

EXECUTIVE SUMMARY

This is one in a series of river assessments being prepared by the Michigan Department of Natural Resources (MDNR), Fisheries Division for Michigan rivers. This report describes the physical and biological characteristics of the Tahquamenon River, discusses how human activities have influenced the river, and serves as an information database 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. By pulling together and synthesizing existing information, river assessments show the intertwined relations between rivers, watershed landscapes, biological communities, and humans. This assessment shows the influence of humans on the Tahquamenon River, and is intended to increase public concern for the river. We hope it will encourage citizens to become more actively involved in decision-making processes that provide sustainable benefits to the river and its users. To help achieve this, assessments identify problem areas within a river system and identify potential opportunities for alleviating them. Assessments also identify the types of information needed to better understand, manage, and protect the river.

This document consists of four parts: an introduction, a river assessment, management options, and public comments (with our responses). The river assessment is the nucleus of the report. It provides a description of the Tahquamenon River and its watershed in twelve sections: geography, history, geology and hydrology, soils and land use patterns, channel morphology, dams and barriers, water quality, special jurisdictions, biological communities, fishery management, recreational use, and citizen involvement.

The management options section of the report identifies a variety of actions that could be taken to protect, restore, rehabilitate, or better understand the Tahquamenon River. These management options are categorized and follow 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 Tahquamenon River watershed.

The Tahquamenon River drains a modest watershed of 790 square miles, mostly in Luce County. A few tributaries originate in northwest Mackinac County and western Chippewa County. Its mainstem flows 87 mi generally eastward to drain into Lake Superior in western Whitefish Bay. For simplicity of discussion, the mainstem is divided into five segments, each having distinct characteristics of size, channel shape, flow characteristics, channel gradient, and water quality. Those segments are named, from headwaters to Lake Superior: Upper River, Dollarville, Marsh Drainage, Middle River, and Lower River. A sixth segment discusses the East Branch Tahquamenon River separately due to its fishery values, land ownership, and Natural and Scenic designation.

Although Native Americans resided around the perimeter of the watershed, they were not able to live along much of the mainstem, due to an extensive contiguous marsh system. Even so, the mainstem was an important canoe route from the Fox River system to the west, extending east to Lake Superior. Early Europeans likewise generally stayed out of the watershed's interior, following native travel routes along the perimeter. It was only when lumbermen arrived that humans penetrated the watershed in large numbers. When the lumber era ended, the river again became quite isolated from human activity. Current river-related activities include hunting, trapping, and pleasure boating. The majority of water users, however, are anglers. Various fish surveys and angler comments suggest that they are targeting good fisheries throughout the watershed.

The Tahquamenon River and most tributaries originate in coarse glacial till or outwash materials, flowing down relatively steep gradients. Those streams that have been surveyed support good brook

trout populations. Roughly one-half of the watershed, however, is comprised of a large wetland complex located in the center of the watershed and following the mainstem. All large tributaries flow into the wetland several miles from the mainstem, and both their gradient and velocity virtually disappear at the same point. The wetland complex acts to moderate discharge fluctuations during the summer and fall by absorbing and then slowly releasing water from rainfall events. Snowmelt flooding, however, produces an unusually large flood event, when compared with streams in the Lower Peninsula. Much of the Tahquamenon River watershed receives considerable lake effect snowfall due to its proximity to Lake Superior, and the marsh snowmelt event usually releases all the accumulated snow within a 2-week time period.

Headwater soils are predominantly sand and poorly consolidated. Past logging practices, some improperly designed road crossings, and other riparian land uses around 1900 accelerated erosion into the streams. For example, some straight-line dredging occurred 120 years ago to remove the sharp stream bends and facilitate log transport. Other streams were cleared of “debris” for the same reason. Even so, little evidence remains of this environmentally heavy-handed logging, and stream and riparian habitats within this watershed are surprisingly natural. Decades of natural healing have produced streams that meander, vegetated banks, and woody debris within the stream channel. Sand bedload is the most significant remaining evidence of the extensive land and timber management effort, as many lower gradient stream sections still suffer from excessive sand sediment load, pools filled in with sand, and subsequent declines in aquatic invertebrate communities. Despite the sand, however, most fish communities appear well balanced with good species diversity, likely owing to the healthy riparian community and contributions of terrestrial invertebrates, leaf litter as nutrient sources for periphyton and invertebrates. Large instream wood structure provides a stable surface for periphyton and invertebrate colonization. A current road-crossing inventory found very little erosion from any of the present road crossings. As the local population increases, there will be a desire to develop many more river or streamside areas. Education, vigilance, and funding will be needed to keep erosion at the lower, more natural levels, and to minimize sedimentation due to human activity in the riparian corridor.

