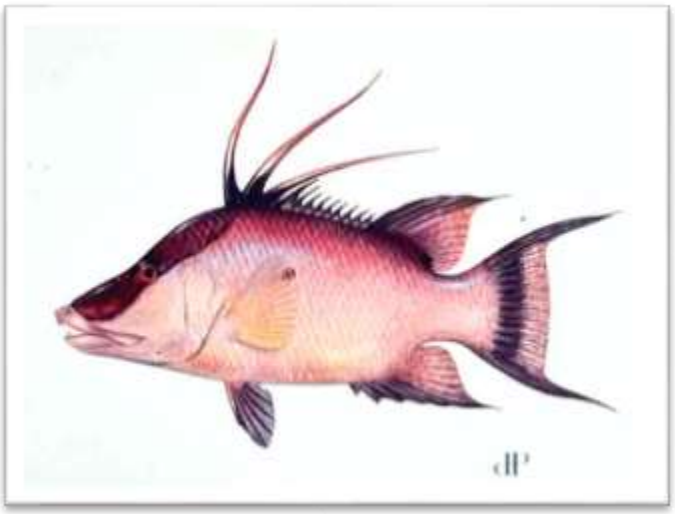
Amendment 37 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region



DECISION DOCUMENT

Modification to the hogfish fishery management unit, fishing level specifications for the two South Atlantic hogfish stocks, rebuilding plan for the Florida Keys/East Florida stock, and establishment/revision of management measures for both stocks

February 26, 2016

Background

The Florida Fish and Wildlife Conservation Commission completed a stock assessment for hogfish in 2014 (SEDAR 37 2014). The South Atlantic Council's Scientific and Statistical Committee (SSC) reviewed the assessment and provided fishing level recommendations in October 2014. The South Atlantic Council received the SSC's recommendations at their December 2014 meeting. Based on genetic evidence the SSC supported treating hogfish in the South Atlantic as two stocks: Georgia through North Carolina (GA-NC) and Florida Keys/Eat Florida (FLK/EFL). Each assessment was then evaluated with regard to fishing level recommendations. The SSC developed catch level recommendations for the GA-NC stock using the Only Reliable Catch Stocks approach, as outlined in Level 4 of the Council's ABC control rule. For the FLK/EFL stock, the SSC considered the benchmark assessment to represent the best available science and recommended it for use in management. The Southeast Fisheries Science Center concurred with this determination. The assessment results indicate the FLK/EFL stock is undergoing overfishing and is overfished. Therefore, the FLK/EFL stock is in need of a rebuilding plan.

Amendment 37 would address specifying the boundary between the FLK/EFL stock, managed by the South Atlantic Council, and the Gulf of Mexico stock, managed by the Gulf of Mexico Fishery Management Council. This demarcation needs to take place to aid in enforcing regulations and for proper tracking of the ACLs for each stock. Amendment 37 also includes actions to specify ABC, ACLs, and OY for the GA-NC and FLK/EFL stocks, establish a rebuilding plan for the FLK/EFL stock, and implement or modify management measures for GA-NC and FLK/EFL stocks to attain the desired level of harvest.

Purpose for Actions

The *purpose* of this amendment is to modify the management unit for hogfish, specify fishing levels based on the South Atlantic Fishery Management Council's Scientific and Statistical Committee recommendations for the Georgia-North Carolina and Florida Keys/East Florida stocks of hogfish, and modify or establish management measures. For the Florida Keys/East Florida stock of hogfish, this amendment would establish a rebuilding plan to increase hogfish biomass to sustainable levels within a specified time period based on results of the recent stock assessment conducted with data through 2012.

Need for Actions

The *need* for this amendment is to align the management boundaries for hogfish with the best available science (i.e., genetic information), and end overfishing and rebuild the Florida Keys/East Florida stock of hogfish while minimizing, to the extent practicable, adverse social and economic effects.

NOTE: NEPA REVIEWER SUGGESTED REMOVING HIGHLIGHTED TEXT FROM PURPOSE STATEMENT ABOVE.

COMMITTEE ACTION:

OPTION 1. APPROVE SUGGESTED EDIT TO PURPOSE

OPTION 2. DO NOT APPROVE SUGGESTED EDIT TO PURPOSE

OTHERS?

Action 1. Modify the Fishery Management Unit (FMU) for hogfish

Alternative 1 (No action). ~~Do not establish separate stocks of hogfish in the South Atlantic.~~ There is a Gulf of Mexico stock and South Atlantic stock of hogfish separated at the jurisdictional boundary between the South Atlantic Fishery Management Council and the Gulf of Mexico Fishery Management Council:
The boundary coincides with the line of demarcation between the Atlantic Ocean and the Gulf of Mexico, which begins at the intersection of the outer boundary of the EEZ, as specified in the Magnuson-Stevens Act, and 83°00′ W. long., proceeds northward along that meridian to 24°35′ N. lat., (near the Dry Tortugas Islands), thence eastward along that parallel, through Rebecca Shoal and the Quicksand Shoal, to the Marquesas Keys, and then through the Florida Keys to the mainland at the eastern end of Florida Bay, the line so running that the narrow waters within the Dry Tortugas Islands, the Marquesas Keys and the Florida Keys, and between the Florida Keys and the mainland, are within the Gulf of Mexico.

Preferred Alternative 2. Modify the snapper grouper fishery management unit (FMU) to specify two separate stocks of hogfish: (1) a Georgia through North Carolina (GA-NC) stock from the Georgia/Florida state boundary to the North Carolina/Virginia state boundary, and (2) a Florida Keys/East Florida (FLK/EFL) stock from the Florida/Georgia state boundary south to:

Sub-alternative 2a. The South Atlantic/Gulf of Mexico Council boundary.

Sub-alternative 2b. The Monroe/Collier County line.

Preferred Sub-alternative 2c. A line just south of Cape Sable running due west (25^0 09’.000 North Latitude).

Figure D-1. Red line represents **Preferred Sub-alternative 2c**: a line due west from a point just south of Cape Sable on Florida's west coast (25º09'.000 N lat.). Blue line denotes Councils' inter-jurisdictional boundary (Sub-alternative 2a) and gray line corresponds to Monroe/Collier County line (Sub-alternative 2b).
Source: Amanda Frick, NMFS SERO

Comparison of Alternatives

Alternative 1 (No Action) would make no changes to specify separate stocks of hogfish within the snapper grouper fishery management unit (FMU) and would, therefore, fail to recognize the latest scientific information on those stocks. **Preferred Alternative 2** would specify the boundaries for the Georgia through North Carolina (GA-NC) stock of hogfish and the sub-alternatives would define the boundary between the Florida Keys/East Florida (FLK/EFL) stock of hogfish managed by the South Atlantic Fishery Management Council (South Atlantic Council), and the Gulf of Mexico stock managed by the Gulf of Mexico Fishery Management Council (Gulf Council). **Sub-alternative 2a** would use the jurisdictional boundary between the South Atlantic and Gulf Councils but would not fit the biological demarcation of the two stocks so that a portion of the FLK/EFL stock would remain within the Gulf Council's jurisdiction. **Sub-alternative 2b** uses the Monroe/Collier County line to differentiate the two stocks. This boundary would result in a better fit to the areas in which the two stocks are contained, but there could be negative law enforcement issues associated with different regulations for hogfish in the two areas. The Monroe/Collier County line was used in the SEDAR 37 (2014) assessment to differentiate between the FLK/EFL stock of hogfish and that in the West Florida shelf.

Preferred Sub-alternative 2c considers a point just south of Cape Sable as a starting point for the boundary line to differentiate the two stocks. According to local law enforcement officials, this would be a good demarcation point because "it is far enough north of the Keys and far enough South of Naples and Marco Island so that Monroe is not simply shifting the regulatory problem north to Collier County." In terms of biological effects, **Preferred Alternative 2** would be beneficial over **Alternative 1 (No Action)** since management would be aligned with the most recent scientific information on the hogfish resource. There would be no difference in the biological benefits among the three sub-alternatives under **Preferred Alternative 2** as the demarcation is not biologically relevant.

Commercial landings for annual catch limit (ACL) monitoring by the Southeast Fisheries Science Center (SEFSC) and the National Marine Fisheries Service (NMFS) Southeast Regional Office are assigned to region based on captain-reported catch area. Headboat landings for ACL monitoring are assigned to an area fished; for vessels in Monroe County, landings are assigned to a region based on port. Marine Recreational Information Program (MRIP) hogfish landings for recreational ACL monitoring are based on reported catch area, with Monroe County landings re-assigned ('post-stratified') from the Gulf to the South Atlantic, consistent with decisions made in SEDAR 37 (2014). Minor changes to regional boundaries such as those being considered in **Action 1** may facilitate enforcement of management regulations but would not impact approaches to ACL monitoring. Thus, ACL monitoring for hogfish would remain consistent with past approaches with regard to the assignment of landings to region in Monroe County; these approaches are consistent with those used in SEDAR 37 (2014).

As described above, modifying the management unit for hogfish is not expected not alter the current harvest or use of the resource. Therefore, **Alternative 1 (No Action)** and **Alternative 2** (along with its sub-alternatives) are not expected to have any additional economic effects as modifications to the harvest hogfish may be affected by other actions in this amendment.

Although additional effects would not usually be expected from retaining the current hogfish FMU under **Alternative 1 (No Action)**, this would be inconsistent with the stock assessment. **Preferred Alternative 2** would align hogfish management with updated scientific information. However, if changes in the quota or other management measures restricted access for fishermen harvesting hogfish in specific areas, there may be some negative social effects due to restricted access to the resource.

Any indirect effects from **Sub-alternatives 2a-2c (Preferred)** would be similar for all fishermen targeting hogfish, except for fishermen in the Florida Keys. Under **Sub-alternatives 2a** and **2b**, management of hogfish in the Florida Keys would be split between the Gulf and South Atlantic Councils' jurisdiction. This would pose problems for the Florida Keys fishermen, as some vessels fish in both jurisdictions and may be subject to separate sets of (present and future) fishing regulations. Under **Preferred Sub-alternative 2c**, the Florida Keys would be managed exclusively by the South Atlantic Council. Thus, some additional benefits would be expected from **Preferred Sub-alternative 2c**, compared to **Sub-alternatives 2a** and **2b**.

Snapper Grouper AP Recommendation:

The AP had no recommendations for Action 1.

Public Comments:

Commercial fishermen in the Keys who have both SA and Gulf permits want boundary between SA and Gulf stock to be at the jurisdictional boundary. Other commenters supported the Council's preferred (line due west just south of Cape Sable).

COMMITTEE ACTION:

OPTION 1. APPROVE IPT'S SUGGESTED EDITS TO ACTION 1

OPTION 2. DO NOT APPROVE IPT'S SUGGESTED EDITS TO ACTION 1 (COMMITTEE TO SUGGEST CHANGES AND APPROVE).

OTHERS?

