

ATLANTIC STATES MARINE FISHERIES COMMISSION

Quality Hotel & Conference Center Alexandria, Virginia

WINTER FLOUNDER MANAGEMENT BOARD

January 29, 2001

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WINTER FLOUNDER MANAGEMENT BOARD

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Attendance

Board Members:

Lew Flagg, ME DMR

Dennis Abbott, proxy for Rep. Blanchard, NH Leg. Appte.

Dr. David Pierce, MA DMF

Vito Calomo, proxy for Rep. Verga, MA Leg. Appte.

Ernest Beckwith, Connecticut DEP

Gordon Colvin, NYS DEC

Brian Culhane, proxy for Sen. Johnson, NY Leg. Appte.

John Connell, NJ Gov. Appte.

Harry Mears, NMFS

John Nelson, NH Fish&Game

Ritchie White, NH Gov. Appte.

Bill Adler, MA Gov. Appte.

David Borden, RI DEM

Dr. Lance Stewart, CT Gov. Appte.

Pat Augustine, NY Gov. Appte.

Bruce Freeman, NJ DF&W

Charles Lesser, DE DFW

Ex-Officio Members:

Steve Correia, MA DMF, TC Chair

Bud Brown, ME, AP Chair

Other Commissioners:

Pete Jensen

Staff:

Dr. Joseph Desfosse

Dieter Busch

John H. Dunnigan

Guests:

Gerald Carvahlo, RI

Sherman Baynard, CCA MD

Dick Brame, CCA

Dr. Jim Guilford, MAFMC

Kenneth B. Lewis, CCA MD

Gregg Waugh, SAFMC

James Fletcher

Rick Cole, DE DFW

There may have been others in attendance who did not sign the attendance sheet.

Winter Flounder Management Board

January 29, 2001

SUMMARY OF MOTIONS

1. *Motion to approve the minutes of May 17, 1999.*

Motion by Mr. Nelson, second by Mr. Adler. The motion carries unanimously by voice vote.

2. *Move that the Winter Flounder Board recommend to the Policy Board that out of the additional ACFCMA money, up to \$10,000 be set aside to conduct a Winter Flounder Ageing Workshop in the year 2001.*

Motion by Mr. Colvin, second by Mr. Calomo. The motion carries by voice vote.

3. *Move to nominate David Borden as Chair of the Winter Flounder Management Board.*

Motion by Mr Colvin., second by Mr. Nelson. The motion carries.

4. *Move to nominate Pat Augustine as Vice-Chair of the Winter Flounder Management Board.*

Motion by Mr Colvin., second by Mr. Flagg. The motion carries.

ATLANTIC STATES MARINE FISHERIES COMMISSION

WINTER FLOUNDER MANAGEMENT BOARD

Quality Hotel and Conference Center Arlington, Virginia

January 29, 2001

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The Winter Flounder Management Board of the Atlantic States Marine Fisheries Commission convened in the Presidential Room of the Quality Hotel and Conference Center, Arlington, Virginia, January 29, 2001, and was called to order at 11:00 o'clock a.m. by Vice-Chairman David V.D. Borden.

WELCOME/INTRODUCTIONS

VICE-CHAIRMAN DAVID V.D. BORDEN: All right, if everyone could have a seat, please, we're going to start. Welcome to the Winter Flounder Management Board meeting. For those of you who do not know me, my name is David Borden and I am Vice-Chairman, at least for the day. We have distributed an agenda. Are there any additions or deletions or modifications to the agenda? The next item of business is to take the roll. (Whereupon, the roll call was taken by Dr. Joseph Desfosse).

APPROVAL OF MINUTES

VICE CHAIRMAN BORDEN: All right, we have a quorum. The first item on the agenda is approval of the minutes of May 17, 1999.

MR. JOHN I. NELSON: **I will move, Mr. Chairman.**

MR. WILLIAM A. ADLER: **I second.**

VICE-CHAIRMAN BORDEN: The motion is made and seconded by John Nelson and Bill Adler. Any discussion on the motion? No discussion. All in favor, signify by saying aye; opposed; abstentions? **The motion carries unanimously.**

PUBLIC COMMENT

The next item is the opportunity for the public to comment. Are there any members of the public who care to comment on the agenda or winter flounder management at this time? We will take comments throughout the meeting if you would care to speak to a motion that comes up. No hands up, then, Next item of business is -- Joe.

DR. JOSEPH DESFOSSE: Before you get into the main part of the agenda, I just wanted to make an announcement. There is a sign-up sheet for people who drove to the meeting, and if you put your license plate number down on the sheet, it means you will not get a ticket or get towed away.

VICE-CHAIRMAN BORDEN: That is an important item. The next item of business is the overview of stock status. I think that this is Steve Correia. Steve.

OVERVIEW OF STOCK STATUS

MR. STEVE CORREIA: Thank you, Mr. Chairman. My name is Steve Correia, and I am the Chairman of the Winter Flounder Technical Committee, which has not met since the last time this Board met. I am going to give two presentations. One is going to be on the stock status of Southern New England/Mid-Atlantic winter flounder and Gulf of Maine winter flounder, and the other one is going to be some preliminary results from an aging comparison study that we have done on winter flounder.

For the update on the stock status of winter flounder, this information was developed by the Northern Demersal /Southern Demersal Working Group of the SAW this summer, and that information was forwarded to the New England Fishery Management Council's Multi-species Monitoring Committee, of which I am the Chair. The information that I am presenting to you, to start off with, will have been done by those two committees. None of this information has been provided to the Technical Committee.

Southern New England/Mid-Atlantic Stock Complex

I am going to start off with Southern New England/Mid-Atlantic winter flounder. The Southern New England /Mid-Atlantic winter flounder was last assessed at SARC 28. The last year in the VPA was 1997. Since then it has been updated using standardized projection methodology. The way this methodology works is that you start with the January 1, 1998, survivors in the assessment; and then for each year, you start to iterate the F until the projected catch equals the observed catch for that year.

There are several important assumptions about this model. One is that the discard-to-landing ratio is constant for those years. The second thing is that the partial recruitment vector or the fishery selectivity doesn't change. It remains the same as it was in the terminal year, or the VPA. The mean weight to age remained constant. And the other thing is that for this particular group we didn't have landings in 2000, and so we made an assumption that the fishing mortality rate in 2000 was the same as it was in 1999.

