

LOWER MOHAWK RIVER FISHERIES

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Overview

The 257 km Mohawk River is the second longest river in New York State with the lower 47 km located within the Capital District (Albany-Schenectady-Troy) area, the state's fourth largest metropolitan area. The river is also part of the New York State Barge Canal system. The magnitude of the resource, its close proximity to large numbers of people, and environmental assessment needs relating to commercial development necessitated updating fisheries information on the lower 122 km of river from Five Mile Dam, located 7.1 km upstream of Lock 16, downstream to the Hudson River. In 1979, the New York State Department of Environmental Conservation (NYSDEC) Region 4 Fisheries Office began a study of the lower Mohawk River to better understand its fisheries potential and management needs. A number of studies, primarily on the Crescent Dam to Lock 16 reach, were completed that culminated in the development of a fisheries management plan for the lower Mohawk River in 1994. Highlights of these fish studies are summarized.

River Description

Completion of the Erie Barge Canal in 1918 resulted in the canalization or obliteration of the succession of riffles, pool, and still waters that characterized the natural Mohawk River. Approximately 135 km of the 257 km free flowing river was changed to a series of permanent and seasonal impoundments. The 122 km lower Mohawk River contains five permanent dams, nine movable dams, nine locks, and five operational hydropower facilities. Another five locks and two guard

gates are located within the 3.7 km landcut canal joining the Mohawk and Hudson Rivers that bypasses the 29.4 m high Cohoes Falls. All but 10.3 km of the lower river is canalized with 113 km containing a 61 m wide by 4.3 m foot deep shipping channel.

The Mohawk River can be classified into three channel basin types based on shape and use: natural river, river canal, and power pool. In the lower Mohawk River, the natural river section comprises a total of 10.3 km and is found in three reaches: Five Mile Dam to Lock 16, the Diversion Dam to Cohoes Falls, and at the mouth above the flooded branch sections to the New York State Dam. The river canal section extends 76.3 km from Lock 8 to Lock 16. The dams at Locks 8-15 are movable and only in place during the May through November navigation season and removed during the winter. These seasonal impoundments range in size from 74 to 248 ha. When these dams are removed, the river becomes free flowing throughout this reach. The 36.2 km power pool section extends from Lock 8 downstream to the Diversion Dam, Cohoes Falls to the New York State Dam, and the flooded stream sections at the mouth. These impoundments are permanent and range in size from 37 to 771 ha.

Effects of Erie and Barge Canal Construction
Completion of the Erie Canal in 1825 and the Erie Barge Canal in 1918 created a bypass around the Cohoes Falls that resulted in a direct waterway link between the Hudson River and Great Lakes. This bypass allowed fish to move east or west through the canal system to establish populations in other

watersheds or within the Mohawk River. Fish moving west through the canal system include sea lamprey, alewife, and white perch. Fish moving eastward include smallmouth bass and gizzard shad. This movement through the canal system is still occurring. Freshwater drum, moving eastward, were first documented in 1990 at Lock 7 and are now present throughout the river.

Riverwide Fish Surveys

Fish populations throughout the lower Mohawk River were sampled with trap nets, electrofishing, and gill nets primarily in June between 1979 and 1983. Seining and trawling efforts occurred August through October in 1982 and 1983. Fifty-six fish species were recorded compared to 48 during the 1934 surveys. Six species collected in 1934 were not collected during the 1979-83 surveys but 12 additional species were collected during the later survey. During the June sampling, blueback herring were the most abundant fish collected followed by smallmouth bass, white sucker, yellow perch, brown bullhead, and rock bass. Numerically, game species represented 12.1% of the total fish collected compared to 25.4% for panfish, and 62.6% for all other fish species. The most numerous species collected by seine were young-of-year blueback herring, emerald shiner, spottail shiner, and bluntnose minnow.

