

Prepared in cooperation with the

New York State Department of Environmental Conservation

Spatiotemporal trends in fish assemblages of the Mohawk River

An extensive resurvey of fish assemblages throughout the main stem Mohawk River is being implemented to assess the effects that species introductions and changes in land use, water quality, and water management may have had on fish communities since the last (1979-83) basin-wide inventory.

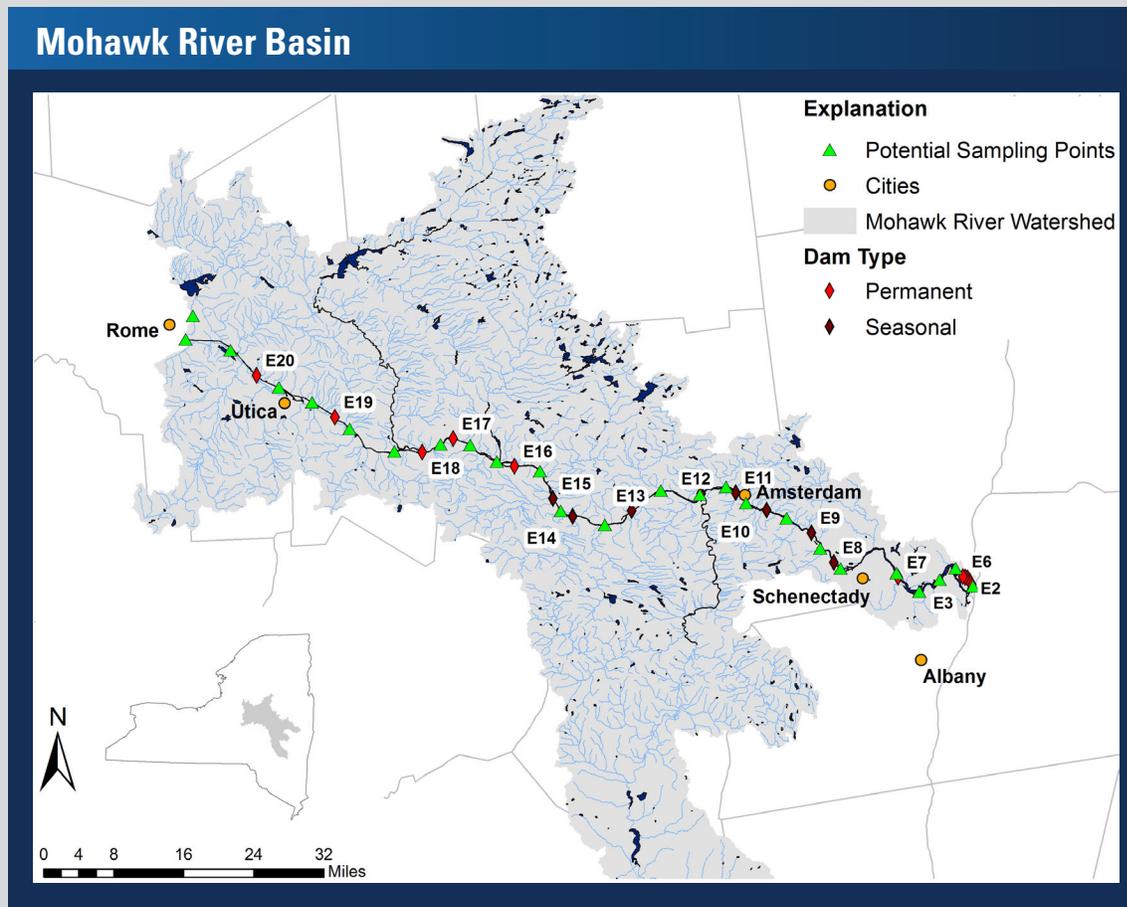
State Department of Environmental Conservation (NYSDEC) from 1979-1983. Some key findings of this research include:

Problem

The mainstem of the Mohawk River extends from Lake Delta Dam near Rome, NY downstream to its confluence with the Hudson River near Cohoes, NY. It supports a diverse fishery that is used extensively by recreational anglers.

