

Dogfish Technical Committee Meeting
Providence, Rhode Island
July 11, 2000
Summary Minutes

The Dogfish Technical Committee (DTC) Meeting was called to order at 1005 by Rich Seagraves.(MAFMC). Dogfish Technical Committee members in attendance included Paul Rago (NEFSC), Peter Christopher (NERO), Greg Skomal (MA), Scott Steinback (NEFSC), and Lori LeFevre (NEFMC). Also attending were Red Munden (NC), Paul Diodati (MA), Steve Correria (MA), Arnie Howe (MA), Jeremy King (MA), Dave Pierce (MA), Jack Musick (VIMS), Joe DeFosse (ASMFC), Jim O'Malley (NEFMC), Colleen Giannini (CT), and Chris Batsavage (NC).

The first agenda item discussed was an update of the NEFSC survey data for spiny dogfish (through spring 2000) presented by Paul Rago. NEFSC survey mean number per tow and biomass per tow values for female spiny dogfish at length for three time periods (1985-88; 1995-1997 and 1998-2000) are given in Attachment 1. Notable is the reduction in the biomass of adult females (>85 cm) throughout the three time series. In addition, the large accumulation of female biomass between 60 and 90 cm evident in the 1995-1997 time period has been greatly reduced (based on the 1998-2000 data). It was also noted that the accumulation of female biomass at these medium size classes (which formed a major component of stock biomass in the 1995-1997 period) is what permitted stock rebuilding in a relatively short period of time for a long lived, slow growing elasmobranch such as spiny dogfish. While updated projections of future stock sizes under fishing mortality trajectories specified in the FMP were not available for this meeting, the recent reduction in the portion of the female stock between 60-90 cm is likely to extend the time period necessary to rebuild the adult female biomass considerably, even at very low fishing mortality rates.

Attachment 2 illustrates the effect of the recent increase in directed fishing on the adult female portion of the stock since 1989 by comparing female numbers and biomass at length for the pre-exploitation phase (1985-88) and the post-exploitation phase (1998-2000). Prior to the post-1989 expansion of the directed fishery, the stock was comprised of an accumulation of large adult females (>80 cm) and a substantial number of small dogfish (<40 cm) which were the offspring resulting from this accumulation of adult females. Since the advent of the recent directed fishery, the adult female portion of the stock has been dramatically reduced. As a result, pup production has also declined dramatically in recent years. The survey indices for pups have been the lowest in the time series for the past four consecutive years (1997-2000), indicating recruitment failure, as a result of the dramatic reduction in adult female biomass.

Attachments 3 and 4 illustrate that the Beverton-Holt method of estimating mortality is robust with respect to varying assumptions about $L_{critical}$ and the natural mortality rate. Fishing mortality estimates from the B-H model have increased dramatically from less than 0.05 prior to 1990 to greater than 0.3 since about 1995. Fishing mortality has exceeded the threshold level of 0.11 since 1991.

Attachments 5-8 give updated NEFSC survey indices (number and weight per tow), swept area biomass estimates, and length frequency distributions for spiny dogfish. These data illustrate the dramatic reduction in the biomass of spiny dogfish pups based on the decline in biomass of dogfish < 35 cm. In addition, the most recent estimate of adult female biomass declined to less than 47,000 mt or to about 27% of the biomass rebuilding target (B_{msy}) of 167,000 mt. The previous estimate of adult female biomass reported at the last meeting of the DTC was 58,000 mt based on 1997-1999 NEFSC survey data.

The next agenda item discussed was an evaluation of the management measures adopted by the Commonwealth of Massachusetts for spiny dogfish for 2000-2001. Seagraves gave an overview of events which transpired from November 1999 through the April 2000 relative to the approval and implementation of the Spiny Dogfish FMP. The FMP, partially approved by the Secretary of Commerce in September 1999, specifies that fishing mortality shall be reduced to $F=0.03$ in year 2 (May 1, 2000- April 30, 2001) and subsequent years. The New England and Mid-Atlantic Fishery Management Councils adopted recommendations relative to second year management measures for spiny dogfish at their respective meetings in November and December 1999. However, the Councils failed to reach agreement relative to the preferred measures for spiny dogfish in 2000-2001.

