

FISHES OF THE MUKWONAGO RIVER, WISCONSIN

by

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The Mukwonago River is a small portion of the Fox River drainage, which is located in southeastern Wisconsin. The Fox River drainage comprises an even smaller portion of the Mississippi River basin, and flows southwest, entering the Illinois River near Ottawa, Illinois. In a recent state survey conducted by the Wisconsin Department of Natural Resources (1974 to 1981), in which the drainage systems of Wisconsin were categorized, the Fox River corresponds to basin 210 (Fago, 1982). This basin encompasses parts of the following Wisconsin counties: Kenosha, Racine, Walworth, and Waukesha.

The Mukwonago River is an outflow of Phantom Lake near Mukwonago, Wisconsin, just west of Hwy. 15. It is located in Waukesha County near the Walworth County line. The portion of the river sampled was subdivided into four study sites. They were located just below several impoundments which stabilized flow from Phantom Lake. Approximately 60' below the second impoundment were a series of three large culverts which permitted flow beneath a dirt road; another 300' below the culvert was the support for a railroad trestle; and 400' further downstream, the river flowed under a highway bridge. Sampling continued past the highway bridge for another 300' (Fig. 1).

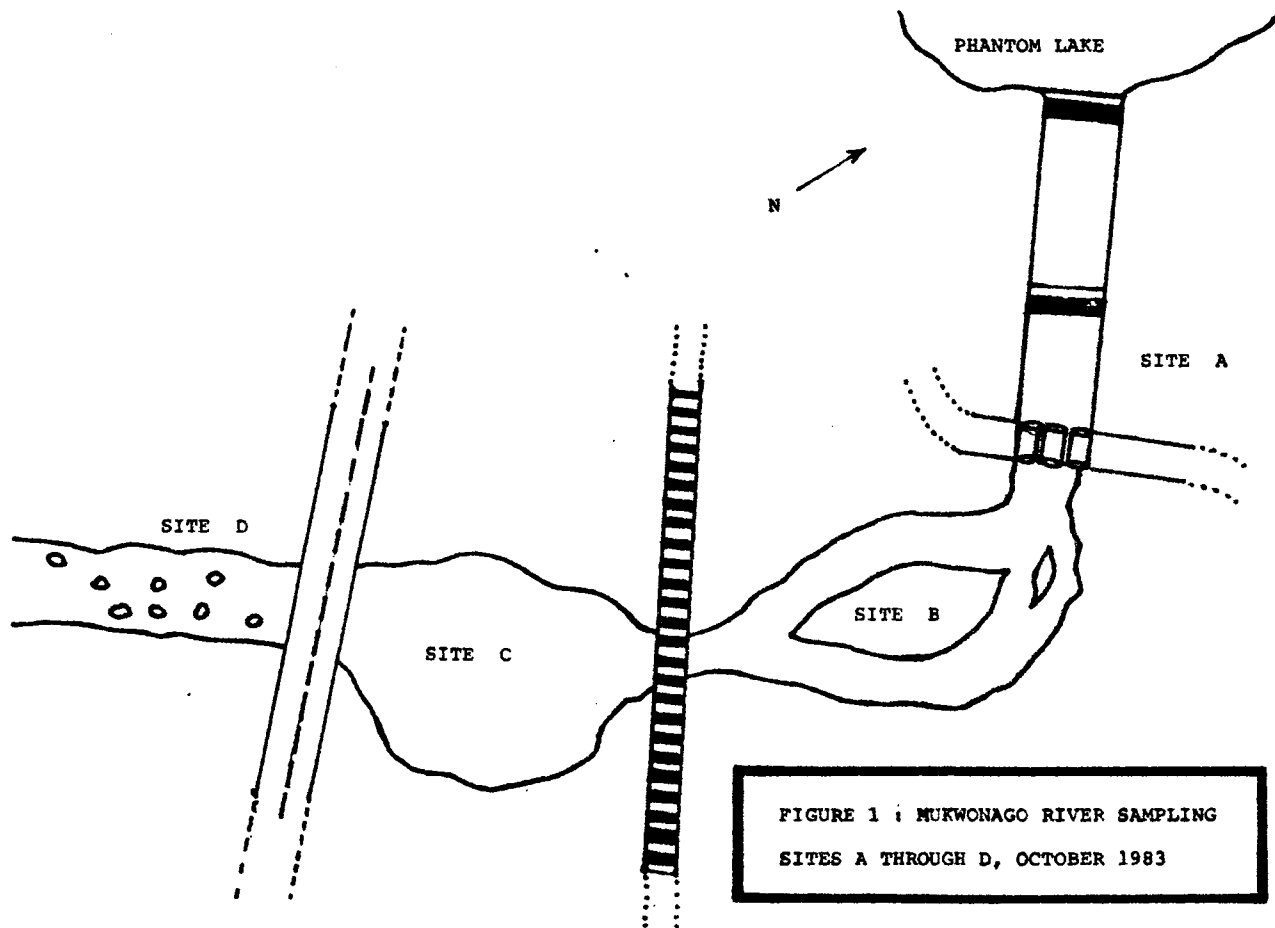
Collection began around 10:30 a.m. on the 17th of October, 1983. Collecting personnel included Simon, (NANFA member Nancy) Garcia, and Trainer. Gear included a 12', 1/8"-mesh minnow seine; dip nets; and sweep nets. Fish were identified in the field by Simon and released.