Action 2. Specify Maximum Sustainable Yield (MSY) for the Georgia through North Carolina (GA-NC) and the Florida Keys/East Florida (FLK/EFL) stocks of hogfish

Alternative 1 (No Action). ~~Do not define MSY for the GA-NC or the FLK/EFL stocks of hogfish.~~ Currently, the maximum sustainable yield (MSY) equals the yield produced by F_{MSY}. $F_{30\%SPR}$ is used as the F_{MSY} proxy for hogfish in the South Atlantic.

Preferred Alternative 2. MSY equals the yield produced by F_{MSY} or the F_{MSY} proxy ($F_{30\%SPR}$). MSY and F_{MSY} are recommended by the most recent SEDAR/SSC.

Preferred Sub-alternative 2a. GA-NC stock of hogfish.

Preferred Sub-alternative 2b. FLK/EFL stock of hogfish.

Alternatives	Equation	F_{MSY}	MSY Values (lbs whole weight)
Alternative 1 (No Action)	MSY is not defined for the GA-NC stock or the FLK/EFL stock	unknown	unknown
Alternative 2 (Preferred)	**MSY equals the yield produced by F_{MSY} or the F_{MSY} proxy. MSY and F_{MSY} are recommended by the most recent SEDAR/SSC.**	**Sub-alt 2a: GA-NC = unknown** **Sub-alt 2b: FLK/EFL = 0.138**	**GA-NC = unknown** **FLK/EFL = 346,095**

Comparison of Alternatives

Maximum Sustainable Yield (MSY) is the largest long-term average catch that can be taken from a stock or stock complex under prevailing ecological and environmental conditions. MSY for snapper grouper species was initially specified in Amendment 11 (SAFMC 1998) to the Snapper Grouper FMP (Amendment 11). For hogfish, Amendment 11 defined MSY as the yield produced when fishing at a rate that will produce MSY where $F_{30\%SPR}$ is used as the F_{MSY} proxy. At that time, MSY was unknown for hogfish due to a lack of data. When a stock assessment is conducted; however, the model usually produces estimates of MSY. In the case of hogfish, a stock assessment could only be conducted for the Florida Keys/East Florida (FLK/EFL) stock; hence, an estimate of MSY is available for the FLK/EFL stock but not the Georgia through North Carolina (GA-NC) stock. The South Atlantic Council needs to take action to adopt the new definition and value for MSY. Selecting a definition for MSY would allow for any subsequent revisions to that value when the stock assessment is updated or a new assessment is performed without the South Atlantic Council having to take action. The South Atlantic Council's Scientific and Statistical Committee (SSC) endorsed the guidance provided by SEDAR 37 regarding MSY and therefore, the two alternatives considered in this action provide a

range of reasonable alternatives to setting the MSY for hogfish. **Preferred Alternative 2** would provide the South Atlantic Council with that option. SEDAR 37 (2014) produced estimates for F_{MSY} and the yield at F_{MSY} for the FLK/EFL stock. Those values are 0.138 and 346,095 pounds whole weight (lbs ww), respectively, and correspond to **Preferred Sub-alternative 2b (Table D-1)**.

Table D-1. Hogfish recommendations for the Florida Keys/East Florida stock of hogfish. Note: values are in metric tons.

Criteria	Deterministic	Probabilistic
Overfished evaluation	Yes, F/Fmsy= 1.593	1.440
Overfishing evaluation	Yes, SSB/MSST= 0.466	0.494
MFMT (Fmsy)	0.138	0.140
SSBmsy (male & female mature biomass, units not reported)	1,043.44	1,033.725
MSST (male & female mature biomass, units not reported)	856.664	848.688
MSY (1000 lb)	156.986	156.973
Y at 75% Fmsy (1000 lb)	Not reported	Not reported
ABC Control Rule Adjustment	22.5%	
P-Star (Prebuild)	27.5% (72.5%)	
OFL (1000 lb)		
ABC RECOMMENDATIONS: Projection results at the recommended P* were not available when this report was finalized. The projection report will be included as an appendix to this report.		

Source: SSC report, October 2014.

For the GA-NC stock of hogfish, the MSY value is unknown (**Preferred Sub-alternative 2a**) because an assessment could not be performed on the stock. However, should data become available to conduct an assessment on that stock, **Preferred Alternative 2** would allow the South Atlantic Council to adopt the new MSY value without having to prepare an additional amendment to do so. **Preferred Alternative 2** would be biologically beneficial over **Alternative 1 (No Action)** as it would incorporate the latest biologically relevant information on hogfish resource into management actions that would be better tailored to address the status of the resource.

As a benchmark, MSY sets off the parameters that condition subsequent management actions, and as such, defining MSY takes special significance. Of the alternatives considered in this action, **Alternative 2 (Preferred)**, which is recommended in the most recent SEDAR and by the SSC, has a better scientific basis. Hence, it provides a more solid ground for management actions that have economic implications.

Social effects of management specifications such as MSY for a stock would be associated with both the biological and economic effects of the MSY value in the rebuilding plan. An MSY level that reflects the best available information (**Preferred Alternative 2**) could result in lower F values in the rebuilding plan, and consequentially lower ACLs, which would likely affect fishermen targeting hogfish. However, an informed and relevant MSY (**Preferred Alternative 2**) is expected to contribute to the success of the rebuilding strategy, resulting in greater expected long-term benefits to the commercial fleet and recreational fishermen who target hogfish than **Alternative 1 (No Action)**

Snapper Grouper AP Recommendations:

The AP had no recommendations for Action 2.

Public Comments:

Since there is no stock assessment that can be used for the GA-NC stock of hogfish, the Council should not consider changes in management for that stock.

COMMITTEE ACTION:

OPTION 1. APPROVE IPT'S SUGGESTED EDITS TO ACTION 2

OPTION 2. DO NOT APPROVE IPT'S SUGGESTED EDITS TO ACTION 2 (COMMITTEE TO SUGGEST CHANGES AND APPROVE).

OTHERS?

Action 3. Specify Minimum Stock Size Threshold (MSST) for the Georgia through North Carolina (GA-NC) and the Florida Keys/East Florida (FLK/EFL) stocks of hogfish

Alternative 1 (No Action). ~~Do not define minimum stock size threshold (MSST) for the GA-NC and Florida Keys/East Florida (FLK/EFL) stocks of hogfish.~~ Minimum stock size threshold (MSST) for hogfish in the South Atlantic is equal to SSB_{MSY} ((1-M) or 0.5, whichever is greater).

Alternative 2. ~~Minimum Stock Size Threshold (~~MSST~~)~~ = SSB_{MSY} ((1-M) or 0.5, whichever is greater).

Sub-alternative 2a. For the GA-NC stock of hogfish.

Sub-alternative 2b. For the FLK/EFL stock of hogfish.

Alternative 3. ~~Minimum Stock Size Threshold (~~MSST~~)~~ = 50% of SSB_{MSY}

Sub-alternative 3a. For the GA-NC stock of hogfish.

Sub-alternative 3b. For the FLK/EFL stock of hogfish.

Preferred Alternative 4. ~~Minimum Stock Size Threshold (~~MSST~~)~~ = 75% of SSB_{MSY}

Preferred Sub-alternative 4a. For the GA-NC stock of hogfish.

Preferred Sub-alternative 4b. For the FLK/EFL stock of hogfish.

Alternatives	MSST Equation	M	MSST Values (lbs whole weight)
1 (No Action)	MSST = SSB_{MSY} ((1-M) or 0.5, whichever is greater).	0.25	unknown
2	MSST = SSB_{MSY} ((1-M) or 0.5, whichever is greater).	0.179	GA-NC = unknown FLK/EFL = 1,888,621
3	MSST = 50% of SSB_{MSY}	0.179	GA-NC = unknown FLK/EFL = 1,150,195
4 (Preferred)	**MSST = 75% of SSB_{MSY}**	**0.179**	**GA-NC = unknown** **FLK/EFL = 1,725,293**

2.3.1 Comparison of Alternatives

The Minimum Stock Size Threshold (MSST) is the biomass level below which a stock is considered overfished. MSST for hogfish in the South Atlantic is currently specified as MSST = SSB_{MSY}*((1-M) or 0.5, whichever is greater) where SSB_{MSY} is the spawning stock biomass at the MSY level and M is the natural mortality rate. MSST has not been specified for the Georgia

through North Carolina (GA-NC) and Florida Keys/East Florida (FLK/EFL) stocks (**Alternative 1 (No Action)**). Regulatory Amendment 21 to the Snapper Grouper FMP, effective November 6, 2014, changed the definition for MSST for select snapper grouper species (red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack) with low natural mortality (M) from MSST = SSB_{MSY}*((1-M) or 0.5, whichever is greater) to MSST = 75% SSB_{MSY}. Other Snapper Grouper FMP amendments changed MSST to 75% SSB_{MSY} for snowy grouper, golden tilefish, and red grouper because natural mortality rate is very low (Amendments 15A, 15B, and 24, respectively). When the natural mortality rate is low (i.e., less than 0.25), even small fluctuations in biomass due to natural variations not related to fishing mortality may cause a stock to vary between an overfished or rebuilt condition. When a species is identified as overfished, the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires that a plan be implemented to rebuild the stock. Redefining MSST for these species was done to help prevent unnecessary overfished designations when small drops in biomass are due to natural variation in recruitment or other environmental variables, and ensure that rebuilding plans are applied to stocks when truly appropriate. Natural mortality for the FLK/EFL stock of hogfish is estimated at 0.179, which is within the range of natural mortality values for species addressed in Regulatory Amendment 21, Amendment 15A, Amendment 15B, and Amendment 24 (0.08 – 0.23). **Alternative 1 (No Action)** is not a viable alternative unless hogfish continue to be managed as a single stock, which would be contrary to the latest scientific evidence. Under all the alternatives considered, the MSST for the GA-NC hogfish stock would remain unknown, thus biological effects would be the same. **Alternative 2** would retain the current MSST formula (SSB_{MSY} *(1-M) or 0.5, whichever is greater) but apply it to each of the two hogfish stocks. This alternative results in the highest MSST value for the FLK/EFL stock but incorporates natural mortality in the equation, thus risking an overfished determination when one is not needed, as explained above. **Alternative 3** would set MSST at 50% of the SSB_{MSY}, which would result in a lower threshold than that proposed under **Preferred Alternative 4** (75% SSB_{MSY}). The biological benefits of **Preferred Alternative 4**, which would trigger a rebuilding plan when biomass is at 75% of SSB_{MSY}, would be expected to be greater than **Alternative 3**, which would have a lower biomass threshold for an overfished determination (50%SSB_{MSY}) because biomass would not be allowed to decrease as much as it would under **Alternative 3** before triggering implementation of a rebuilding plan. At their October 2013 meeting, the South Atlantic Council's Scientific and Statistical Committee (SSC) acknowledged that the 75%SSB_{MSY} approach is an acceptable choice for MSST, and they voiced no concern regarding the adoption of this management reference point for South Atlantic Council managed species.

