

ASMFC Spiny Dogfish Technical Committee Report

The Spiny Dogfish Technical Committee held a meeting on April 23, 2003 in Warwick, RI to address the Board's charge. The purpose of the meeting was to reexamine Dr. Rago's and Dr. Pierce's methodologies for determining the appropriate quota for the 2003-2004 spiny dogfish fishery. The methodologies were evaluated to determine if a constant fishing mortality rate of 0.03 could be achieved. As part of this evaluation, the Technical Committee identified the assumptions made in each method in order to arrive at the quota for the 2003-2004 fishing year. The Technical Committee discussed the characteristics of the current spiny dogfish fishery and reviewed the available landings and discard data to develop a recommendation for an appropriate quota for the 2003-2004 fishing year. The meeting commenced at 10:15 AM.

Attendees

The Technical Committee members present were Chris Batsavage (TC Chair and NC DMF), Clare McBane (NH F&W), Wilson Laney (USFWS), Jack Musick (VIMS), Chris Powell (RI DFW) and Alexei Sharov (MD DNR). Others in attendance were Red Munden (Spiny Dogfish Board Chair & NC DMF), David Pierce (Spiny Dogfish Board member & MA DMF), Vince O' Shea (ASMFC, Executive Director), Megan Gamble (ASMFC, Plan Coordinator), Jimmy Ruhle (MAFMC member & NC Fisherman), Paul Rago (NEFSC), Kathy Sosebee (NEFSC), Eric Dolin (NERO), Hannah Goodale (NERO), Najih Lazar (RI DFW) and Sonja Fordham (Ocean Conservancy).

Quota Determination Methods and Their Assumptions

Dr. Pierce referred the Technical Committee to his February 19, 2003 memorandum for the review of his quota determination methodology. He used the 2000-2002 three year moving averages for his biomass estimates derived from the NEFSC spring trawl survey. He included spiny dogfish in the 70-79 cm size class since they comprised a significant proportion of the Massachusetts directed fishery in 2002. He applied a fishing mortality rate (F) of 0.03 by size class (70-79 cm, 80+ cm) and by sex to get a potential catch of 10.4 million pounds. The potential catch was reduced to 8.8 million pounds because the Management Board was more comfortable at adopting this quota. The presentation Dr. Pierce made to the Management Board on February 25, 2003 reported discards in the directed fishery ranging from 9-15%. However, updated analysis of the data by Massachusetts revealed that the discards by weight were approximately 2-3%. Therefore, discards were not factored into his quota estimate because there appears to be little or no discard mortality in the Massachusetts directed fishery.

Dr. Pierce provided the Technical Committee with discard data from the Massachusetts directed fishery in 2002. Although MA DMF has sampled this fishery since 2000, data was provided from 2002 only because of changes in the fishery. The Technical Committee requested data from additional years to assess any trends in the level of discards from the directed fishery. The information on discards presented to the Technical Committee was at-sea data collected by MA DMF staff from three gill net trips and six longline trips. Data for the discard estimates were pooled because gill net and longline trips occurred at the same time and in the same general area. Although discards by both gear types were very low, the discards from gill nets appeared to be much higher than from longlines. The Technical Committee questioned whether it was appropriate or not to pool the discard estimates from the two gear types when their discard rates are quite different. Dr. Pierce did not know the percent coverage of observed trips in the directed fishery, but he mentioned that the boats in this fishery have very similar fishing practices. The Technical Committee was concerned that nine observed trips may not be an adequate number of trips to characterize the fishery. Longline boats comprise 60-70% of the vessels in this fishery and gill net boats make up the remaining 30-40%. There are no discard mortality estimates from this fishery, but it appears to be low since the fish are caught in relatively shallow water by gear with short soak times (less

than one hour). It was noted that NMFS assumes 100% discard mortality in the recreational fishery, 75% in the gill net fisheries and 50% in the trawl fisheries. Despite the low estimates of discards in the Massachusetts directed fishery, the Technical Committee believed discards from the directed fishery should be factored into the quota estimation.

