



Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: Sturgeon Management Board

FROM: Sturgeon Technical Committee

DATE: July 12, 2018

SUBJECT: Review of Priority Data Sets for Atlantic Sturgeon Stock Assessment

The 2017 Atlantic Sturgeon Benchmark Stock Assessment indicated that efforts to assess the status of Atlantic sturgeon are hampered by a lack of data and that more work is needed to establish reliable indices of abundance for spawning populations and juveniles prior to the next assessment. Despite the fact that there has been a tremendous amount of new information about Atlantic sturgeon collected in recent years, the species is not well monitored by existing fishery-independent (FI) surveys and landings information does not exist after 1998 due to implementation of a coastwide moratorium. Because of this, Atlantic sturgeon are considered a “data-poor” species which hindered the Stock Assessment Subcommittee’s (SAS) ability to use complex statistical stock assessment models, particularly at the distinct population segment (DPS)-level. Furthermore, total losses from ship-strikes and bycatch are largely unknown due to a lack of reporting, insufficient data collection, or low to non-existent rates of on-board observer coverage in most fisheries that may encounter Atlantic sturgeon.

In response to the assessment’s findings, the Management Board (Board) discussed the need to support management actions that have contributed to recovery seen to date (e.g., the moratorium, habitat restoration/protection, better bycatch monitoring), and acknowledged the need to improve data collection along the Atlantic coast to support future stock assessments and improve the current understanding of stock status. Accordingly, the Board tasked the Technical Committee (TC) to identify the data sets most important to Atlantic sturgeon stock assessment, and develop recommendations regarding where to focus state resources.

The TC met June 18 via conference call to review the data sources used (and considered for use) in the benchmark assessment (Table 1), as well as the research recommendations identified in the assessment regarding data collection (Appendix 1). The TC expressed concern about unfunded mandates, noting that most of the research recommendations relating to data needs cannot happen without securing additional funding. The TC is hesitant to recommend unfunded data collection and monitoring requirements as states are already running into funding issues to maintain long-term survey programs that collect valuable FI assessment data. Although Section 6 of the Endangered Species Act (ESA) does provide a mechanism to receive federal grants to fund the conservation of endangered species, only a minority of these funds support Atlantic sturgeon and those so allocated do not typically support long-term research

and survey programs needed for the species. That being said, the TC made the following recommendations listed in order of importance:

1. State and federal partners as well as academic institutions should encourage data sharing to better assess this species in the future. The success of the 2017 benchmark stock assessment depended on a community of state, federal, and academic partners who freely shared data which should continue to be encouraged. Some DPSs had limited data availability and more work is needed to ensure all information on the species is made available to stock assessment.
2. Continue to conduct the FI surveys that were used for developing indices of relative abundance for Atlantic sturgeon (Table 1) and continue to collect associated environmental (e.g., temperature, salinity) and biological (e.g., length, weight) data. This recommendation puts the least financial burden on the states as there is no need to secure additional funding. Additionally, states are encouraged to continue to conduct those surveys that were not used in the assessment due to short or broken time series. With the addition of more years of data, these surveys could meet the TC's criteria for relative abundance indices in future benchmark assessments. However, the TC noted that it is critical that states maintain current methodologies as well. If states are required to modify its surveys as a result of ESA Section 7 consultations, it will impact the time series and potentially render that survey unusable for the next assessment.

For FI surveys that were not used due to low encounter rates of Atlantic sturgeon, states should consider expanding those surveys to include annual Atlantic sturgeon monitoring (e.g., sample additional sites/strata in areas where Atlantic sturgeon occur). This was also identified as a lower cost recommendation, although the TC noted that navigating permitting requirements may require state resources.

3. Continue to implant acoustic tags in Atlantic sturgeon and maintain receiver networks. The acoustic tagging data provide important information on current mortality rates and was used heavily in the assessment. It is critical that states maintain and support current networks of acoustic receivers and acoustic tagging programs, and expand the programs in underrepresented DPSs to improve the estimates of total mortality. However, this recommendation comes with a high price tag and many programs already struggle to secure funding to maintain their acoustic receiver arrays. Appropriate permits must also be acquired.
4. Continue to collect and improve data on incidental catch of Atlantic sturgeon. The primary source of data on Atlantic sturgeon bycatch comes from the Northeast Fisheries Observer Program which covers federal waters north of Cape Hatteras, North Carolina, but there is likely bycatch occurring in state water fisheries which are not well monitored. Accordingly, to improve estimates of bycatch, the number of trips and gears covered by observer programs should be increased and expanded to include more inshore and estuarine waters. Although some states (e.g., New York) have recently allocated resources to collect better

information on sturgeon bycatch in its fisheries in order to apply for Section 10 Incidental Take Permits, the TC reiterates its concerns of unfunded mandates.

