

Atlantic States Marine Fisheries Commission

*Working towards healthy, self-sustaining populations for all Atlantic coast fish species,
or successful restoration well in progress, by the year 2015.*

ATLANTIC STRIPED BASS TECHNICAL COMMITTEE DRAFT REPORT #2004-3



**Striped Bass Technical Committee
Radisson Hotel – Manchester, New Hampshire
Monday September 20th & Tuesday September 21st, 2004**

Attendees:

Technical Committee Members: Tom Squiers (ME DMF), Doug Grout (NH DFG & TC Vice Chair), Gary Nelson (MA DMF & TC Chair), Najih Lazar (RI DEM), Vic Crecco (CT DEP), Vic Vecchio (NY DEC), Tom Baum (NJ DFW), Michael Kaufmann (PA BFC), Des Kahn (DE DFW), Alexei Sharov (MD DNR), Rob O'Reilly (VMRC), Sara Winslow (NC DMF), Wilson Laney (US FWS), Gary Shepherd (NEFSC), Peter Fricke (NMFS), Andy Kahnle (NY DEC & SB SASC Chair), Stuart Welsh (USGS/WVU & Tagging SC Chair).

ASMFC Staff: Patrick Kilduff (ASMFC) and Megan Gamble (ASMFC)

Others: Dick Brame (CCA), Frank Gable (NMFS), Mike Armstrong (MA DMF), Joe Grist (NC DMF), John Hoenig (VIMS), Pete Kornegay (NC F&W)

Tagging Subcommittee Report

Stuart Welsh updated the Technical Committee on the results of the Tagging Subcommittee's Report for 2003. The report provides average F estimates for mixed-stocks and local areas, where the estimate for the local areas is a weighted average. The weighting scheme for the local area tagging results is an attempt to explain the contribution of each local area to the coastal migratory stock.

The weighting scheme for the producer areas needs to be re-evaluated. Based on the spatial distribution of the recaptures and knowing the distribution of the harvest, the subcommittee could determine a better estimate for the weights assigned to each stock. The Technical Committee discussed whether each coastal program, individually, is representative of the mortality on the entire stock or is it representative of a local mortality. Re-evaluating the weighting scheme is a way to determine if the coastal programs should be averaged or considered separate.

The tagging estimates of fishing mortality on 18 inch and a greater striped bass for the Virginia and Maryland programs are very high and differ from the exploitation estimates. The terminal year Fs are overestimated, but there has been an increase in F for these two programs

There is a lot of variability in the Virginia estimate, but subcommittee members felt that all the results should be included in the report. Should it be included if there is so much variability? Throughout most of the time series the Virginia Rappahannock estimates have been volatile, but this year it is being held as a reliable estimate. Why the change? The drop in the estimate could be attributed to the model selection differences between years. The Virginia Rappahannock estimate is significantly correlated with the Maryland program. Rob thinks there should be a few more years of stability in the estimate for the Rappahannock before it is used in the tagging report.

There is no evidence to support the steady rise in the fishing mortality rate for the Maryland Chesapeake Bay estimate for 18-inch and greater fish. The estimate shows overfishing but there is no other evidence to support that, such as the direct enumeration study or the spring tagging results. Often times, the subcommittee uses goodness of fit as a measure for using a program. The Maryland estimate had a good fit. The Technical Committee advised that both the Maryland Chesapeake Bay and Virginia Rappahannock estimates should have a qualifier. The report will include the estimates

but there will be caveats that explain the estimate is upheld through statistical analyses but there is no practical evidence to support the rise in F.

The 18-inch estimates from the coastal mix stock programs were eliminated from the report due to poor goodness of fit; the results fluctuated wildly. The Technical Committee asked that the estimates be put back into the report with caveats that explain their removal.

There are eight different estimates of exploitation rate based on R/M and none support the claim that there has been an increase in F. The proportion released alive has dropped dramatically since the beginning of the time series.

Andy suggested it's time to push for a coastwide reporting rate to verify the rate is still what it was four or five years ago. The reporting rate is crucial to interpretation of R/M, as well as all the other approaches. **The Technical Committee will advise the Board to advocate for a coastwide high reward tagging program to improve the coastal estimates of mortality.** Gary Shepherd indicated that it should be a coordinated, coastwide reporting rate study. Wilson noted that Federal Aid should be favorable towards such a study. There is currently a subcommittee of the Tagging Subcommittee working on a proposal for a coastwide high reward program. We discussed different methods of preparing/submitting such a proposal. Last year, FWS Annapolis submitted a proposal through the ACCSP, but it wasn't successful. Wilson thought that multiple states could submit a joint proposal through Federal Aid. Wilson asked Sara if she thought such a joint proposal was possible. Sara thought it would be difficult. Wilson noted the ACCSP route would likely be easier. Des indicated that he would check into how it would work through Federal Aid, and send out some advice to the states.

VPA Report

Recreational landings for most states increased. The states with the highest recreational landings were MA, NY, MD and VA. Maine, Delaware and New Jersey were the only states that did not increase their recreational landings. Dead discards have stabilized. It appears that more people are harvesting their catch, which is also borne out by the tag data. Total losses, 3.6 million fish, is also the highest value in the time series. Recreational losses increased 29 percent over last year. The highest proportion of landings came from age 7, and the highest proportion of discards from age 3.

Commercial landings in 2003 were about 865,000 fish. Commercial landings also increased in most states, due to the quota increase in Amendment 6. The highest commercial landings were from Maryland. Commercial discards were about 262,000 fish. The commercial catch increased but is not the highest in the time series. The commercial landings were mostly age 5 and discards were age 3. 76% of the 2003 catch came from the recreational sector. 2003 total losses were a 26% increase over 2002. The most of the increased catch was older age fish, which was over 50 percent of the catch.

The ADAPT VPA model is based on catch at age data, but it also uses fishery dependent and independent indices to tune the model. The VPA produces a 2003 F estimate for ages 8-11 of 0.62 (0.34 in 2002). Average weighted by N for ages 7-11 (28 inches and above) was 0.53. The F on ages 3-8 was 0.13. The total stock abundance has increase to 56 million fish. Most of the increase is

attributed to the age one fish. Fish ages 8 and higher have declined. There was a decrease in SSB to 27.3 million, from 33 million in 2002.