Differences in Fish Community Structure by Channel Basin Type

The June, 1979-83, sampling data indicated major differences in fish communities in the four permanent power pool impoundments and the eight seasonal river canal impoundments. Comparisons of the relative percentage of the three fish categories-game fish, panfish, and other fishes-show that the lower Mohawk River fish community changes from panfish dominance in the power pool impoundments to game species dominance in the river canal impoundments. Excluding the anadromous blueback herring, game and panfish in the power pool impoundments represented 9.4% and 65.2% of the fishes collected compared to

36.3% and 23.8% in the river canal impoundments.

Angler Use

The lower Mohawk River supports a popular, warmwater fishery. In 1982 on the Crescent Dam to Lock 16 reach, the estimated total fishing pressure was 115,245 trips or 389,033 hours which is equivalent to 45.9 trips/ha or 154.9 h/ha. Shore and boat anglers made an estimated 59,622 and 55,623 trips, respectively. No other large (> 405 ha) warmwater system in New York at the time was known to support fishing pressure exceeding the 154.9 h/ha recorded from the lower Mohawk River.

Angler Catch and Harvest

Shore and boat anglers each caught (creeled plus release) about 0.9 fish/h in 1982 on the lower Mohawk River; however shore anglers creeled 0.29 fish/h compared to the 0.15 fish/h for boat anglers. Smallmouth bass, the dominant species caught by both shore and boat anglers were caught at a rate of 0.36 and 0.73 fish/h, respectively. For shore anglers, smallmouth bass comprised 41% of the total catch followed by rock bass (17%), yellow perch (9%), crappie (6%), and suckers (5%). For boat anglers, smallmouth bass comprised 78% of the total catch followed by rock bass (8%), walleye (3%), fallfish (3%), bullhead (3%), and yellow perch (1%). Anglers removed an estimated 77,626 fish weighing an estimated 25,930 kg from the Crescent Dam to Lock 16 reach during the May through September fishing season in 1982 for a per hectare yield of 30.9 fish and 10.3 kg. The per hectare harvest of 9.6 smallmouth bass weighing 4.3 kg was the highest recorded for a New York water with a 30.5 cm size limit.

Changes in Smallmouth Bass Abundance, Size Structure, and Fishery

Smallmouth bass were the dominant game fish in the lower Mohawk River and the second most abundant species collected during the 1979-83 riverwide surveys. Electrofishing catch rates ranged from 17.3 fish/h in the

Crescent impoundment to 155.1 fish/h in the Lock 10 Pool and averaged 70.7 fish/h for the entire lower river. Except for the Lock 15 Pool, smallmouth bass catch rates were highest in the seasonal impoundments. The electrofishing catch rates were very high and indicative of a dense population. By comparison, spring electrofishing catch rates in eight New York lakes from 1978 to 1980 averaged 8.9 smallmouth bass/h with individual collections ranging up to 43.2 smallmouth bass/h.

The quality of the smallmouth bass fishery was assessed through the 1982-86 angler diary program. During this five year program on the Crescent Dam to Lock 16 reach, cooperators averaged 1.10 smallmouth bass/h and 0.51 legal (≥ 30.5 cm) bass/h. These catch rates were high and indicative of a very high quality fishery. In the St. Lawrence River, long recognized as one of the premier smallmouth bass fisheries in New York, diary cooperators from 1978 to 1980 recorded catch rates only half as high as those recorded in the lower Mohawk River. St. Lawrence cooperator catch rates averaged 0.60 fish and 0.32 legal fish/h, respectively.

In a similar 1996-97 diary cooperator study, smallmouth bass catch rates averaged 0.48 fish and 0.31 legal fish/h. Although these catch rates are still indicative of a good bass fishery, it represented a decline of 57% in the overall catch rate and a 40% decline in the legal catch rate from the very high 1982-86 cooperator catch rates. The diary data suggested a decline in smallmouth bass abundance, which was verified in a 1998 electrofishing survey of the Lock 8 Pool. This survey also revealed a change in the size structure of the bass population with fewer smaller bass and more larger bass present.