The Tahquamenon River watershed is very natural; forests and wetlands comprise about 90% of the watershed. Little evidence of previous logging-related habitat destruction remains. Even so, the forest type changed after the last pine complexes were lumbered almost 100 years ago. The intervening time has allowed the forest to stabilize into a mixture of upland and conifers, upland and lowland hardwoods, wetlands, and marshes. The distribution of wetlands corresponds closely to occurrences of lacustrine deposits of clay, silt, sand, and gravel. As a result, urban development is restricted or impossible in many of the wetland areas, which serve to further maintain the natural condition. Further stream protection is provided by the riparian forests, which stabilize streambanks, shade stream channels, help control surface runoff, and provide periodic large woody material to the stream channel that is used as habitat by aquatic organisms. Several smaller tributaries were recently surveyed by Michigan Department of Environmental Quality (MDEQ) to quantify habitat quality and the aquatic invertebrate community. All streams were judged acceptable. Researchers, however, documented an increase in quality and diversity of the aquatic invertebrate community in a range from downstream to upstream, and from the east side of the watershed to the west.

The Tahquamenon River has a unique gradient profile. Although its average gradient is 3.2 ft/mi, the majority of the river has almost 0 ft/mi gradient. The 12-mi Upper River segment contains an average gradient of 12 ft/mi, and the best trout fishing waters here average 14 ft/mi for 7.3 mi. The highest slope in the Dollarville segment occurs mostly in the upstream portion, and the gradient slowly lessens as the river flows off glacial outwash and onto organic deposits. It averages 2.8 ft/mi for the first 7.4 mi of the segment, and only 0.9 ft/mi for the last 11.5 mi. The highest gradient of the Marsh Drainage segment exists immediately downstream from the Dollarville Dam. The river drops 3 ft at the dam, and then another 4 ft through about 3 mi to the M-123 Bridge (1.3 ft/mi). The river then

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averages 0.15 ft/mi through the next 13 mi to the downstream boundary of the segment at the Sage River mouth. The Middle River segment averages only 0.09 ft/mi. The river through the Upper and Lower falls complex drops about 96 ft. Below the Lower Falls downstream rapids area, the river averages 0.25 ft/mi through the last 16 mi to Lake Superior. Most tributaries follow a similar gradient pattern, with headwater areas containing gradients of 10–36 ft/mi, while the main branches contain considerably lower gradients. The lower gradients are generally due to the huge marsh complex that each stream flows through to join with the Tahquamenon River.

There are only seven dams in the Tahquamenon River watershed. Three were built and maintained by MDNR, Fisheries Division, and the ponds are managed as brook trout fisheries. Two additional small dams are privately owned. They each impound 4 acres. Fish surveys have shown brook trout populations at sites downstream from each dam. The 61-acre Halfway Lake and its lake level control dam are privately owned, and situated in the headwaters of Auger Creek. Dollarville Dam impounds 1,100 acres and was cooperatively built by local residents, state, and federal authorities.

Water quality in the watershed is generally good, primarily due to the lack of human development within the basin. There are only two point source discharges permitted in the watershed, the Newberry Wastewater Treatment Plant and the Tahquamenon Falls State Park. MDEQ, Water Bureau, monitors the effluents. Agriculture is rare in the watershed. Despite minimal local pollution, air transport brings pollutants such as mercury into the watershed from outside sources. As a result, the Tahquamenon River watershed is included in the statewide general fish consumption advisory for large predator fish based on mercury bioaccumulation.

