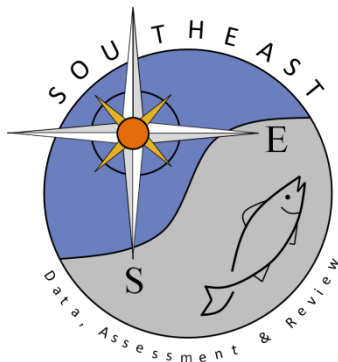**SEDAR 36: South Atlantic Snowy Grouper**
Public Comments

SEDAR36-WP-13

Submitted: 23 July 2013
Revised: 13 September 2013
Revised: 1 October 2013

This information is distributed solely for the purpose of pre-dissemination peer review. It does not represent and should not be construed to represent any agency determination or policy.

SEDAR 36: South Atlantic Snowy Grouper
Public Comments

Two public comments were received through the sedar36comments@safmc.net email address. The first was received on July 23 (see page 3) and the second was received on September 13 (see pages 4-6). Panel responses to public comment are on pages 7-10.

Received: July 23, 2013
Thanks for the opportunity to speak on behalf of the commercial fishery in northern N.C.

1.   First in reading the MRIP info i still find that i am unable to find a age/ length comparison between N.C. thru Fla. I know Kyle mentioned they are about the same. What is about the same???

2.   Secondly, will the recent overages in the recreational sector have and adverse impact on the assessment?

3.   Thirdly, if you read my previous historical account of our northern fishery, you may have noticed that enviromental influences are having more than minimal impacts on our surrounding fisheries. As assessment biologist, how can you ignore (if in fact you do) the changing dynamics of our fisheries in your assessments that are so obvious in the northern reaches of this complex. And would anyone question this northward shift in the deep water complex?

4.   Also, if you go to Fla for instance, you would expect to catch a golden tilefish in 85 or 90 fathoms and out. If you came to northern N.C. you would have to go to 125> fathoms to catch one. Also, a citation in Fla would probably be 25 or 30 lbs.. If you wanted to raise and eyebrow out of Hatteras that fish would have to be 50>lbs. So therefore considering this geographical differential, If you don't assess the Northern snowy fishery via Mar Map....especially since port sampling since 2006 is biased in both the commercial and recreational fisheries......(and port sampling only started after 2006 up here).......then how can you recommend to the council and assessment that gives a true picture of the whole of the South Atlantic fishery (Va. line right)....especially in lieu of all the world records that have been set in Va. and N.C.....?

5.   Can you offer insight in how the commercial fishery might help fill in "data poor" voids in the assessment process during this time of fiscal austerity with a scientific set aside which allows both a fisher and a biologist to prosper?

6.   If the answer to 5 was yes, then can you please request it of the SAFMC/NMFS?

Thank you for your consideration of these questions.
Jeff Oden

Comments on data availability for SEDAR 36, including an alternative commercial vertical handline CPUE index

Jeff Oden and Peter Barile

SAFMC Amendments 13c and 15a have resulted in a step down in commercial landing quotas from a 2500 lb. trip limit to 275 lbs. in 2006, and a further reduction to100 lbs. in 2008 in the South Atlantic Snowy grouper fishery. As a result, the most reliable landings data stream, commercial long line landings, available from 1993 to 2005, is not available in SEDAR 36 as an index of abundance. SEDAR 36 relies upon a Southeast Region Headboat Survey (SRHS) recreational landings database as the primary index of abundance. Reliance on this data source is both unfortunate and inappropriate, as the SRHS fishery (in 60-90' depth) is located remotely from both the historical snowy grouper fishery and population centers in shelf environments from 200' to ~ 700' depth.

A further result of the commercial trip limit decrease to 100lbs. is the decline of the commercial handline (vertical line) fishery, and the decision to not utilize this data in SEDAR 36. The decision to exclude this data, is a result of the contention that with at a 100 lbs. max trip limit, it is not possible to measure trends in abundance. We disagree, and propose that with the high efficiency of targeted snowy grouper vertical line drops, a meaningful and explicit CPUE index of abundance can be developed. Below, we demonstrate development of such an index; and alternatively, describe why the usage of SRHS landings data is an inappropriate source of landings data for use in SEDAR 36. Despite regulation, it is clear that there is significantly more commercial vertical handline landings data available versus the estimated SRHS data utilized in SEDAR 36.