Alternatively, the TC discussed the benefits of fishery-specific studies that estimate bycatch over a short period of time. As long as the results of the studies are comparable (e.g., similar methodologies), the TC can determine if (and how) Atlantic sturgeon bycatch in that fishery has changed from one time period to the next. Conducting one year studies every 3-5 years, for example, would reduce the financial burden of annual observer coverage. Additionally, this approach could promote collaboration with academic institutions since such studies are ideal thesis opportunities for graduate student research.

5. Collect data needed to quantify the numbers of Atlantic sturgeon killed by ship strikes each year at the DPS and river-level. The 2017 benchmark stock assessment identified ship strikes as a potential significant source of Atlantic sturgeon mortality. States are encouraged to respond to Atlantic sturgeon carcass sightings and determine if the cause of death was due to ship strike. Delaware State University is conducting an Atlantic sturgeon carcass reporting rate study for the Delaware Bay, the results of which could be applied to observed ship strike deaths to estimate total ship strike mortality for a given DPS or river.
6. Processing of genetic samples should be a priority in order to update the genetic baseline at the coastwide, DPS, and river-specific level and improve the genetic stock definitions of Atlantic sturgeon. The TC noted that efforts are already being made to address this; NOAA has provided funding to USGS to analyze and genetically assign 850 samples in the repository to hopefully fill the gaps in the baseline for the Carolina and South Atlantic DPSs.
7. Similar to the discussion on bycatch data needs, the TC discussed more fiscally reasonable approaches to evaluate trends in abundance in future assessments. Initiating a FI survey explicitly designed to monitor Atlantic sturgeon abundance would require a considerable amount of time and resources before it met the TC's time-series requirements as an index of abundance (i.e., 15+ year time series with consistent methods), although any biological information collected could be used immediately. As an alternative, the TC discussed generating a time series of repeated studies which measure abundance and recruitment over a short period of time (e.g., a series of 2-3 year studies carried out every 5-10 years instead of long term monitoring conducted on an annual basis). Again, as long as the results of the studies are comparable, the TC can determine if (and how) Atlantic sturgeon abundance and recruitment in a particular river or DPS has changed from one time period to the next. States and academic institutions could combine resources to complete studies under mutually agreed upon terms and conditions, including an appropriate timeline and data sharing protocols.

Work Cited:

Atlantic States Marine Fisheries Commission (ASMFC). 2017. Atlantic Sturgeon Benchmark Stock Assessment and Peer Review Report. Arlington, VA. National Oceanic and Atmospheric Administration Award No. NA15NMF4740069. p. 456

Table 1. Surveys considered, accepted and rejected for developing indices of relative abundance for Atlantic sturgeon. Asterisks in the “Accepted” column indicate a survey that was developed into an index but should not be used in analysis at this time due to the time series being too short. All surveys are fishery-independent unless indicated with “(FD)” (fishery-dependent). (Table 8 from ASMFC 2017).

Surveys Considered	Accepted	Rejected	Reason(s) Rejected						
			Time series too short or broken	Rare occurrence of sturgeon	Unusable as suggested by data submitter	Inconsistent methods, gear changes	Limited covariates	Incomplete dataset or unavailable	FD survey concerns
ME Gillnet		X	X				X	X	
ME-NH Trawl	X								
MA FD Investigation Maintenance Sampling		X		X					
MA FI Trawl Survey		X		X					
MA Industry based survey for cod		X		X					
RI Trawl		X		X	X				
CT LIS Trawl	X								
NY Juvenile Gillnet	X*		X						
NY Hudson River shad gillnet fishery (FD)		X	X						X
NY Hudson River power generator monitoring		X			X	X			
NYSDEC bottom trawl for striped bass		X		X	X				
NJ Ocean Trawl	X								
DE DFW ATS juvenile survey		X	X						
DE trawl (16' and 30')		X		X					
DSU inshore juvenile sampling & offshore sampling		X	X		X				
MD Coastal Offshore Trawl Survey		X		X					