Dr. Rago's presentation reviewed the basic methodology for quota estimation, examined key assumptions, updated the Technical Committee on the bycatch estimation, and identified differences between his method and Dr. Pierce's method. The swept area biomass is estimated from the NEFSC spring trawl survey. Fishing mortality is estimated using a method that provides total removals from the population, including landings and discards. This method is based on biological growth parameters of the species, the size composition of the population and the average size of dogfish in the landings. The model also assumes that natural mortality is known. One problem with the F estimation is that it lags behind removals from the fishery. When there are abrupt changes in the F rate, the estimated F may not reflect the current F rate. Projected removals from the population are estimated as the product of F and the swept area biomass and are equal to the sum of the landings, discards and uncertainty in the biomass estimates. Therefore, because the projected removals include discards, a rescaling factor is applied to determine the rebuilding quota.

The long-term target F rate (0.082) allows 1.5 female pups per female recruit to the spawning stock biomass. Fishing mortality rates greater than 0.11 removes spiny dogfish from the population faster than they can be replaced. The historically low catches of pups in the spring trawl survey the past six years is a likely result of the high fishing mortality during the large scale directed fishery. Although the lack of pups in the survey could be a result of some environmental change, the likelihood of the survey missing them six consecutive years after commonly catching them for 35 years is low. Furthermore, the length frequency distributions show fewer spiny dogfish between 50-65 cm now than in previous years. If pup production was higher than the survey indicates, then a higher proportion of fish in this size class would be observed.

Dr. Rago updated the Committee on discard data from NMFS observer trips. Trawl, gill net and dredge fisheries showed a similar decline in spiny dogfish discards. The overall change in discard rates were approximately 1,500 pounds per trip in the late 1980s to approximately 200 pounds per trip by 2002. The discard rate of spiny dogfish declined as the population declined. However, it was noted that smaller spiny dogfish that were once discarded are now landed, and fewer days at sea has resulted in fishermen attempting to avoid spiny dogfish. Discards are dominated by non-directed fisheries and have been approximately equal to landings since 1997.

Both quota determination methods provide similar estimates of predicted catch. The main difference is Dr. Rago applies a rescaling factor to account for discarding and uncertainty in the biomass estimate while Dr. Pierce assumes no discards occur in the directed fishery and does not account for discards in other fisheries.

Characteristics of the Current Spiny Dogfish Fishery

The Technical Committee discussed assumptions about the current fishery. Dr. Pierce's assumptions for his quota determination method are based on a directed fishery that is prosecuted in a very clean manner. Approximately 85% of the 2002 landings came from Massachusetts, but the 2003-2004 specifications allocates about 58% of the quota to Massachusetts, Maine and New Hampshire and 42% of the quota to the states south of Massachusetts. It is possible that fishing effort will shift to state waters once Federal waters close to harvest. Because directed fisheries could occur in these states, the Technical Committee identified assumptions about the fisheries that occur there. There are several trawl, gill net and hook fisheries targeting other species in state waters that discard spiny dogfish. Therefore, the Technical

Committee could not assume that discards would be as low in other states as they appear to be in Massachusetts. The Technical Committee agreed that it is unlikely that an F of 0.03 will be achieved with an 8.8 million pound quota when discards in other fisheries as well as Canadian landings are considered. Dr. Rago pointed out that one year of landings at 8.8 million pounds will not have a big influence on the rebuilding of the population. However, numerous years of harvest at this level would likely be detrimental because of low pup production and the low spawning stock biomass.

- **The Technical Committee recommends** a 4 million pound quota for the 2003-2004 fishing year.

Other Business

The next Spiny Dogfish Technical Committee meeting will be on May 28, 2003 in Baltimore, MD to review the stock assessment conducted by the Spiny Dogfish Stock Assessment Subcommittee. Details regarding data needed for the assessment and who was going to provide it were discussed.

The meeting adjourned at 3:45 PM