The Mid-Atlantic Council recommended a quota of 2.9 million pounds and a trip limit of 300 pounds for both quota periods during the 2000-2001 fishing year. The Mid-Atlantic Council recommendations for management measures for 2000-2001 adopted at its December 1999 meeting would have implemented the FMP as approved by NMFS. The Mid-Atlantic Council's rationale for these recommendations were as follows 1) the TAC associated with an $F=0.03$ in year two (as specified in the FMP) is 2,901,254 pounds; 2) 300 pounds is the trip limit expected to produce, on average, the level of landings specified in the FMP during the rebuilding period (about 3 million pounds) to achieve an $F=0.03$; 3) the intent of the FMP was to close the directed fishery for adult female spiny dogfish after year one and allow for the landing of incidental bycatch of spiny dogfish only during the rebuilding period; and 4) to prevent a derby fishery and allow for a more equitable distribution of landings in time and space.

The New England Council recommended a quota of 22,059,228 pounds in 2000-2001 and a trip limit of 7,000 pounds in quota period one (May-October) and up to 7,000 pounds in quota period two (November-April) at its November 1999 meeting. The rationale for the action taken by the New England Council was that it would allow the directed fishery to operate for another year while the Councils develop alternative approaches to the management of the spiny dogfish fishery.

Although the Councils failed to reach an agreement for second year management measures, the FMP specifies that the Regional Administrator may modify the recommendations using any of the measures that were not rejected by both Councils. As such, both sets of management measures were submitted to the Regional Administrator for consideration. However, on February 10, Secretary of Commerce William M. Daley notified the Councils that he was suspending implementation of the final rule for spiny dogfish until March 15, 2000 and

requested that the two Councils work together to reach an agreement on how to manage the spiny dogfish resource for the upcoming fishing year. The Secretary's request was based on concerns about the economic impact of the FMP and the potential for dogfish discards. He also indicated his intention to implement measures he considered appropriate for spiny dogfish, should the Councils fail to reach an agreement on measures for the 2000-2001 fishing year.

To honor the Secretary's request, the Councils subsequently scheduled a series of meetings which allowed for the consideration of new data or a different interpretation of older data used in the analyses upon which spiny dogfish management measures for 2000-2001 could be re-examined. On March 6, the Dogfish Technical Committee met to consider new terms of reference regarding spiny dogfish including a review of estimates of the magnitude of dogfish discards and associated mortality, alternative biomass rebuilding targets and the current status of the stock (Attachment 9). The Technical Committee concluded that no new information existed to change its findings or recommendations relative to dogfish discards or the biomass rebuilding target proxy. However, a considerable body of new information updating the status of the spiny dogfish stock was reviewed by the Dogfish Technical Committee. The Technical Committee concluded that fishing mortality on spiny dogfish continued to increase in 1998 -1999. For example, the new assessment data indicated that fishing mortality had increased by about 50% from 1997 to 1999. The fishing mortality rate was now about four times the level which defines overfishing and greatly exceeded the level required to rebuild the stock. In addition, the adult female portion of the stock continued its dramatic decline. Particularly alarming was the total recruitment failure or lack of pup production observed for the last three consecutive years. As such, the Technical Committee concluded that there was no basis to change the stock rebuilding plan in the Spiny Dogfish Fishery Management Plan.

On March 14, the Joint Dogfish Committee met to review the Dogfish Technical Committee's comments and recommendations regarding the terms of reference discussed above. The Joint Committee voted to maintain the 2000-2001 specifications for spiny dogfish at 2.9 million pounds with a trip limit of 300 pounds.

The Mid-Atlantic Council met March 16 to reconsider its earlier recommendation on fishery management measures for the 2000-2001 fishing season for spiny dogfish. The Mid-Atlantic Council reaffirmed its original position, i.e., 2.9 million pound quota with an associated trip limit of 300 pounds, after receiving recommendations from the Joint Dogfish Committee.

At its March 22-23 meeting, the New England Council voted to recommend that the quota for 2000-2001 be 14.3 million pounds with an associated trip limit of 7,000 pounds. The New England Council changed its recommendation for the 2000-2001 dogfish specifications for two reasons. First, updated stock assessment data indicate that fishing mortality is higher and mature female biomass was lower than was estimated when the FMP was developed. Therefore, the Council no longer supported a 22 million pound quota because it would neither adequately reduce fishing mortality nor provide the necessary conservation for the spawning female component of the stock. Secondly, the Council wanted to give some protection to the stock while both Councils work together to amend the FMP over the next year.

As noted above, the Councils were unable to achieve a mutually agreeable resolution on 2000-2001 spiny dogfish specifications as requested by the Secretary of Commerce. Both Councils forwarded their recommendations to the Secretary of Commerce on March 27, 2000. The Secretary considered the Councils' recommendations and established a quota of 4 million pounds, a trip limit of 600 pounds from May 1-Oct. 30, and a trip limit of 300 pounds from Nov. 1-April 30. The Secretary also established a 500,000 pound experimental fishery to determine the feasibility of targeting spiny dogfish males rather than females.