Table 11. *Continued (Table 8 from ASMFC 2017).*

Surveys Considered	Accepted	Rejected	Reason(s) Rejected						
			Time series too short or broken	Rare occurrence of sturgeon	Unusable as suggested by data submitter	Inconsistent methods, gear changes	Limited covariates	Incomplete dataset or unavailable	FD survey concerns
VIMS Shad Monitoring	X								
NEAMAP	X*		X						
NC Program 120		X		X					
NC Program 135	X								
NC Program 915		X		X					
SC Edisto River Sturgeon Monitoring	X*								
UGA Work		X	X						
USFWS Winter Trawl COOP Cruise	X								
NEFOP / ASM (FD)		X			X	X			X
NEFSC trawl		X		X	X	X			
The following surveys were rejected immediately due to extremely low encounter rates, or due to limited geographic coverage and survey design methods:									
NY Fall Shoals Survey		X				X			
VT Trawl Survey		X							
Upper James River Work		X						X	
James River FRG		X				X		X	
NC AR Gillnet -Fall/Winter		X							
NC AR Gillnet - Spring		X							
Historic Altamaha Study		X						X	
NJ Striped Bass Tagging Survey		X		X					
DE Carcass Report		X							
MD Striped Bass Gillnet Survey		X		X					

Table 1. Continued (Table 8 from ASMFC 2017).

Surveys Considered	Accepted	Rejected	Reason(s) Rejected						
			Time series too short or broken	Rare occurrence of sturgeon	Unusable as suggested by data submitter	Inconsistent methods, gear changes	Limited covariates	Incomplete dataset or unavailable	FD survey concerns
VIMS Juvenile Fish and Blue Crab Survey		X		X		X			
ChesMMAP		X							
Southeast Area Ocean Gillnet		X	X	X					
NC AS Trawl		X		X					
NC South Gillnet		X	X	X					
Cape Fear Gillnet		X	X						
Carolina Power and Light Surveys		X							
GA Brunswick River Sampling		X	X						
Pee Dee River Run Atl. Sturgeon Gillnet		X	X	X					
Pee Dee River Survey		X							
Winyah Bay		X							
Santee River		X		X					
Two South Carolina Rivers Studies**		X	X	X					
Savannah River and Selected Tribs		X	X	X					
Georgia Shad Tagging		X							
SEAMAP		X		X					

**It was noted by the South Carolina TC Representative on the June 18th, 2018, TC call that these studies do in fact encounter Atlantic sturgeon regularly and therefore the check in the “Rare occurrence of sturgeon” is incorrect.

Appendix 1

The SAS identified several research recommendations that would benefit Atlantic sturgeon and future stock assessments. Specific recommendations flagged to be improved upon before initiating another benchmark stock assessment are as follows (ASMFC 2017):

Future Research

- Expand and improve the genetic stock definitions of Atlantic sturgeon, including developing an updated genetic baseline sample collection at the coastwide, DPS, and river-specific level for Atlantic sturgeon, with the consideration of spawning season-specific data collection.

Data Collection

- Establish regional (river or DPS-specific) fishery-independent surveys to monitor Atlantic sturgeon abundance or expand existing regional surveys to include annual Atlantic sturgeon monitoring. Estimates of abundance should be for both spawning adults and early juveniles at age. See Table 1 for a list of surveys considered by the SAS.
- Establish coastwide fishery-independent surveys to monitor Atlantic sturgeon mixed stock abundance or expand existing surveys to include annual Atlantic sturgeon monitoring. See Table 1 for a list of surveys considered by the SAS.
- Continue to collect biological data, PIT tag information, and genetic samples from Atlantic sturgeon encountered on surveys that require it (e.g., NEAMAP). Consider including this level of data collection from surveys that do not require it.
- Encourage data sharing of acoustic tagged fish, particularly in underrepresented DPSs, and support programs that provide a data sharing platform such as The Atlantic Cooperative Telemetry Network. Data sharing would be accelerated if it was required or encouraged by funding agencies.
- Maintain and support current networks of acoustic receivers and acoustic tagging programs to improve the estimates of total mortality. Expand these programs in underrepresented DPSs.
- Collect DPS-specific age, growth, fecundity, and maturity information.
- Collect more information on regional vessel strike occurrences, including mortality estimates. Identify hot spots for vessel strikes and develop strategies to minimize impacts on Atlantic sturgeon.
- Monitor bycatch and bycatch mortality at the coastwide level, including international fisheries where appropriate (i.e., the Canadian weir fishery). Include data on fish size, health condition at capture, and number of fish captured.

Assessment Methodology

- Establish recovery goals for Atlantic sturgeon to measure progress of and improvement in the population since the moratorium and ESA listing.
- Expand the acoustic tagging model to obtain abundance estimates and incorporate movement