

**Atlantic States Marine Fisheries Commission
Atlantic Striped Bass Technical Committee
Report 2003 - 02**



**Thursday October 23rd, 2003
Holiday inn Downtown
Providence, Rhode Island**

Present:

Tom Baum (NJ DFW), Vic Crecco (CT DMF), Jason Dilday (NC DMF), Megan Gamble (ASMFC; FMP Coordinator), Doug Grout (NH FG), Phil Jones (MD DNR), Desmond Kahn (DE DFW), Andy Kahnle (NY DEC & Stock Assessment Subcommittee Vice Chair), Najih Lazar (RI DFW), Dave Miko (PA FBC), Gary Nelson (MA DMF & Technical Committee Chair), Rob O'Reilly (VMRC), Alexei Sharov (MD DNR & Stock Assessment Subcommittee Chair), Gary Shepherd (NMFS NEFSC), Tom Squiers (ME DMR), Vic Vecchio (NY DEC), and Stuart Welsh (WVU & Tagging Subcommittee Chair).

Others:

Janaka de Silva (FL FWCC), Kathy Hattala (NY DEC), Vince O'Shea (ASMFC; Executive Director), Craig Shirey (DE DNR), and Douglas Vaughan (NMFS SEFSC).

Stock Assessment: ADAPT VPA

Alexei Sharov, Chair of the Stock Assessment Subcommittee, presented the results of the stock assessment report for the ADAPT VPA results. In 2002, the total recreational landings were 1,828,367 fish. There was an overall decline in coastwide recreational landings driven by a decline in recreational landings in the estuaries (primarily in the Chesapeake Bay). The total recreational landings in weight were 8,409 mt. Striped bass of age 4 to 8 comprised 76% of the recreational landings. Total commercial landings in 2002 were 654,062 fish. The commercial landings also dropped sharply, about a 37% reduction from 2001. While most of the reduction can be attributed to lower commercial landings by the state of Maryland, the majority of striped bass landed commercial were taken by the Chesapeake Bay jurisdictions (PRFC, MD, and VA). Most of the striped bass harvest by the commercial fishery were of age 4, 5, and 6, these are the age groups primarily harvested in the Chesapeake Bay. More results from the VPA assessment can be read in the Stock Assessment Subcommittee's report to the Technical Committee (October 2003).

Stock assessment subcommittee is not totally satisfied with the commercial discard estimation methodology, but no additional work was conducted this year. In the future, more work will need to be done to improve the methodology, specifically obtain data on size and age structure of discards by gear, improve gear specific mortality estimates, and examine the sensitivity of methodology to changes in assumptions about commercial reporting rates. The 2002 assessment uses the same commercial discard estimation methodology from last year's peer reviewed assessment.

Fifty-three survey indices were used in the assessment, out of 76 possible indices. Some of the indices eliminated were the Maryland spawning stock biomass survey for age 2 because the age 2 dynamics did not correlate with the older years and did not follow a pattern or a trend observed for older ages; the NMFS survey ages 12 and older because the sample size was not representative enough to provide a reliable estimate; and the VA pound net because the time series for consecutive ages appeared to be highly correlated within the same year. The worst seemed to be in the older ages, such as 9 vs 10. If the peaks in age 9 indicated a strong year class, then the peak should be in the following year for age 10. However the peaks tend to align, suggesting either there was an aging problem or the catchability in the gear changed annually.

The Stock Assessment Subcommittee performed additional analyses on the influence of the different plus group options (12+, 13+, 14+, 15+) on the results of the assessment. A simulated population was developed to determine the effect of ageing error on the estimation of N and F. The ageing error introduced to the simulated population was based on results from the ageing workshop and a collection of known-age scales and otoliths. From these analyses, the Subcommittee drew the conclusion that fewer age groups compressed into a plus group resulted in a higher F estimate. There is a 2-3% difference in

the number of fish included in the 12 and 14 plus groups. While the percentage of number of fish is not particularly high, the resultant F estimates are significantly different, 0.2 and 0.36 respectively. The 13+ and 12+ runs reflect the known trends in stock. For example, these two plus groups depict the overfished status of the striped bass stock in 1982 whereas the F estimate for 15+ is around 0.1, not reasonable for an overfished population.