With rebuilding taking place over a number of years, management actions and their economic consequences could change over time depending on a variety of factors, including the status of the stock and fishing conditions. **Alternative 3** would appear to be best from an economic standpoint, because it is unlikely to trigger restrictive rebuilding actions in the short term. One possible downside of this alternative is that once the stock is considered overfished, the required rebuilding actions could be very restrictive and potentially remain for quite some time. **Alternatives 1 (No Action)** and **2** lie on one end of the continuum for potential negative economic effects because they have the highest probability of triggering restrictive rebuilding actions. A possible mitigating factor with **Alternatives 1 (No Action)** and **2** is the possibility that the required management actions would have adverse economic effects which would not last

long. But a frequently varying regulatory regime would tend to de-stabilize business planning and fishing decisions, which could have potentially worse economic consequences. The economic implications of the **Preferred Alternative 4** may be characterized as falling between **Alternatives 1 (No Action)/2** and **Alternative 3**.

Social effects of revised biological parameters such as MSST for a stock would be associated with both the biological and economic effects of the modified MSST value. Under all alternatives, fishermen could be affected by future restricted access to a specific species due to an overfished designation, which could have negative effects on associated fishing businesses and communities. Although **Preferred Alternative 4** is the more restrictive approach to set the MSST than under **Alternatives 1 (No Action)-3**, it would also be the most likely to trigger a rebuilding plan sooner, which may avoid more severe biological impacts to the stock.

Snapper Grouper AP Recommendations:

The AP had no recommendations for Action 2.

Public Comments:

Since there is no stock assessment that can be used for the GA-NC stock of hogfish, the Council should not consider changes in management for that stock.

COMMITTEE ACTION:

OPTION 1. APPROVE IPT'S SUGGESTED EDITS TO ACTION 3

OPTION 2. DO NOT APPROVE IPT'S SUGGESTED EDITS TO ACTION 3 (COMMITTEE TO SUGGEST CHANGES AND APPROVE).

OTHERS?

Action 4. Establish Annual Catch Limits (ACLs) for the Georgia through North Carolina (GA-NC) stock of hogfish

Alternative 1 (No action). ~~Do not establish ACLs for the GA-NC stock of hogfish.~~ The current acceptable biological catch (ABC) for the entire stock of hogfish is 134,824 lbs ww and ACL = optimum yield (OY) = ABC. The commercial ACL = 49,469 lbs ww (36.69%) and the recreational ACL = 85,355 lbs ww (63.31%).

Preferred Alternative 2. Establish an ACL for the GA-NC stock. Specify commercial and recreational ACLs using re-calculated sector allocations based on proposed modifications to the management unit (69.13% commercial and 30.87% recreational). The ABC for the GA-NC stock = 35,716 pounds whole weight (lbs ww).

Sub-alternative 2a. ACL = OY = ABC

Preferred Sub-alternative 2b. ACL = OY = 95% ABC

Sub-alternative 2c. ACL = OY = 90% ABC

Comparison of Alternatives

Because the SEDAR 37 stock assessment was not deemed applicable to the GA-NC stock of hogfish, the South Atlantic Council's Scientific and Statistical Committee (SSC) applied Level 4 of the ABC Control Rule to arrive at an acceptable biological catch (ABC) recommendation for the Georgia through North Carolina (GA-NC) stock of hogfish. Based on methodology in *Calculating Acceptable Biological Catch for Stocks That Have Reliable Catch Data Only* (Only Reliable Catch Stocks – ORCS) (Berkson et al. 2011), the South Atlantic Council's SSC recommended an approach to compute the ABC for unassessed stocks with only reliable catch data. The approach involves selection of a "catch statistic", a scalar to denote the risk of overexploitation for the stock, and a scalar to denote the management risk level. The SSC provides the first two criteria for each stock, and the South Atlantic Council specifies their risk tolerance level for each stock. **Table D-2** presents the values and scalars used in the calculation.

Table D-2. The South Atlantic Council's SSC ABC recommendation for the GA-NC stock of hogfish.

Statistic	Value
Risk of Overexploitation	Moderately High
Associated Scalar	1.25
Range of Years	1999-2007
Year of Max Landings	2006
Catch Statistic	40,818 lbs ww
Council Risk Scalar (Preferred from Am 29)	0.7
Proposed ABC	**35,716 lbs ww**

Table D-3 shows the proposed total ACL and sector ACLs for the GA-NC hogfish stock. Sector allocations differ from those under **Alternative 1 (No Action)** because splitting the stock renders it necessary to re-calculate sector allocations using the appropriate landings figures for the relevant geographic area. That is, only landings from Georgia and the Carolinas were used to derive sector allocations based on the existing allocation formula whereas sector allocations

under **Alternative 1 (No Action)** were computed using commercial and recreational landings for the four South Atlantic states. The recreational ACL is presented in both lbs ww and in numbers of fish for each proposed alternative. Recreational ACL in numbers of fish was obtained by dividing the recreational ACL in pounds by the average weight of hogfish caught recreationally in Georgia and the Carolinas. The average weight used for this calculation was 10.60 lbs ww.

Hogfish are currently managed as a unit stock within the South Atlantic Council's area of jurisdiction. Hence, **Alternative 1 (No Action)** specifies the ABC, ACLs and sector allocations (based on the South Atlantic Council's approved allocation formula) for the entire stock. Since **Action 1** proposes to split the hogfish stock into two based on recent genetic evidence, **Alternative 1 (no Action)** is not a viable alternative as it would ignore the latest scientific information on hogfish stock structure. The SEDAR 37 (2014) stock assessment was not deemed applicable for the GA-NC portion of the stock, therefore **Preferred Alternative 2** and its sub-alternatives propose ABCs based on the South Atlantic Council's ABC Control Rule for stocks with only reliable catch (ORCS approach). **Sub-alternatives 2b (Preferred)** and **2c** would have a greater positive biological effect than **Sub-alternative 2a** because they would create a buffer between the ACL/OY and ABC, with **Sub-alternative 2c** setting the most conservative ACL at 90% of the ABC (**Table D-3**). Creating a buffer between the ACL/OY and ABC would provide greater assurance that overfishing is prevented, and the long-term average biomass is near or above SSB_{MSY}. However, the South Atlantic Council's ABC control rule takes into account scientific uncertainty. The Magnuson-Stevens Act National Standard 1 (NS1) guidelines indicate an ACL may typically be set very close to the ABC. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. An annual catch target (ACT), which is not required, can also be set below the ACL to account for management uncertainty and provide greater assurance overfishing does not occur.

Table D-3. Commercial and recreational ACLs provided by **Sub-alternatives 2a-2c**. Recreational ACL converted from pounds to numbers using an average weight of 10.60 lbs ww per fish.

Sub-alternative	Total ACL	Rec ACL (lbs)	Rec ACL (numbers)	Comm ACL (lbs)
2a	35,716	11,026	1,040	24,690
2b (Preferred)	**33,930**	**10,474**	**988**	**23,456**
2c	32,144	9,923	936	22,221

In general, assuming a sector is able to catch its entire ACL, the higher the ACL, the greater the positive direct economic effects for all sectors, as long as the ACL is not exceeded. Therefore, **Sub-alternative 2a** represents the highest positive direct economic effects, followed by **Preferred Sub-alternative 2b** and **Sub-alternative 2c**.

Because recreational landings are likely to vary year by year, there will likely be some years in which recreational landings will reach the recreational ACL and recreational AMs would be triggered. If an in-season closure and payback measure are implemented as recreational AMs in **Action 12**, there would likely be some negative effects on recreational fishermen and for-hire businesses that target hogfish. In general, a higher ACL would lower the chance of triggering a recreational AM (if implemented) and result in the lowest level of negative effects on the recreational sector.

Snapper Grouper AP Recommendations:

MOTION: RECOMMEND SUB-ALTERNATIVE 2A UNDER ACTION 4 AS PREFERRED ALTERNATIVE
Sub-alternative 2a. ACL = OY = ABC
APPROVED BY AP

****RECOMMENDATION: FOR THE NC-GA STOCK, THE COUNCIL SHOULD CONSIDER REGULATING COMMERCIAL AND RECREATIONAL HOGFISH BASED ON TWO SEPARATE GEARS (HOOK-AND-LINE AND SPEAR). MAINTAINING SEPARATE ACLs FOR COMMERCIAL AND RECREATIONAL BUT NOT BASED ON GEAR. INTENT IS TO BETTER MANAGE USING DIFFERENT SIZE LIMITS, ETC.****

Public Comments:

- Since there is no stock assessment that can be used for the GA-NC stock of hogfish, the Council should not consider changes in management for that stock.
- At the proposed commercial ACL, the season will only last 9 months.
- Concern that the MRIP survey is not sampling dive boats adequately and, therefore, recreational estimates for the GA-NC stock do not reflect abundance of hogfish in that region.

COMMITTEE ACTION:

OPTION 1. APPROVE IPT'S SUGGESTED EDITS TO ACTION 4

OPTION 2. DO NOT APPROVE IPT'S SUGGESTED EDITS TO ACTION 4 (COMMITTEE TO SUGGEST CHANGES AND APPROVE).

OTHERS?

Action 5. Establish a rebuilding plan for the Florida Keys/East Florida (FLK/EFL) stock of hogfish

Alternative 1 (No Action). ~~Do not establish a rebuilding plan the Florida Keys/East Florida (FLK/EFL) stock of hogfish.~~ The current ABC for the entire stock of hogfish is 134,824 lbs ww. There is no rebuilding plan in place for hogfish in the South Atlantic.

Alternative 2. Define a rebuilding plan where the rebuilding strategy for the Florida Keys/East Florida (FLK/EFL) stock of hogfish sets ABC equal to the yield at a constant fishing mortality rate and rebuilds the stock in 10 years with a 50% probability of rebuilding success. The overfishing limit (OFL) is the yield at F_{MSY}. The spawning stock biomass (SSB_{MSY}) is 2,300,391 lbs ww. Year 1 = 2017

Year	F	SSB (lbs)	Probability of SSB > SSB_{MSY}	OFL	ABC (lbs)	Discards (lbs)
2017	0.087	466,101	0	76,834	48,026	595
2018	0.087	615,078	0	95,460	61,994	768
2019	0.087	780,517	0	114,891	77,363	958
2020	0.087	958,225	0.001	134,663	93,826	1,162
2021	0.087	1,145,995	0.01	154,552	111,135	1,376
2022	0.087	1,341,203	0.049	174,308	129,008	1,597
2023	0.087	1,540,211	0.125	193,604	147,103	1,821
2024	0.087	1,739,110	0.224	212,120	165,076	2,044
2025	0.087	1,934,221	0.327	229,575	182,603	2,261
2026	0.087	2,122,134	0.421	245,737	199,389	2,469
2027	0.087	2,300,212	0.5	260,470	215,211	2,664

Source: FL Fish and Wildlife Research Institute. Revised projections for SEDAR 37 (**Appendix K**).