Headwater and tributary high gradient stream temperatures provide acceptable thermal regimes for brook trout. The lower gradient tributary sections warm as they flow into the large wetland that encompasses most of the Tahquamenon River mainstem, producing temperatures that are only marginal for trout. The mainstem from County Road 415 north of McMillan downstream to Lake Superior is classified for coolwater species including muskellunge, northern pike, walleye, and yellow perch. A recent thermal study found that coolwater sport fish species have adequate coolwater refuge in lower segments along the river's mainstem, as high summer water temperatures fall quickly with increasing depth in the several deep holes.

Jurisdiction over the river generally belongs to the State of Michigan. Sport fishing regulations, consumption advisories, fish stocking protocols, chemical discharges, and habitat manipulations are all determined or approved by the various entities of state government. In addition, local units of government influence the river through construction and maintenance of road crossings. The Tahquamenon Falls State Park is a special use area managed by the MDNR, Parks and Recreation Division. The upstream half of the East Branch Tahquamenon River lies within United States Forest Service (USFS) ownership. That portion of the river that flows through USFS property has been designated as a Wild and Scenic River. The section extending from the headwaters in section 5, T45N, R05W downstream about 11 mi to section 20, T46N, R06W was designated "recreational" for its exceptional brook trout fishing, while the small remaining section within USFS ownership west of section 20 was designated "wild." The existing wild brook trout population was recognized in the designation as an outstanding value of the river that must be preserved.

The Tahquamenon Falls have existed since the early period of glacial retreat. Thus, they have continually provided a migration barrier for fish coming in from Lake Superior. With only a few rare human-caused exceptions, the species diversity is representative of an earlier era of geologic time. There are no carp, sea lamprey, alewives, smelt or other introduced species in the mainstem upstream of the Upper Falls. Hulbert Lake has always been a private lake, and therefore subject to private stocking. It was historically stocked with lake trout, smelt, ciscoes, and green sunfish. Those species are found nowhere else in the upper river. Fisheries Division has over the last 120 years stocked

brown trout, rainbow trout and splake, in addition to species already present in the watershed. Native American legend associated lake sturgeon with the lower Tahquamenon River, but no Fisheries Division survey on record has documented any sturgeon in the river.

The Upper River segment is designated as first quality trout water. The segment characteristics are relatively high stream gradient, excellent large woody structure, and an abundance of exposed rock cobble and gravel. Considerable habitat enhancement work conducted in recent years has protected eroding banks, exposed rock and gravel beds, and scoured the sand bedload to produce deeper holding waters. The new fish community reflects a traditional brook trout – mottled sculpin species complex, with large numbers of wild brook trout.

The Dollarville, Marsh Drainage, and Middle River segments all support excellent fisheries for northern muskellunge, northern pike, walleye, and yellow perch. Concurrent with somewhat warmer annual temperatures in recent years, angler input and survey results indicate increases in the number of both smallmouth and largemouth bass. The Lower River segment supports excellent seasonal fisheries for walleye, steelhead, and yellow perch, with good summer catches of northern pike, northern muskellunge, and smallmouth bass.

A variety of amphibians, reptiles, birds, mammals and plants occur within the watershed. Several are threatened or endangered. The number of bird species either inhabiting or passing through the watershed is striking. Much of the migratory traffic consists of birds moving to Whitefish Point, Chippewa County. It is a common concentration area for migratory species flying north into Ontario in the spring, or back south again in the fall. Purple loosestrife, Eurasian milfoil, and zebra mussels are the only aquatic pest species documented in the watershed. Purple loosestrife has been identified along several road and wetland margins, while Eurasian milfoil and zebra mussels have each been documented in only one lake in this watershed.

Angling is by far the most popular riverine activity. The number of kayakers and canoeists are increasing, generally targeting the Marsh Drainage segment as McPhee's Landing is the only public access between Newberry and the Upper Falls. Their trips are generally day trips for fishing or wildlife viewing, as there are no acceptable campsites within the marsh complex. Almost all of the shoreline acceptable for camping further downstream in the Middle River segment is privately owned.

A watershed council would provide a mechanism for people of diverse interests to work together to protect and preserve existing resources. Such a multi-agency forum for exchange of information, ideas, visions, and goals does not currently exist.