2013

Observing Striped Bass Catch and Atlantic Sturgeon Bycatch in a Striped Bass Fishery Using Raised Footlines

George Earl Trice IV

Final Report of Fishery Resource Grant Project 2013

Conducted by George Trice

Project Title: OBSERVING STRIPED BASS CATCH AND ATLANTIC STURGEON BYCATCH IN A STRIPED BASS FISHERY USING RAISED FOOTLINES.

Name of PI: George Earl Trice IV

Brief Summary

This project was conducted from January 16th, 2013 to May 13th, 2013. The project documented the catch of striped bass (*Morone saxatilis*) and Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) bycatch of two different net configurations, a traditional anchored gill net and an experimental raised footline anchored gill net. The project was conducted in traditional striped bass fishery areas. The experimental methodology was created in an attempt to reduce the bycatch of Atlantic sturgeon while not affecting the striped bass fishery. Nets were hung using conventional methods allowing the net to rest on the bottom of the waters. Experimental nets were hung with a 3.5 foot bottom panel with no mesh allowing bottom dwelling fishes to swim under the "floated" net mesh. Nets were hung using mesh sizes of 5.5", 6", and 8". All catch was recorded and compared to determine the effects of the different hanging methods and get a better estimate on Atlantic sturgeon bycatch in Virginia's striped bass bay fishery. The data showed that Atlantic sturgeon bycatch was twice as high in standard gear compared to experimental gear but bycatch was so low proper comparisons were difficult. There was no difference in striped bass catch numbers between standard and experimental gear.

Methods

In this project nets were hung using mesh sizes of 5.5", 6", and 8". Nets were hung in 300 foot sections. Standard nets were hung using conventional gill net methods that allow the net to sink completely. An identical net of each mesh size was also hung using an experimental method of raised footlines, thereby creating a "float net". Nets having the raised footlines were floated 3.5 feet from the bottom. All catch was identified, measured and counted. All data were recorded and analyzed to determine the efficiency of the compared nets with respect to striped bass catch and Atlantic sturgeon bycatch. In previous studies the experimental nets frequently dragged. This year instead of 75lb per-100 fathom lead lines we used 100lb per 100-fathom lead line. Sampling areas will vary and will be determined by where the target fish (striped bass) are located.

Analysis

From January 16th, 2013 to May 13th, 2013 forty-six trips were taken among three different traditional striped bass fishing areas (Figure 1). Because commercial fishers were targeting striped bass, effort and mesh size varied between areas with 8" being set in area A and 5.5" and 6" being set in area B and C. Area A is considered the main Chesapeake Bay while areas B and C are considered the riverine area. A total of 3738 striped bass were caught with 1861 (50%) caught in conventional nets versus 1877 (50%) caught in the experimental nets. The total striped bass weight captured was about 10,205 kg. Catch-per-unit-effort (CPUE) units are fish caught per $1000m^2$ of net per hour set. The CPUE of striped bass in standard gear was 0.004424 and 0.00416 for experimental gear. There does not appear to be any differences in CPUE comparing the 5.5", 6" and 8" experimental and standard gear (Figure 2). Because of the delayed run of larger striped bass into the bay sampling effort using 8" gill net in the main Chesapeake Bay was much lower compared to typical years. The 8" Chesapeake Bay collections typically account for 60% of weight caught per year, this year they only accounted for 25%. Considering how much of the striped bass fishery is conducted in the Chesapeake Bay more effort is required to determine bycatch of Atlantic sturgeon in the 8" Bay fishery.

There were six Atlantic sturgeon collections, one in 6" experimental gear and five in standard 6" gear. There was zero mortality and all fish swam away in good shape. Three of the collections in standard gear were likely the same fish because it had an odd notch on the upper part of the tail and the fish was caught in almost the same spot over a four day period. Atlantic sturgeon bycatch was $9.5^{x10\text{-}6}$ in standard gear and $4.0^{x10\text{-}6}$ for experimental gear. All Atlantic sturgeon were caught in area B which is about 2 km from a known juvenile Atlantic sturgeon congregation area.