Because the F was so high, the Stock Assessment Subcommittee conducted multiple sensitivity analyses. Through the sensitivity analyses, the subcommittee determined that the model is most sensitive to the catch at age and somewhat sensitive to the mix of indices.

With the reweighting off, there is a strong retrospective bias meaning that there may be a strong overestimation of the terminal F . The stock size may be slight underestimated, and the terminal year F overestimated. The more years away from the terminal F , the more stable the estimate and F estimation decreases.

This years VPA was configured in the same way as the VPA for the 2002 data due to concern for the scrutiny the report may get because of an increase in F . The selection of the ages used in the assessment from each index may be another contributing factor to the rise in the fishing mortality estimate. Some of the indices that get weight are surprising; such as the Massachusetts commercial catch per unit effort survey and Virginia's YOY gets a higher weight than Maryland's YOY. It is crucial that the work from the VPA Indices Workshop be completed. The indices need to be discussed thoroughly. Not all of the data from an index may be useful. The goal is to have indices that are correlated with stock abundance.

The Technical Committee generally agreed that it is time to try some of the models that incorporate the VPA and tagging data into one model. The forward projection model may be a viable alternative to the ADAPT VPA. Eric Williams is very interested in combining the tagging and VPA estimates.

ICA Results

Gary Nelson presented the results of the ICA analysis. The model used the same catch-at-age matrix as the VPA. The model assumes the catch is calculated with error. The ICA model produced similar results, except for the last three years where the ICA model shows slightly lower values. While the scale of the resulting estimates are different, the results from the ADAPT and ICA are very similar.

Vic Crecco's Analysis

Vic Crecco presented his paper analyzing the recreational fishery in Connecticut. The paper tried to examine if effort increased during the short term as an explanation for the radical increase in fishing mortality rate. There was an increase in the landings between 2002 and 2003. The increase can be partially explained by the change in the striped bass regulations in CT. In 2003, Connecticut changed regulations to a 28-inch minimum size and two fish creel limit, whereas in 2002 Connecticut had a slot limit. In reviewing the data, Vic was looking for a change in trips, either directed or total. There could have been an increase in the number of directed trips or an increase in the encounter rate. A rise in F could result from an increase in abundance, or the killing power of the gear could increase. There could have, also, been a massive violation of the creel limit.

The effort in Connecticut's recreational fishery did not go up by 82%. The relative abundance of fish 28 inches and above did increase. Actual harvest per trip was just about the same between 2002 and

2003. There was a doubling in the number of trips that harvested one or more fish per trip. There was not as many violations recorded by law enforcement for striped bass harvested from the EEZ in 2002 and 2003. Vic believes there was a general increase in abundance for the sizes greater than 28 inches. There was probably an increase in the access intercepts that harvested striped bass. Vic contends that this supports the tagging results and not the rise in F expressed in the VPA. Vic analysis looks at trends and does not provide an estimate of F . Vic explains the increase in Connecticut's catchability by either an increase in availability of fish in Long Island Sound or in the overall abundance of the coastal migratory stock.

New Hampshire's recreational fishery contributed to an increase in F because of an increase in the number of fish that can be taken and the effort increased. In Massachusetts, the number of directed trips went down even though the bag limit increased, recreational landings increased in Massachusetts.

Andy Kahnle's Analysis

The purpose of Andy's paper was to re-run Vic Crecco's analysis, but to come up with another index for population abundance for age 7 plus using MRFSS catch per unit effort for ages 7 and older. MRFSS does not age B2's, so Andy used the regional age length keys developed for the VPA. Total catch has increased over time, but has been relatively stable for the past four years. CPUE has been declining for total ages over the last couple of years. The CPUE for ages 7+ has increased over the time series, but has been relatively stable for the last four years.

Andy then graphed the population abundance for 7+ using VPA, Tag coast, and Tag producer areas. The VPA has been relatively stable for the last few years, the Tag coast has increase in over the last 4 years and the Tag producer was more similar to the VPA estimates but increase in the terminal year. Each of these estimates was then compared to the MRFSS CPUE values. The MRFSS versus VPA shows a very similar trend. The coastal tag estimate increases well above the VPA. The Producer area tag estimate and VPA estimate are closer than the coastal, but the terminal year of the tag estimate increases above the VPA's population estimate. MRFSS seems to track closer to the VPA estimates than the tagging program estimates. Based on MRFSS, the VPA also seems to track the population estimate much better than the tag programs. Reviewing the relative exploitation for MRFSS and VPA reveals earlier in the time series the trend is divergent, but then comes together near the end.

Des noted that it is to be expected that the MRFSS estimate is more closely relate to the VPA estimates than the tag data, as the VPA is heavily dependent on the MRFSS data. Andy agreed, but noted all analyses use the same information to some degree, even with this consideration the VPA comes out ahead. Vic Crecco noted that effort in this case might not be independent of population abundance. Andy noted he used only trips for anglers who stated they were targeting striped bass.

Gary Shepherd explained that if 7+ kill was plotted versus 7+ tag, there is an almost linear increase, implying if both went up at equal rates, the incoming population was going up faster than the removal rate. Otherwise, there would be an equilibrium N . It would be constant. If catch is going up, and N is going up, the numbers entering the population have to be increasing faster than they are being removed. Des agreed that had to be the case. Gary S. noted that the tag estimate and VPA estimate have both been increasing since 1998. Gary S. noted that the indices for the striped bass age 7+ are generally flat. Gary S. noted that we could have a problem with the indices, or several other factors.

Gary S. displayed another graph, in which he plotted CATCH, VPA N and TAG N from 1992 through 2004. He stressed again that the population had to be rising faster than the removals.

Another possible explanation posed by Vic Crecco was that the catches in the north of the range are not from the population at large. He feels the evidence from the tagging data do not support an increase in landings of 82 percent. It would take an enormous increase in effort to produce such a mortality increase and Andy's analysis shows only an 11 percent increase in effort.

