




UNITED STATE DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Southeast Fisheries Science Center  
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MEMORANDUM TO: Roy E. Crabtree, Ph.D.  
Regional Administrator, Southeast Regional Office

FROM: Bonnie Ponwith, Ph.D.   
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SUBJECT: Data Analyses Response for South Atlantic Snowy Grouper

The Southeast Fisheries Science Center was requested to identify a conversion factor to convert landings in weight from snowy grouper caught by recreational fishermen to landings in number. More specifically, the conversion factor is needed for allocation in the Marine Recreational Fisheries Statistics Survey (MRFSS) sectors. Ideally we would have sufficient samples from the recreational sectors to compute an average weight. However, given the current regulations and the MRFSS sampling design, virtually no snowy grouper are being intercepted for weight measurements. The headboat fishery was used in the SEDAR 4 stock assessment as a proxy for determining the age-specific selectivity for the MRFSS sectors and therefore it potentially could provide average weight samples. Unfortunately in recent years the headboat weight samples have been too small ( $n=4$  per year) to be useful and recent fishing activity by private and charter boats suggests the headboat fishery is no longer a good proxy for the MRFSS sectors.

For this analysis we decided to be consistent with the SEDAR 4 age-structured stock assessment of snowy grouper. In this context, a conversion factor for converting weight to numbers will depend on the weight-at-age vector, the age-structure of the population, and the age-specific selectivity of the fishing sector. For this analysis, the weight-at-age data came directly from the SEDAR 4 stock assessment for South Atlantic snowy grouper (Figure 1). In that stock assessment, the MRFSS sectors were assumed to follow the same age-specific selectivity as estimated from the headboat sector. Therefore, for this analysis the headboat selectivity will be used as the best estimate of MRFSS selectivity (Figure 2).

There is concern the headboat selectivity may be outdated. Since the completion of SEDAR 4 in 2003 there has been an increase in charter and private boat activity in deep waters off the coasts of North Carolina and Virginia. Prior to this recent activity, the catch of snowy grouper by MRFSS sectors was thought to be largely incidental and occurred in shallower

waters. Since larger snowy grouper tend to occur in deeper water, fishing in shallower water results in the dome shape of the estimated selectivity curve from the stock assessment (Figure 2). However, if there is significant fishing activity by MRFSS sectors in deeper water, than a flat-topped selectivity curve may be more appropriate. For this reason we chose to present results for both types of selectivity curves (Figure 2).

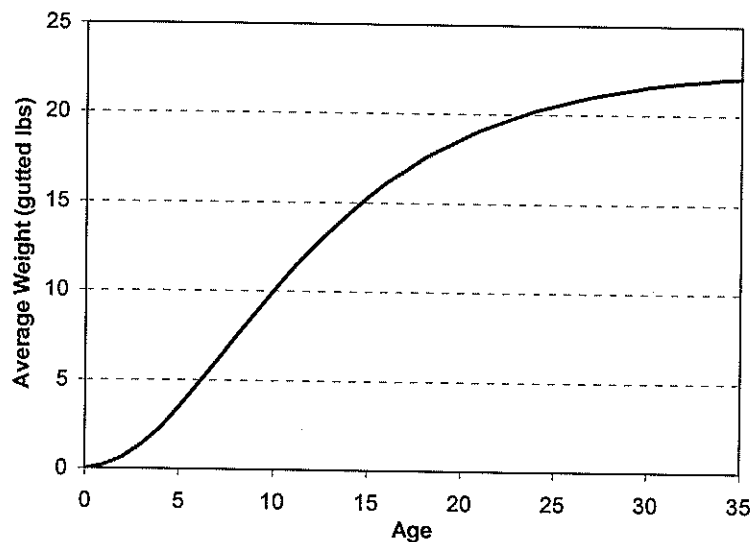
As mentioned above, another component of the analysis is the age structure of the population. The last year for which an estimated age structure exists is 2002 from the SEDAR 4 stock assessment. Since we are now six years past that estimated age structure and because we have had changes in the regulations for snowy grouper it was decided not to use this age structure. Based on the recent regulations for snowy grouper, which reduced total F to levels close to  $F_{MSY}$ , the equilibrium age structure at  $F_{MSY}$  was used in this analysis. The results from this analysis are shown in Table 1.

**Table 1.** Conversion factors (guttled lbs<sup>-1</sup>) resulting from this analysis for snowy grouper for two types of selectivity pattern assumptions.

| Selectivity Assumption | Conversion Factor | Weight (guttled lbs) | Numbers |
|------------------------|-------------------|----------------------|---------|
| Headboat Fishery       | 0.2676            | 4400                 | 1177    |
| Flat-topped            | 0.1188            | 4400                 | 523     |

The choice of best selectivity assumption depends on the degree to which the deepwater fishing is occurring for private and charter boats. At this time it is unknown. Precaution would suggest using the flat-topped selectivity assumption, however if the deepwater fishing is small, then using the headboat fishery selectivity could suffice.

**Figure 1.** Average weight-at-age (guttled pounds) for snowy grouper.



**Figure 2.** Age-specific selectivity patterns for snowy grouper.