None of the experimental nets dragged during the study period so the increased lead line weight fixed the issue with experimental nets dragging.

Conclusions

Because 2013 Atlantic sturgeon bycatch collections were so low so it is hard to make strong inferences between the two gear types. If data from previous years is incorporated the raised footlines help reduce Atlantic sturgeon bycatch in striped bass fisheries. Dragging of experimental nets was fixed by increasing lead line weight from 75lb per 100 fathom to 100lb per 100 fathom.

Experimental and standard gears appear to have similar CPUE's of striped bass in both environments sampled. Future work is needed in the Chesapeake Bay proper to determine if catch rates of striped bass vary between the two gear types. Considering how much fisheries effort is conducted in the Chesapeake By proper future work is needed to determine bycatch of Atlantic sturgeon in those fisheries. These new data imply that previous approximations of Atlantic sturgeon bycatch in the striped bass fishery are over estimated.

Final Summary

Importantly, for the 10th year in a row, this FRG sturgeon project documents Atlantic sturgeon inhabiting the James River. The use of raised footlines continues to have lower bycatch of Atlantic sturgeon, even when very few fish are caught. There were only six Atlantic sturgeon collections while 10,205 kg of striped bass were harvested. Three of those Atlantic sturgeon collections were likely the same fish and the fish. All Atlantic sturgeon were released in good health. The experimental and standard gears have similar catches rates of targeted species. Considering how little effort was focused in the Chesapeake Bay proper during this study due to the late arrival of large striped bass, future work is needed to determine gear efficiency and Atlantic sturgeon bycatch in the Chesapeake Bay proper striped bass fishery.