Smallmouth bass (*Micropterus dolomieu*) and walleye (*Sander vitreus*) are among the most popular game species with anglers but past biological surveys have documented at least 56 fish species that inhabit the river. An extensive fish survey of the Lower Mohawk River was last conducted by the [New York](#)

- the river supported an abundant and fast growing smallmouth bass population
- anadromous blueback herring (*Alosa aestivalis*) were a critical forage species for the ecosystem
- fish communities were notably different in permanent versus seasonally impounded reaches
- the river received heavy angling pressure



Luis Rodriguez (left) and Scott George (right) net fish during a 2014 electrofishing survey



Photograph courtesy of NYSDEC (2014)

Mature pumpkinseed captured during 2014 surveys



Photograph courtesy of U. S. Geological Survey (2014)

The river has apparently undergone many changes in the 30 years since this survey. The nonnative and invasive zebra mussel (*Dreissena polymorpha*), which was first observed in 1991, spread throughout the lower river by 1993. Freshwater drum (*Aplodinotus grunniens*) became established around 1990 and northern pike (*Esox lucius*) have increased in abundance as well. Meanwhile, the runs of anadromous blueback herring are becoming weaker and preliminary data suggest smallmouth bass are becoming less abundant. Finally, upgrades of the flashboards at several of the seasonal dams may allow for the repeated raising and lowering of these devices during the warm weather season to mitigate flood impacts. The extensive changes that have occurred in this ecosystem over the past 30 years warrant a comprehensive fish-community inventory to assess the current status of fish assemblages in the mainstem of the Mohawk River.

Approach

The [U. S. Geological Survey \(USGS\)](#) and the NYSDEC will conduct fish community surveys at a minimum of 24 locations during 2014 and 2015. The surveys will be completed using boat electrofishing of near-shore habitats. The resulting data will be analyzed to a) assess the condition of current fish assemblages, b) identify the relative abundance of common species, c) identify spatial differences associated with seasonal or permanent impoundments, and d) assess temporal changes in the fish community over the past 30 years. Field efforts will also focus on collections of American eel, blueback herring, and smallmouth bass where practical in order to obtain data and tissues needed to support collaborative research and monitoring efforts.

