the City of Port Huron. The main stem is 73 miles long, and its major tributary streams total an additional 118 miles. There are very few natural inland lakes in the Black River watershed. The headwaters originate in the Minden Bog area of Minden Township, Sanilac County, located at the border with Huron County. From its origin, the river flows south, largely through relatively flat agricultural areas of Sanilac County. Upon nearing the south border of Sanilac County, it enters, and is entrained by, a large, natural valley of glacial origin. Major parts of this portion of the main stem valley (about 16 river miles) through St. Clair County are contained within the Port Huron State Game Area managed for public recreation by the Michigan Department of Natural Resources. Where the main stem valley reaches the south end of Lake Huron, it turns in the southeast direction to Port Huron, where it flows into the St. Clair River.

For the purpose of discussion, the Black River main stem is divided into four major segments based on valley segment descriptions and artificial modifications of major river channels. The uppermost segment runs from north of Minden Bog to just upstream from the confluence of the main stem with Elk Creek. Segment 2 receives water from Elk Creek, which drains the largest subwatershed, and continues downstream to a point several miles below the City of Croswell where the river channel takes on a much more natural form. In Segment 3 the gradient quickly changes from relatively low at the upper end to very good in the rest of this segment as the river travels down towards the archaic

lake plain. The river valley becomes more natural as it continues downstream and about 16 miles of the Black River main stem are contained within the Port Huron State Game Area. Segment 3 has the remaining subwatersheds entering as tributaries along its course, including Black, Silver, Plum, and Mill creeks. Segment 4 is 11 miles long encompassing the main stem from the Wadhams Road bridge to the mouth in the city of Port Huron. This segment of the main stem is characterized as very low to negligible gradient with significant affect from changing water levels in the upper St. Clair River. Stocks Creek, Howe Drain, and the Black River Canal comprise the only significant tributaries

History

The southern extent of the pine district (where pine could be profitably harvested) began just below the mouth of the Black River and extended across the state to Lake Michigan. The lumbering industry in Michigan got underway in the Black River watershed in the 1740s, because the area was the closest and had the most accessible source of cedar and pine for building ships, forts, and other structures around Detroit. Michigan's first steam mill was built on the Black River in 1832, five years before statehood. Historians have determined that by 1880 the pineries of St. Clair and Sanilac counties had been completely depleted. Vast areas of the Black River watershed were composed of flat, poorly drained soils and many areas had significant wetlands in the early settlement period. Canals were dug along many riverine systems to promote soil drainage and flow of water away from the land for agricultural development. The Black River watershed continues to be severely affected by historical and current drainage practices.

Geology and Hydrology

In the upper reaches, the Black River has a very low gradient flowing over mostly fine to medium textured lacustrine deposits that are easily eroded. However, as it travels south the river increases gradient as it crosses between end moraines consisting of fine to very coarse grained glacial till. These deposits provide gravel, cobbles, and boulders for valuable substrate. Fish and other aquatic animals are typically most diverse and productive in river sections with higher gradient and well established riffle-pool sequences with good hydrogeomorphic diversity. The major end moraine to the east of Black River extends from Huron County south through much of St. Clair County separating the watershed from Lake Huron. At approximately Wadhams Road in St. Clair County, the Black River begins to head east cutting across beach ridges and moraines before entering the St. Clair River.

Soils and Land Use Patterns

Soils in the Black River basin are chiefly (80%) silt loams and sandy loams and are drained somewhat poorly to very poorly. A very large percentage of the land has been converted to agricultural production. Forested land went from 443,000 acres in 1800 to 85,000 acres in 1992. Cultivated lands account for most of the 359,000 acre difference. There are 10 cities, towns, and small villages in the Black River watershed the largest of which is Port Huron with a population of approximately 32,000 people.

Channel Morphology

The channel length and gradient varied considerably among segments, with the gradient being 2.9 feet per mile in Segment 1, only 1.9 feet per mile in Segment 2, 3.7 feet per mile in Segment 3 and undetectable in Segment 4. Black Creek, one of the smaller tributaries, had the highest gradient at 9.6 feet per mile. Mill Creek also has a relatively high gradient at about 5.0 feet per mile.

Dams and Barriers

While most large river systems in Michigan have many dams, there are only three major dams in the Black River watershed, two on the main stem of the river and one on Mill Creek. Dams have a direct affect on a river environment by altering the natural cycle of water flow, fragmenting river continuity, blocking fish passage, and modifying downstream flows, temperature, water quality, and habitat.

Water Quality

Stream water quality is a very important determinant affecting aquatic organisms and the health of the entire aquatic community within a watershed. Nonpoint source pollution is the greatest factor that degrades water quality in this watershed. The entire Black River and most, or all, tributaries suffer greatly from high sediment loading due to erosion from widespread channelization, extensive cultivation, and to some extent, poor land management. Unnaturally high-sediment loadings to a river system create a myriad of serious geomorphic and biological problems. The NPDES Phase II permitting process provides a framework with three components (municipal storm sewer, industrial storm water, and construction storm water) for addressing storm water and flow issues. Management plans for watersheds in St. Clair County are being developed under the leadership of the County's Stormwater Coordinator to fulfill the Environmental Protection Agency (EPA) and Michigan Department of Environmental Quality (MDEQ) Phase II National Pollutant Discharge Elimination System (NPDES) regulations. There are 52 NPDES permitted discharges to the surface waters in the Black River watershed.

Special Jurisdictions

Several government agencies have regulatory responsibilities that affect the river. The Michigan Department of Natural Resources and Department of Environmental Quality manage natural resources and state-owned lands, and enforce environmental regulations. The U. S. Fish and Wildlife Service (USFWS), U. S. Department of Agriculture, and U. S. Environmental Protection Agency all have responsibilities for specific federal mandates. Counties and townships are involved in planning and zoning activities. County drain commissioners have authority to establish designated county drains which allows for construction, maintenance, inspection, and improvement of all county drains. There are almost 1,000 miles of designated drains in the Black River watershed.