The 2002 stock assessment uses a 13+ age group because fewer ages in the plus group reduces the uncertainty associated with ageing error; this plus group had the lowest relative error for F in simulated experiments; and it accurately represented the exploitation pattern for the early 1980s. With the newest version of ADAPT (NFT VPA/ADAPT Version 2.1), each plus group run could be configured in 24 different ways. The Subcommittee selected the 13+ run that produced the lowest residual sum of squares. Additionally, the Stock Assessment Subcommittee compared results between the ADAPT and ICA programs and found that the ADAPT results were more stable than the ICA results.

The 13+ run estimated a fishing mortality rate of 0.36 for ages 8-11 for 2002. This F estimate is lower than the threshold ($F_{\text{threshold}} = 0.41$), but higher than the target ($F_{\text{target}} = 0.30$). In previous assessments, the F was estimated for ages 4 through 11 ($F_{4-11} = 0.27$). The current assessment uses ages 8 through 11 because they more accurately reflect the ages fully recruited to the fishery. The assessment report also estimates the F ages 3 through 8 to determine the fishing mortality in the estuaries ($F_{3-11} = 0.20$).

The Technical Committee noted the need to investigate the bootstrap results on F and examine the survey indices. While the 2002 bootstrap results are very different results from last year's bootstrap results, the assessment results from the 13+ run are similar to last year's 13+ run. The Technical Committee was concerned about the level of uncertainty and number of outliers in the bootstrap results. Some members suggested that the uncertainty could be related to the F estimates and ageing error on ages 8 and 9. The bootstrap on the population estimate is also skewed but not as dramatically as the F estimates. The bootstrapping methods have changed slightly with the new ADAPT software which can result in very different results. The Stock Assessment Subcommittee will investigate the bootstrap results further before next year's assessment. Despite these concerns, the stock assessment subcommittee accepted the results from the stock assessment.

The Technical Committee provided suggestions to improve the stock assessment report. The report should make it clear that the actual population size has not changed this year. The stock assessment makes it appear as though it is lower because the ADAPT model was configured differently compared to last year's stock assessment (12 plus group was used in last year assessment and 13 plus is used this year). The report should also include more discussion on why the subcommittee chose the maximum age included in the VPA. This discussion should also convey that fishing mortality changes as a result of the selection of the 13+ group and the use of ages 8-11 as the average F estimate for the coastal population. Not only should these changes to the assessment be clearly explained in the stock assessment report, but also the implication of these changes needs to be clearly explained to the Management Board.

Stock Assessment: Tagging Analysis

The Tagging Subcommittee and the Technical Committee noted the need to re-evaluate all of the tagging programs, specifically their design. Virginia is concerned that maybe the Rappahannock is not the best area to release tagged fish.

The Technical Committee approved both the tagging analysis and the VPA stock assessment report conditioned upon some minor modifications.

State Proposal: New York's Hudson River Recreational Fishery

The state of New York requested an extension on the development and implementation of recreational measures for the Hudson River. At the June Board meeting, New York was granted an extension through mid-March. The current recreational regulations on the Hudson River are a 1 fish possession limit with an 18-inch minimum size and an open season from March 16th to November 30th. New York presented four different options to the Technical Committee and requested their review for conservation equivalency: 1 fish at 28"; 2 fish at 28"; 1 fish at 18", 24", or 26"; or 1 fish at 18", 24", 26", 28" with a spawning closure. The proposal used yield-per-recruit (YPR) in numbers and egg-per-recruit (EPR) analysis to determine the conservation equivalency of an estimated harvest of a 2 fish creel limit and an 18", 24", and 26" minimum size to the harvest estimated for a 2 fish creel limit with a 28" minimum size. The evaluation of conservation equivalency was based on a percent maximum spawning potential (MSP) measured as lifetime egg production per recruit. Further details of the analysis can be found in the NY DEC proposal dated September 4, 2003.

New York has conducted some public hearings on these options. While the public does not appear to support a spawning season closure, NY DEC is still considering the spawning season closure. Technical Committee members questioned the duration of the season with different size limits and suggested a closure during part of the season if NY DEC decides to implement the smaller minimum size.

In addition to the above options, the proposal includes several measures designed to reduce the effects of catch and release mortality. Public is in favor of prohibiting the use of treble hooks in bait fisheries. NY DEC plans to do some education on the use of circle hooks with various fishing groups.