It is difficult to dispute that catch did increase with an increase in recreational landings, recreational discards increased, commercial landings increased and commercial discards increased. If catch increased in 2003, then it is likely the F increased in 2003. Its not likely that F is as high as 0.62, but F is very likely higher than in 2002.

Vic Crecco noted that we do estimate discards, but that there isn't any scintilla of evidence that any of those fish die. He noted that we make a lot of arbitrary decisions, because we have to do so. There is no evidence how many of those fish actually died. Gary S. noted that we could justify making the discard losses even higher. Vic Crecco noted the point he was making is that we plug in some constants for which we have no evidence. Gary S. indicated that if the discard mortality stays constant, it would increase with population size. There is a data gap for estimates of poaching, NC winter recreational fishery, and inland fisheries. All of these could contribute to an increased F.

Rob asked if anyone was aware what happened with the averaging of Wave 3 effort in 2002, which might be having an effect here. Doug noted that if you assume an increasing trend in striped bass directed effort, Rob is probably right, but that is only one wave out of five that are measured, and he noted a lot of the effort is in Wave 4 for some of the other states.

Des asked if the high 2003 catch estimates in Maryland had been investigated. The charter boat and volunteer angler survey have been investigated. There was no change in volunteer angler logbook data and a 5 percent increase in charter boats, yet the MRFSS showed a 100 percent increase in effort.

Vic Crecco noted that the 1997 and 1998 year classes do enter into the catch, but in order for Maryland's increase to have occurred, the JAI or the M would have had to increase tremendously. Vic Crecco noted the relative accuracy of the MRFSS was very relevant to this whole discussion.

Alexei noted that no one in MD believes 2003 was a record year as MRFSS indicates. Alexei noted that the number of kept fish from the volunteer angler survey was exactly the same for 2002 and 2003. Directed effort did go up. The increase could be explained by only a slight increase in the harvest rate. Gary N. noted he recalculated the value to include parties of more than one angler, and it changed some, but not much. The Maryland harvest rate has been going down since 1998, but the number of directed trips has gone up. The difference between MRFSS estimates and Maryland estimates is MRFSS uses all trips to estimate harvest. The Maryland estimate was probably within the estimates of proportional standard error.

Rob noted that VA showed a significant increase in Wave 5, of which they are highly skeptical because of the hurricane just before Wave 5 wiping out a lot of boats and precluded fishing. NMFS is examining the data, but won't provide any conclusions until the end of the year. Des noted there is

error in the catch-effort data. Gary Nelson noted that the Massachusetts data makes sense to him and MA's PSEs are about the same as Maryland's. Vic C. indicated the data do not make sense, because there would have had to be a tremendous increase in the number of fish.

Rob noted that Wave 4, 5 and 6 are close to what they have been in the previous three years, or slightly less, in terms of fish 28-inch or greater in the Maryland recreational landings, so there couldn't have been an increase in those size categories. He noted Wave 5 is typically large in Maryland and Wave 6 in Virginia. Rob indicated that it would have had to be smaller fish, which results in the large increase, from 2002, in Maryland's 2003 recreational landings.

Alexei noted that the F on ages 3-8 appear moderately low, at least in Chesapeake Bay, so whatever happened in Maryland has nothing to do with what is going on in the coast. There is error in every year's estimate. Gary S. noted that Alexei's comment was that the F from the VPA agrees well with the tag-based F for the Bay fish, and that is true.

There is no coastwide index that covers the coastwide population. The technical committee assumes the indices adequately cover the overall trends in the coastal migratory population. These assumptions work in years when nothing changes much, but in years when things change, there are problems.

There are three components to the MRFSS estimates: effort, percentage of anglers encountering a striped bass, and catch per trip. There was an increase in the percentage of anglers encountering a striped bass and an increase in effort in Maryland. Those are the two factors that drove the estimate. The average number of fish harvested per trip did go down slightly. Effort increased by 500,000 trips and the percentage of anglers encountering striped bass went up by 50 percent. In 2002, 5.5 percent of the trips harvest a striped bass. In 2003, it was 8.6 percent of trips that harvested a striped bass. That is about a 50 percent increase in harvest.

The Maryland charter boat CPUE time series from 1993 - 2003 did not vary much throughout the ten years. There was a slight increase from 2002 to 2003. The volunteer angler survey data were available only for three years, and CPUE was available and stayed constant for 2002 and 2003. Vic C. suggested that meant if the population was going up, the catch should have doubled. Alexei noted the design wasn't very rigorous, but was haphazardly random. The number of fish encountered by the average angler went down, according to the volunteer angler survey.

It appeared from the data that the number of trips increased in 2003. The number of directed trips in Maryland increased by 34 percent. The percentage of trips successful increased, and the fish per trip declined slightly, but that still resulted in an increase.

Maryland's Proposal (Spring Trophy Quota)

In 2003, the Management Board approved a new methodology for calculating the Chesapeake Bay spring migrant fishery. Each year Maryland must submit a new quota for the fishery and report the harvest from the previous year.

Alexei explain the methodology used to estimate Maryland's harvest of coastal spring migrants into the Chesapeake Bay. The method employs length data from the Maryland Volunteer Angler Survey

and the Charterboat Creel Survey, as well as harvest data from MRFSS access/intercept survey (wave 2 and 3) and harvest reports from Maryland's charter fishery.

The estimated harvest of spring coastal migrants was 31,218 in Maryland. Virginia's coastal migrant harvest was estimated to be 186 fish, for a total Chesapeake Bay spring coastal migratory fish harvest of 31,404 fish.

Then Alexei briefly reviewed the approved methodology for estimating the 2005 spring coastal migrant striped bass harvest quota for the Chesapeake Bay. The quota is based on the changes in the number of age 8+ striped bass in the population as determined by the ADAPT VPA. The harvest quota for 2005 was estimated to be 31,434 fish.