Biological Communities

Little information on the history of the fish community in the Black River watershed is available prior to 1972, and no creel surveys have been conducted on the main stem or its tributaries. Fisheries surveys since 1972 and other sources going back even further, show that 89 species of fishes occurred in the Black River drainage during the past 65 years. That is a relatively high number because there are essentially no natural lakes in the watershed. Most species are native, although three species have colonized and four species were introduced (some intentional and others accidental). Conditions prevalent due to watershed development have favored tolerant species with broad habitat requirements. Deforestation and agricultural activities have reduced flow stability and increased sediment load in streams throughout the watershed. The abundance of silt-tolerant fish species have increased, whereas fishes requiring clean gravel substrate or clean water with aquatic vegetation at some point in their life cycles have declined. Introduced pest species including common carp, purple loosestrife, and Phragmites have had negative effects on native fishes and invertebrates.

Fish sampling was conducted by Fisheries Division at numerous sites throughout the watershed during 1972 through 2006. Seventy-nine species of fish were caught, with mimic shiner, common shiner, bluntnose minnow, bluegill, white sucker, and golden redhorse being the most frequently seen species among sites. Recent fish sampling found that species richness has improved over the past four decades. These findings support the contention that there was improvement in water quality over the past thirty years. Earlier, the Black River supported a very diverse fish community and it is reasonable to think that it can be restored.

Invertebrates are less mobile than fish so their community can provide a direct indication of water quality. Water sampling was conducted by Michigan Water Resources personnel in 1973 to evaluate effects from municipal and industrial discharges in the vicinity of Crosswell. Aquatic habitat in the Black River at that time was seriously compromised by pollution and the invertebrate community consisted mainly of tolerant species. Surveys have been conducted about every ten years since and have shown that a substantial improvement in habitat quality and invertebrate fauna has occurred. However, much of the watershed is still heavily affected by nonpoint source pollution.

Within the Black River watershed there are 19 of Michigan's native mussel species which are state listed as threatened, endangered, or of special concern with three of these species also being federally listed as endangered. The Black River, surveyed in 2003 by Michigan Natural Features Inventory (MNFI), found evidence of 22 native mussel species, 17 live and 5 shell only. In 2005, another survey observed 15 living species plus 6 more identified from dead shells. The Black River is a potential native mussel refuge because it has few boat launches and has relatively high mussel diversity which makes it less likely that zebra mussels will be introduced. Recent surveys of the East Sydenham River in Ontario documented populations of many mussels that were presumed to be common historically in the Black River, but are now rare or extirpated. The USFWS, at their Genoa National Fish Hatchery in Wisconsin, is culturing endangered and threatened mussels for rehabilitation into the wild. It would be feasible to culture and reintroduce some of the endangered and threatened mussels into the Black River watershed, assuming their habitat has recovered sufficiently to support them.

Minden Bog is a very unique and ecologically valuable natural resource to the State of Michigan. It is the only raised bog in Michigan and likely the most southerly example of a raised bog in North America. Minden Bog is truly domed forming parts of the headwater areas of the Cass and Black river watersheds. The raised portion of the bog is isolated from the water table and receives its water only from precipitation. Much of the natural bog that remains is in the Black River watershed and managed by MDNR Wildlife Division as part of the Minden City State Game Area.

The Port Huron State Game Area has many unique natural features making it the most valuable habitat for native plants and animals. It contains a large, contiguous riparian zone protecting the river and providing a variety of habitat types connected by the waterway. The game area supports many areas labeled by MNFI as "special botanical projects." Extensive ravines along the Black River, heavily wooded with hemlock, provide shelter and moisture similar to habitats normally found in Michigan's Upper Peninsula. These ravines are known to support over 200 species of plants including broad-leaved sedge (state endangered SE), large toothwort (state threatened ST), beak grass (ST), wahoo, goldenseal (ST), broad-leaved puccoon, heart-leaved plantain (SE), trailing arbutus, painted trillium (SE), pink moccasin flower, twisted stalk, rattlesnake plantain orchid, beaked hazelnut, and golden saxifrage.

Fishery Management

Intensity of fishery management of the Black River ranges from very low in Segments 1, 2, and 4 to moderate in Segment 3 and Mill Creek. Past management practices have included fish stocking, fishing regulations, and chemical reclamation to reduce competitors. A number of fish species have

been stocked at various times and locations throughout the watershed. Current significant sport fisheries include seasonal steelhead and walleye fisheries on the lower portion of the Black River and Mill Creek. There are also occasional stocking efforts at several human-made ponds which are not connected directly to the Black River.

Recreational Use

Recreational use of the Black River is very limited in the upper two segments, but is high in Segment 3 and moderate in Segment 4. The recreation potential of portions of the watershed in state game areas is huge due to their large area, public ownership, and accessibility by Southeast Michigan residents. Many people use these areas for fishing, canoeing, bird watching, picnicking, trapping, and hunting. However, the potential use of the entire river is limited by public access and excessive silt and turbidity. Improved public access throughout the river and corrective action to reduce erosion will improve recreational potential.

Citizen Involvement

The aquatic environment in upper segments of the Black River watershed is very degraded because land managers have chosen to modify stream channels and artificially drain extensive areas of the landscape with little regard for native animal and plant communities. It will take great effort to increase public awareness and restore natural features of the upper Black River watershed. For the lower two segments of the watershed, St. Clair County government, by building a strong coalition of many local governmental agencies and public interest groups, has made very significant progress in obtaining that goal.