Preferred Alternative 3. Define a rebuilding plan where the rebuilding strategy for the ~~Florida Keys/East Florida (~~FLK/EFL~~)~~ stock of hogfish sets ABC equal to the yield at a constant fishing mortality rate and rebuilds the stock in 10 years with a 72.5% probability of rebuilding success. The ~~Overfishing Limit (~~OFL~~)~~ is the yield at F_{MSY}. The ~~Spawning Stock Biomass (~~SSB_{MSY}~~)~~ is 2,300,391 lbs ww. Year 1 = 2017

Year	F	SSB (lbs)	Probability of SSB > SSB_{MSY}	OFL	ABC (lbs)	Discards (lbs)
2017	0.07	466,101	0	76,834	38,367	595
2018	0.069	623,334	0	95,460	49,449	777
2019	0.068	801,673	0	114,891	61,982	982
2020	0.068	997,357	0.001	134,663	75,710	1,206
2021	0.068	1,208,116	0.014	154,552	90,469	1,446
2022	0.067	1,430,997	0.067	174,308	106,059	1,698
2023	0.067	1,661,827	0.167	193,604	122,197	1,957
2024	0.067	1,896,011	0.293	212,120	138,566	2,219
2025	0.067	2,129,079	0.417	229,575	154,851	2,477
2026	0.068	2,356,761	0.525	245,737	170,750	2,728
2027	0.068	2,575,569	0.613	260,470	186,018	2,968

Source: FL Fish and Wildlife Research Institute. Revised projections for SEDAR 37 (**Appendix K**).
Note: Projections for various F scenarios were completed using Stock Synthesis (SS3). Under a constant F scenario, the F values vary over the span of the projection due to changes in the stock's vulnerable biomass and age composition.

Alternative 4. Define a rebuilding plan where the rebuilding strategy for the ~~Florida Keys/East Florida (~~FLK/EFL~~)~~ stock of hogfish sets ABC equal to the yield at a constant fishing mortality rate and rebuilds the stock in 7 years with a 50% probability of rebuilding success. The ~~Overfishing Limit (~~OFL~~)~~ is the yield at F_{MSY}. The ~~Spawning Stock Biomass (~~SSB_{MSY}~~)~~ is 2,300,391 lbs ww. Year 1 = 2017

Year	F	SSB (pounds)	Probability of SSB > SSB_{MSY}	OFL	ABC (lbs)	Discards (lbs)
2017	0.027	466,101	0	76,834	14,352	595
2018	0.027	643,910	0	95,460	19,342	801
2019	0.027	853,516	0	114,891	25,157	1,042
2020	0.027	1,092,682	0.002	134,663	31,751	1,315
2021	0.027	1,359,505	0.03	154,552	39,049	1,618
2022	0.027	1,650,910	0.133	174,308	46,953	1,945
2023	0.027	1,962,295	0.306	193,604	55,333	2,293
2024	0.027	2,288,307	0.494	212,120	64,049	2,654

Source: FL Fish and Wildlife Research Institute. Revised projections for SEDAR 37 (Appendix K).

Alternative 5. Define a rebuilding plan where the rebuilding strategy for the ~~Florida Keys/East Florida (~~FLK/EFL~~)~~ stock of hogfish sets ABC equal to the yield at a constant fishing mortality rate that rebuilds the stock in 7 years with a 72.5% probability of rebuilding success. The ~~Overfishing Limit (~~OFL~~)~~ is the yield at F_{MSY}. The ~~Spawning Stock Biomass (~~SSB_{MSY}~~)~~ is 2,300,391 lbs ww. Year 1 = 2017

Year	F	SSB (pounds)	Probability of SSB > SSB_{MSY}	OFL	ABC (lbs)	Discards (lbs)
2017	0.022	466,101	0	76,834	11,858	595
2018	0.022	646,051	0	95,460	15,774	804
2019	0.022	859,315	0	114,891	20,469	1,049
2020	0.022	1,103,904	0.002	134,663	25,906	1,328
2021	0.022	1,378,000	0.031	154,552	32,042	1,639
2022	0.022	1,678,512	0.145	174,308	38,810	1,976
2023	0.022	2,000,728	0.329	193,604	46,106	2,335
2024	0.022	2,339,124	0.523	212,120	53,809	2,710

Source: FL Fish and Wildlife Research Institute. Revised projections for SEDAR 37 (Appendix K).

Comparison of Alternatives

In the tables above, the terminal spawning stock biomass (SSB) in the rebuilding projections may not equal or exceed the base run estimate of SSB_{MSY} because the SSB estimates in the projections were generated from multiple bootstrap iterations in order to incorporate uncertainty into the projections. Therefore, the actual SSB_{MSY} that the projections are rebuilding to is not the estimate from the base run but the median (or other type of estimate in the case of the 72.5% probability of success runs) from the bootstrap distribution.

Table D-4 below provides a summary of the alternatives for **Action 5**.

Table D-4. A summary of the various rebuilding scenarios (Alternatives 1-5) for the Florida Keys/East Florida (FLK/EFL) stock of hogfish.

Alternatives	F rate strategy	F rate	Year 1 ABC (lbs)	Rebuilt stock (years)	Probability of rebuilt stock
1 (No action)	Do not specify a rebuilding plan. The current ABC for the entire stock of hogfish is 137,824 lbs ww				
2	Constant	0.087	48,026	10	50%
3 (Preferred)	**Constant**	**0.070 (year 1)**	38,367	**10**	**72.5%**
4	Constant	0.027	14,352	7	50%
5	Constant	0.022 (year 1)	11,858	7	72.5%

The last year of data in the hogfish assessment report (SEDAR 37 2014) was 2012. Projections for various fishing mortality (F) scenarios were completed using Stock Synthesis (SS3) base model configurations for the FLK/EFL hogfish stock (SEDAR 37 2014). Projection results were based on year 1 = 2016 and extending through 2026, or to the point of stock rebuilding if a scenario did not result in rebuilding within 10 years.

The recreational sector for hogfish was closed on August 24, 2015, due to an increase in landings observed during Wave 2 of the Marine Recreational Information Program (MRIP) survey. As a result, preliminary landings for 2015 are above the landings level assumed in the stock projections raising concerns that the projections may no longer represent the best scientific information available. Therefore, the South Atlantic Council requested updated projections for the FLK/EFL hogfish stock using the most recent landings estimates. The new revised projections (**Appendix K**) included the most recent landings and charged year 1 to 2017 to reflect the likely implementation date of management actions. The projected overfishing limits (OFL) and acceptable biological catches (ABCs) assume the current hogfish minimum size limit (12 inches fork length).

Since the stock assessment for the FLK/EFL stock falls under Tier 1 of the ABC control rule, the SSC recommended a P* = 0.275 with a probability of rebuilding success of 72.5%, which corresponds to the values shown under **Preferred Alternative 3**. Since the SEDAR 37 (2014) stock assessment determined that the FLK/EFL hogfish stock is overfished, **Alternative 1 (No Action)** is not a viable alternative. Moreover, the South Atlantic Council received notification (via letter dated February 17, 2015), of the overfished determination for the FLK/EFL stock of hogfish. Therefore, the South Atlantic Council has two years to develop and implement a rebuilding plan for that stock. **Alternative 2** would rebuild the stock in the required 10 years but at a lower probability of success than that recommended by the SSC, whereas **Alternatives 4** and **5** would rebuild the stock in 7 years with 50% and 72.5% probabilities of rebuilding success, respectively. Since the stock would rebuild in a shorter time period, **Alternatives 4** and **5** would implement lower ABCs (and consequently lower ACLs) than alternatives that rebuild the stock in the required 10 years. In general, lower levels of harvest and less time to rebuild translate into higher biological benefits for the stock, hence the biological benefits of **Alternatives 4** and **5** would be higher than those under **Preferred Alternative 3**. However, the SSC has indicated that harvest levels proposed under **Preferred Alternative 3** are sustainable and would achieve the goal of rebuilding the FLK/EFL stock of hogfish within a reasonable timeframe. Therefore, there is no biological need to constrain harvest below this level. Compared to **Alternative 1 (No Action)**, the biological effects of **Alternatives 2-5** would be beneficial since management would be responding to the best scientific information available and results of the SEDAR 37 (2014) stock assessment have indicated that the FLK/EFL stock of hogfish is overfished and undergoing overfishing.

Rebuilding plans in general impose negative direct economic effects in the short term in favor of more direct positive economic effects in the long term as the stock recovers. The difficulty is in balancing those long term and short-term economic effects. Being overly restrictive in the short term could rebuild the stock faster, but perhaps at the expense of pushing some fishermen out of the hogfish portion of the snapper grouper fishery because they are unable

to survive financially under the restrictions. Being too lenient in the short term could jeopardize the probability of rebuilding the stock as needed.

Rebuilding plans in general impose negative direct economic effects in the short term in favor of more direct positive economic effects in the long term as the stock recovers. The difficulty is in balancing those long term and short-term economic effects. Being overly restrictive in the short term could rebuild the stock faster, but perhaps at the expense of pushing some fishermen out of the fishery because they are unable to survive financially under the restrictions. Being too lenient in the short term could jeopardize the probability of rebuilding the stock as needed.

Alternative 1 (No Action) is not a viable alternative to consider, as there are statutory requirements to rebuild all fishery stocks that are overfished or undergoing overfishing. The rebuilding plan has indirect economic effects in that it frames the ACL decision (**Action 6**). The level of the ABC in and of itself does not have direct economic effects.

Because higher ABC levels (and associated ACLs) would be expected to result in less short-term negative social effects on fishermen by allowing more access to hogfish, **Alternative 2** would likely have the least effects associated with catch limits, followed by **Preferred Alternative 3**, **Alternative 4**, and then **Alternative 5**. However, a longer rebuilding plan (**Alternative 2** and **Preferred Alternative 3**) would extend any negative effects on fishermen due to harvest restrictions more than under the shorter (7-year) rebuilding plans in **Alternatives 4** and **5**. Additionally, lower probability of rebuilding could result in long-term negative effects on the stock, which would affect future fishing opportunities. Overall, **Preferred Alternative 3** would be a longer period (10 years) for rebuilding, but may result in a lower level of negative short-term effects than under **Alternatives 4** and **5** due to higher ABCs/ACLs.

Snapper Grouper AP Recommendations:

The AP had no recommendations for Action 5.

Public Comments:

No specific comments regarding proposed rebuilding plan.

COMMITTEE ACTION:

OPTION 1. APPROVE IPT'S SUGGESTED EDITS TO ACTION 5

OPTION 2. DO NOT APPROVE IPT'S SUGGESTED EDITS TO ACTION 5 (COMMITTEE TO SUGGEST CHANGES AND APPROVE).

OTHERS?