The TC had several questions about the methodology used to estimate the harvest for the 2004 spring coastal migrant fishery, the questions were specifically regarding emigration rates taken from Rugolo and Jones (1989). Rugolo was to have done additional work to refine the estimates on emigration rates. There were some concerns that emigration rates and duration of stay in the Bay may have changed due to incidents of increased hypoxia. The original emigration rates were calculated assuming F in the Bay was zero when in actuality there was some harvest and discard mortality doing on during the moratorium and this needs to be accounted for in the calculations. The Technical Committee discussed various reasons error may be introduced when using Rugolo's estimate of emigration rates. **TC recommends that the emigration rates be re-evaluated by the state of Maryland.**

The Technical Committee agrees that MD followed the appropriate procedure for estimating the harvest for 2004's spring trophy fishery, as well as the cap for the 2005. The Board approved a 40,624 fish quota for the 2004, but there was an overage in 2003 so the 2004 quota was adjusted to 27,134. Maryland exceeded the 2004 cap by 4,270 fish. The 2005 quota adjusted for overages in previous years will be 27,164 fish. The actual quota will be re-estimated as soon as the VPA estimates are finalized. Also, the numbers are acceptable pending any remedial actions the Board may need to take in response to the stock assessment report.

New York' Proposal

New York submitted a proposal that consisted of previously approved regulatory changes. The Management Board approved the changes in December 2003 or earlier. The proposal was submitted to notify the Commission of the intended changes to New York's striped bass management program for the 2005 fishing year. There are three components to the proposal. First component modifies the Hudson River recreational measures. Currently, the measures are 1 fish and an 18-inch minimum size limit with an open season from March 15th to November 30th. There are two ways New York may modify the regulations: 1) stepwise minimum size increase (2005: 1 fish 24 inches; 2006: 1 fish 28 inches) or 2) the minimum size will be increased to 28 inches in 2005. The Board approved both 1 fish at 18 inches, 24 inches or 28 inches in June 2003.

The second component of the proposal addressed the striped bass regulations for the Marine District's Recreational Fishery. The current regulations are 1 fish at 28 inches between April 15th to December 15th. There is a special permit for party and charter boats, which are allowed 2 fish at 28 inches. The proposal is to increase the Marine District's recreational measures to 2 fish at a 28-inch minimum size or one fish with a minimum size of 28 inches and a second fish of a larger size (which is more

conservative and yet to be determined). If the second option is selected, the party and charterboat measures may change.

The third and final component of the proposal pertained to the Marine District's Commercial Fishery. The current measures require a permit, have a slot size of 24 inches to 36 inches, a harvest cap of 828,293 pounds, as well as a season, mesh requirements for gillnets and bycatch provisions for other gears. The proposal modifies the slot size limit to 28 inches to 39 inches and correspondingly the quota to 877,180 pounds. The mesh size for gillnets may also change. Amendment 6 allows New York to increase the commercial quota up to 1,061,060 pounds if the bag limit was two fish at a minimum size limit of 28 inches. Vic Vecchio noted that there is higher PCB contamination in the larger fish, so the alternative may not be viable for the west end of the open area toward New York City.

The TC and Board already approved New York's proposal, therefore the Technical Committee does not need to approve the proposal again. **The Technical Committee saw no problem with the proposed regulations.**

Delaware's Proposal

Delaware submitted a proposal that does not modify any of the mandatory requirements in Amendment 6, but does modify their current management program. The first aspect of proposal would require circle hooks for bait fishery while fishing the three identified spawning ground areas. There is already a seasonal closure in place from April 1 to May 31 when the take or retention of striped bass is prohibited. Due to an increased catch and release fishery, the circle hook requirement will likely reduce the mortality associated with the fishery. New Jersey already has a circle hook requirement in the New Jersey portion of the Delaware River and Pennsylvania is considering one in their jurisdiction.

The second aspect of Delaware's proposal addresses the commercial hook and line season. Delaware's commercial quota (193,447 pounds) is allocated between to gears with 90% allocated to the gill net fishery and remaining allocated to a hook and line fishery occurring from September 1 through the end of December. Because the hook and line fishery does not harvest all of the quota allocated to the fishery, the state proposed to extend the season to include the spring and summer months to allow the fishery to take advantage of higher market prices. The season would begin April 1 rather than September 1. The spawning grounds would remain closed and for those fishermen who also hold a gill net permit, no hook and line tags will be issued until after the spring gill net season.

The third and final aspect of Delaware's proposal extends the commercial gill net season by opening it two weeks earlier and closing it one month later. The state would try to reduce the amount of bycatch resulting from the extended season by requiring drift gill nets with mesh sizes greater than 4 inches throughout most of May. Again, the extended season is proposed to allow the fishery to harvest the full quota and to take advantage of better market prices.

Des Kahn explained how the commercial fishery quota is monitored for both gear types. Commercial fishermen are required to hold a permit. Fishermen are issued tags prior to the start of the fishery's season and catch must be reported at weigh stations. The quota for both fisheries is monitored on a weekly basis. The Technical Committee discussed the potential increased discard mortality. One

cause for the increase would be that the fishery is allowed to fish over a longer period of time, also the hook and release mortality could increase with the season extending into the warmer summer months. Discard mortality rises with warmer water temperatures. The Technical Committee recommended the mandatory use of circle hooks used in the commercial hook and line fishery. A longer season allows more time for high grading, which is another potential source for increased mortality. The Technical Committee members would feel more comfortable if the season was closed in the summer and then reopened in the fall. Members also felt there should be some sort of monitoring for the level discards occurring in these fisheries.

The Technical Committee approves the proposal because it is a quota monitored fishery, but there are some suggestions for managing the fishery to decrease potential discards; such as circle hooks and a summer closure.

Pennsylvania's Proposal

Pennsylvania's spawning stock survey is not required under the current management plan, but the FMP does require states to get the approval of the Technical Committee if any monitoring programs are modified. In 2003, the Technical Committee approved a modification to the spawning stock survey. The proposal modified the survey so that each of the established 21 sampling sites were sampled once, rather than twice. The modification was made to allow Pennsylvania to expend resources on sampling additional sites upstream where spawning may occur. Mike Kaufmann distributed maps depicting the 21 sampling sites. The state proposes to sample between the Neshaminy Creek and the head of the tide to resample some sites visited last year, as well as sites not sampled last year.