Subsequent to the Secretary's decision, the Commonwealth of Massachusetts announced its decision to implement management measures for state waters on April 18, 2000 which included a 7,000,000 quota, 7,000 pound trip limit, 31 inch minimum size limit and other restrictions including a minimum mesh size for gill nets of 6.5 inches (Attachment 10). The Mid-Atlantic Council, concerned that the Massachusetts measures for 2000-2001 could undermine federal FMPs effort to rebuild the stock, requested that the ASMFC take emergency action to implement the Spiny Dogfish FMP in state waters (Attachment 11). In addition, the MAFMC voiced its concerns directly to the Commonwealth of Massachusetts (Attachment 12). The chairman of the MAFMC (Dr. Gilford) and Director of MA Marine Fisheries (Mr. Diodati) subsequently agreed to have the DTC meet and review the conservation equivalency between the FMP strategy of a constant F strategy of maintaining an $F=0.027$ during rebuilding (Attachment 13) and the MA proposal to implement a constant harvest (quota) strategy of 4,000 mt throughout the rebuilding period (Attachments 14 and 15).

The rationale and supporting analyses for the MA management approach of a constant quota are contained in a memo from Steve Correia (Attachment 16) and a summary of the presentation which he gave to the DTC (Attachment 17). The constant 4,000 mt quota projections were made starting with same set of initial stock conditions as was assumed in the constant F approach applied in the FMP (i.e., based on 1997-1999 NEFSC survey data). Under the constant harvest strategy, F is initially reduced to 0.08 and then is gradually reduced to about 0.05 from 2004 to 2017. In contrast, the FMP restricts harvest to levels corresponding to $F=0.03$ (which corresponds to about 1300-2500 mt from 2001-2013). After that, landings would be allowed to increase to levels in excess of 10,000 mt. The fundamental difference between the approaches is that the constant quota approach allows for higher landings initially during rebuilding but lower landings towards the end of the rebuilding period. Both approaches appear to result in stock rebuilding to the SSBmax level in approximately 17 years. By maintaining a constant harvest, F varies with stock size under the constant quota approach and averages 0.055 during the 17 year rebuilding period.

After a review of the MA strategy, the DTC reached the following consensus:

1. A constant quota of 4,000 mt, applied on a coastwide basis to the entire stock, would allow the stock to rebuild to the target biomass in approximately the same time period as under the FMP stock rebuilding program which is based on a constant fishing mortality strategy (i.e., the two

strategies appear to be equivalent with respect to female stock biomass rebuilding).

2. The constant quota strategy may involve greater risk. Rebuilding of the adult female stock will be compromised under the constant harvest approach because landings are higher during the majority of years during the rebuilding period.

3. The degree of risk depends on the nature of the fishery during the initial period of rebuilding and the magnitude and mortality of discards. The greater the degree that a directed fishery occurs on adult females, the greater the risk that stock rebuilding would be compromised. In contrast, if the 4,000 mt constant harvest fishery is prosecuted entirely as a bycatch fishery across all size classes, the risk may be minimal, especially in the case where discard mortality is high.

4. A strict evaluation of the MA management measures for 2000-2001 versus the FMP was not possible since MA measures include a 7,000,000 pound quota and a 31 inch size limit. In absence of the size limit, the 7,000,000 pound quota, applied coastwide across the entire stock, would be expected to meet the goals of the stock rebuilding schedule adopted in the FMP. The analysis presented by MA was based on a 4,000 mt (8.8 million pound) quota and assumed the same selectivity pattern that was used in the FMP projections (which assumed no size limit). The FMP projections assumed that the constant F was applied with a partial recruitment vector based on the selectivity pattern observed in the fishery during 1996. To make a direct comparison, the FMP constant F projections and MA constant quota projections would have to be re-run with a partial recruitment vector which reflected the expected mortality at size assuming a 31 inch size limit was in effect. Although this analysis was not available, it is expected that fishing mortality on adult females under the constant harvest model would be higher assuming a 31 inch size limit compared to the partial recruitment vector assumed in the MA analysis.

5. Under either scenario (constant 4000 mt harvest or constant $F=0.027$), the rebuilding period is expected to be extended due to the continued decline in the adult female portion of the stock and the recent reduction in intermediate size females, as evidenced by the 1998-2000 NEFSC survey results. These results indicate that female spawning stock biomass declined by about an additional 10,000 mt since the last estimate based on 1997-1999 survey data. Extension of the time frame for stock projections greatly increases the uncertainty about future stock sizes under any of the management scenarios considered.