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## Status of Fishery Resources off the Northeastern US

### NEFSC - Resource Evaluation and Assessment Division



Revised  
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## Atlantic and Shortnose sturgeons

*Atlantic* (*Acipenser oxyrinchus*)  
*Shortnose* (*Acipenser brevirostrum*)

by Gary Shepherd

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### Distribution, Biology and Management

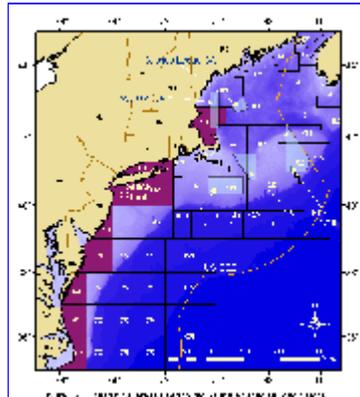


Figure 42.1 Statistical Areas Used

The Atlantic sturgeon, *Acipenser oxyrinchus*, and the shortnose sturgeon, *Acipenser brevirostrum*, are demersal, anadromous species distributed along the Northeastern coast of North America (Figure 42.1). Both species occur between 40°N and 45°N, but the distribution of the Atlantic sturgeon extends further north. Both species migrate from the marine environment to freshwater rivers in early summer, with these migrations occurring later in the year for the Atlantic sturgeon. Where the species co-occur, the shortnose sturgeon migrates earlier than the Atlantic sturgeon. Spawning generally occurs in rivers, below the fall line. Eggs are deposited on hard surface and will not adhere for 4 to 6 days until hatching. Juvenile sturgeon remain in the river system through summer before migrating to estuaries in winter. Juveniles remain in the estuary system for 3 to 5 years before migrating to the nearshore as adults. Migration into the marine environment has only recently been documented for the shortnose sturgeon.

Tagging studies indicate that Atlantic sturgeon migrate extensively in the marine environment and Delaware Rivers have been recaptured as far north as coastal Maine and south to North Carolina. In southern systems have more restricted marine migrations, remaining closer to their natal rivers.

Sturgeons are considered to be among the most primitive bony fishes, with origins dating back to the Permian period. Sturgeons are characterized by 5 rows of bony plates or scutes along the back rather than barbells under their snout used as sensory organs. Juveniles and adults of both species are bottom feeders consuming a variety of crustaceans, bivalves, worms, plants and occasionally small fish. The Atlantic sturgeon and may attain maximum sizes of approximately 100 cm (40 in.) and 23 kg (50 lbs). Shortnose sturgeon reach maximum sizes of 430 cm (170 in) and 363 kg (800 lbs). Both species are long-lived, with ages in excess of 60 years for females and about 30 for males. Maturity occurs in female shortnose sturgeon at age of 7 and 15, with maturity at younger ages at the southern end of the distributional range. A similar latitudinal pattern in female age at maturity with southern fish maturing between age 7 and 15 in the St. Lawrence River, Canada reaching maturity in 27 to 29 years. Both species are highly fecund, with production increasing proportional to body size with individual fish spawning once every 3 to 5 years.

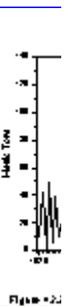
Management of both species is conducted under the auspices of the Atlantic States Marine Fisheries Commission (ASMFC). An Interstate Fishery Management Plan (FMP) was implemented in 1990 which set regulations on sturgeon fisheries. The Plan was amended in 1998 in response to a marked decline in abundance. Fishing is now prohibited in all participating states' waters, and a moratorium has been in place since 1999 under provisions of the Atlantic Coastal Fisheries Cooperative Management Act (ACFMA). The FMP is to restore sturgeon spawning biomass to provide for a sustainable fishery. Management includes protected year classes of females to be present in any river stock of sturgeon before considering a stock. The FMP also emphasizes research programs to evaluate stock status of Atlantic sturgeon.

