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To: North Carolina Marine Fisheries Commission  
From: Chris Batsavage  
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Subject: 2010 Southern Flounder Commercial Landings Reduction Estimate

The estimated number of southern flounder landed in the commercial fishery from 2008 to 2010 were examined to see how landings compared to 2007 (terminal year in stock assessment and base year for landings reductions) and to see if the 2010 landings met the required reduction of 20.5% in numbers of fish for the commercial fishery. The same analytical methods used for the stock assessment's catch at length were used for this analysis, which allowed for a direct comparison of numbers. The number of southern flounder landed by the commercial fishery in 2007 was 1,142,159 fish and the number of fish landed by the commercial fishery in 2010 was 849,455 fish. The 2010 landings in numbers of fish were a 25.6% reduction from 2007 landings, which meets the required reduction. The management measures from the sea turtle lawsuit settlement agreement contributed to the reduction, but not all of it. Below are some reasons why:

1. Higher proportion of Large (2-4 pound) market grade flounder in 2010 landings—this market grade accounted for 42 percent of the commercial landings, by weight, compared to 36 percent of the landings (by weight) in 2007. In addition, the average weight of southern flounder in the large market category was higher than in previous years. These factors resulted in needing fewer fish to land the 1.69 million pounds of southern flounder in 2010. If there was a higher proportion of the catch in the medium (1-2 pound) market grade and/or the average weight of southern flounder was lower in 2010, then the number of fish landed would have been higher. If this was the case, 2010 landings might not have met the required harvest reduction.
2. Very low landings in Albemarle Sound and its tributaries in 2010—most of this region was unaffected by the sea turtle management measures, but landings were less than half of what was landed here in 2009. The sea turtle management measures contributed to the reduction in the eastern portion of the Albemarle Sound area, but a landings reduction this large from the sea turtle management measures alone (or the other factors describe above) was not expected. Environmental factors may have played a role (cold winter, flooding rains in the fall), but there is not much information available on this for southern flounder aside from landings trends and anecdotal reports from fishermen. Albemarle Sound and its tributaries accounted for approximately 36 percent of the total annual commercial southern flounder landings from 2000 to 2007—the highest in the state for that time period. If the 2010 landings reduction in Albemarle Sound was lower, the required harvest reduction might not have been met.
3. Sources of effort reduction—no setting of large mesh gill nets 3 days per week and the reduction of the maximum yardage limit for large mesh gill nets for most of the estuarine waters were predicted to account for the reduction in landings and fishing effort. However, reports from the fish house samplers, Marine Patrol, and fishermen indicate that some fishermen quit fishing for southern flounder instead of only reducing their fishing effort. The number of fishermen gill netting for southern flounder in 2010 has

not yet been analyzed, but the number of large mesh gill net trips from May 17 through December 31 were over 33 percent less than the number of large mesh gill net trips for the same time period in 2009. If some fishermen quit fishing for flounder in 2010 but resume in 2011, it could have an impact on whether or not the required landings reduction is met in 2011.

In summary, the required commercial southern flounder landings reduction was met in 2010, but factors besides the sea turtle management measures played a role in this reduction. Predicted landings reduction estimates cannot account for changes in fishermen's behavior or in fish availability, which both have a considerable impact on landings. Therefore, the magnitude of future landings reductions is inherently uncertain.