A vertical line (bandit gear) commercial CPUE index

The commercial vertical line fishery in the South Atlantic for snowy grouper has been historically significant, with >1000 targeted trips per year (SEDAR 36 WP03) at the 2500 lb. trip limit, with regulation markedly decreasing both effort and landings. However, with increasing landings regulation on snapper-grouper species in the South Atlantic, multi-species are targeted on snapper-grouper trips, making a reduced effort for snowy grouper a measurable index of abundance. Indeed, targeted snowy grouper trips have remained > 500 trips/ yr. in the South Atlantic (see Figure 1., SEDAR 36 WP03).

Here we provide a current (2007-2013) snowy grouper CPUE index of abundance, from the vertical line fishery, following the 2006 step-down in trip limits. This index is a summary of commercial logbook data volunteered by vertical electric reel fishermen (n=5) from the Cape Canaveral to Daytona Beach area, one of the historically significant fishery zones for the commercial handline fishery (SEDAR 36 WP03, Figure 2). There were 113 trips in 2012 and 71 in 2013 assessed, roughly ~ 20% of the ~500 snowy grouper trips made in the south Atlantic each year (see Figure 1., SEDAR 36 WP03). From interviews with fishermen, it is obvious that highly efficient vertical line drops occur on the order of minutes, rather than hours, making assessment of effort to reach a 100 lb. trip limit a measurable parameter. Specifically, vertical line drops, with 3

to 12 hooks, for snowy grouper are generally made on abrupt bottom topography (mostly wrecks) where large populations of snowy grouper are know to aggregate. As vertical line catches are made generally from 15 to 30 min., depending on depth; it is plausible to measure the efficiency of landings per hook during these short time intervals. This specific analysis is in contrast to less precise estimates (in hours) listed in the commercial logbooks for directed snowy grouper fishing effort. The data presented here are a much more realistic and explicit description of a nominal commercial handline CPUE than presented in SEDAR 36 WP03 (Figure 3). Summary statistics are available in Table 1., and a plot of the commercial snowy grouper vertical line CPUE index is presented in Figure 1.

Table 1. Summary statistics for nominal CPUE index (lbs*hook*hr.) expressed as annual mean ± standard deviation (SD), including the number of trips (n^1), vertical line drops (n^2), and total landings per year for 2007-2013 in NE FL.

Year	Nominal mean CPUE (lbs*hook*hr.)	SD	n^1 (trips)	n^2 (drops)	Total landings (gutted wt.in lbs,)
2013	46.6	21.3	71	128	8,443
2012	45.6	18.9	113	164	10,212
2011	56.6	18.6	29	36	2,726
2010	55.2	16.9	27	32	2,563
2009	21.7	8.9	12	24	1,106
2008	18.6	6.7	8	17	719
2007	20.6	6.8	7	14	612

Figure 1. Plot of snowy grouper nominal CPUE, expressed as mean ± standard deviation, for commercial vertical handline fishery for 2007-2013 for NE FL.
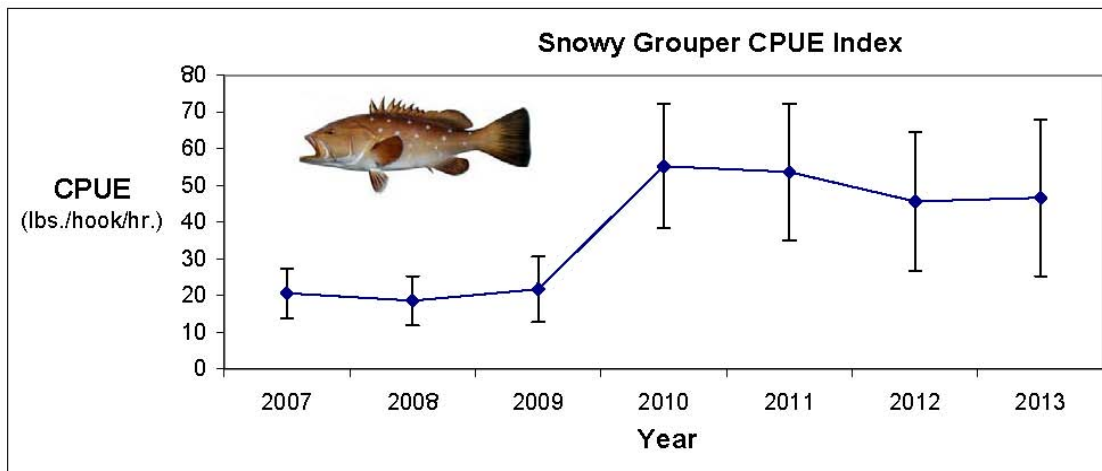
Use of Southeast Region Headboat Survey data as an index of abundance