Smallmouth bass studies were conducted in the Locks 8, 10, and 14 Pools from 1985 through 1988 and these studies were repeated in 1999 and 2001 to verify the changes in bass abundance and size structure observed during the diary study and 1998 electrofishing study.

In the 1985-88 studies, the electrofishing catch rate in the Lock 8, 10, and 14 Pools averaged 44, 69, and 35 fish/h compared to the average of 15, 9, and 8 fish/h recorded during the 1999 and 2001 studies, respectively. The RSD16 of smallmouth bass in the Lock 8, 10, and 14 Pool averaged 3%, 1%, and 0% in the early study and 29%, 40%, and 26% in the later study, respectively. The same three pools were electrofished in 2006 and the results were similar to those recorded in 1999 and 2001. The data suggests that the reduction in smallmouth bass abundance and the increase in larger fish occurring throughout the lower river in the eight seasonal impoundments are permanent. The reasons for this shift in abundance and size structure are not known but may be related to the establishment of zebra mussels in 1991. It is also not known whether a similar shift has occurred to the bass populations in the permanent impoundments downstream of Lock 8.

Contaminants in Fish

Contrary to popular opinion, all lower Mohawk River fish are safe to eat except for those fish caught at the mouth. The mouth is limited to catch and release fishing only because of elevated PCB levels in Hudson River fishes. This catch and release regulation applies to the Hudson River between the Troy Dam and Hudson Falls and includes all tributaries to the first impassible barrier which in the Mohawk River is the New York State Dam between Cohoes and Waterford. Currently, there are no health advisories on fish consumption from the lower Mohawk River. Historically, PCBs were a problem in the Mohawk River downstream of Lock 7 that resulted in an eat none health advisory for white perch and a one meal per month advisory for smallmouth bass in this 12 mile reach. However, these advisories were lifted in April, 1994, due to declining PCB levels which have fallen even further since then. White perch PCB levels in 1983, 1987, 1992, and 2006 were 7.3, 3.4, 1.3, and 0.5 ppm, respectively. Smallmouth bass PCB levels in 1983, 1987, 1992, and 2005 were 2.5, 2.1, 0.8, and 0.2 ppm, respectively. The US Food and

Drug Administration (USFDA) tolerance level for PCBs is 2.0 ppm. In the 2005 fish collections below Lock 7 and between Locks 8-9, mercury concentrations were consistently below the USFDA action level of 1.0 ppm. The three p,p'-DDT related compounds were frequently detected but their total concentrations were generally well below 0.1 ppm and well below concentrations considered harmful to human health or the environment. Several compounds were not detected in any sample. Non-detectable compounds include mirex, photomirex, trans-chlordane, heptachlor, heptachlor epoxide, aldrin, and lindane.

Summary

The lower Mohawk River supports an abundant and diverse warmwater fishery of high quality. It is a dynamic system whose fish community is still undergoing change. The smallmouth bass fishery has shifted from one dominated by fish in the 10-13 inch size range to one now dominated by fish 14 inches and larger. Freshwater drum, first collected in 1990, are now present throughout the river and locally abundant in some areas. Blueback herring abundance is declining throughout the river. Northern pike, once very rare, now provide trophy fishing opportunity throughout the river.

The river's close proximity to large numbers of people makes it an important recreational asset provided the public has access to the river and water quality remains good. Public and fee boat launch sites are located throughout the lower Mohawk River between Crescent Dam and Lock 16. Only the Lock 9 and 11 Pools have no boat launch sites. Shore fishing is most popular at the locks.

The lower Mohawk River fisheries management plan, completed in 1994, summarizes the historical background and the fishery. Fisheries issues were identified and included the following: hydropower development, stream flow fluctuation, stream diversion, zebra mussels, fishing ban, law enforcement, commercial fisheries, and fishing tournaments. Nineteen management strategies were developed including 31 specific recommendations for implementation. This management plan should be updated.