Action 6. Establish Annual Catch Limits (ACLs) for the Florida Keys/East Florida (FLK/EFL) stock of hogfish

Alternative 1 (No action). ~~Do not establish ACLs for the Florida Keys/East Florida (FLK/EFL) hogfish stock.~~ The current acceptable biological catch (ABC) for the entire stock of hogfish is 134,824 lbs ww and ACL = optimum yield (OY) = ABC. The commercial ~~annual catch limit~~ (ACL) = 49,469 lbs ww (36.69%) and the recreational ~~annual catch limit (~~ACL) = 85,355 lbs ww (63.31%).

Preferred Alternative 2. Establish ~~annual catch limits (~~ACLs~~)~~ for the ~~Florida Keys/East Florida~~ (FLK/EFL~~)~~ stock of hogfish. Specify commercial and recreational ACLs for 2017-2025~~7~~. ACLs will not increase automatically in a subsequent year if present year projected catch has exceeded the total ACL. Specify commercial and recreational ACLs using re-calculated sector allocations based on proposed modifications to the management unit (9.63% commercial and 90.37% recreational).

Sub-alternative 2a. ACL = OY = ABC

Preferred Sub-alternative 2b. ACL = OY = 95% ABC

Sub-alternative 2c. ACL = OY = 90% ABC

Comparison of Alternatives

Table D-5 shows the proposed total annual catch limit (ACL) and sector ACLs for the FLK/EFL hogfish stock. Sector allocations differ from those under **Alternative 1 (No Action)** because splitting the stock renders it necessary to re-calculate sector allocations using the appropriate landings figures for the relevant geographic area. That is, only landings from Florida were used to derive sector allocations based on the existing allocation formula whereas sector allocations under **Alternative 1 (No Action)** were computed using commercial and recreational landings for the four South Atlantic states. The recreational ACL is presented in both lbs ww and in numbers of fish for each proposed alternative based on the South Atlantic Council's preferred rebuilding plan alternative under **Action 5**. Recreational ACL in numbers of fish was obtained by dividing the recreational ACL in pounds by the average weight of hogfish caught recreationally in Florida. The average weight used for this calculation was 1.85 lbs ww.

Hogfish are currently managed as a unit stock within the South Atlantic Council's area of jurisdiction. Hence, **Alternative 1 (No Action)** specifies the ABC, ACLs and sector allocations (based on the South Atlantic Council's approved allocation formula) for the entire stock. Since **Action 1** proposes to split the hogfish stock into two based on recent genetic evidence, **Alternative 1 (no Action)** is not a viable alternative as it would ignore the latest scientific information on hogfish stock structure. **Preferred Alternative 2** and its sub-alternatives proposes a total ACL for the Florida Keys/East Florida (FLK/EFL) stock using different buffers to account for management uncertainty.

Table D-5. Sector ACLs in pounds and numbers (recreational) for **Sub-alternatives 2a-2c** in **Action 6** and based on ABC projections from **Preferred Alternative 3** in **Action 5** where ABC equal to the yield at a constant fishing mortality rate and rebuilds the stock in 10 years with a 72.5% probability of rebuilding success. Recreational ACL in numbers of fish is based on average weight of 1.85 lbs ww.

Sub-alternative 2a: ACL=OY=ABC				
Year	**Total ACL (lbs)**	**Rec ACL (lbs)**	**Rec ACL (numbers)**	**Commercial ACL (lbs)**
2017	38,367	34,672	18,742	3,695
2018	49,449	44,687	24,155	4,762
2019	61,982	56,013	30,277	5,969
2020	75,710	68,419	36,983	7,291
2021	90,469	81,757	44,193	8,712
2022	106,059	95,846	51,808	10,213
2023	122,197	110,429	59,692	11,768
2024	138,566	125,222	67,688	13,344
2025	154,851	139,939	75,643	14,912
2026	170,750	154,307	83,409	16,443
2027	186,018	168,104	90,867	17,914
Preferred Sub-alternative 2b: ACL=OY= 95%ABC				
2017	**36,449**	**32,939**	**17,805**	**3,510**
2018	**46,977**	**42,453**	**22,947**	**4,524**
2019	**58,883**	**53,212**	**28,764**	**5,670**
2020	**71,925**	**64,998**	**35,134**	**6,926**
2021	**85,946**	**77,669**	**41,983**	**8,277**
2022	**100,756**	**91,053**	**49,218**	**9,703**
2023	**116,087**	**104,908**	**56,707**	**11,179**
2024	**131,638**	**118,961**	**64,303**	**12,677**
2025	**147,108**	**132,942**	**71,860**	**14,167**
2026	**162,213**	**146,591**	**79,239**	**15,621**
2027	**176,717**	**159,699**	**86,324**	**17,018**
Sub-alternative 2c: ACL=OY=90%ABC				
2017	34,530	31,205	16,868	3,325
2018	44,504	40,218	21,740	4,286
2019	55,784	50,412	27,250	5,372
2020	68,139	61,577	33,285	6,562
2021	81,422	73,581	39,774	7,841
2022	95,453	86,261	46,628	9,192
2023	109,977	99,386	53,722	10,591
2024	124,709	112,700	60,919	12,010
2025	139,366	125,945	68,078	13,421
2026	153,675	138,876	75,068	14,799
2027	167,416	151,294	81,781	16,122

Sub-alternatives 2b (Preferred) and **2c** would have a greater positive biological effect than **Sub-alternative 2a** because they would create a buffer between the ACL/OY and ABC, with **Sub-alternative 2c** setting the most conservative ACL at 90% of the ABC (**Table D-5**). Creating a buffer between the ACL/OY and ABC would provide greater assurance that overfishing is prevented, and the long-term average biomass is near or above SSB_{MSY}. However, the South Atlantic Council's ABC control rule takes into account scientific uncertainty. The Magnuson-Stevens Act National Standard 1 (NS1) guidelines indicate an ACL may typically be set very close to the ABC. Setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. An annual catch target (ACT), which is not required, can also be set below the ACL to account for management uncertainty and provide greater assurance overfishing does not occur.

In general, assuming a sector is able to catch its entire ACL, the higher the ACL, the greater the positive direct long- and short-term economic effects for all sectors, as long as the overall ACL is not exceeded. Therefore, **Sub-alternative 2a** represents the highest positive direct economic effects, followed by **Preferred Sub-alternative 2b** and **Sub-alternative 2c**.

Recreational landings of hogfish in the FLK/EFL sub-region have been much higher than the proposed recreational ACLs under **Preferred Alternative 2** (**Table D-6**). For the potential recreational ACLs in the first five years of a proposed rebuilding plan, FLK/EFL recreational landings are substantially higher than any proposed recreational ACLs (**Figure D-2**). If an in-season closure and payback measure are implemented under **Action 12**, there would likely be some negative effects on recreational fishermen and for-hire businesses that target hogfish, as access will be greatly restricted. In general, a higher ACL would lower the chance of triggering a recreational AM (if implemented) and result in the lowest level of negative effects on the recreational sector. After **Alternative 1 (No Action)**, **Sub-alternative 2a** would be the most beneficial for recreational fishermen, followed by **Preferred Sub-alternative 2b** and then **Sub-alternative 2c**. However, because the proposed ACLs in **Preferred Alternative 2** would all be much lower than recreational landings in recent years, all sub-alternatives would likely result in negative effects on recreational anglers, for-hire businesses and for-hire clients who harvest or would harvest hogfish.

Table D-6. Commercial and recreational landings (lbs ww) for the FLK/EFL stock of hogfish, 2000-2014.

Year	Rec Landings	Commercial Landings	TOTAL Landings
2000	40,295	28,015	68,310
2001	79,266	18,455	97,721
2002	99,499	19,525	119,024
2003	123,767	20,623	144,390
2004	190,292	23,299	213,591
2005	189,126	12,380	201,506
2006	120,381	11,337	131,718
2007	271,031	14,402	285,433
2008	361,301	17,882	379,183
2009	239,327	12,014	251,341
2010	137,731	10,554	148,285
2011	66,475	10,384	76,859
2012	300,550	12,145	312,695
2013	142,687	13,950	156,637
2014	239,403	15,833	255,236

Source: SERO and SEFSC

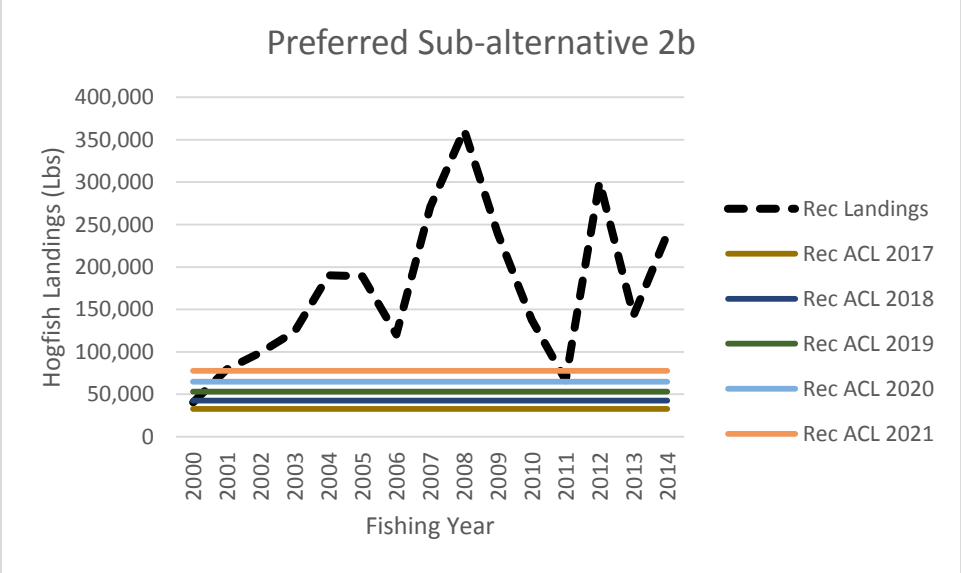


Figure D-2. Annual recreational landings of FLK/EFL hogfish (lbs ww) for compared to the potential recreational ACLs under **Preferred sub-alternative 2b**.