Water quality in the Mukwonago River system below the culverts was excellent, with visibility to the substrate. Above the culverts, to the impoundments, water was murky, visibility not usually exceeding 12". Water temperature was 50° F (10° C) while air temperatures hit a high of 60°F (15.5°C).

Site A: From the Impoundment South to the Culverts (map next page)

In this area, water depth ranged from 3' near the vertical concrete slab shoreline to 4½' near the dam. Substrate consisted mainly of large cobble and boulders; vegetation consisted of algae. The shoreline was abutted by tall grasses and open fields. Current velocities were fast, approaching 2 ft./sec. Maximum stream width at this site was approximately 20', and the stream was channelized to the culverts.

Few fish species were present at Site A, probably due to the impoundment. Only a single species was collected: the Yellow Perch (Perca flavescens).



Site B: From the Impoundment South to the Trestle--More Variety

From the impoundment south to the railroad trestle, water depth ranged from several inches just below the culverts to 1½' near where the island widened the river, back to 3" near the trestle. Two riffles were present, just below the culverts and just below the island, the latter just above the trestle and leading through it. Substrates in the riffles consisted mostly of fine gravel and small cobble. On the east bank, vegetation consisted of tall grasses, cattails, and bullrushes. The west bank was mostly covered by deciduous trees and shrubs. The maximum width of the riffles was approximately 10' to 15'.

The middle portion of the site consisted of slower current, less than ½ ft./sec. The river was subdivided into two sections by an island. Maximum width in each of the two side braids was 10' to 15'. The substrate was silt-covered sand and cobble with dense aquatic macrophytes along the edges. Aquatic plants included Coontail (Ceratophyllum demersum); water lilies (Nuphar sp.); and water milfoil (Myriophyllum sp.). The island and shore held various sedges, cattails, and bullrushes.

At Site B, a variety of species distributed in both the pool and riffle habitats were collected. In the riffle below

the culvert were the Brook Silverside (Labidesthes sicculus); Common Shiner (Notropis cornutus); Emerald Shiner (N. atherinoides); Brown Bullhead (Ictalurus nebulosus); Rainbow Darter (Etheostoma caeruleum); Johnny Darter (E. nigrum); Logperch (Percina caprodes); and Blackside Darter (P. maculata). The island habitat included the following species: Common Shiner; Emerald Shiner; Redfin Shiner (Notropis umbratilis); Tadpole Madtom (Noturus gyrinus); Blackstripe Topminnow (Fundulus notatus); Warmouth (Lepomis gulosus); and Bluegill (L. macrochirus). Behind the island near the railroad trestle, the Shorthead Redhorse (Moxostoma macrolepidotum) was collected; in the riffle, several Redfin Shiners were seined.