Last year, the Technical Committee commented the CPUE has high variability and the state should attempt to determine if there is a prime time to sample this area of the Delaware River. By examining the data from the last nine years, Pennsylvania was able to determine the ideal time was between May 12 to May 22 because there is a good mix of males and females. Generally, in early May females predominate and total catches per site are very low. By May 7 catches improve somewhat, but are inconsistent. Catches per site are higher and the mix of sexes is most consistent between May 12 and May 22. After May 22, there are very frequent zero catches per site combined with occasional sites with very high catches, predominated by males. Sampling will be focused between this short period to reduce variability. To increase the upriver exploratory sampling sites, the repetitive sampling will again be eliminated and each of the 21 sites will be sampled only once. Des Kahn noted that the precision is actually fairly good, but the proposal calculates the coefficient of variation incorrectly; it should be the standard error divided by the mean rather than the standard deviation divided by the mean. The coefficient of variation will be will recalculated.

The Technical Committee asked if Pennsylvania has found that there is a longitudinal change in the location of the spawning grounds? Mike Kaufmann responded that the spawning grounds change during the season but not from one season to the next. **The Technical Committee approved the proposal with the request that PA comes back next year with another report and update on progress.** The Technical Committee did express some concern that reducing the sampling will also reduce the number of tags released because of the additional sites sampled.

North Carolina's Revised Striped Bass FMP (Sara Winslow)

The ASMFC FMP for Striped Bass requires North Carolina to inform the Commission of changes to their Albemarle-Roanoke Striped Bass FMP. The Commission's approval of North Carolina's management plan is not required. However, North Carolina must adhere to the compliance criteria in Amendment 6. The Management Plan defines both the Albemarle Sound management area and the Roanoke River management area. The FMP was last revised in 1994, so the updated FMP explores harvest options and identifies management measures and research needs to promote recovery of striped bass stock in the central and southern area.

The A/R target fishing mortality rate is set at 0.22 and the threshold spawning stock biomass is set at 400,000 pounds. The annual total allowable catch is allocated to the three fisheries; 25% to the Roanoke River recreational fishery, 25% to the Albemarle Sound recreational fishery and 50% to the Albemarle Sound commercial fishery. The FMP implements overage penalties. No overage penalties were applied to the Roanoke River overages from 1994-2002 due to the significant underage in 2003. The FMP addresses habitat and environmental issues, catch and release mortality in hook and release fisheries, discards in the multispecies gillnet fishery, enforcement of creel limits, and maintains the Albemarle Sound Management Area boundary line.

Rob O'Reilly asked about the type of gill nets employed. Sara advised that anchor gill nets are used, and the mesh size is closely regulated in the Albemarle Sound management area. Sara noted our concerns about the fishery around Oregon Inlet, but indicated that the NCMFC didn't concur and maintained the same regulations (2 fish per person per day and 28 inch total length). The NCDMF will be monitoring the harvest in the vicinity of Oregon Inlet and including that in the VPA for the A/R stock. The harvest from the Oregon Inlet area will be deducted from the ASMA recreational TAC. Vic Vecchio asked if there was any proposal to do some more tagging in the vicinity of Oregon Inlet. Pete indicated that tagging was what had prompted the concerns about the stock in the first place, and more tagging would be desirable.

Albemarle-Roanoke Stock (Joe Grist)

The Technical Committee requested that Joe Grist provide a quick update on the status of the Albemarle-Roanoke stock. The 2003 environmental conditions led to a decline in stock status because of abnormally high rainfall in addition to a hurricane.

The 2003 assessment estimates the total stock abundance to be between 1 and 2 million fish. The 2000 cohort, represented by an exceptionally high JAI value, has begun to enter the fishery, showing up as age-3 discards in 2003. It is unclear how large the cohort is actually, or how accurate the 2000 JAI value was when talking availability versus abundance, but data for 2004 for age-4 fish should shed light on this in the next annual assessment (2005). The 2003 estimate of fishing mortality on ages 4-6 is $F=0.15$, which is below the target for these ages ($F_{\text{target}} = 0.22$). SSB is estimated to be around 1 million pounds, exceeding the threshold of 400,000 pounds since 2000. There is evidence that the stock structure is expanding with striped bass aged out to 14 years.

The assessment shows wild fluctuations in F , likely attributed to the 2003 environmental conditions confounding the model and creating a lot of uncertainty. Alexei asked if there is any evidence of mixing and the recovery of the coastal migratory stock possibly influencing the F s, maybe contributing

to the fluctuation. There have been a few tagged fish caught in the Albemarle-Roanoke that were tagged in other states. Overall exchange rate since 1990 was about 1% at the most. North Carolina is tagging more, older large fish now, so the presence of A-R fish may increase in coming years.

Diadromous Fish Habitat Document (Wilson Laney)

Wilson Laney is writing the striped bass chapter of the Diadromous Species Habitat Baseline Source Document. Wilson distributed copies of Table 2 from the document. Table 2 is an attempt at a comprehensive review of all literature that describes striped bass habitat. ASMFC Habitat Committee would like to lay the foundation for Habitat Areas of Particular Concern designation, if desired. The Commission does not use the term Essential Fish Habitat as the Regional Councils and NOAA Fisheries do, but the Commission does use have the Habitats of Particular Concern (HAPC).

Wilson and the Habitat Committee are asking the Technical Committee to review table and send Wilson citations that are not included in the table. If in the future the Commission wants to designate HAPCs, the document will provide basis for the determination of a designation. Wilson will send out an electronic version of the table for the Technical Committee's review. **Technical Committee members should send references that contain river kilometre, striped bass spawning reaches, as well as the year and temperature documented.** The entire chapter will be sent out the TC for their review in the near future. The Habitat Committee hopes to have a completed draft document for the Policy Board at the annual meeting.

Maryland's Baywide F Estimation (John Hoenig)

In 2003, Maryland submitted a proposal to eliminate the summer/fall tagging program and use the R/M estimates from the spring tagging program to estimate the Chesapeake Bay fishing mortality rate. The Technical Committee originally approved Maryland's proposal with some concern that Virginia data had not been included in the analysis. During the December 2003 Board meeting, per the request of the Commonwealth of Virginia, John Hoenig made a presentation outlining a series of concerns regarding the change in programs and methodology. The Board referred the issue back to the Technical Committee asking that the Technical Committee consider John Hoenig's concerns. Earlier this year, the Technical Committee reviewed John's presentation to the Board and requested additional work. John Hoenig addressed the Technical Committee's requests and presented his findings during this Technical Committee meeting.