Although commercial landings of FLK/EFL hogfish are much lower compared to recreational landings, the proposed commercial ACLs under **Preferred Alternative 2** are much lower than commercial landings in recent years (**Table D-6** and **Figure D-3**). The potential commercial AMs in **Action 12** would mirror current commercial AMs for each stock, and there would be a possibility of an in-season closure for a year with high landings, or a payback if triggered. In general, a higher ACL would lower the chance of triggering a closure, resulting in in the lowest level of negative effects on the commercial sector. After **Alternative 1 (No**

Action), **Sub-alternative 2a** would be the most beneficial for commercial fishing businesses who may harvest hogfish, followed by **Preferred Sub-alternative 2b** and **Sub-alternative 2c.**

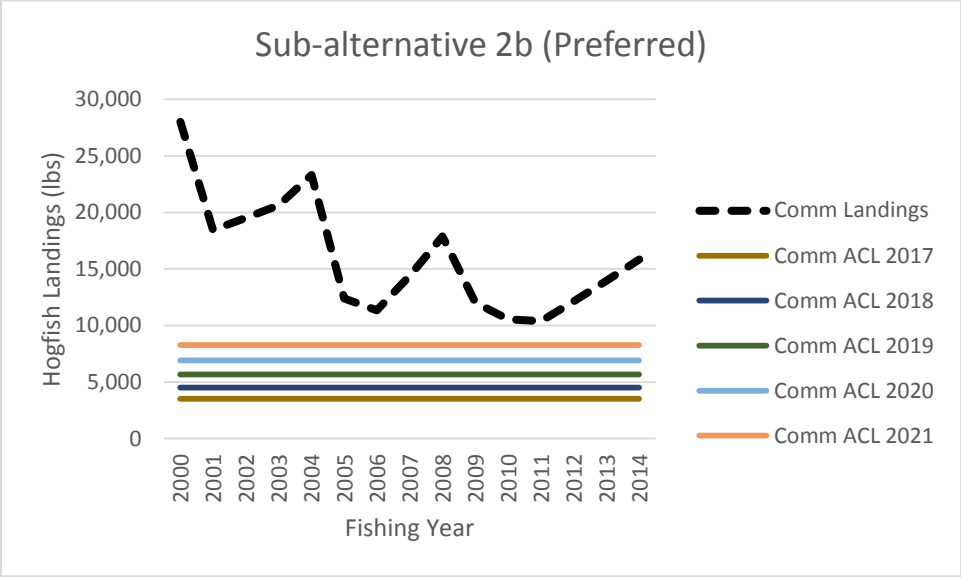


Figure D-3. Annual commercial landings of FLK/EFL hogfish (lbs ww) for compared to the potential commercial ACLs under **Preferred Sub-alternative 2b**.

Snapper Grouper AP Recommendations:

The AP had no recommendations for Action 6.

Public Comments:

No specific comments regarding proposed ACLs.

COMMITTEE ACTION:

NOTE: AT SEPTEMBER 2015 MEETING COUNCIL APPROVED MOTION TO SPECIFY ACLs TO 2025. THE REBUILDING GOES THROUGH 2027, HOWEVER.

OPTION 1. APPROVE IPT'S SUGGESTED EDITS TO ACTION 6

OPTION 2. DO NOT APPROVE IPT'S SUGGESTED EDITS TO ACTION 6 (COMMITTEE TO SUGGEST CHANGES AND APPROVE).

OPTION 3. CONSIDER SSC RECOMMENDATION AND PROVIDE GUIDANCE TO STAFF ON PREFERRED APPROACH TO SET ABC AND ACLs FOR FLK/EFK STOCK.

OTHERS?

Action 7. Establish a recreational Annual Catch Target (ACT) for the Georgia through North Carolina (GA-NC) and the Florida Keys/East Florida (FLK/EFL) stocks of hogfish

Alternative 1 (No Action). ~~Do not establish recreational annual catch targets (ACTs) for the GA-NC and Florida Keys/East Florida (FLK/EFL) stocks of hogfish.~~ The current annual catch target (ACT) is 59,390 lbs ww and applies to hogfish throughout the South Atlantic Council's jurisdiction. The ACT = recreational ACL*(1-PSE) or ACL*0.5, whichever is greater, and where Percent Standard Error (PSE) = average PSE 2005-2009.

Year	Hogfish PSE
2005	28.7
2006	34.3
2007	23.9
2008	30.9
2009	29.5
Average	29.5

Source: NMFS Office of Science and Technology MRIP Domain Catch Totals (2015)

Preferred Alternative 2. Establish an ~~annual catch target (~~ACT~~)~~ for the GA-NC stock of hogfish for the recreational sector.

Sub-alternative 2a. ACT = recreational ACL*(1-PSE) or ACL*0.5, whichever is greater.

Preferred Sub-alternative 2b. ACT =85% recreational ACL.

Sub-alternative 2c. ACT = 75% recreational ACL.

Year	Hogfish PSE (GA-NC)
2010	61.9
2011	67.3
2012	63.1
2013	56.1
2014	n/a
Average	**62.1%**

Source: NMFS Office of Science and Technology MRIP Domain Catch Totals (2015)

Preferred Alternative 3. Establish an ~~annual catch target (~~ACT~~)~~ for the ~~Florida Keys/East Florida (~~FLK/EFL~~)~~ stock of hogfish for the recreational sector.

Sub-alternative 3a. ACT = recreational ACL*(1-PSE) or ACL*0.5, whichever is greater.

Preferred Sub-alternative 3b. ACT =85% recreational ACL.

Sub-alternative 3c. ACT = 75% recreational ACL.

Year	Hogfish PSE East FL-FL Keys
2010	30.5
2011	22.0
2012	24.7
2013	14.7
2014	10.7
Average	**20.5**

Source: NMFS Office of Science and Technology MRIP Domain Catch Totals (2015)

Comparison of Alternatives

The National Standard 1 (NS1) guidelines recommend the use of annual catch targets (ACTs) to prevent ACLs from being exceeded. For species without in-season management control, managers may utilize ACTs that are set below ACLs so that catches do not exceed the ACLs. If an ACT is specified as part of the system of accountability measures (AMs) for hogfish, an ACT control rule that accounts for management uncertainty may be utilized for setting the ACT. The objective for establishing an ACT and related AMs is to prevent the ACL from being exceeded. In managing the snapper grouper fishery; however, the South Atlantic Council has chosen not to use ACTs to trigger AMs because it is anticipated that improvements in reporting will reduce management uncertainty.

Since the ACT is typically set lower and would be reached sooner than the ACL for any given species, using an ACT rather than the ACL as a trigger for AMs in the recreational sector may prevent an ACL overage. This more conservative approach, would likely help to ensure that recreational data uncertainties do not cause or contribute to excessive ACL overages for vulnerable species. Using recreational ACTs rather than the ACLs to trigger recreational AMs may not eliminate ACL overages completely; however, using such a strategy for the recreational sector may reduce the need to compensate for very large overages.

The updated framework procedure included in Amendment 17B to the Snapper Grouper FMP (SAFMC 2010b) allows for the timely establishment and adjustment of ACTs (and ACLs) if the South Atlantic Council and NMFS determine they are necessary.

The NS1 guidelines recommend a performance standard by which the efficacy of any system of ACLs and AMs can be measured and evaluated. According to the guidelines:

> *…if catch exceeds the ACL for a given stock or stock complex more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary, to improve its performance and effectiveness (74 FR 3178).*

If an evaluation concludes that the ACL is being chronically exceeded for any one species or species group, and post-season AMs are repeatedly needed to correct for ACL overages, adjustments to management measures would be made. As stated previously, the updated framework procedure implemented through Amendment 17B (SAFMC 2010b) could be utilized to modify management measures such as bag limits, trip limits, seasonal closures, and gear

prohibitions in a timely manner. Using the regulatory amendment process to implement such changes, if needed, is the most timely method of addressing issues associated with repeated ACL overages through permanent regulations.

Table D-7 shows recreational ACTs for the GA-NC stock of hogfish based on the proposed recreational ACL alternatives in **Action 4**.

Table D-7. Recreational ACTs (in pounds and numbers) for the GA-NC stock of hogfish for each of the recreational ACL sub-alternatives in Action 4.

	ACL=ABC		**ACL=95%ABC**		**ACL=90%ABC**	
	lbs	**num**	**lbs**	**num**	**lbs**	**num**
ACT=rec ACL (1-PSE) or rec ACL*0.5, whichever is greater	5,513	520	5,237	494	4,961	468
ACT=85%rec ACL (Preferred)	**9,372**	**884**	**8,903**	**840**	**8,435**	**796**
ACT=75%recACT	8,269	780	7,856	741	7,442	702

Table D-8 shows recreational ACTs for the FLK/EFK stock for the **Alternative 3** sub-alternatives, including **Preferred Sub-alternative 3b**. Recreational ACTs are specified in numbers of fish based on **Preferred Sub-alternative 2a** under **Action 6**.

Alternative 1 (No Action) is not a viable alternative for management as the previous single stock of hogfish has been separated into two separate stocks and the current ACT set for the recreational sector is no longer valid. Because the South Atlantic Council has not employed ACTs in its management strategy for the snapper grouper fishery, the biological effects of **Preferred Alternatives 2** and **3** (and their respective sub-alternatives) would be neutral. Compared to **Alternative 1 (No Action)**, **Preferred Alternatives 2** and **3** (and their respective sub-alternatives) would be biologically beneficial in that management would be adjusted to apply to two separate stocks of hogfish and; therefore, be responding to the best scientific information available about the target species.

Preferred Sub-alternative 2b and **Preferred Sub-alternative 3b** would allow for the highest catches (and highest positive direct economic effects) before the ACT could be used to trigger a closure for the recreational sector. **Sub-alternatives 2a** and **3a,** which result in the second highest ACL, would be expected to result in the next highest amount of positive direct economic effects, followed by **Sub-alternatives 2c** and **3c**.

Establishment of a recreational ACT for each stock of hogfish would likely have little effects on recreational fishermen targeting hogfish, unless the Council decides to set the ACT as a trigger for AMs at a later time. A higher ACT could be more beneficial for fishermen, depending on the levels specified in **Preferred Alternatives 2** and **3**. Because the ACT is used for monitoring only, it is expected that the social effects of **Alternative 1 (No Action)**, **Preferred Alternative 2**, and **Preferred Alternative 3** would be the similar.

Table D-8. Recreational ACTs (numbers of fish) under consideration for the FLK/EFL stock of hogfish based on **Preferred Sub-alternative 2b** under **Action 6**.

			ACT=rec ACL (1-PSE)		ACT=85%recACL (Preferred)		ACT=75%recACL	
Year	**Rec ACL (#)**	**Rec ACL (lbs)**	**numbers**	**pounds**	**numbers**	**pounds**	**numbers**	**pounds**
2017	17,805	32,939	14,155	26,186	**15,134**	27,998	13,354	24,704
2018	22,947	42,453	18,243	33,750	**19,505**	36,085	17,211	31,840
2019	28,764	53,212	22,867	42,304	**24,449**	45,231	21,573	39,909
2020	35,134	64,998	27,932	51,674	**29,864**	55,248	26,351	48,749
2021	41,983	77,669	33,377	61,747	**35,686**	66,019	31,487	58,252
2022	49,218	91,053	39,128	72,387	**41,835**	77,395	36,913	68,290
2023	56,707	104,908	45,082	83,402	**48,201**	89,172	42,530	78,681
2024	64,303	118,961	51,121	94,574	**54,658**	101,117	48,227	89,221
2025	71,860	132,942	57,129	105,689	**61,081**	113,001	53,895	99,706
2026	79,239	146,591	62,995	116,540	**67,353**	124,603	59,429	109,944
2027	86,324	159,699	68,628	126,961	**73,375**	135,744	64,743	119,774

Snapper Grouper AP Recommendations:

MOTION: SUPPORT THE COUNCIL'S PREFERRED FOR ACTION 7.
Action 7. Establish a recreational Annual Catch Target (ACT) for the GA-NC and the Florida Keys/East Florida (FLK/EFL) stocks of hogfish
Preferred Alternative 2. Establish an annual catch target (ACT) for the GA-NC stock of hogfish for the recreational sector.
Preferred Sub-alternative 2b. ACT =85% recreational ACL.
APPROVED BY AP

Public Comments:

No specific comments regarding proposed recreational ACTs.