This projection is getting a little long in the tooth. The 1997 year class is based on age zero indices from the assessment. In the 1998, 1999 and 2000 year classes, they are based on the median recruitment that was observed throughout the time period in the assessment. This kind of assumption in recruitment is made often. In short term projections, it does not really have a big impact, because usually the recruits are a couple of years away from recruiting into the fishery of those projected year classes, and they do not have a big impact.

As the projection gets longer, these projected recruitments start to enter the fishery, and at this point the '97 year class is four years old in 2001 and is fully recruited. The 1998 year class is age three and it is partially recruited, and you can see that you have two other year classes that will be contributing to the projected biomass.

The first slide is the mean biomass. The solid dark line is the biomass through the assessment. This dash line in the center here is the projected mean biomass, which represents the mean value from the projection. The upper value represents the 95 percent constant interval. The upper line represents the upper limit for the 95 percent constants intervals. The lower line represents the lower limit and the middle line is the median projection.

For the New England Fisheries Management Council, they have a different set of biological reference points than the ASMFC plan. One of their biological reference points is BMSY, and BMSY was calculated at the SARC using the time series from 1981 through 1998.

When you crank it through the model, it says that this stock was at BMSY around 1984 and it had declined, and now we are projected to be right around BMSY. One important thing to note about this particular BMSY is because of the short time series, this decline is bizarre. It's a myth. You had a BMSY back in '84 that was actually a little bit above it. One thing that it does not take into account is that you should have a much longer time series so you could have a biomass much higher back in the 60's. That could be a true BMSY, but given that we could only work with this period of '81 through 1998 because of the recreational catch, this is what the model results come out with.

This next slide shows the biomass weighted fishing mortality. This is another difference between the reference points used in the ASMFC and in the New England Fishery Management Council. They use a surplus production model to estimate BMSY and that model gives a biomass-weighted F. The way biomass-weighted F is it takes the F at age, multiplies it by the biomass at age, sums that up for the whole population. One of the properties of this biomass-weighted F is that in addition to being a measure of exploitation, it's also sensitive to recruitment. Particularly, the population does not have an extended age distribution, as many populations have when you have a period of high exploitation.

You can see that there was a period of very high F. At about 1994, you see the F's dropping. It dropped below FMSY, it dropped below the F target, and now the projected F, dash lines, and you can see that projected biomass-weighted F is below the F target. So from the perspective of the New England Fishery Management Council, this stock is in fairly decent shape. Biomass is projected to be near BMSY. Their fishing mortality rate is slightly below the target for this stock.

The ASMFC uses three reference points. They had an F-25 percent, which defined overfishing. They had an F-30 interim target, and they had an F-40 rebuilding target. All of these were fully recruited F's in which the age distribution of the population has little impact. Now the scale has changed in terms of I have converted them over to fully recruited F's.

This top dash line is the fully recruited version of FMSY. It is about 59, which is very high. You can see that it is above the old F-20 MSP that the Council used to have for overfishing definitions. The next line is F-25, the ASMFC overfishing definition, and you can see that mortality in the terminal VPA was below the F-25 and it is still below it. The next line is the F-30 interim target; and again, the fishing mortality rate for fully recruited is just about on the F-30 interim target and this represents F-40 percent, which is close and you can see that the F has never

achieved that.

In terms of the ASMFC FMP, you are above your rebuilding target for the F, and the ASMFC plan did not designate a biomass to determine when you are rebuilt. That was something that the Technical Committee was supposed to go back to and try to identify. That was based on the projection methodology. This month I went to the various Technical Committee members, and I asked them to send us their state indices to try to match to see how well they are following their projected biomass.

These two slides represent the Rhode Island Spring/Winter Survey. On this side, to my left and your right, is the mean number per tow. In the Rhode Island series, you can see that this index has dropped and has remained stable since about 1991. The slide on your left is the biomass; and again, you see a fairly steady decline. Maybe you can see a little upswing, but it looks like the decline plateaued out with this one. It does not seem like this index is as optimistic as the projection.

This is the Rhode Island Fall Survey. You see the same sort of pattern. You see a high peak early on in the time series and you do not see a recovery in either one of these indices.

This is the Connecticut Abundance and Biomass Index. Again, you do not tend to see as much of that. You see an upswing up in this 1994 period and then you see the indices going down. Again, this is at odds somewhat with the projected biomass or the biomass coming out of the projection.

This is the Massachusetts Spring Indices. Again, you see the indices going up in the early 1990's, and about 1997 or 1998 you start to see the indices going back down again.

This is the New Jersey Index. It is sort of a noisy index, but I feel that this biomass is showing the biomass increasing slightly in this later period. This one probably agrees somewhat with the overall projection.

This is the NMFS Spring Survey. This one is matching the projections fairly well. You see a little down turn in the year 2000, but that could be noise. In their fall index, which is the index that measures abundance, you see the early part of the index mimics the projected biomass fairly well and then you see it decline in 1999, 1998 and 2000. Again, this one is a little bit less optimistic than the projection.

If you look at the projections -- and they are getting long in the tooth, as I said earlier -- you would conclude that mean biomass is near BMSY; however, there are several indices that indicate that conditions are a little less optimistic, even suggesting the stock biomass has declined. The biomass-weighted fishing mortality is near the New England Council's target F and it is below the FMSY threshold. The fully recruited fishing mortality rate is near the ASMFC's F-30 target and well above the F-40 rebuilding F.

That is what I have for New England. Mr. Chairman, do you want me to take questions on this first or do you want me to run through the whole presentation?

VICE-CHAIRMAN BORDEN: Yes, please, questions for Steve, any questions? Dave Pierce.

DR. DAVID PIERCE: Yes, Steve, when you say that in the assessments that the projections are a little bit long in the tooth, do you mean that we should set them aside and rely more heavily on the advice that we are getting out of all of these different surveys?

In other words, I am uncertain to what extent we should not put much weight on the projections that, of course, are optimistic in terms of getting us to our targets. What is your view?

MR. CORREIA: I am uncertain, too. There are other things that I think we need to look at, like length frequencies in the survey, length frequencies in the catch, are there indications that the population age structure is increasing. I am not sure.