After further review of Maryland's analysis, John determined the data matrices of recaptures from the summer/fall tagging are sparse and are not suitable for the Brownie model's estimates of survival. The summer/fall tagging program could be another source of data that would provide consistency in data overtime and for this reasons the summer/fall data has not proven itself to be dispensable. John does not recommend using the Brownie model or Fs derived from R/M because of inexplicably high year-to-year variability. Additionally, these models also do not handle non-mixing well.

John advocates for the instantaneous rates model as the best option for estimating the Chesapeake Bay fishing mortality rate because it can accommodate for non-mixing, provides diagnostic procedures and has been extensively studied. Also, the instantaneous rates model provides information on the appropriate value of natural mortality and does not provide wild fluctuations from year-to-year. The

model is insensitive to tag reporting rate as long as the tag reporting rate is high. John recommends using the instantaneous rate model for estimating the Chesapeake Bay fishing mortality rate. John also recommends finding a way to use the tagging data as a VPA input.

John distributed his thoughts on a Plan for Action. John suggests verifying the instantaneous rates model results with Maryland data. John's presentation used Virginia Rappahannock data. Then both sets of results need to be compared to determine if the instantaneous rates model can produce more credible estimates and if natural mortality is higher than previously believed. John wants to put together a manuscript with Des and Vic on natural mortality. John suggests continuing with the constant M and using the value estimated by the instantaneous rates model in a side-by-side comparison to evaluate methodologies and results.

In conclusion, John no longer has a problem with Maryland's proposal to eliminate the fall tagging program, but he does not support the use of R/M estimates to determine the Chesapeake Bay fishing mortality rate. Maryland's proposal was to use spring tagging data to determine the fishing mortality for Chesapeake Bay and the proposal estimated the exploitation rate using the R/M ratio.

In John's opinion, the spring tagging program provides a better estimate of F because there is better tag mixing. It is hard to get decent numbers of fish from the fall tagging program because of sparse data matrices and mixing issues. The elimination of the summer/fall tagging program is acceptable to Virginia as long as Maryland submits another analyses using Virginia's data. Virginia and Maryland's fishing mortality rates are not comparable; therefore it is important to include the Virginia data in the Baywide F estimate. Virginia is considering releasing tags during the spring to augment the Maryland analysis of the Baywide F. When Virginia has its portion of the spring releases, it will be sure to conduct the analysis of their data in the same manner. Maryland and Virginia agree to do a joint analysis of the spring tagging program, evaluating the best means to estimate the Baywide F. The states will repeat the R/M ratio and the instantaneous rate model using both Maryland and Virginia data. These analyses will be studied separately and then with combined data.

Doug was concerned about not having time to thoroughly review this new information. Des was concerned that the original proposal included only Maryland data and wanted to make sure that Virginia data be included. Alexei explained that it is Maryland's intent to use Virginia's data. Rob believes that additional time will not change the conclusion that the fall tagging program can be eliminated. Doug is wary because we were hasty with the original decision and as a result wants to be more careful this time around. The Committee is concerned about the coastal migrants coming into the Bay during the spring tagging and skewing the estimate of the resident population. The F estimate is supposed to be an estimate of the harvest of the resident population.

In response to some Technical Committee member's concerns, the Technical Committee will have additional time to consider John's presentation and paper. **All comments are to be distributed to the entire group by October 4th so that the comments can be included in the TC report. Currently, the Technical Committee's general consensus is to allow the elimination of the summer/fall tagging program and use the spring tagging program to estimate the Baywide fishing mortality rate.**

Update October 4th, 2004: Additional comments supported the general consensus from the Technical Committee meeting in September. The additional comments emphasized the importance of submitting further analysis of several methods for calculating the fishing mortality rate using the spring tag data from both Maryland and Virginia before the Technical Committee can agree on the best method.

The additional analyses to be conducted by Maryland and Virginia could lead to changes in the tagging program or changes to the estimate of the Baywide F. **The Technical Committee will need to approve any change to the tagging program or the methodology for estimating the Baywide F. For 2005, Maryland and Virginia will provide R/M estimates of exploitation, Des's method for estimating exploitation, and the instantaneous rates model. Additionally, the Technical Committee wants Maryland and Virginia to submit an analysis of the R/M ratio, Kahn's method and instantaneous rates using previous years data prior to the February Board meeting so that the TC has enough time to evaluate the findings and if Board action is needed, it could be taken in February.**

Natural Mortality (M)

Some Technical Committee members felt it was time to notify the Board that there is a problem with natural mortality. Des, Vic Crecco and John Hoenig have all presented analysis that show an increase in natural mortality on the younger ages in the Chesapeake Bay. The VPA does not show an increased fishing mortality rate on the younger ages, but the landings have increased. The VPA does not support the claim that natural mortality has increased. Vic Crecco noted the empirical evidence for an increase in M, concurrent with the incidence of mycobacterial disease.

Several technical committee members agreed that the TC should tell the Board there is some statistical evidence for an increase in natural mortality, but the empirical data are not all consistent. **Gary Nelson will initiate an email discussion to determine how to proceed in addressing natural mortality. Gary Nelson indicated that he would inform the board, noting that the Technical Committee could not resolve any plan of attack at the present time.**

VPA Indices Workshop

Gary Nelson reviewed the outcome of the VPA Indices Workshop. The first day of the workshop was spent reviewing each survey and their methodologies. On the second day, the workshop participants developed an evaluation protocol for the indices. In the process, problems were identified for each program, so recommendations were made to improve the indices. The states need to evaluate their survey design and address the recommendations made by the Workshop participants. Eventually, the Technical Committee will need to review all of the state analyses and determine which surveys will be included in the VPA.