COMMITTEE ACTION:

OPTION 1. APPROVE IPT'S SUGGESTED EDITS TO ACTION 7

OPTION 2. DO NOT APPROVE IPT'S SUGGESTED EDITS TO ACTION 7 (COMMITTEE TO SUGGEST CHANGES AND APPROVE).

OTHERS?

Action 8. Increase the commercial and recreational minimum size limit for the Georgia through North Carolina (GA-NC) and the Florida Keys/East Florida (FLK/EFL) stocks of hogfish

Alternative 1 (No Action). ~~Do not increase the commercial and recreational minimum size limit for hogfish~~. The current minimum size limit for hogfish is 12 inches fork length (FL) for both the commercial and recreational sectors in federal waters of the South Atlantic Region, and state waters of South Carolina, North Carolina, and Florida. There is no minimum size limit for hogfish in state waters of Georgia.

Preferred Alternative 2. Increase the commercial and recreational minimum size limit for the GA-NC stock of hogfish in the South Atlantic Region.

Sub-alternative 2a. 16 inches FL

Preferred Sub-alternative 2b. 17 inches FL

Sub-alternative 2c. 18 inches FL

Sub-alternative 2d. 19 inches FL

Sub-alternative 2e. 20 inches FL

Sub-alternative 2f. Increase the minimum size limit from 12 inches FL to 15 inches FL in year 1, to 18 inches FL in year 2, and to 20 inches FL in year 3.

Preferred Alternative 3. Increase the commercial and recreational minimum size limit for the ~~Florida Keys/East Florida (~~FLK/EFL~~)~~ stock of hogfish in the South Atlantic Region.

Sub-alternative 3a. 14 inches FL

Preferred Sub-alternative 3b. 15 inches FL

Sub-alternative 3c. 16 inches FL

Sub-alternative 3d. 17 inches FL

Sub-alternative 3e. Increase the minimum size limit from 12 inches FL to 14 inches FL in year 1 and to 16 inches FL in year 3.

Comparison of Alternatives

The current minimum size limit for commercial and recreational harvest of hogfish in the South Atlantic is 12 inches fork length (FL). **Preferred Alternatives 2** and **3** include sub-alternatives for minimum size limits for the Georgia through North Carolina (GA-NC) stock and the Florida Keys/East Florida (FLK/EFL) stock, respectively. Sub-alternatives under **Preferred Alternative 2** contain a wider range of size limit options because the GA-NC stock hogfish attain larger sizes than FLK/EFL stock of hogfish. In addition to **Sub-alternatives 2a** through **2e** and **3a** through **3d**, which would implement a size limit that would remain in place until modified through an amendment to the regulations, the South Atlantic Council is also considering a step-up approach to implementation of a minimum size limit for both stocks. **Sub-alternatives 2f** and **3e** are designed to increase the minimum size limit over time for each of the two hogfish stocks, respectively. The intent of these alternatives is to allow resource users more time to adjust to the change in minimum size limit.

Hogfish begin life as females and eventually become male if they live long enough. It is estimated that for the GA-NC stock, half of female hogfish transition to males at 24 inches FL. In Florida and the Florida Keys, half of female hogfish become male at about 16 inches FL. **Alternative 1 (No Action)** would maintain the current minimum size limit of 12 inches FL for hogfish throughout the South Atlantic and would therefore not respond to the latest scientific information on hogfish stock structure establishes two genetically different stocks in the South Atlantic region. **Preferred Sub-alternative 2b** would establish a minimum size limit for GA-NC hogfish stock of 17 inches FL. As such, this alternative could result in removal of individuals before sex change can occur and thus impart negative biological impacts to the stock. The same would be true for the remainder of the sub-alternatives under **Preferred Alternative 2** as none propose a minimum size limit above the size at transition. Hence, all of the sub-alternatives under **Preferred Alternative 2** are expected to result in the same level of biological impact. For the GA-NC stock, minimum size limits of 16 inches fork length and above would result in projected reductions in recreational harvest (across all modes) of less than 5% (**Table D-9**).

Table D-9. Projected reductions in recreational hogfish landings (in numbers of fish) for the GA-NC stock, by month, for headboat (HB), charter, and private modes, under proposed minimum size limits. Preferred alternative indicated in bold.
Note: data have been pooled to achieve a minimum sample size of 30 fish per estimate.

	HB (NUMBERS; 2011-2013)											
Size limit (inches FL)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
16	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%
17	**45%**	**45%**	**45%**	**45%**	**45%**	**45%**	**45%**	**45%**	**45%**	**45%**	**45%**	**45%**
18	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%
19	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%
20	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%

	CHARTER (NUMBERS; 2012-2014)											
Size limit (inches FL)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
16	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
17	**15%**	**15%**	**15%**	**15%**	**15%**	**15%**	**15%**	**15%**	**15%**	**15%**	**15%**	**15%**
18	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
19	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
20	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%

	PRIVATE (NUMBERS; 2012-2014)											
Size limit (inches FL)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
16	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
17	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**
18	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
19	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
20	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Sources: Headboat CRNF file (mean 2011-2013), MRIP Catch-Effort Files (mean 2012-2014).
Note: There were insufficient samples to model monthly impacts of proposed size limits for headboat; headboat catch effort file for 2014 not available.

However, the projected reductions in harvest are based on limited available data and are, therefore, highly uncertain. When pooled across months, the expected reduction to the for-hire sector in Georgia and the Carolinas is 4.6% (**Table D-10**). NOTE: Table not in main document

Table D-10. Projected recreational landings (in numbers of fish) and percent reduction in harvest due to proposed size limits for the GA-NC hogfish stock. Preferred alternative indicated in bold.

Size Lim (in)	Proj Landings	Reduction	% Reduction
12 (status quo)	431	-	-
16	417	14	3.2%
17 (Pref)	**411**	**20**	**4.6%**
18 -20	411	20	4.6%

Source: SAFMC

For the commercial sector, the preferred minimum size limit of 17 inches fork length (**Preferred Sub-alternative 2b**) is expected to result in an average reduction in commercial landings of only 2% (**Table D-11 and D-12**). Although the status of the GA-NC stock is unknown, preferred commercial and recreational ACLs (**Action 4**) are above recent average commercial and recreational landings, respectively; therefore, management measures to constrain harvest to present in-season closures are not needed. However, as mentioned above, biological benefits could result from a precautionary approach to address population stability considering this species' life history characteristics.

Table D-11. Percent reductions in commercial landings (in pounds whole weight) for GA-NC, by month, at under proposed minimum size limits. Preferred alternative indicated in bold.

	Month												
Size Limit (inches FL)	1	2	3	4	5	6	7	8	9	10	11	12	Mean 2012-2014
12	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	1	1	0	0	0	0	0	0	0	0	0	0
16	1	1	1	1	0	1	0	0	0	0	0	0	1
17	**1**	**3**	**3**	**4**	**3**	**3**	**3**	**1**	**1**	**1**	**1**	**1**	**2**
18	3	4	4	5	3	4	3	2	2	1	2	2	3
19	7	7	9	7	4	6	5	5	2	2	5	6	6
20	9	12	11	8	5	8	8	7	3	4	7	9	8

Sources: SEFSC TIP data (accessed May 2015).
Note: Some months were pooled with surrounding months to achieve a sample size >30.

Table D-12. Projected commercial landings (lbs ww) and percent reduction in annual harvest due to proposed size limits for the GA-NC hogfish stock. Preferred alternative indicated in bold. NOTE: Table not in main document

Size Lim (in)	Proj Landings	Reduction	% Reduction
12 (status quo)	20,534	-	-
16	20,406	128	0.6%
17 (Pref)	**20,128**	**406**	**2.0%**
18	19,918	617	3.0%
19	19,398	1,137	5.5%
20	18,921	1,613	7.9%

Source: SAFMC

Preferred Sub-alternative 3b would establish a minimum size of 15 inches FL for the FLK/EFL stock of hogfish. **Preferred Sub-alternative 3b** would thus establish a minimum size limit below the size at which transition occurs and possibly result in negative biological impacts. **Sub-alternatives 3c-3e**, on the other hand, propose minimum size limits above the size at transition and would thus be expected to impart some biological benefits to the FLK/EFL stock. For the recreational sector, minimum size limits of 13 inches FL and above, could result in reductions in harvest across all modes ranging from 32% to 88% (**Tables D-13** and **D-14**).

Table D-13. Projected reductions in recreational hogfish landings (in numbers of fish) for the FLK/EFL stock, by month, for headboat (HB), charter, and private modes, under proposed minimum size limits. Preferred alternative indicated in bold.
Note: data have been pooled to achieve a minimum sample size of 30 fish per estimate.

	HB (NUMBERS; 2011-2013)											
Size limit (inches FL)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
14	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%	59%
15	**72%**	**72%**	**72%**	**72%**	**72%**	**72%**	**72%**	**72%**	**72%**	**72%**	**72%**	**72%**
16	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
17	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%
	CHARTER (NUMBERS; 2012-2014)											
Size limit (inches FL)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
14	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	33%	33%
15	**79%**	**79%**	**79%**	**79%**	**79%**	**79%**	**79%**	**79%**	**79%**	**79%**	**70%**	**70%**
16	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	76%	76%
17	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%

	PRIVATE (NUMBERS; 2012-2014)											
Size limit (inches FL)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
14	54%	54%	50%	50%	30%	30%	53%	53%	54%	54%	56%	56%
15	**63%**	**63%**	**61%**	**61%**	**71%**	**71%**	**54%**	**54%**	**60%**	**60%**	**63%**	**63%**
16	75%	75%	70%	70%	73%	73%	59%	59%	63%	63%	71%	71%
17	82%	82%	81%	81%	84%	84%	69%	69%	77%	77%	80%	80%

Sources: Headboat CRNF file (mean 2011-2013), MRIP Catch-Effort Files (mean 2012-2014).
Note: There were insufficient samples to model monthly impacts of proposed size limits for headboat; headboat catch effort file for 2014 not available.

Table D-14. Projected recreational landings (in numbers of fish) and percent reduction in annual harvest due to proposed size limits for the FLK/EFL hogfish stock. Preferred alternative indicated in bold.
NOTE: Table not in main document

Size Lim (in)	Proj Landings	Reduction	% Reduction
12 (status quo)	150,715	-	-
14	76,247	74,468	49.4%
15 (Pref)	**58,388**	**92,327**	**61.3%**
16	47,678	103,036	68.4%
17	32,331	118,384	78.5%
18	21,809	128,906	85.5%
19	18,725	131,990	87.6%
20	17,506	133,209	88.4%

Source: SAFMC

The preferred minimum size limit of 15 inches FL (**Preferred Sub-alternative 3b**) would constrain commercial harvest by about 50% overall (**Table D-15** and **D-16**). The greatest biological benefits to the FLK/EFL stock would result from the appropriate combination of management measures (minimum size limit (**Action 8**), commercial trip limit (**Action 9**), recreational bag limit (**Action 10**), and recreational season (**Action 11**).