Some members of the Technical Committee felt as though fishing with a 1 fish creel limit, regardless of the minimum size, will be just as conservative as a 2 fish creel limit with a 28" minimum size limit. NY DEC's proposal estimates the number of fish caught with a 2 fish creel limit based on the number of fish caught in the charter fishery. Members of the Technical Committee expressed concern that the estimated number of second fish harvested under a 2 fish creel limit may be artificially high because the charter fishery is more efficient and catch rates used in the analysis could be higher than the private boat mode that NY indicated dominates this fishery. Some members expressed concern that use of lower (and potentially more realistic) 2nd fish catch rates could result in the analysis showing that a one fish creel at 18 inch size limit would be less conservative than the 2 fish 28 inch standard. Generally, the Technical Committee found New York's proposal to be conservationally equivalent to the recreational fishery management measures in Amendment 6 (2 fish creel limit with a 28" minimum size).

The Technical Committee recommends the approval of NY's proposal for the Hudson River recreational fishery. The Technical Committee recommends a partial spawning season closure if a smaller than 28 inch minimum size is implemented for the Hudson River.

State Proposal: Delaware's Recreational Fishery

Earlier this year, the state of Delaware submitted an implementation proposal that included four options for the striped bass recreational fishery (2 fish @ 28"; 1 fish between 24"-28" & 1 fish >28"; 1 fish between 24"-28" & 1 fish >28" with a seasonal closure; 1 fish 24"-28" & 1 fish >41"). The Technical Committee reviewed the conservational equivalency analyses for these options and approved two of the options (2 fish @ 28", as well as 1 fish 24 – 28" and a second fish greater than 41"), indicating that the analysis for conservation equivalency on the remaining two options was not viable. The Board concurred with the Technical Committee's advice during their June meeting.

Delaware submitted a new proposal and conservation equivalency analysis for 1 fish between 24-28" and a second fish above 28" for their recreational fishery. The proposal compared the percent maximum spawning potential of the proposed regulation, also Delaware's current recreational regulation, and the Amendment 6 requirement (2 fish creel limit with a 28" minimum size) to determine if the two regulations are conservationally equivalent.

Using this standard, 2 fish creel limit and 28" minimum size yields a %MSP of 24. Due to difficulties in modeling the slot limit, the proposal models 2 fish at 24 inches as a proxy to determine the %MSP. The proxy achieves a 16% MSP, thus requiring a 33% reduction in harvest. To achieve the 33% reduction in harvest, Delaware will either delay the opening of the fishery or close the fishery early. Because fish are not landed consistently over the course of the year, the delayed opening or early closure will be implemented according to when the fish have historically been landed. The Technical Committee agreed that the slot size in combination with the seasonal reduction is conservationally equivalent to the recreational measures in Amendment 6.

The Technical Committee recommends the approval of Delaware's proposal for the recreational fishery.

State Proposal: Chesapeake Bay's Spring Trophy Fishery

When reviewing all of the Chesapeake Bay jurisdictions implementation proposals for Amendment 6, the Technical Committee noted that the proposals did not impose a cap on the harvest for the spring recreational trophy fishery. The Technical Committee recommended the approval of the implementation proposals from all three Chesapeake Bay jurisdictions, but recommended that the trophy fishery be held at the 30,000 fish cap. In June, the Board approved all three proposals but concurred with the Technical Committee's recommendation and capped the trophy fishery at 30,000 fish.

In previous years, the cap on the trophy fishery was established through discussions and agreements among members of the Management Board. Maryland submitted a proposal on behalf of the Chesapeake Bay jurisdictions to annually establish the cap on the trophy fishery based on stock size. Specifically, the spring season cap will change in proportion to the number of age 8+ striped bass in the population as determined annually by the Adapt VPA. Calculating the harvest cap is also dependent on achieving an F of 0.30, assuming natural mortality is 0.15, and uses the partial recruitment vector for ages 8+ from the VPA. The proposed methodology projects the number of age 8+ fish in population one year later and estimates the Bay-wide harvest cap based on the stock size of age 8+. Using the new methodology, the Bay-wide harvest cap would increase from 30,000 fish in 2003 to 40,624 fish in 2004. The trophy fishery cap will be reanalyzed each year based on the methodology in the proposal.

Since 1991, the harvest cap was exceeded only twice. The Bay-wide harvest cap was exceeded in 2003 by about 15,000 fish. Amendment 6 states that if a jurisdiction sets a harvest cap on a recreational fishery and the cap is exceeded in any one year, the jurisdiction will need to deduct the overage from the following year's cap. The 2004 Bay-wide harvest cap will need to be reduced by the overage amount. Some members of the Technical Committee expressed concern that the Chesapeake Bay jurisdictions will relax regulations to ensure that the cap is met (i.e. extend the duration of the trophy season). The Technical Committee also noted some concern that the VPA is premised on a mixed stock (the basis for the harvest cap estimation) and yet the Chesapeake Bay jurisdictions are fishing on a single stock. The Chesapeake Bay jurisdictions' proposal is yet another increase in the potential harvest of striped bass allowed under Amendment 6. The Technical Committee is concerned about the cumulative impacts of these increases. Additionally, the Stock Assessment Report for 2002 indicates that fishing mortality was high (based on ADAPT VPA results) and the VPA tends to overestimate the population size in the terminal years.

