Atlantic Sturgeon
Terms of Reference

February 6, 2014

Terms of Reference

- External peer review
- Developed by the Atlantic sturgeon Technical Committee and Stock Assessment Subcommittee
- One set of TORs for the assessment
  - To guide the TC/SASC
- One set of TORs for peer review
  - To guide the review panel

Objective Statement

The objectives of this assessment are to gather the best available data on Atlantic sturgeon in order to develop meaningful biological reference points and assess the status of the stock against those reference points at a scale that is most appropriate for the biology and management of the species.

TERMS OF REFERENCE FOR STOCK ASSESSMENT

1. Define population structure based on available genetic and tagging data. If alternative population structures are used in models (e.g., DPS, coastwide, river system), justify use of each population structure.

2. Characterize the precision and reliability of fishery-dependent and fishery-independent data, including tagging data, that are used in the assessment, including the following but not limited to:

    a. Provide descriptions of each data source (e.g., geographic location, sampling methodology, and potential explanation of anomalous data).

    b. Describe calculation and standardization (if performed) of abundance indices and other statistics including measures of uncertainty.

    c. Discuss trends and associated estimates of uncertainty (e.g., standard errors).

    d. Justify inclusion or elimination of available data sources.

    e. Discuss the effects of data strengths and weaknesses (e.g., temporal and spatial scale, gear selectivities, aging consistency, and sample size) on model inputs and outputs.

3. Develop biological reference points for Atlantic sturgeon populations.

4. Review existing estimates of Atlantic sturgeon bycatch (retained and discarded) and, if possible, develop a time-series of bycatch in monitored fisheries, and discuss the assumptions and applicability of such estimates to reference points.

5. If possible, develop models to estimate population parameters (e.g., *F* or *Z*, biomass, and abundance) and analyze model performance and stability.

6. State assumptions made for models and for calculations of indices and other statistics. Explain the likely effects of assumption violations on synthesis of input data and model outputs.

7. Where possible, assess stock status based on biological characteristics, including not but not limited to:

a. Trends in age and size structure

b. Trends in temporal indicators of abundance

8. Characterize uncertainty of model estimates and biological or empirical reference points.

9. Recommend stock status as related to reference points (if available). For example:

    a. Is the stock below the biomass threshold?

    b. Is mortality above the threshold?

    c. Is the index above or below a reference index value?

10. Other potential scientific issues:
  a. Compare reference points derived in this assessment with what is known about the general life history of the population unit. Explain any inconsistencies.

11. Develop detailed short and long-term prioritized lists of recommendations for future research, data collection, and assessment methodology. Highlight improvements to be made by next benchmark review.

12. Recommend timing of next benchmark assessment and intermediate updates, if necessary, relative to biology and current management of the species.

TERMS OF REFERENCE FOR PEER REVIEW

1. Evaluate appropriateness of population structure(s) defined in the assessment.

2. Evaluate the adequacy, appropriateness, application of the data used, and the justification for inclusion or elimination of available data sources. Evaluate the methods used to calculate indices and other statistics and associated measures of dispersion.

3. Evaluate the estimates of bycatch of Atlantic sturgeon and the methods used to develop them.

4. Evaluate the methods and models used to estimate population parameters (e.g., *F, Z,* biomass, relative abundance) and biological reference points, including but not limited to:

a. Evaluate the choice and justification of the preferred model(s) or method(s) of calculation (i.e., was the most appropriate model or method chosen given available data and life history of the species?).

b. If multiple models were considered, evaluate the analysts' explanation of any differences in results.

c. If appropriate, evaluate model parameterization and specification (e.g., choice of CVs, effective sample sizes, likelihood weighting schemes, calculation/specification of *M,* stock-recruitment relationship, choice of time-varying parameters, plus group treatment).

d. Evaluate the diagnostic analyses performed, including but not limited to:

i. Sensitivity analyses to determine stability of estimates and potential consequences of major model assumptions

ii. Retrospective analysis

5. Evaluate the methods used to characterize uncertainty in estimated parameters. Ensure that the implications of uncertainty in technical conclusions are clearly stated.