As summarized from SEDAR 36 WP-12, <u>estimated</u> Southeast Region Headboat Survey (SRHS) landings from (2007-2012) are presented, below, in Table 2. First, it is inappropriate for NMFS to utilize this index of abundance from a shallow water (~60-90') depth fishery survey for a predominately deep water species (200' to 700') where a fishery has historically been prosecuted at these depths. Second, the SEDAR 36 stock assessment has chosen to primarily utilize an index of abundance from a fishery that may catch (as an estimate, with no real landings data) an average of 89 total individuals per year from the South Atlantic region. With an estimated 200,000 trips (angler-days/ yr., see SEDAR 36 WP-12, Table 4.) in the South Atlantic since 2007, this would yield ~ 0.00045 snowy grouper per trip, hardly the kind of catch rate data that should be used to construct an index of abundance. Further, in terms of morphometric data utilized to characterize these estimated landings, the data are even more lacking. From Table 3 of SEDAR 36 WP-12, since 2007, an average of 3.5 fish/ year from FL, <1 fish/ yr. from SC & NC and a total of 27 fish from the South Atlantic were utilized to estimate mean weight and weight ranges. This paucity of data, again, is just not acceptable.

Table 2. Summarized data from SEDAR 36 WP-12 on Southeast Region Headboat Survey landings from 2007-2012 indicating <u>estimated</u> number of individuals landed and total wt. of landings by state and totals in the South Atlantic region.

	FL/	GA	SC		NC		Total South	Atl.
Year	**#**	**lbs.**	**#**	**lbs.**	**#**	**lbs.**	**#**	**lbs.**
2007	39	46	90	163	44	74	173	283
2008	18	20	12	24	23	47	53	91
2009	23	32	11	22	74	150	108	204
2010	39	79	-	-	38	59	77	139
2011	33	35	-	-	30	31	63	67
2012	<u>41</u>	<u>56</u>	<u>-</u>	<u>-</u>	<u>19</u>	<u>30</u>	<u>60</u>	<u>85</u>
mean	**32**	**45**	**38**	**70**	**38**	**65**	**89**	**144**

Conclusions and Recommendations:
1) The SEDAR 36 stock assessment model is based upon an inappropriate and data-poor index of abundance, the Southeast Region Headboat Survey. Reviewers of SEDAR 36 should recognize the limitations of the stock assessment model based upon the lack of empirical fisheries dependant and fisheries independent data.

2) A significant commercial vertical handline fishery (>500 (+) trips/ yr.) currently exists, and is not being utilized in SEDAR 36. As demonstrated here, through mining of commercial logbook data, and interviews of vessel captains, a more realistic estimate of catch efficiency (nominal CPUE) can be calculated and applied across the South Atlantic.

3) The SAFMC's SSC should review the data available for scheduled stock assessments to determine if there are adequate and credible data available to construct age-structured models. Otherwise, data-poor stock assessments, such as SEDAR 36, should be handled in an alternative manner.

Responses to public comments submitted through <u>sedar36comments@safmc.net</u> email address. Submitted comments were broken into broad topics for purposes of panel response.

Comparison of regional differences in MRIP age/length data

During the first assessment webinar, a data provider from the headboat survey noted that the spread in distribution of length compositions by region from MRFSS/MRIP and the headboat survey were similar. Sample sizes in the MRFSS/MRIP data are not sufficiently large to do a meaningful comparison of growth curves by region or state. Table 10 in SEDAR36-WP01 shows the number of snowy grouper lengths measured by state through MFRSS/MRIP. Figure 6 in SEDAR36-WP06 shows comparisons of the length compositions from MRFSS/MRIP by state. Sample sizes of recreational age data (MRFSS/MRIP and headboat combined) by state are found in Table 4 in SEDAR36-WP06. The assessment panel noted the limited biological samples available from the recreational fleet and included a research recommendation in the assessment report to increase the number of age samples from the general recreational fishery (MRIP) with more complete spatial coverage.