The Chesapeake Bay jurisdictions should not use this methodology to project the number of age 8+ fish and estimate the harvest cap beyond one year. The harvest cap should be recalculated each year. *The Technical Committee believes the methodology used in the Maryland proposal is scientifically acceptable.*

State Proposal: Methodology for Estimating the Fishing Mortality Rate on the Chesapeake Bay Resident Striped Bass Population

Currently, the Chesapeake Bay jurisdictions estimate the Bay-wide fishing mortality through an annual direct enumeration study using fish tagged in the summer and fall. In addition to the direct enumeration, the Chesapeake Bay also estimates F from the tagging program on the spring spawning stock survey mark and recapture data on the resident Chesapeake Bay population. The tagged and recaptured striped bass in the spring spawning survey provide another avenue for estimating the Bay-wide F. The Chesapeake Bay jurisdictions are required to monitor F on an annual basis, so that if necessary managers can adjust fishing effort to control total removals and avoid population overfishing. The spring spawning survey mark and recapture data is currently used as an independent estimate of the resident Chesapeake Bay population. Maryland proposes using the spring tagging program, beginning in 2004, to estimate F on the resident striped bass stock in the Chesapeake Bay annually.

If the spring survey based F estimate is approved, Maryland intends to discontinue the direct enumeration study. Discontinuing the direct enumeration study will free up resources, such as manpower, to allow additional work and analyses on striped bass. For example, Maryland might be able to release additional tags in the spring spawning survey. The direct enumeration study is not used for any purpose other than to evaluate the F on the Chesapeake Bay stock, which in turn is used in the harvest control model.

The direct enumeration study is a brief but intense tagging project with very short recovery periods. Because the recovery periods are short, the emigration of striped bass out of the Bay is considered to be negligible. In contrast however, the Spring tagging study tabulates recoveries over an entire calendar year, so emigration of striped bass out of the Bay becomes an important factor to consider, and must be adjusted for in the calculation of F. The tagging database shows tag recoveries of striped bass from the Spring Chesapeake Bay tagging study within Delaware Bay and along the coast. The absolute number of recoveries may be small, however the Technical Committee suggested that the elements of the formula contained in the proposal be adjusted by the proportion of tags recovered within, and outside of the Bay.

The Technical Committee also observed that just as tagged fish moving out of the Bay influences the estimate of F, so too does the movement of untagged fish into the Bay. If the effect is a dilution of tagged individuals, then the estimates of F will be underestimated. The mark/recapture models used in the Tagging Analysis are called “closed capture” methods, which assume a constant population with no movement into or out of the population, other than mortality. Events mimicking mortality, in either direction, are not accounted for in the method. The Technical Committee recommended the Chesapeake Bay jurisdictions investigate methods to adjust for these events.

The Technical Committee agreed that the spring spawning survey is a sound methodology for estimating the bay-wide fishing mortality rate on striped bass. One committee member insisted, however, that both MD and VA spring tag data should be used to estimate Bay F if the method is to be used to calculate bay-wide quota. Because the direct enumeration study is used to determine the Bay-wide quota, the dissenting individual had concerns about using the spring survey to calculate the Bay-wide quota. Currently, the spring spawning survey does not incorporate Virginia tagging data in the calculation of the fishing mortality rate.

Other Business

Due to time constraints, the Technical Committee could not address all of the items on the agenda. The remaining agenda items will be placed on the agenda for the next Technical Committee meeting (i.e. Technical Committee Charges, Revisions to the State Proposals, and Dr. Crecco's paper on Independent Estimates of F and M). The Technical Committee agreed to hold a conference call to discuss the final stock assessment report, which will include results from and discussion regarding the VPA and tagging report. Additionally, the Technical Committee will hold a conference call to discuss the concerns regarding the tagging analysis. Both conference calls will take place prior to the December Board meeting. Finally, the Technical Committee expressed the importance of holding two Tagging Subcommittee meetings next year; one meeting to address major concerns with the methodology of the tagging analysis and a second to conduct the annual tagging analysis.