

Appendix A: Fish

Shortnose Sturgeon

Acipenser brevirostrum

Federal Listing	E
State Listing	E
Global Rank	G3
State Rank	SH
Regional Status	V. High



Photo by Robert Michelson

Justification (Reason for Concern in NH)

Shortnose sturgeon are federally listed as endangered and presumed extirpated in New Hampshire. Until a recent detection of a tagged fish by an acoustic telemetry receiver in Great Bay, shortnose sturgeon had not been observed in New Hampshire waters since 1971 (M. Kieffer, U.S. Geological Survey (USGS) Biologist, personal communication). Population declines due to the development of barriers (such as dams) in coastal rivers, alteration of spawning habitat, and commercial harvest have been well documented.

Distribution

Shortnose sturgeon are found in large coastal rivers and estuaries from New Brunswick south to Florida. Early records suggest that sturgeon were once able to move as far upstream on the Merrimack River as Amoskeag Falls (Noon 2003). They were also once thought to be common in the Piscataqua River.

Access to the upper portion of the Merrimack River is blocked by the Essex Dam in Lawrence. A fish elevator at the Essex Dam on the Merrimack River in Massachusetts has never recorded sturgeon use, although spawning activity has been documented a few miles downstream. There is a well-documented population of shortnose sturgeon in the Connecticut River, but the upstream limit of the population is south of the New Hampshire border, in Turners Falls Massachusetts.

Habitat

Shortnose sturgeons occupy freshwater rivers, estuaries, and nearshore coastal habitat. Spawning occurs in freshwater over substrates consisting of boulder, cobble, and gravel with water depths of 10 m or less (Kynard 1997). Water temperatures during spawning range from 9.0 to 18.0°C. Spawning runs were observed during late April in the Merrimack River, Massachusetts (Kieffer and Kynard 1996). Adults forage on sandy and muddy substrates often near the upper reaches of tidal influence. They use fleshy barbels on their pointed snouts to detect benthic invertebrates with their sucker-like mouths, which they use to vacuum up their prey (Scott and Crossman 1973). Shortnose sturgeon remain in preferred river reaches for overwintering. In northern populations they do not feed during the winter months.

Appendix A: Fish

NH Wildlife Action Plan Habitats

- Estuarine
- Marine
- Large Warmwater Rivers



Distribution Map

Current Species and Habitat Condition in New Hampshire

There are no known spawning populations in New Hampshire waters.

Population Management Status

N/A

Regulatory Protection (for explanations, see Appendix I)

- Federal Endangered Species Act
- Possession prohibited

Quality of Habitat

Recent tagging studies using acoustic telemetry have revealed that some shortnose sturgeon are more migratory than previously believed (Fernandes et al. 2010; Wippelhauser et al. 2015). Individuals tagged in the Kennebec and Penobscot Rivers have been found to move between the two river systems. Shortnose sturgeon tagged in the Merrimack River have been detected in the Kennebec River (Wippelhauser et al. 2015). A tagged individual was recently detected by an acoustic telemetry receiver deployed for an unrelated project in Great Bay. It is possible that shortnose sturgeon move between multiple foraging areas among the rivers and estuaries that flow into the Gulf of Maine.

A status assessment of shortnose sturgeon in the Merrimack River suggests that the population may have expanded since surveys were last conducted in the late 1980's (Kynard and Kieffer 2009). Recent studies have also identified documented shortnose sturgeon in the Androscoggin, Kennebec, and Penobscot Rivers (Fernandes et al. 2010). Shortnose sturgeon native to the Kennebec River have been captured in the Merrimack River, but later detected in the Kennebec River during the spawning season (Kynard and Kieffer 2009). It appears that shortnose sturgeon may move extensively between coastal river systems to forage, but return to their natal rivers to reproduce. Understanding the importance of movement between river systems and identifying critical foraging and spawning habitat will help further the recovery of this species. The NHFG should support acoustic tagging studies of shortnose sturgeon in the Gulf of Maine rivers to assess the extent of movement into New Hampshire waters.

Habitat Protection Status

Appendix A: Fish

Habitat Management Status

N/A

Threats to this Species or Habitat in NH

Threat rankings were calculated by groups of taxonomic or habitat experts using a multistep process (details in Chapter 4). Each threat was ranked for these factors: Spatial Extent, Severity, Immediacy, Certainty, and Reversibility (ability to address the threat). These combined scores produced one overall threat score. Only threats that received a “medium” or “high” score have accompanying text in this profile. Threats that have a low spatial extent, are unlikely to occur in the next ten years, or there is uncertainty in the data will be ranked lower due to these factors.

Disturbance from dams that block species from spawning areas or other important habitat (Threat Rank: Medium)

Dams block access to freshwater spawning habitat.

There are no known spawning populations of shortnose sturgeon in New Hampshire. The extent of habitat used by sturgeon before dams is not known, but records of sturgeon exist as far upstream as Amoskeag Falls in Manchester (Noon 2003).

List of Lower Ranking Threats:

Mortality from commercial over-harvest due to fishing bycatch

Disturbance from dredging

Actions to benefit this Species or Habitat in NH

Support research in the Gulf of Maine

Objective:

Use acoustic telemetry studies to identify important shortnose sturgeon habitat throughout the Gulf of Maine.

General Strategy:

The network of acoustic telemetry receivers continues to expand in the North Atlantic. Recent research in the Merrimack River suggests that many shortnose sturgeon move into into different rivers and estuaries to forage before returning to their natal river to spawn. The extent of habitat use and movement among shortnose sturgeon populations in the Gulf of Maine is not well understood. Supporting sturgeon movement studies may help determine the relative importance of New Hampshire coastal waters and estuaries as sturgeon habitat.

Political Location:

Watershed Location:

References, Data Sources and Authors

Data Sources

Published literature was used to define global range and characteristics of habitat used in freshwater. Historical distribution of the species was also obtained from published literature. Fisheries professionals provided information on current populations.

Published literature and personal communications with fisheries biologists.

Data Quality

Data are limited to 3 confirmed observations. The most recent observation was an incidental recording of a shortnose sturgeon by a stationary acoustic telemetry receiver in Great Bay (M. Kieffer, USGS, personal communication). Historical distribution information should be treated cautiously because there was often no distinction made between Atlantic sturgeon and shortnose sturgeon.

Acoustic telemetry studies in the Gulf of Maine are providing a growing source of information on shortnose sturgeon populations in the northeast (Fernandes et al. 2010; Kynard and Kieffer 2009; Wippelhauser et al. 2015). The extent and quality of data will improve as more receivers are deployed and more extensive studies are conducted.

There are only 3 confirmed records of shortnose sturgeon in the Great Bay estuary.

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2005 Authors:

Literature

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