I was trying to show both of these so that you could have a sense in terms of saying, "Well, the projections may be optimistic". How far down we are, I am not sure. We have to look at some of these other indicators; and to do that, I think the Technical Committee needs to get together. This is going to require some evaluation.

Again, this stuff has not been aired through any group. This is just a pile of indices that I received this January and these are sort of my personal interpretations of them.

VICE-CHAIRMAN BORDEN: Other questions? All right, then let us move on, Steve.

Gulf of Maine Stock Complex

MR. CORREIA: The next stock is going to be Gulf of Maine winter flounder. We have less information for this stock. It is an index-based assessment based on survey indices and landings, and for this particular stock there are really only two sets of survey indices, the Massachusetts Division of Marine Fisheries and the National Marine Fisheries Indices.

The multi-species monitoring group has developed these relative exploitation indices, which is just the catch and

biomass divided by the catch in the survey. It sort of gives you a sense of where exploitation is. It is a very crude measure. There is a lot of noise in the survey indices. The survey indices include pre-recruit fish, so this index is sensitive to year class effects.

So, if you have a large year class coming through, the biomass is going to go up even though the biomass of the exploited stock does not, and you could get a false signal showing that relative exploitation is going down when, in fact, it is the influence of a year class. We have not had an update on the age structure of this group since 1997, so we are even less certain where we are compared to last time we looked at it.

This is the Massachusetts Spring Index, which is probably our best index for biomass, the Massachusetts Survey, and in both cases you see the same sort of trend. Both in numbers per tow and in the biomass, you see a large increase in the last year. One thing to bear in mind is that this stock is located in the Western Gulf of Maine. There has been a lot of management measures that have been put into place there, rolling closures, that should impact this stock, so this is not an inconsistent sort of picture.

What does concern me is that this particular survey is occurring right at the time when the rolling closures have just passed. It has been like three or four months that this area has not been fished, and this also could have an impact on the availability of these fish to the survey, so that is a caveat that I add to this.

If you look at the NMFS Survey, which is more widespread, this is the offshore strata, which gives you a much longer time period, and you see the same sort of result where in the recent years the survey indices really shoot up. This is a shorter time series which includes both the inshore and the offshore strata; and when I say inshore, the inshore strata is very inshore. And you see the same sort of pattern that the biomass has increased in the most recent years.

This graph represents the commercial landings and the recreational landings. The solid line is the commercial landings. You will see a continual decline in the commercial landings. You see them start to flatten out in the most recent years and then decline again somewhat in 1999. The recreational landings take a much more severe dive and they almost hit zero and just bump along since the early '90's. This last graph here represents the relative exploitation index; and remember, you had the biomass index either staying constant and going up, you had landings going down, and so you can see that there is a decline in the relative exploitation rate.

Again, the last time we looked at this when we had ages, we had a large increase in ages 1, 2 and 3, but then no increase in age 4. This indicated to the Technical Committee at that point that you either had improved survival of these younger fish or you had increased recruitment, but it was not going on to the older age groups. That conclusion was drawn before all of these rolling closures went into place, and we do not have the ages up to date in order to take a look at that again. My personal conclusions are that surveyed biomass indices have increased, landings have declined, relative exploitation has declined.

The one thing that I note is that 1-plus biomass is being used in the denominator of this relative exploitation index, so it's sensitive to improved recruitment. I will answer any questions on this stock.

CHAIRMAN BORDEN: Yes, Bill.

MR. WILLIAM A. ADLER: Steve, on the landings that have declined, do you take into consideration that the reason that landings may have declined was because of the strict rules against fishing for them, not that there is less fish?

MR. CORREIA: Right, I think that if I look at this whole time series, I think that early on in the time series one of the reasons you are getting these declining landings is because of stock sizes declining, and I think that is consistent with recreational landings are going down.

In this latest period, I don't know. There has been sufficient regulations in that area with the rolling closures and the mesh and a lot of other things, that this could be through the regulations. That is the most likely scenario in the most recent years, especially since survey indices suggest that biomass is going up.

VICE-CHAIRMAN BORDEN: Dennis.

MR. DENNIS ABBOTT: Thank you, Mr. Chairman. How do you measure the recreational take in this fishery?

MR. CORREIA: This is coming directly from the MRFSS database.

VICE-CHAIRMAN BORDEN: Gordon Colvin.

MR. GORDON C. COLVIN: I just wanted to take that issue that Bill brought up one step further, Steve. I understand that there have been many management measures in place that would affect the commercial catch and effort, but what about recreational?

I noticed that the recreational catches that you showed were also very low and continuously over many years now, and I was not under the impression that there were equivalent regulatory restrictions on recreational catch. Does that same situation apply there or not?

MR. CORREIA: In this case, there has been. In Massachusetts waters, there is a closed season for these; and when it opens, these fish start to become less available because they are moving out.

We have bag limits and I think there is a two-hook limit in terms of what people can use. That could be constricting the recreational catch, but anecdotally what I am hearing is that people have trouble catching these things inside the embayments. Areas that traditionally have very high recreational catches, people report that they have difficulty catching them, so I am not sure what's causing it.

It could be that these fish are spending less time within the estuaries and that they are moving out of some of the areas where they used to be available to be caught because the water regime has changed or something. I'm not sure, but I consistently hear that the recreational catch is -- you can't catch them the way they used to, not only for this stock, but also for Southern New England.

I know when I talked to the scientists from Rhode Island, like near Narragansett Bay and Montauk Bay, the fish aren't there. They have trouble catching them; but on the other hand, they are seeing more fish in their salt ponds and more fish in their Sounds, so it could be a distributional type change too.

VICE-CHAIRMAN BORDEN: Vito.

MR. VITO CALOMO: Steve, do you think the biomass is increasing because they are in their cycle or because of the fish or because of the six-inch mesh, because of the raised foot rope trawl, because of Gulf of Maine closures, limited harvest -- What do you think, Steve?

MR. CORREIA: Again, we do not have a lot of information to look at. We'd have to look at the age structure of these things. We are seeing more older fish, but I think there has been a significant amount of regulations in the home area of these fish, at least through Massachusetts and the Mass Bay, Cape Cod Bay -- you know, six months of closures and larger mesh.

I would hope that some of this biomass is being driven because of the restrictions, but until we look at it, one of the things that we would hope to see, if that's true, would be an increase in the age structure as opposed to a recruitment event. We do not have the information at this point to update that because the last time that we had the age structure was in 1997. Many of these regulations have occurred since then.