The National Marine Fisheries Service and U.S. Fish and Wildlife Service received a petition to list Atlantic sturgeon as endangered, which was reviewed in 1998. The endangered status was denied but the species' status is of concern. The status of Atlantic sturgeon is currently being re-evaluated. During the 20th century, sturgeon abundance declined throughout its historic range and in 1967 it was listed as endangered and has since remained so.



### The Fishery

Atlantic and shortnose sturgeon fisheries began with native American Indians prior to the arrival of European settlers into North America. Colonists records indicate exports of sturgeons to Europe as early as 1628. A substantial Atlantic sturgeon fishery existed into the late 1800s, with landings as high as 3500 mt. However, overfishing, habitat degradation and reduced demand contributed to population decline so that only incidental landings occurred during 1900 to 1950. Landings increased during the 1950s to 1980s, particularly in the Carolinas and ranged between 45 mt and 115 mt per year (Figure 42.2 [Fig 42.2 Data]). Increased landings in the early 1990s were due to increased catches in ocean fisheries off New York and New Jersey (Table 42.1). As part of the FMP implemented by the Atlantic States Marine Fisheries Commission, a moratorium was established in 1998 which prohibited the harvest of wild Atlantic sturgeon. Shortnose sturgeon were rarely the target of commercial fisheries and were taken primarily as incidental bycatch in other fisheries. Possession of shortnose sturgeon is prohibited due to its endangered species status.



### Research Vessel Survey Indices

Atlantic sturgeon are taken only incidentally in the NMFS bottom trawl surveys. No shortnose survey. The information from these surveys is therefore inadequate to determine any population capture both juvenile and adult Atlantic sturgeon are conducted in rivers, estuaries and coastal range and are used to determine stock status. In addition, tag release/recovery programs are in the Hudson River and the Chesapeake Bay and tributaries. Shortnose sturgeon are also sampled by state and Florida.

### Assessment Results

Each river system in which Atlantic and shortnose sturgeon occur is considered to contain a mixture of individuals in coastal waters. A review of Atlantic sturgeon stock status in 1998 by the U.S. Fish and Wildlife Service and the U.S. Fish and Wildlife Service concluded that although the abundance was significantly reduced, adequate spawning stock still remained for the persistence of the population. Habitat improvements and fisheries conservation were recommended to improve the likelihood of recovery.

Shortnose sturgeon were listed in 1967 as an endangered species but in some systems abundance levels that would allow reconsideration of their endangered status. The shortnose population in Brunswick, Canada is among the largest in North America, and the Hudson and Delaware River populations are also large. Numbers of shortnose sturgeon are declining in the Hudson River.

### Biological Reference Points

The Atlantic sturgeon recovery plan requires that at least 20 protected year classes of female river system stock before a fishery can be allowed. Upon recovery, the target fishing mortality rate in the Hudson River will be 0.03, the rate that maintains eggs per recruit (EPR) at 50% of the EPR as of 1998.

The long term objective of the shortnose sturgeon recovery plan is to restore populations and genetic diversity and avoid extinction. The short term goal is to rebuild populations throughout the range of the species from the Endangered Species list.

### Summary

Stock abundance of Atlantic and shortnose sturgeons steadily declined throughout the 20th century due to overfishing and habitat destruction. Fisheries for Atlantic sturgeon existed until 1997 when they were closed from Maine to Florida. Shortnose sturgeon was declared an endangered species in 1967 under the Endangered Species Act of 1966. Research into the biology, habitat requirements and stock status of both species is ongoing with the goal of restoring both species to sustainable levels of abundance.

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**Table 42.1** Recreational and commercial landings for the Atlantic sturgeon (thousand metric tons)

Category	1986-95 Average	1996	1997	1998	1999	2000	2001	2002
<b>U.S. Recreational</b>	-	-	-	-	-	-	-	-
<b>Commercial</b>								
United States	54	3	<1	<1	0	0	0	0
Canada	168	61	66	47	47	42	51	51
Other	-	-	-	-	-	-	-	-
<b>Total Nominal Catch</b>	<b>222</b>	<b>64</b>	<b>66</b>	<b>47</b>	<b>47</b>	<b>42</b>	<b>51</b>	<b>51</b>

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#### **For further information**

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