Effect of 2012 recreational ACL overages on the assessment

The assessment model does not explicitly track quotas, or whether those quotas are met. It doesn't need to. Essentially, the assessment model estimates the fishing mortality rate that provides the observed level of landings, conditional on the predicted abundance at age. To the assessment, it doesn't matter if the observed landings were above or below a quota. It is true that an estimate of "overfishing" can be driven primarily by one sector, and that managers can consider such information when devising regulations. However, that type of analysis should be part of a management strategy evaluation, and is beyond the scope and terms of reference of a stock assessment.

In the SEDAR 36 assessment, the estimated fishing rate exceeded MFMT (maximum fishing mortality threshold - represented by Fmsy) for most of the assessment period (1974-2012), but only once in the last six years. This occurred in 2012, when the recreational fleet exceeded its quota. However, the terminal F estimate is based on a three-year geometric mean ($F_{current} = F_{2010-2012}$). $F_{current}$ is below Fmsy in the base run and the median of the MCB uncertainty analysis indicating that overfishing is not occurring.

How are environmental influences factored into stock assessments?

Stock assessment models do not ignore environmental effects on fish populations. They model fluctuations in recruitment, which may be caused by the environment or other factors. In addition, environmental effects (e.g., temperature) can be taken into account when developing indices of abundance. For snowy grouper, this was done for the MARMAP indices (see SEDAR36-WP02 for more details). It is true, however, that there is a lot of room for

improvement in how assessment models account for environmental, as well as ecological, effects. These factors can be quite complex (multi-dimensional) and can change through time in unpredictable ways. The potential for environmental and ecological effects (and their interactions) is widely acknowledged, but at the same time, poorly understood. In theory, there is no reason these effects cannot be built into assessment models, but in practice, such models are often best treated more as hypotheses than as well-tested descriptions of real dynamics.

Regional differences in fishery north of Cape Hatteras

For most snapper-grouper species, Cape Hatteras seems to be the most appropriate biogeographic boundary between the South Atlantic and Mid-Atlantic. However, the NC-VA line is the management boundary. For many species, this difference is likely inconsequential. For other species, such as snowy grouper, the distinction might be important. There is nothing to prevent the South Atlantic Council from implementing area-specific regulations, if they conclude that is the best path forward.

Scientists, managers, and of course fishermen are all well aware of the large fish being caught off VA and northern NC. History shows a pattern of pockets of deepwater species being discovered and then rather quickly depleted. This leaves many questions: How large is this northern subpopulation? Is it self-reproducing? Is it being subsidized by the South Atlantic population? How much fishing pressure can it sustain? Should it be managed as a "trophy fishery" or something else?

For any stock, variation in exploitation and life-history characteristics might be expected at finer geographic scales. Modeling finer spatial scales would require more data, such as information on the movements and migrations of adults and juveniles. One of the research recommendations in the SEDAR 36 assessment report is to determine the optimal level of spatial structure to include in an assessment of snapper-grouper species, such as snowy grouper, and to determine if well defined zoogeographic breaks (e.g. Cape Hatteras) should help define stock structure.

Commercial fishery assistance with data collection

Continued participation and cooperation in current commercial data collection programs (e.g. commercial logbooks, TIP – port sampling, etc.) are critical for future stock assessments. For deepwater species, such as snowy grouper, perhaps the best opportunity for commercial fishermen to assist with data gaps would be for scientists and fishermen to team up to conduct the sampling needed for indices of abundance. In this scenario, the scientists would design the study (with fishers' input), and the fishermen would conduct the actual sampling (with scientists help). One of the research recommendations in the SEDAR 36 assessment report is to develop reliable indices of abundance; this information could be collected by fishermen in collaboration with scientists through cooperative research projects.