MR. CALOMO: Steve, you would not see the age structure according to size like we have because of the much larger increase in mesh structure that the commercial fishermen are using; isn't that true?

MR. CORREIA: If they are using larger mesh and the fishing mortality rates are down, you should see more larger fish in the catch and you should see larger fish in the surveys. We haven't examined that yet.

One of the problems that you have with the stock is that sampling of the commercial fishery is not good. In fact, I think they had ten samples last year, so we do not even have enough samples to try to do a VPA at this point.

VICE-CHAIRMAN BORDEN: Anyone else? Pat.

MR. PAT AUGUSTINE: Thank you, Mr. Chairman. We have had a series of meetings on Long Island to try to determine what has happened to winter flounder in our area, and it appears that when the larger fish come into the bays and hit the Sound, such as fluke and so on, we seem to find this tremendous number of winter flounder that have been there, literally covering the bottom in every back bay and back area that you can imagine, disappear.

Yet, we do not see them floating dead. Is it possible that at that early time, three to seven inches, that they are the ones that are going out to the ocean and becoming the mid-water type fish and adding to the biomass that way as opposed to not only the fewer fish that are being harvested because of the six-inch mesh? Is it possible that it is this combination?

MR. CORREIA: I do not think that you are going to see the biology of the species supported becoming a mid-water fish. These are bottom-dwelling fish. Once they settle as juveniles, they basically stay on the bottom.

MR. AUGUSTINE: I stand corrected. I did not mean mid-water fish. I mean offshore fish as opposed to being close along the shoreline and staying inside the back bays.

MR. CORREIA: I think you could have a distribution shift. If the water temperature -- these things are somewhat sensitive to water temperatures, and they could be changing their distribution, which may make it difficult for recreational anglers to get them.

The other thing is that they could be moving faster than what they used to. It is difficult to interpret. The other thing that could be going on, too, is that we could have that BMSY target mis-specified because we are using a much short time series, only from 1981 on, so that peak just prior to 1984, we could say that you are above the MSY and then you are below and that is what the model is indicating.

If we have this longer time series that went back to the '60's, this little '80's could just be a blip and BMSY could be much higher than that, and that could be another factor that BMSY is mis-specified, and it could be much higher and you need to get that higher level in order to get the fish to stay more inshore.

There are a lot of dynamics with this stock. It is complex. There is a lot of inshore population and we also have Nantucket Shoals, and so part of this increase could be Nantucket Shoals driving it and a lot of local populations inshore are doing as well.

VICE-CHAIRMAN BORDEN: Gerry.

MR. GERALD M. CARVALHO: Thank you, Mr. Chairman. Do we have any data on the natural predation? I mean, we have an increase of stock of fluke, which preys on this. We have an increase in striped bass, which prey on this winter flounder and we've got a thousand seals in Narragansett Bay eating six to ten pounds of food per day. Do we have any data on the natural predation that is taking place?

MR. CORREIA: There are some people that are doing food studies and putting it into various models. We don't have, or at least I am not aware of, very specific information on what the regular movement was on winter flounder.

One of the things that you have to bear in mind when you look at these predations is that there's not really one species that just targets winter flounder. They target a lot of different species and so that means that they are also targeting winter flounder's competitors, species that butt up head to head with them. They are also eating some of winter flounder's predators and what is the result, I am not sure.

VICE-CHAIRMAN BORDEN: Any further questions for Steve? Go ahead.

Comparative Ageing Study

MR. CORREIA: The SARC 28 recommended that we conduct a comparative study of the age ranges of winter flounder. We have some preliminary results for that. My co-worker, Jeremy King, did a great job in terms of helping me get this thing ready for this meeting. There are two parts to the study. The first part has been completed. We had four age readers from New Jersey, Connecticut, Massachusetts and the National Marine Fisheries Service.

We had 203 whole otoliths from winter flounder throughout the range in U.S. waters, including Georges Bank. These whole otoliths were sent out to each of the readers. The readers were blind to the geographic origin of the fish and also to the sex of the fish, but they had access to the length information. The second part of the analysis is that the otoliths are going to be sectioned, and they are going to be re-aged by the readers; and before they get sectioned, we are going to have one reader reread all of the whole otoliths in order to get some measure of the intra-reader variation.

We looked at a couple of different matrices. One was percent agreement, so in all of these we are comparing one reader to another. We take an otolith that Reader 1 says is age one, and then we look at what Reader 2 said it was and we do a comparison. If they agree, agreement, and if they are off, disagreement, and we sum that up for all the ages and get the percent agreement. The other thing that we did was that we looked at a measure of the variation.

So, for all the otoliths that one reader said was age one, we took the next reader and looked at how different their range was or how much variation there was in terms of what they said that this age one otolith was. In this case, we're not saying that one reader is correct and the other reader is wrong, but it's the only way that we can do these comparisons.

The other thing is that we want to check for bias. When two readers disagree, we are looking for directionality. Sometimes they can disagree and if it is just random, that is all right, but if you start to see a directionality where one reader is consistently either overaging the fish or underaging it compared to another reader, that is something we need to be careful about.

There were a couple of ways that we did it. One was that we plotted the mean age of one reader against another reader and we applied that with the 95 percent confidence intervals. We also looked at the distribution of these ages among the readers. So if one reader for all the age one, we plotted what the other reader said his ages were. Finally, we did a regression analysis.

When you do these comparisons among readers, we are looking for regression with a slope of one and an intercept of age zero. That means that these guys are consistent in their reading. If you start to see a slope that is different than one, it indicates that there is some bias between the readers; and if you see an intercept that is greater than zero, it also indicates that there is some inconsistency in terms of how they are reading the structure, because an intercept greater than zero suggests that one reader is always reading a ring that another reader is not.

I am not going to run through all of these plots. This is the plot of Reader 1 versus Reader 2. It is probably the best plot that we have. This gray line represents the one-to-one line. All of the points that are on this line means that they are in pretty good agreement. You can see that on this particular one, the lines are pretty good up until around age four. You see the 95 percent confidence intervals follow that line.

When you start to get up to age six, you can start to see that one reader is starting to underage the fish compared to the other one and the problem gets worse as the fish get older. This particular one had an overall agreement of 77 percent, which is not unacceptable. It had a fairly low CV, called fishing variation, which also was not too bad, but this deviation at the older ages is something for concern; and if you look at this table here, you can see that much of this agreement is being driven by these younger ages.