Des Kahn noted that some of the statements in the document regarding Delaware are incorrect, and asked if they could be corrected. The document included in the Technical Committee briefing CD was only a compilation of notes taken during the Workshop. The plan is to formalize the report and have it printed. Those present during the Workshop were asked to submit a formal write up of the survey design and methods for inclusion in the Workshop report. Technical Committee members felt that the

self-evaluations should also include a description of the life history for the fish in their area, including information regarding spatial and temporal distribution of the stock.

The Technical Committee agreed with the procedure outlined by the Workshop for evaluating the survey indices. At a later date, the Technical Committee will need to discuss how surveys will be eliminated. **The Technical Committee will formally request that the Board require the states to conduct the self evaluation of their surveys and submit a write up to the Commission by March 15th.**

Status of the Stock

The Stock Assessment Subcommittee's report and the Tagging Subcommittee's report need to be consolidated into one report. The Technical Committee has not reconciled the two sets of results. Gary Nelson suggested the Technical Committee members take turns expressing their individual views this year's stock assessment.

Des: There is no way to resolve the discrepancy in results between the VPA and tagging analysis. Does not know how to explain the increase in the VPA's terminal year fishing mortality rate estimate, unless there was a big increase in effort or catchability. Des was concerned about the retrospective pattern, when it is run without weights. That normally tells him the VPA is unreliable. Des does not believe the regulation changes are enough to explain the VPA results. The tagging programs did not show same increase in exploitation rate. 82% rise in F occurs only in the older fish.

Andy: One possibility for presenting the results is to provide bounded estimates. There are problems with both modeling approaches and cannot select one model over another. The terminal F lies somewhere between the two estimates. The fishing mortality rate may have gone up in 2003. The Technical Committee should recommend that the harvest should not be relaxed any further. The Technical Committee and subcommittees have identified problems with both models that need to be addressed.

Wilson: It is common knowledge that there has been a significant recreational fishery off of North Carolina and Virginia that has not been included in the VPA. This is a cause of concern and is another source of mortality that is not accounted for. There is no agreement between the two approaches. The Technical Committee should indicate to the Board that status quo needs to be maintained and no harvest increases should occur until things are investigated further.

Stuart: The true 2003 fishing mortality rate estimate is probably some where between the tagging analysis and the VPA results. The Technical Committee should present both methods and explain the uncertainties associated with both models.

Alexei: It appears the increase in fishing mortality for ages 8 –11 is the results of the substantial increase in harvest in 2003, specifically the increased harvest on older fish. The abundance of those cohorts is still high; therefore there will likely be the same high level of harvest in the future. We have not accumulated the complete information on catch for each cohort because they have not fully lived out their lives yet. Over the next few years we will see whether or not the terminal year's estimate will go down. The increase in harvest could be the result of a relatively high abundance or due to a

significant increase in harvest or effort. Fisheries could be locating fish with increased efficiency this year; Alexei wonders this is not the case for previous years. Tagging model does not show an increase in exploitation rate. With the methodology we are using right now, we can only present them with a range of the estimates. There should not be any further relaxation in regulations. If next year we run the VPA and F is still as high, there will be an indication that the increase in F is truly high.

Najih: VPA produced unusually high F estimates and we cannot find any clear reason for why the model produced the high F. Because of the PR pattern, F should be calculated based on ages 6-11 to include the fully recruited Fs. There are some questions about whether the increase in the recreational estimates are as high as reported by MRFSS; is the increase real or an MRFSS survey error. Adding one more year may stabilize results or provide a more realistic set of results. The increase is partially attributed to error in catch and we have liberalized some of the management measures, in particular the recreational regulations in some states. These are contributing factors to the rise in F too. Najih is not comfortable suggesting F has doubled.

Tom Baum: It is hard to accept the MRFSS estimates. It is suspect that NJ's harvest estimates did not increase with the other states. F has gone up very high. Some of the increase is attributable to the increase from Amendment 6.

Rob: All the dialogue in the world is not going to change the fact that the VPA produces an F of 0.62. Likewise, nothing was going to change the fact that the R/M estimates from the tagging studies show relatively low estimates of F. The Technical Committee needs to bridge this gap for the Board. Rob believes F has increased, but is uncertain about the extent. Landings did go up so we should expect F to go up too. This is a terminal year estimate; the retrospective analysis brings the validity of that estimate into question. The VPA shows a relatively low F for ages 3-8 in 2003. For every age, except for age 6, there is an increase in harvest, not to the same extent as the older ages but still there was an increase. The indices do not seem to be doing justice in terms of keeping track of the landings increase. Rob is concerned with the lack of increase in F in ages of 3-8 from the VPA, compared to comparable results from the tagging analysis. We cannot ignore the information coming from the tagging program.

Vic Crecco: Never has Vic seen such a divergence in the estimates from the two models. The VPA shows such a pronounced increase in the F for the older ages. Need to breakdown the cause for the increase in the F. The two fish daily creel limit is the most conservative creel limit in the Northeast or north of Cape Hatteras for that matter. In order for the F to have risen due to the recreational fishery, we had to have overwhelmed the creel limit, meaning there had to be an increase in effort. There was a coastwide increase in directed effort, but it was not sufficient to have caused an 82% rise in mortality. The MRFSS data needs to be examined more comprehensively to determine if the number of access intercepts have gone up. There is no comparable increase in the MARK based models. The Connecticut data did not show an increase in mortality on the age 8+ fish. There must be something about determining the abundance of the larger fish. Vic believes there may be a problem with evaluating the abundance of the large fish. All of the information should be presented to the Board. There needs to be a better set of indices for the larger fish. Vic suspects it is not a problem with the VPA, but rather a problem with the spatial and temporal distribution of the fish. Vic explained that he is a proponent of the tag-based analysis.

Vic Vecchio: Vic agrees with much of what Vic Crecco said. He is surprised about the F on the older ages, but he is uncomfortable with the redundancy of the tag-based estimates. In New York, landings went up by 33%. Vic believes the increase is accurate. There needs to be an investigation of the indices.