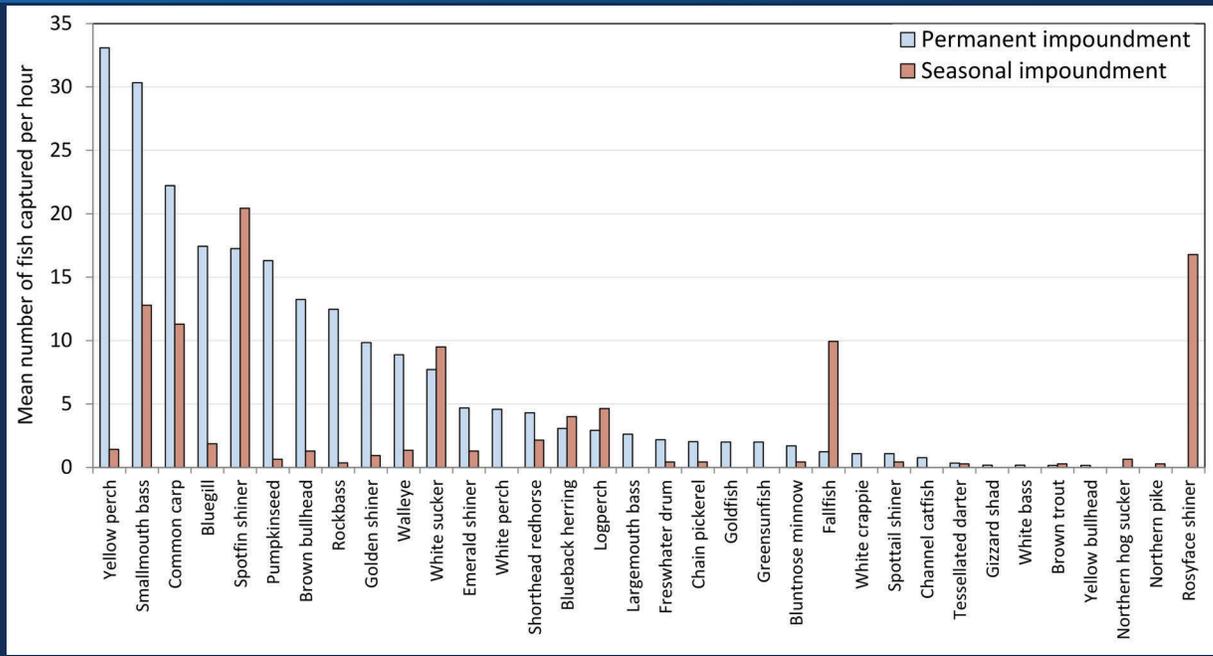
Preliminary Results

Analysis of data collected at 12 sites in 2014 indicates the Mohawk River continues to support diverse fish communities. These surveys identified 34 species and suggest

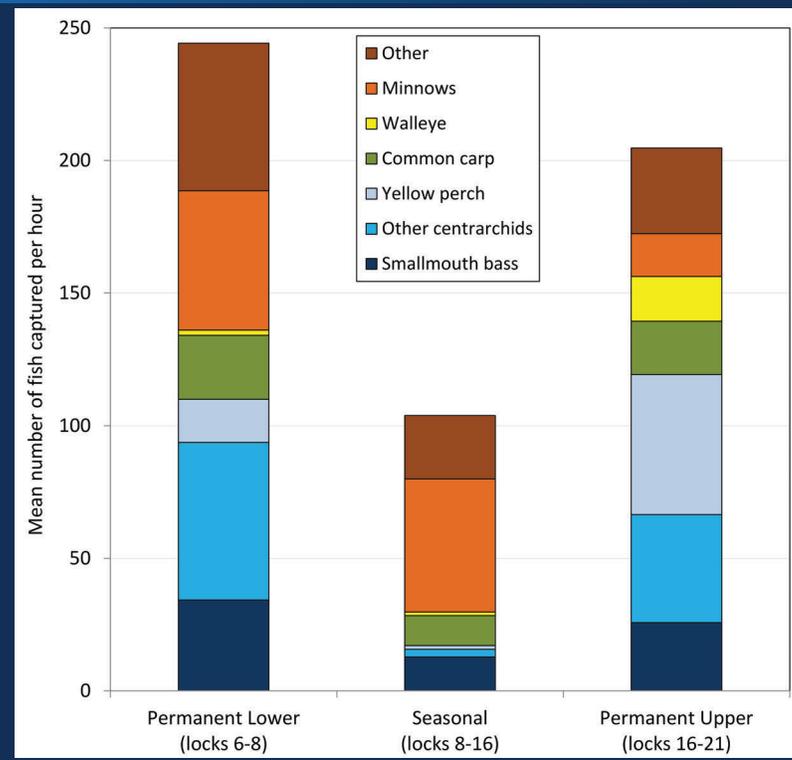
that the abundance and/or distribution of these species varies between permanent and seasonal impoundments. Lentic fish often associated with ponds and lakes (e.g. sunfish) were generally more abundant in the permanent

impoundments while minnows were a larger component of the fish communities in seasonal impoundments. When all species were considered, mean catch per hour in permanent impoundments was more than double that of seasonal impoundments.