Here you have 80 to 90 percent agreement through age four and then you can start to see that the agreement is dropping through age five. This is fairly important because the fish become fully recruited at age four, and so the fishing mortality rate fully recruited is going to be very dependent upon characterizing these older fish. That was one of the better comparisons that we had overall.

Again, there is concern about bias. When we look at the regression, the slope was significantly different from one, and one of the reasons this occurred is because of this bend over here, so the recruiter regression and the slope is a little less than one, again indicating that there is bias between these two readers. I am not saying which reader is right. We don't know, this is just a relative comparison. These are the distributions of the age samples.

For instance, if you look at age one, there were eight otoliths that Reader 1 said was age one. Reader 2 said that seven of those they agreed on; and one of them, the age was age two. You can see that when we get up to age eight, again, there were eight age samples. Five they agree on were age eight; but when they disagreed three times, all three disagreements were underage relatively. It was age seven. Here you see that when you get up to age nine, there were four samples. One was age nine and Reader 2 aged all four as age eight. When you look at this, you can get a sense of some of the bias that is occurring.

Here you have Reader 3 against Reader 1. The first thing you can draw your attention to is you can see that this line starts to deviate very early on from the one-to-one line, so there is much higher bias between Reader 3 and Reader 1, even though the percent agreement is virtually the same. Overall, they agreed 77 percent of the time, but when they disagreed, one was consistently overaging compared to the other. Again, you can see that the percent agreements start to drop significantly after age four; and when you look at age six and age seven, 53 and 43 percent, that is fairly low agreement.

We would like to get those numbers a little bit higher than that. Again, if you look at the scatter plot, the bias comes across very clear in this plot. You can see that all the dots tend to be above the one-to-one line. So again, when they disagree, one overages compared to the other one.

This is Reader 1 versus Reader 4. You see a much more significant disagreement between these two groups. The overall agreement was something like 33 percent, and that is really unacceptable, and you can see that there was clear bias in this one, too. I mean, these lines don't even touch the one-to-one line and you can see that it is outside the confidence intervals. This one has an intercept that is significantly different from zero, and it has a slope that is different from one.

It suggests that one reader is reading this very much differently than the other reader is doing. Again, if you look at the scatter plot, it is very clear that there is a bias here. You see a very high variation. You can see in one case where a reader is saying within age four, the other reader is putting that fish out to age twelve, so there is a large amount of inconsistency between these two readers.

Again, this particular slide just shows the significance of the regressions. You can see that in most cases you had significant slopes, indicating that there was bias between the readers. In many cases, you also had a significant intercept, suggesting that the level of consistency between readers needs to be improved. Again, these are my conclusions. They have not been run through a group.

It appears to me that there is inconsistent age determination, there is low percent agreement at older ages; and probably more importantly, there is significant relative bias in almost all of the comparisons.

My recommendation would be to conduct an aging workshop and get people together. Maybe a term of reference could be to develop standardized protocols for aging, training, testing and consistency evaluation among these readers. We should also try to evaluate the various structures that are used for aging, for instance, scales, whole otoliths, sectioned otoliths and the methods to age winter flounder.

The other recommendation that I would have is to delay assessment updates until after you have this workshop. It makes little sense to me to go on processing age structures when we do not have consistent protocols going on among the readers. That should conclude that, Mr. Chairman.

VICE-CHAIRMAN BORDEN: Questions for Steve? Bruce.

MR. BRUCE FREEMAN: Thank you, Mr. Chairman. Steve, you indicated at one of your conclusions that bias exists in all age comparisons?

MR. CORREIA: That is correct.

MR. FREEMAN: Could it be that one, indeed, of those age readers was correct and the others were not? The conclusion was that all are, and I was just curious as to how you can make that determination that bias exists in all of the comparisons.

MR. CORREIA: Because what we do not have in this analysis is a set of true ages, true agreed-upon ages. If we had that, I could have had the analysis in a different way and to see who had a bias compared to these true ages. All we have is relative comparisons, so I compared Reader 1 to Reader 2; and when I did that comparison, there was a bias between one and two.

When I did it for two and three, that bias was also there, so the bias is being driven because there is inconsistency among the readers; and so when somebody is seeing rings and some person is saying that this is an annulus and somebody else is saying this is a check, and it just shows up on all of these comparisons.

MR. FREEMAN: There may or not be a bias, but it would seem to me under those conditions there are certainly differences. There is no doubt there are differences between all readers.

And the other comment is that this is not uncommon, the fact that when you age a fish, such as a fish of this age, as you get older, the differences between readers becomes more apparent, true on scales and true on otoliths. That certainly is one of the difficulties is determining what is true and what is not.

MR. CORREIA: Absolutely. You would expect that percent agreement to go down. What you do not expect is to have a directionality to the disagreement, so what this is showing is that when you compare the readers when they disagree, there is a directionality to the disagreement. One person is adding ages relative to the other reader, and that shows up in all of these, particularly at the older age. If it was just random, then you wouldn't see the bias. Sometimes you would over age and sometimes you would under age.

One of the things here is that we have lumped these analyses together and they were from fish from a broad range. We haven't broken it down to see if there is a difference between sexes, between geographic areas, between how people read the otolith quality. I asked the readers on a scale of one to four to tell me what they thought of the otolith. In some of these, they say, well, the otolith wasn't that good or the otolith should be sectioned.

Now, initially, we were just going to section the otoliths and the people's remarks were not good, but given these kind of results, we said, well, we are going to section all of them because that will give some information as to whether a sectioned otolith may be more appropriate than a whole otolith. This has been shown in other stocks, for instance, yellowtail, that, really, you need to section these things to get a high level of consistency.

That is something we are going to be looking at, but the disagreement on the older ages probably could be a little bit better than what we have here, but that is not as significant as the fact that there's the bias.

CHAIRMAN BORDEN: Pat.

MR. AUGUSTINE: Thank you, Mr. Chairman. Along with what Mr. Freeman was saying, as long as you have a bias between comparing one to two and two to three and then three to one and you still can't get any better assessment to come forward, when we look at your recommendations, if I have a sense for how long it is going to take to what we are going to try to do here, we may be looking at another year or two before we can actually do anything?