Signature _____ Date 9/3/13

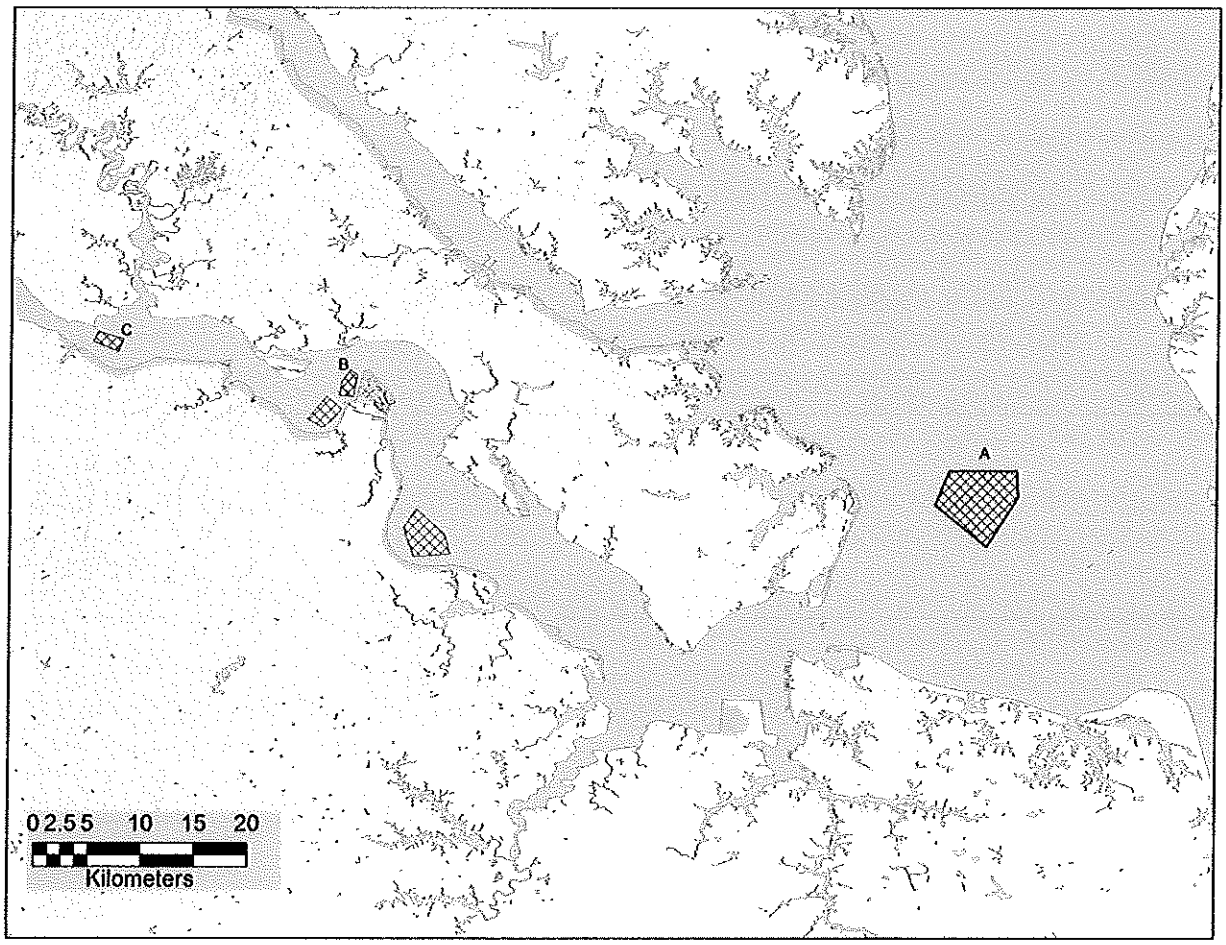

Figure 1. Map showing fishing areas of 2013 Fisheries Resource Grant. The black grids are where striped bass gill nets were set, A is the Chesapeake Bay proper and B and C are the riverine environment. The red grids are known juvenile Atlantic sturgeon congregation areas.

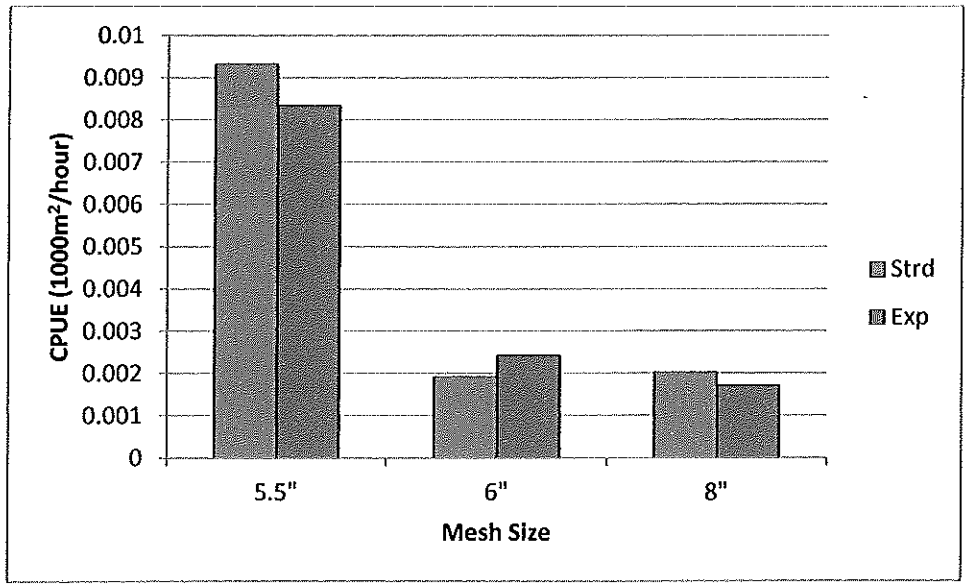

Figure 2. Barplot showing CPUE of various size mesh nets.