Site C: From the Trestle South to the Highway Bridge; the Greatest Variety

Below the railroad trestle, south to the highway bridge, the river widened to approximately 35'. Water depths ranged from 2' to 3'. Cobble substrates included more sand in interstitial spaces, and a layer of silt covered the entire bottom. Clumps of Coontail and pondweeds (Potamogeton spp) were common. Current velocities were slow--less than 0.25 ft./sec.

Site C produced the greatest diversity of species, including the Grass Pickerel (Esox americanus vermiculatus); Redfin Shiner; Stoneroller Minnow (Campostoma anomalum); Blackstripe Topminnow; the endangered Starhead Topminnow (Fundulus notti dispar; see below); Tadpole Madtom; Rock Bass (Ambloplites rupestris); Pumpkinseed (Lepomis gibbosus), Warmouth; Orangespotted Sunfish (L. humilis); Largemouth Bass (Micropterus salmoides); White Crappie (Pomoxis annularis); Rainbow Darter; Fantail Darter (Etheostoma flabellare); and Johnny Darter.

Site D: Below the Highway Bridge

The habitat below the highway bridge was relatively homogeneous, with stream widths reaching approximately 20'. Larger rocks and boulders jutted out of the water, and substrates consisted of fine gravel and small cobble. Water velocities were moderate, ranging from one to two ft./sec. in reaches. The east bank was abutted by deciduous trees while the opposite bank was open grass fields.

Species were few here. These included: Emerald Shiners; Carp (Cyprinus carpio); Rainbow Darter; Fantail Darter; Johnny Darter; and Blackside Darter.

Overview: "Specially Protected Species"

A total of 25 species distributed among eight families were collected from the Mukwonago River. This included the endangered Starhead Topminnow (Fundulus notti dispar) and a "watch species," the Redfin Shiner (Notropis umbratilis).

The State of Wisconsin currently has eight species on its endangered list, six species on its threatened list, and 18 species on its unofficial watch list (Fago, 1982). Endangered status is reserved for any species or subspecies in danger of extirpation. Its continued existence as part of the state's wildlife resources is held to be in jeopardy. Threatened

status includes any species or subspecies that could become endangered in the foreseeable future. A watch species is a species or subspecies that may or may not be holding its own. Watch species are under special observation to identify conditions that could cause further decline, or any factors that could enhance their survival in the state (Chap. NR 27, Wis. Admin. Code).

In the neighboring Rock River basin, a total of 93 species were collected by the Wisconsin Department of Natural Resources (Fago, 1982). No specimens of the Starhead Topminnow were collected. Specimens of the Redfin Shiner were collected, but not in the same numbers as in the present study. Greene (1935) reported the Starhead Topminnow from Mukwonago Mill Pond and from Lake Beulah. Both records of known occurrence were from the lower Fox River system near the border of Walworth and Waukesha Counties. The most recent collection from the Mukwonago River below Phantom Lake occurred in the fall of 1974; the species was described as common (Becker, 1983). This agreed with our findings in terms of relative abundance. The Redfin Shiner was reported at several sites in the Fox River drainage (Greene, 1935). Greene described the species as being of general occurrence in the southern half of the state. The rest of the 25 species described in the present study were also collected in the neighboring Rock River basin (Fago, 1982).

The Starhead Topminnow was collected near clumps of vegetation, usually in areas without current. The substrate in these areas was silt-covered cobble. The distinct head pattern of the topminnow could be seen as the fish swam along the water surface. Smith (1979) reported the species to inhabit glacial lakes and clear, well vegetated floodplain lakes, swamps, and marshes. Additional populations may be present upon further investigation in the lakes.

During the present study, 25 Starhead Topminnows were collected, along with 20 Redfin Shiners. None were retained due to the status of the species as described by the Wisconsin DNR.

Most Abundant Species

The five most common species in terms of abundance in the Mukwonago River, according to our study, were: Emerald Shiner, Fantail Darter, Rainbow Darter, Common Shiner, and Starhead Topminnow. Only single specimens of Brown Bullhead, Carp, Rock Bass, Largemouth Bass, and Yellow Perch were captured among the four collecting sites.

Literature Cited

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