MR. CORREIA: I suspect if we get a workshop this summer, it may take that long. If we do it in the summer, it is probably going to take a while to age a backlog of samples. I know in Massachusetts the most recent survey age is 1997, so we have three surveys to age. That may be somewhere around 2,400 structures or maybe a little bit more to age.

To me, if you go ahead and age those structures when you know you have this kind of problem, it is really wasting resources. If you do the workshop and maybe have to re-age all of these things again, you may have to go back and re-age the time series.

VICE-CHAIRMAN BORDEN: Any other questions for Steve? Thank you very much, Steve. We will move on to the next agenda item, which is the staff overview on the long-range plan. Joe.

OVERVIEW OF LONG RANGE PLANNING

DR. DESFOSSE: Actually, these all mesh together pretty well. I have one question for Steve. What is your meaning when you say a workshop? Are you just talking about getting the Technical Committee together to sit down?

Ageing Workshop

MR. CORREIA: No, I would hope to make it a formal workshop. We could invite the four people who participated in this study, plus other people that either age winter flounder, say, up in Canada or states that are bringing age readers on board, such as Rhode Island and maybe some other states; bring all of these people together and develop the protocols. I guess it would be very similar to how we did summer flounder several years ago.

DR. DESFOSSE: That level of involvement, I do not think we have planned for in the budget; definitely not in the ISFMP budget. I don't know what we can do along those lines. I was thinking if it was just the Technical Committee getting together, we had a Technical Committee meeting that was planned for this summer. If that was the case, they could go over that stuff and it would not delay the process too much longer.

My goal, as your staff person, was you will see that there is a table for long-range planning in the Winter Flounder Management Program. This was based on the premise that the Technical Committee was going to be able to update assessments last fall and take the Gulf of Maine assessment to the spring SARC. Right now that has been postponed. The Technical Committee has not met, so you are looking at least six months longer in the schedule that is laid out before you.

Based on the problems that Steve has outlined, I don't know if we can go forward with updating the Gulf of Maine assessment and meeting the deadline to take it to the spring SARC.

I guess the question for the Board, then, is do you want to instruct the Technical Committee to continue along that line or should they postpone that and work on this aging?

VICE-CHAIRMAN BORDEN: Gordon Colvin.

MR. COLVIN: I think it is important to hear clearly what we are being told today about the need to deal with the aging difficulties.

I note that we have scheduled a Policy Board discussion of funding priorities for some increase in ACFCMA funds that may become available and I, at least, would certainly be more than willing to sponsor discussion of a winter flounder aging workshop in that discussion, which takes place later this week, if somebody could only tell me what it might cost.

I do think we need to address an aging workshop before we go forward with assessment updates. From what Steve just presented, I pretty much agree with him right on the spot. That needs to get sorted out. Otherwise, it will be a waste of resources to go forward with the assessment updates.

VICE-CHAIRMAN BORDEN: Other comments? Any disagreement with that thought that Gordon just put forth? Bud.

MR. BUD BROWN: What do you think that it's going to cost to have that assessment workshop, Steve?

MR. CORREIA: I have never done any financial end of this stuff. I suspect that you're probably looking at maybe a two- or three-day workshop, so there will be some hotel costs involved.

For most of these people, they are kind of centrally located, and I know the Winter Flounder Committee tends to meet on the cheap because you can drive to places. That may cut down some of the cost.

VICE-CHAIRMAN BORDEN: Lisa, I can see you waving your hand. Is it \$5,000, is that what you're saying?

DR. LISA KLINE: I would say -- I think it would be for 10 people?

VICE-CHAIRMAN BORDEN: Ten people? How many people, Steve?

MR. CORREIA: Well, I know there's four readers that we have right now. Connecticut has a new reader that they are breaking in. I believe Rhode Island is bringing on an age reader, so that would make it at least five. New Jersey or --

VICE-CHAIRMAN BORDEN: So based on ten individuals, do you think, \$5,000?

DR. KLINE: I would say probably six, seven.

VICE-CHAIRMAN BORDEN: She said seven thousand based on an assumption of ten people. Ernie.

MR. ERNEST E. BECKWITH, JR.: I have a question for Steve. Steve, I see that Part 2 of this study, the study of the sectioned otoliths has not been finished yet. I know that my staff, when I worked on that, and our staffers seemed to believe there was much better correlation with the sectioned otoliths than with the whole otoliths.

If that is the case, if you run those correlations again, and you don't see a large difference, what bearing would that have on the workshop?

MR. CORREIA: I suspect that if that was true, the conclusion would be that the sectioned otolith would be the preferred structure, if you can get that kind of agreement.

The trouble with sectioned otoliths is that they cost a lot of money per unit because of the processing, and the second thing is that it is difficult to get whole otoliths from commercial fish because you have to destroy the head in order to get it. I would not be surprised if one conclusion could be that the sectioned otoliths would be the way to go, but there's other things that would come out of this workshop.

For instance, one thing that could develop is that you could develop a reference collection of agreed-upon ages and anytime someone starts to age, they get a sample of this reference collection to see how they are doing relative to these agreed-upon ages. It helps to prevent drift in aging over the time and also becomes very useful when you lose your age reader and you have to bring somebody else on board, so I think that is another thing that would come out of this workshop that would be real useful.

In fact, I am not sure where the funding sources go, but it seems to me that this is something that the ACCSP, it would kind of fall under that umbrella.

VICE-CHAIRMAN BORDEN: Gordon.

MR. COLVIN: I would like to make a motion, Mr. Chairman.

VICE-CHAIRMAN BORDEN: All right.

MR. COLVIN: **I would move that the Winter Flounder Board recommend to the Policy Board that out of the additional ACFCMA money, up to \$10,000 be set aside to conduct a Winter Flounder Ageing Workshop in the year 2001.**

VICE-CHAIRMAN BORDEN: Is there a second?

MR. CALOMO: **Second.**

VICE-CHAIRMAN BORDEN: Seconded by Vito. Discussion on the motion? Bruce.

MR. FREEMAN: Thank you, Mr. Chairman. I certainly support the motion, but the question that I would have to Steve, are there other aspects of the stock assessment that we don't know or need further information; or once this issue is resolved, we will be able to do a more accurate stock assessment?