Doug: VPA estimate is very high, but it is a terminal point estimate. There are very high error bounds around that estimate. Based on the retrospective analysis, the value will likely drop in subsequent years. There has been a relaxation in regulations, not only in recreational regulations, but also commercial regulations. Partially driven by an increase in effort, but also attributed to catchability, this observation is based on increased harvest in several states. A greater percentage of the trips caught striped bass. There is no comparable increase in abundance in the independent indices to explain the increased F rate. Doug believes F did go up. He questions the tag-based estimates; there had to be an increase in the F estimate because of the relaxation of the regulations. There maybe some error around the harvest estimates, but we aren't taking into consideration the harvest in North Carolina. As a result, we may be undercounting dead fish. Doug wants to understand why the tag-based estimates are going down. Intuitively, if we have solid assumptions, we would not be seeing lower tag-based estimates given the increase in harvest due to relaxation of regulations. We also know there is an increase in effort. We have exceeded the target for the past several years.

Sara: In the ocean recreational fishery off of North Carolina and Virginia, there is a lot of high grading and discarding. She felt that the harvest in the last two years, perhaps even tripled, during the November through February time period. Without data from this fishery, the assessment has a big data gap. North Carolina picks up those landings, MRFSS does not. The terminal year estimate is questionable, but in future assessments the estimate should come down. The Board should be conservative, stay with status quo and prevent any further increase in harvest.

Tom Squiers: Tom explain that he does not have the experience to interpret the model results, but by just looking at the various trends you can see catch went up, effort increased, the SSB is going down, abundance of age 8+ is going down, the harvest increased and F has gone up. We have to caution the Board to be conservative.

Gary Nelson: Gary does not believe F has gone up as high as the VPA estimates. In Massachusetts, harvest numbers have gone up because the bag limit increased. Gary believes the harvest numbers are correct, but does not have confidence in the corresponding F . The Subcommittees need to address the problems with the models. Gary is concerned about the risk associated with being middle of the road with our advice to the Board. There is potential injury to the stock if nothing is done. Gary suggests presenting the Board with the risks associated with the results.

Gary Shepherd: Gary does not believe the terminal year F estimate. The large increase, even with the retrospective iterative weighting, still not believable. He felt that we are dealing with some unreliable indices given that the stock has plateaued. Because we are dealing with some unreliable indices, the noise in the estimates is increasing. There are specific waves that have overestimated harvest for recreational fishery, but there are probably some that are underestimates too. The relaxation of the regulations leads to the increased catch. Tag data is also skeptical, because it is flat over most of the time series with very little change. The replacement population needs to be increasing faster than the removals, if this were true there should be some indication in the indices, but this evidence is not

present. We are either missing something in the modeling process or in the tag releases, not sure which one. If we project the abundance of age-8 fish, based on past data, using a simple regression, it comes out about where the VPA says it should be. Gary felt that for the catch to have increased so much, then N would have had to increase very rapidly, and yet none of our indices so indicate. The complexity of the population has outpaced our modeling ability. The ADAPT model is probably not appropriate for handling the three stocks. The tag data assumptions need to be reviewed due to the complexity of the stocks. There is too much uncertainty to definitively say we are over the threshold. The last year's VPA said we were over the target F since 1997. If it is accepted that harvest has increased, then it is likely F increased. We cannot say with certainty the threshold was exceeded; we can, however say, with certainty that the target has been exceeded.

This is a terminal year estimate of the fishing mortality rate and the retrospective clearly shows that F is likely to go down. The estimate is very biased. **The Technical Committee came to consensus that the VPA estimate of F was too high. The Technical Committee's message to the Board should explain all of the uncertainties associated with both models.**

If the F threshold is exceeded in any year, then the Management Board is required to take action. **The Technical Committee cannot say with any certainty that the fishing mortality exceeded the F threshold. It is likely that the target has been exceeded for a number of years.** If fishing mortality is over the target for two years and SSB is under the target for either of the two years, then action to reduce the fishing mortality is mandated. Gary Nelson noted that if the Technical Committee does not have confidence in the F estimate, then the Technical Committee does not have confidence in the spawning stock biomass estimate either. The other trigger is the JAI; the 2003 JAIs for Maryland and Delaware were the highest on record. **Gary Nelson asked that the JAI time series be updated by the appropriate states.**

The proposals were to change regulations to the maximum allowed under the plan; the plans were not liberalizing regulations from the amendment requirements. There is a difference between liberalizing regulations from the plan requirements and liberalizing the regulations from the status quo. The Board needs to understand where the commercial quotas are now and how much commercial harvest could increase according to Amendment 6.

ACCSP Biological Sampling Targets

None of the Technical Committee members submitted recommendations for biological sampling targets. Vic Vecchio explained that he did not submit the excel spreadsheet because his department recently updated the spreadsheet collectively. Megan was unaware of an updated spreadsheet, but will check with Shannon Bettridge when she returns the office. Gary Nelson was concerned about recommending targets and being held accountable for collecting all the sampling. Doug explained the spreadsheet is to be used as a guideline and are meant to be targets only. The recommendations will not be enforceable. Due to time and concerns expressed above, the Technical Committee did not prepare recommendations for the Stock Assessment Committee as requested.

Prioritization of Technical Committee Charges

Due to time, the Technical Committee was unable to address the outstanding Technical Committee charges and discuss the FMP mandated Bycatch Program. Additional charges have been made during the course of the Technical Committee meeting. **The Technical Committee agreed to have Megan update the list of charges and then address the Technical Committee's workload via conference call.**

Evaluation of Compliance Spreadsheets

2004 was the first year that the states were asked to enter all of the fishery dependent and independent data into an excel spreadsheet. The purpose of the spreadsheets is to facilitate the compilation of all the state data for the annual stock assessment, reducing the amount of work the stock assessment subcommittee had to do upfront. The Excel spreadsheet is meant to be separate from the standard written compliance report.

Some people found the spreadsheets to be confusing because the sheets already included an example. It was thought the example should be used, rather than deleted and the state data should be entered into the sheet. The standard units need to be specified for each spreadsheet. It was unclear which units were supposed to be entered. States are to enter total length in the compliance spreadsheets. It is easier to convert to fork when needed.

Generally, the Technical Committee found this first year of filling out the spreadsheet difficult because the entire time series needed to be entered into the spreadsheet, but it should be easier next year when only one year will need to be entered.