Average abundance of fish species in permanent and seasonal impoundments



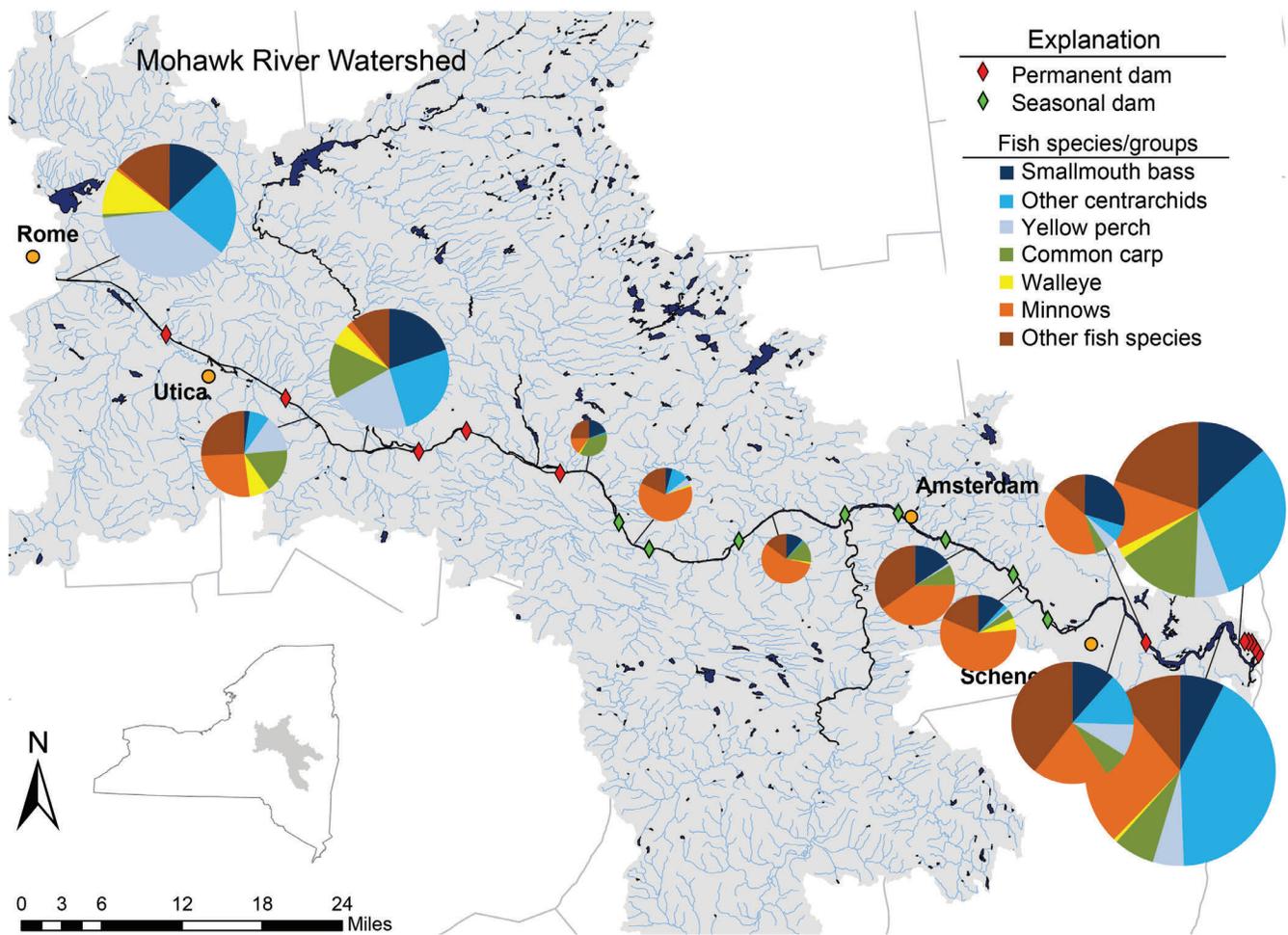
Average abundance of major species/groups by river section



When permanent impoundments were subdivided into lower (locks 6-8) and upper (locks 16-21) sections, differences between fish communities in all three sections were also apparent. For example, yellow perch were moderately abundant in the lower permanent reaches, rare in the seasonal reaches, and highly abundant in the upper permanent reaches. The “Other centrarchids” group, composed primarily of largemouth bass and sunfish species, was a major component of fish communities in the permanent impoundments but was poorly represented in the seasonal reaches.

Proportional pie charts showing relative abundance for major species/groups at each site.

(Chart size reflects the overall abundance of fish.)



Next steps:

Fish surveys at 12 more sites in 2015 will provide additional data needed to confirm or reject this preliminary interpretation. The entire contemporary dataset (2014-15) will be compared to 1979-83 surveys to assess temporal changes in the fish community. Additionally, scale samples collected from smallmouth bass and walleyes in the permanent lower, seasonal, and permanent upper reaches will be used to determine the age of these individuals. This information will be used to determine if the growth of these species differs between reach type or between the 1979-83 and current surveys.

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