MR. CORREIA: I think once this is resolved, you would get a more accurate assessment, I would hope, for Southern New England Atlantic stock or for the Georges Bank stock. For Gulf of Maine stock, there is a paucity in the historical sampling, so you're not going to be able to reconstruct that. You can't make samples that do not exist.

I am not convinced that even when we do this workshop that you are going to be able to get a VPA done for Gulf of Maine; and, quite frankly, people have been exploring other models for Gulf of Maine stock and they have not quite fit yet, so I am not convinced that we are going to get much better information on Gulf of Maine than we have now, with maybe the exception that once we get this aging done, we will have catch-at-age information from the Massachusetts survey, the NMFS survey, that will tell us something about the age structure of the population and recruitment coming into it.

That would be in addition over what we have right now. The other thing is that the Gulf of Maine stock is one of the only stocks that doesn't have an overfishing definition in the New England Groundfish Plan, and I think if we come up with one, it is going to be similar to scup. It will be based on the survey index and relative exploitation or something like that, but right now I don't see a surplus production model coming in place. I don't think we are going to be able to estimate FMSY.

We are not going to be able to estimate BMSY based on what we have looked at so far, but that may change when we get together. I have a lot of hope for it.

VICE-CHAIRMAN BORDEN: Bruce.

MR. FREEMAN: If I may, Mr. Chairman, my principal concern is to make sure that this motion would contain funds so that we could move forward; and if there is additional monies that are needed to solve an additional problem, I would like to see it included.

As I understand from your comments, Steve, your belief at this point is that if we can overcome this problem, we should be on our way, at least, for Southern New England and Middle Atlantic. The Gulf of Maine certainly needs additional work, but that is perhaps outside the scope of this.

MR. CORREIA: Yes, I think that's an accurate conclusion. Again, these are my personal conclusions. I am not sure how the Technical Committee would look at it. I would hope that they would reach the same ones, but just to let you know that this has not been aired anywhere. You guys are the first ones to see this information.

VICE-CHAIRMAN BORDEN: I would just offer a comment that I asked Joe how many Technical Committee meetings we have budgeted for, and it is just one. If you look at some of the issues that we are potentially going to deal with, I would doubt very much whether or not the Technical Committee will be able to get through all of those issues in one meeting, so if, in fact, there is additional money that gets allocated to this, hopefully we could use it for winter flounder or for the Technical Committee. Further discussion on the motion? Ernie.

MR. BECKWITH: A question for Gordon and Tina. Gordon, did you specify that the workshop be done this year?

MR. COLVIN: I did.

VICE-CHAIRMAN BORDEN: Bud.

Gulf of Maine Sampling

MR. BROWN: Steve, you talked about all of the problems with the Gulf of Maine. Are there things that the state of Maine or the state of New Hampshire could be doing?

We are always acting with no knowledge. How are we going to move towards knowledge and what could be done in the interim because the Gulf of Maine is not changing.

MR. CORREIA: Yes, increased sampling of the commercial catch is one aspect that is useful. If you could get more information out of the recreational catch in terms of lengths and age samples is another recommendation.

We don't have a survey index out of New Hampshire. We don't have one out of Maine, although I understand that Maine may be starting up another set of surveys. Those are the general types of data issues we have. The other source of data that may come in is there's a move to get study fleets and industry-based surveys; and some of that information, we will be able to pull off of winter flounder.

It's basically data needs; and even for the Gulf of Maine stock, it is not a problem that is easily fixed because you need at least ten years of age data to construct a VPA. It's not like you go out and sample tomorrow and next year we come back with a VPA. It is going to take a while to build up. As that information comes in and we start to see what the age structure of the commercial catch is like, and we start getting more of the survey index, you are going to get a much fuller picture than what we currently have, so that's going to help.

VICE-CHAIRMAN BORDEN: Dave Pierce.

Georges Bank Stock/NEFSC

DR. PIERCE: I would certainly support this motion; however, it seems to me that we are omitting another important stock of winter flounder and that is Georges Bank. Georges Bank winter flounder, that is done with a VPA, which relies on aging information. A VPA is being done or has been done in the past for Georges Bank winter flounder. It will be done in the future, I suppose, for Georges Bank winter flounder; therefore, I would like to believe that the Northeast Fisheries Science Center would be in the position to assist with the effort to provide some funds, for example.

This is not just an ASMFC problem, it is a problem that cuts across into federal waters as well; Georges Bank being the obvious example there. I would have been prepared to make a motion to amend this that would somehow fold the Center into this process, but I am not going to do that only because I am aware of the fact that the Center has its own major funding problems with regards to ageing fish, not just winter flounder, but other fish as well.

I think all of these species of fish with which we deal are suffering from the same problem; a lack of people and a lack of skill in order to age these fish so we can do the best assessment possible. I will support the motion with the understanding that it would be nice for NMFS to get involved in this in a more formal way, but it is unlikely that it will happen.

VICE-CHAIRMAN BORDEN: Are you ready for the question? All those in favor, signify by saying aye; opposed; abstentions. **The motion carries unanimously.** Joe.

DR. DESFOSSE: I think, with the understanding that the workshop will occur sometime this summer or later in the year, the schedule that you see will be bumped down a couple of months and probably a half year at least, but the steps will be the same.

PDT Guidance

The other page that was included in your document -- you had a discussion during your last meeting, May 17, 1999, in North Carolina, topics to be addressed by Amendment 1. We have not lost sight of those. They are still on the burner. The PDT will include those in the public information document once they get started drafting that and that is all that I have. Pete.

MR. W. PETE JENSEN: Can I ask Steve a question? Steve, how applicable is this winter flounder aging workshop to aging other species otoliths?

MR. CORREIA: I think that there's some basic things that come out of it, and in my view one of the things that comes out is that you need to have some sort of reference collection and testing when you have multiple ages to make sure that not only are you consistent, but that you maintain your consistency over time.

I am not an age reader. In fact, it is kind of ironic that I am doing all of the analysis on this when I basically have never aged fish. But, I suspect that in a lot of species, you may run into the same sort of problem. They ran

into this with yellowtail. People were reading the whole otoliths. They had a workshop on it, and I think the conclusion was that they needed to go to sectioned otoliths.

And I believe they set up a reference collection and a whole set of protocols for this. I suspect for any place where you have multiple readers, I think that doing these sort of comparisons to make sure that everyone is in agreement is a pretty good policy to have, but I can't comment on individual stocks because I am not familiar with the aging of them.