It is routinely requested that additional funding be devoted to fishery independent sampling, which would include scientific sampling funded through cooperative programs such as the fishery research and cooperative research grants (see links below). Deepwater species would seem an ideal subject for this type of cooperation.

http://www.ncseagrant.org/home/research/fishery-research
http://sero.nmfs.noaa.gov/operations_management_information_services/state_federal_liaison_branch/crp/index.html

Indices of abundance
A comment expressed concerns with the decision to use the headboat index and not to use the commercial handline or longline indices in the SEDAR 36 assessment model. Although no commercial indices were used in the SEDAR 36 base run, commercial landings, length, and age data were used. Fishery independent indices are preferred for assessments, as these indices are able to track trends in abundance better than fishery dependent indices for a number of reasons, including hyperstability (shifting effort to areas of high abundance), hyperdepletion, regulation changes, technology creep, and the difficulty in identifying effective effort.

The SEDAR 36 assessment model fits two fishery independent indices (MARMAP chevron trap and MARMAP vertical longline) and one fishery dependent index (headboat). Additional fishery dependent indices were discussed and considered for use in the assessment including a commercial handline index, a commercial longline index, a MRFSS/MRIP index, and a SCDNR charterboat logbook index. The alternate commercial handline index presented in the public comment was not provided to the assessment panel for consideration during the assessment process.

The MRFSS/MRIP data, SCDNR charterboat logbook data, and commercial longline index were discussed during the pre data deadline webinar. Sample sizes for the MRIP and SCDNR charterboat datasets were small and the panel decided that the data were insufficient for index development. The commercial longline index was rejected for use primarily due to small samples sizes, but the panel also discussed additional concerns, including an inconsistent pattern across regions in the nominal index and large deviations in years with the lowest sample sizes.

A commercial handline index was reconstructed for consideration in SEDAR 36. (A similar index was developed, and ultimately rejected as a measure of abundance during SEDAR 4). The index was, again, not recommended for use. Reasons cited are similar to SEDAR 4, including the difficulty in defining effective effort for deep water species using current reporting approaches. Also noted are the aggregative nature of snowy grouper, and their affinity for confined habitat locations, traits that make them particularly susceptible to rapid depletion at local levels and either of which could result in an index that does not track abundance. However, the commercial

handline index was included as a sensitivity run (see sensitivity run 'S8' in the assessment report).

Commercial logbook data from 2006-2012 were not included when developing the commercial handline and longline indices due to restrictive regulations that went into effect during this time period. In 2006, the commercial trip limit was reduced from 2500 pounds gutted weight to 275 pounds gutted weight. For both the commercial handline and longline logbook data, there was a dramatic increase in the number of trips that were at or close to the trip limit. When most trips reach a management limit for a species, and there is no way to more precisely define effort directed at that species, an index created from such data will not track abundance. In fact, such an index would likely under-represent any rise in abundance, because catches restricted by a trip limit cannot increase with increasing population abundance.

The headboat index was included in the SEDAR 4 and SEDAR 36 assessment model base runs. The headboat fishery typically operates in a manner more similar to fishery independent data collection because the fishery targets the snapper-grouper complex in general rather than the focal species specifically. This helps minimize the changes in catchability relative to other fishery dependent indices that target the specific species more effectively.

A comment noted concerns about the headboat fishery operating in waters shallower than where snowy grouper typically occur. This is recognized in the analysis, and does not mean that the information is not useful, just that it may need to be considered with this fact in mind. Snowy grouper are found inshore, in areas fished by the headboats, otherwise they would not appear in the catch of this sector. Of possible concern is the difference in size and age of the fish encountered by the headboat versus other sectors that operate in deeper waters. Many species in the snapper-grouper complex exhibit movement to deeper waters by older individuals, thus a headboat fishery operating in shallower areas may not be able to access the full age range of the population. This appears to be the case with snowy grouper, and is addressed through the selectivity pattern estimated for the headboat catches. The headboat fishery has a domed selectivity, indicating that it primarily catches fish between ages 3 and 11. For comparison, selectivity patterns for the commercial fisheries indicate catches of fish at all age classes, reflecting effort in this sector that occurs in both shallow and deep areas. In terms of the assessment model, this means that the headboat fishery data is providing an abundance index of fish primarily between the ages of around 3 to 11.