6. Evaluate recommended estimates of stock biomass, abundance (relative or absolute), mortality, and the choice of reference points from the assessment for use in management, if possible, or, if appropriate, recommend changes or specify alternative estimation methods.

7. Evaluate stock status determination from the assessment, or, if appropriate, recommend changes or specify alternative methods/ measures.

8. Review the research, data collection, and assessment methodology recommendations and make any additional recommendations warranted. Clearly prioritize the activities needed to inform and maintain the current assessment, and provide recommendations to improve the reliability of future assessments.
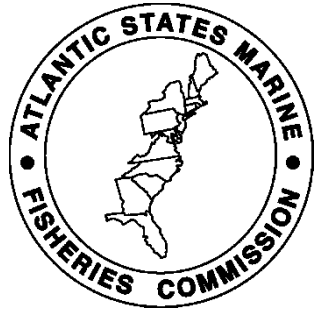
Working towards healthy, self-sustaining populations for all Atlantic coast fish species or successful restoration well in progress by 2015
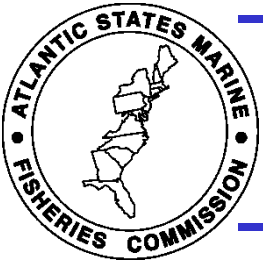
Atlantic Sturgeon FMP Review
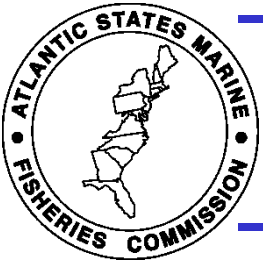
Status of the Fishery

- Complete Atlantic states moratorium since 1997.

- EEZ harvest prohibited in 1998.

- Will remain in effect until stocks exhibit a minimum of 20 protected year classes of spawning females

Bycatch

- In 2012, a total of 332 Atlantic sturgeon were reported as bycaught in various fisheries on the Atlantic Coast.

- Majority occurred in the SC Winyah Bay American shad gillnet fishery (205).

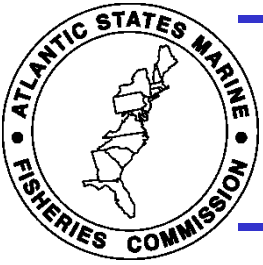- There continues to be an underreporting concern

Ship Strikes

- In 2012 there were 18 Atlantic sturgeon carcasses reported from the Delaware Estuary, of which 18 had external injuries that were most likely the result of being struck by a ship propeller.
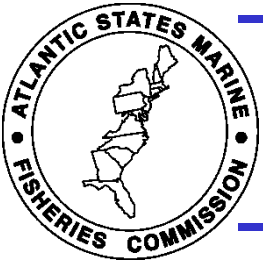
Status of the Stock

- ASMFC Stock Assessment – 1998

- ESA Listing Endangered/Threatened – 2012

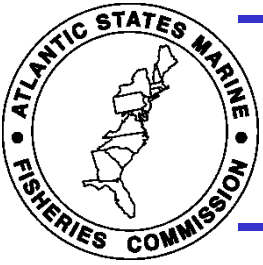- New benchmark assessment initiated in 2013 and expected to be peer reviewed in early 2015.

Habitat

- Restoration of historic spawning habitat

- Great Works Dam was removed in the summer of 2012

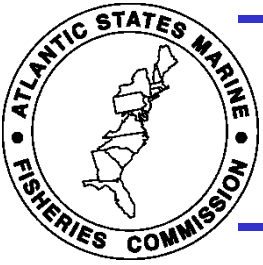- Veazie dam was removed in November 2013

Compliance

- States are required to submit information on:
    - Results of bycatch monitoring for Atlantic sturgeon in other fisheries;
    - Monitoring results
    - Habitat status
    - Aquaculture operations status
- The PRT finds all states in compliance with the FMP.

Recommendations

- States are requested to:
- Coordinate with the ASMFC regarding the progress of incidental take permits under Section 10 of the ESA.
- Incorporate ongoing research to the extent possible in the upcoming benchmark stock assessment
- The PRT stresses the importance of mandatory reporting requirements to effectively monitor sturgeon bycatch in their fisheries.