ELECTIONS

VICE-CHAIRMAN BORDEN: Any further discussion on this point? If not, we will move onto the next item on the agenda which is elections. The floor is open for nominations for Chairman of the Committee. Gordon Colvin.

MR. COLVIN: **I nominate David Borden.**

MR. NELSON: **Second.**

VICE-CHAIRMAN BORDEN: Further nominations?

MR. NELSON: **Move to close the nominations, Mr. Chairman.**

MR. AUGUSTINE: **Second.**

VICE-CHAIRMAN BORDEN: Nominations are closed. All in favor, signify by saying aye; opposed; one in opposition and **the motion carries**. The floor is open for nomination for Vice-Chair.

MR. COLVIN: I will take care of it. **I nominate Pat Augustine.**

VICE-CHAIRMAN BORDEN: Okay, is there a second?

MR. LEWIS FLAGG: **Second.**

CHAIRMAN BORDEN: Second by Lew Flagg. Any further nominations for Vice-Chair? The nominations are closed. All in favor, signify by saying aye; opposed; abstentions. **The motion carries unanimously**. Other business? Congratulations, Pat. Bruce and then Bud.

OTHER BUSINESS

MR. FREEMAN: David, can we assume on this schedule that Joe had done that we need the workshop, and that everything will just be moved back a quarter, I guess, in other words, through the summer? If we would follow the same schedule, it is just going to be moved backwards?

VICE-CHAIRMAN BORDEN: That is pretty much my take on it, Bruce. I guess the only question I would ask either Joe or Steve is that if you look at the topic list, there are other issues on that topic list that aren't necessarily affected by the ageing deliberations, and one of the questions would be is there enough to have a Technical Committee meeting to try to sort through some of those.

Maybe you don't even have to answer this, but I assume there would be no opposition here, provided there is adequate funding, to have a Technical Committee meeting and let them start to pick up some of these items and review them. I don't think anyone wants to delay the process if there is work that can productively get done. Steve.

MR. CORREIA: To that point, Mr. Chairman, one of the things with doing this amendment had to do with trying to align the overfishing definitions between New England and here.

One of the rumors that I have heard is that New England is moving their overfishing definitions, or as an alternative, changing it for a species like this, going from a quarter BMSY to a half BMSY. We could end up continually leap frogging, and I am not sure how you would deal with something like that, if you wait for Amendment 13 to go through or --

VICE-CHAIRMAN BORDEN: We are honored to have the Chairman of the New England Council Groundfish Committee sitting right down the table from you, so maybe he can comment on that.

MR. NELSON: The preparation for Amendment 13, as I think most people involved in this, realize that it is continuing, and one of the points that needs to be addressed, I think everyone agrees on, is the need to revisit our overfishing definitions and reference points and the Council did vote to have in the document at least the reconsideration to use one-half BMSY as a reference point.

I think it still needs to be reviewed by a scientific group to say whether one-half BMSY is correct for various stocks, but certainly that is the intent. I am not sure how we would bring this into agreement with the ASMFC process, but it may be something that the Technical Committee could be working with the Council Technical Committee and probably the Science Committee to see where they would be going on that and if they have like minds on it.

Usually, the same people are on both, so you would probably have like minds and maybe they could bring it to some reasonable position that would be probably attainable is how I probably should put it.

MR. CORREIA: Do you envision that committee doing that work before Amendment 13 is complete?

MR. NELSON: No. I think that it's something we have asked to have the committee take a look at during 2000 and report back by September of '02, but the amendment will probably be in place and effective slightly after that time, but we are trying to have as little a gap as possible, but the work would be ongoing. Andy Rosenberg will be heading up the Science Committee.

MR. CORREIA: This is the S & S?

MR. NELSON: S & S Committee, yes.

MR. CORREIA: Yes, the other issue that I have -- and I guess it is my own little pet one -- is the fact that you are using pre-recruit fish in the biomass index --

MR. NELSON: In some cases, yes.

MR. CORREIA: -- in a lot of the cases like this and that can cause some problems, so I would hope that would also get addressed.

MR. NELSON: I think a number of those things we recognize need to be addressed and we would like to have them addressed, but time-wise, it is something that I can't answer.

VICE-CHAIRMAN BORDEN: Bud, you had your hand up.

MR. BROWN: I did. I guess that it's a request. I would like to have the Advisory Panel, at least me, be in contact with the Technical Committee to go through this because we want to be effective and active. Certainly, the commercial advisor in Maine who is on the board at the Fish Exchange in Portland and we should be able to get otoliths to get down there, and maybe we can do things to help out where there's absence of activity.

I have a question for John. I thought there was discussion at the council about having one-quarter BMSY be a threshold.

MR. NELSON: I don't want to spend much time on groundfish, Mr. Chairman, but it is already in Amendment 9. There's a number of stocks that have one-quarter BMSY listed as the reference point, and the Council is not sure that this is the appropriate level to have as a target and so we are looking at that to be revisited. And we put forth for the public hearing document for comment that one-half BMSY would be our lowest threshold.

VICE-CHAIRMAN BORDEN: Bruce.

MR. FREEMAN: A question to John as well. The issue of aging, is that also an issue that there is agreement in New England that this has to be resolved before they can move forward, the New England Council?

MR. NELSON: Actually, the Council is waiting for the ASMFC assessment.

MR. FREEMAN: Well, it's hard to keep up.

MR. NELSON: So Steve if is saying that aging is a crucial point here, I doubt if there is anyone who would disagree with him.

VICE-CHAIRMAN BORDEN: Okay, any other business? Going back just briefly to one point that Bud has raised a couple of times, I think it would be helpful if, Steve, either you individually or the Technical Committee could compile a list of the information that they needed collected on the Gulf of Maine stock, particularly in that geographic area, not that there would be an obligation on the part of the state, but at least then we could provide it to the state and some of the industry representatives up there and if we can figure out a way to collect it, we will be further ahead.

MR. CORREIA: I suspect that much of that is listed in the recommendations section of the assessment, so I can go through that and pull it out.

VICE-CHAIRMAN BORDEN: Thank you. Any further business to come before the board? If not, we are adjourned. (Whereupon, meeting was adjourned at 12:30 o'clock p.m., January 29, 2001.)

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