Table D-15. Percent reductions in commercial landings (in pounds whole weight) for FLK/EFL, by month, under proposed minimum size limits. Preferred alternative indicated in bold.

	Month												
Size Limit (inches FL)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**Mean 2012-2014**
12	0	0	0	0	0	0	0	0	0	0	0	0	0
13	29	46	48	7	2	5	6	19	34	45	30	30	16
14	58	64	66	12	3	9	12	24	45	68	48	61	29
15	**71**	**71**	**73**	**18**	**9**	**15**	**17**	**59**	**61**	**68**	**58**	**76**	**41**
16	76	77	77	19	9	66	22	61	64	68	66	80	47
17	81	77	77	21	13	70	36	62	72	90	76	85	54
18	81	77	77	24	16	71	42	71	80	90	80	85	60
19	81	77	77	25	17	76	47	71	80	90	90	85	64
20	81	77	77	25	19	77	48	71	80	90	90	85	65

Sources: SEFSC TIP data (accessed May 2015).
Note: Some months were pooled with surrounding months to achieve a sample size >30.

Table D-16. Projected commercial landings (lbs ww) and percent reduction due to proposed size limits for the FLK/EFL hogfish stock. Preferred alternative indicated in bold. NOTE: Table not in main document

Size Lim (in)	Proj Landings	Reduction	% Reduction
12 (status quo)	28,406	-	-
14	17,233	11,173	39.3%
15 (Pref)	**14,385**	**14,021**	**49.4%**
16	12,466	15,940	56.1%
17	10,423	17,983	63.3%

Source: SAFMC

There were very little data available to estimate the economic effects for the consumer surplus (CS) estimates for the recreational sector for the GA-NC stock. Hence, a number of the size limits proposed by the **Alternative 2 (Preferred)** sub alternatives resulted in indistinguishable CS values for the recreational sector **(Table D-17)**. **Alternative 1 (No Action)** affords the highest positive, direct, short-term economic effects compared to the **Preferred Alternative 2** sub-alternatives. There were no distinguishable differences between **Preferred Alternative 2 Sub-alternative 2f** for the first year and **Alternative 1 (No Action)**. However, the long-term direct economic effects for **Alternative 1 (No Action)** would result in a more compressed stock size and presumably lower fecundity leading to fewer fish available to harvest when compared to other **Preferred Alternative 2** sub-alternatives. However, it should be noted that the differences in estimated consumer surplus for all the **Preferred Alternative 2** sub-alternatives is rather small. The economic benefit of establishing a larger minimum size limit would be an increased stock size with a larger range in sizes of fish. Overall, in the short-term, there are negligible differences among the **Preferred Alternative 2** sub-alternatives.

For the commercial sector of the GA-NC stock, except for **Alternative 1 (No Action)**, **Preferred Alternative 2, Sub-alternative 2e** affords the highest probability of long-term positive economic effects, as well as the highest probability of greater short-term direct negative economic effects. In terms of least to most long-term, direct, positive economic effects for the commercial sector, the sub-alternatives for **Preferred Alternative 2** would be **2a**, **Preferred 2b**, **2c**, **2d**, and then **Sub-alternative 2e**. It is not clear where **Sub-alternative 2f** would fit in the rankings, however; in the long-term, it would be expected to fall between **Sub-alternative 2a** and **Sub-alternative 2e**.

Table D-17. **Preferred Alternative 2** expected recreational CS and commercial ex-vessel revenue (2014 $) for hogfish landed from the GA-NC stock in the first year of implementation.

Sub-alternative	Size Limit	Recreational CS	Commercial Ex-vessel
Alternative 1	12” FL	$5,331	$74,129
Sub-alt. 2a	16” FL	$5,134	$73,666
Preferred 2b	**17” FL**	**$5,059**	**$72,662**
Sub-alt. 2c	18” FL	$5,059	$71,902
Sub-alt. 2d	19” FL	$5,059	$70,025
Sub-alt. 2e	20” FL	$5,059	$68,305
Sub-alt. 2f	15”/18”/20” FL	$5,331	$73,998

Note: Sub-alternative 2f uses a stepped approach to increasing the size limit with an increase to 15" in year 1, 18" in year 2, and 20" in year 3. Given the uncertainty associated with predicting further into the future, the effects are based only on the 15" size limit increase.
Source: Hogfish Recreational Decision Tool, **Appendix ??**

Preferred Alternative 3 sub-alternatives indicate that an increase in minimum size limit for both the recreational and commercial sectors of the FLK/EFL stock would result in reduced short-term economic benefit when compared to **Alternative 1 (No Action)**. For the recreational sector, the differences among **Preferred Alternative 3** sub-alternatives and **Alternative 1 (No Action)** range from $68,975 (14" FL; **Sub-alternative 3a** and the first year of **Sub-alternative 3e**) to $126,644 (17" FL; **Sub-alternative 3d**). The differences in expected economic effects among the **Preferred Alternative 3** sub-alternatives are small in the short-term.

Commercial sector landings for the FLK/EFL stock are relatively low with an **Alternative 1 (No Action)** expected ex-vessel value of just $50,453 (**Table D-18**). The differences between **Alternative 1 (No Action)** and the **Preferred Alternative 3** sub-alternatives for the commercial sector range from $14,671 (14" FL; **Sub-alternative 3a** and first two years of **Sub-alternative 3e**) to $27,395 (17" FL; **Sub-alternative 3d).** However, in the long-term a larger minimum size limit could result in larger stock size, as well as a broader range of sizes of hogfish available to be caught. In that sense, in the long-term, a larger minimum stock size could result in greater long-term economic benefit. In terms of least to most long-term, direct, positive economic effects for the commercial sector, the sub-alternatives for **Preferred Alternative 3** would be **3a**, **Preferred 3b**, **3c**, and **3d**. It is not clear where **Sub-alternative 3e** would fit in the rankings, however the in the long-term, it would be expected to fall between **Sub-alternative 3a** and **Sub-alternative 3d**.

Table D-18. Preferred Alternative 3 expected recreational CS and commercial ex-vessel revenue (2014 $) for hogfish landed from Florida Keys/Florida East Coast stock in the first year of implementation.

Sub-alternative	Size Limit	Recreational CS	Commercial Ex-vessel
Alternative 1	12" FL	$216,438	$50,453
Sub-alt. 3a	14" FL	$147,463	$35,782
Preferred 3b	**15" FL**	**$125,568**	**$29,706**
Sub-alt. 3c	16" FL	$103,797	$26,772
Sub-alt. 3d	17" FL	$89,794	$23,058
Sub-alt. 3e	14"/16" FL	$147,463	$35,782

Note: Sub-alternative 3e uses a stepped approach to increasing the size limit with an increase to 14" in year 1, 16" in year 3. Given the uncertainty associated with predicting further into the future, the effects are based only on the 14" size limit increase.
Source: Hogfish Recreational Decision Tool, **Appendix ??**

Some social effects of minimum size limits would be associated with the positive and negative biological effects of minimum size limits on the hogfish stocks. Positive effects of allowing only fish of a certain size that are caught in the South Atlantic exclusive economic zone (EEZ) to be landed could help maintain sustainability of harvest and the health of each hogfish stock, which would be beneficial to recreational and commercial fishermen in the long term.

Negative effects of potential increase in discard mortality due to higher minimum size limit could affect the stock and in turn, commercial and recreational fishing opportunities.

Snapper Grouper AP Recommendations:

MOTION: RECOMMEND SUB-ALTERNATIVE 2B AS PREFERRED FOR ACTION 8.
Action 8. Increase the commercial and recreational minimum size limit for the GA-NC and the Florida Keys/East Florida (FLK/EFL) stocks of hogfish.
Preferred Alternative 2. Increase the commercial and recreational minimum size limit for the GA-NC stock of hogfish in the South Atlantic Region.

Sub-alternative 2b. 17 inches FL

APPROVED BY AP (6 TO 5)

MOTION: RECOMMEND SUB-ALTERNATIVE 3E AS PREFERRED FOR ACTION 8
Action 8. Increase the commercial and recreational minimum size limit for the GA-NC and the Florida Keys/East Florida (FLK/EFL) stocks of hogfish.
Preferred Alternative 3. Increase the commercial and recreational minimum size limit for the Florida Keys/East Florida (FLK/EFL) stock of hogfish in the South Atlantic Region.

Sub-alternative 3e. Increase the minimum size limit from 12" to 14" in year 1 and to 16" in year 3.

APPROVED BY AP

****RECOMMENDATION TO LOOK AT SLOT LIMIT FOR HOGFISH (12 TO 16 INCHES) FOR FLORIDA HOGFISH.****

Public Comments:

GA-NC: Support for increase in minimum size. Suggest increase to 16 inches FL.
FLK/EFL:

- Most support for an increase in the minimum size limit to 16 inches FL.
- Some commenters supported a 17-inch minimum size limit for Florida hogfish.
- Support for the preferred 15-inch FL but even better would be increasing to 14" up to 16" over 3 years (based on the growth rates of healthier stocks like those in Dry Tortugas or the Gulf, hogfish will reach 16 inches in 2-3 years).
- Consider step-up increase in minimum size limit for Florida hogfish up to 18" or 20".
- A large number of undersized hogfish are harvested during mini-season. An increase in minimum size limit without prohibiting harvest during mini-season could lead to massive discards.
- Also consider a possible slot limit or a soft slot limit where only one fish over 21-22 inches, for instance, can be taken per vessel so as to limit the number of large males that can be taken while still maintaining trophy fishing.
- An increase in the minimum size limit may affect dockside value and price to consumers because restaurants want a certain size fillet.

COMMITTEE ACTION:

OPTION 1. APPROVE IPT'S SUGGESTED EDITS TO ACTION 8

OPTION 2. DO NOT APPROVE IPT'S SUGGESTED EDITS TO ACTION 8 (COMMITTEE TO SUGGEST CHANGES AND APPROVE).

OPTION 3. CONSIDER PUBLIC COMMENTS FOR RANGE OF ALTERNATIVES AND SELECTION OF PREFERRED

OTHERS?

Action 9. Establish a commercial trip limit for the Georgia through North Carolina (GA-NC) and the Florida Keys/East Florida (FLK/EFL) stocks of hogfish

Alternative 1 (No Action). ~~Do not establish a commercial trip limit for the GA-NC and Florida Keys/East Florida (FLK/EFL) stocks of hogfish in the South Atlantic Region. Currently~~ There is no commercial trip limit for hogfish in the South Atlantic region.

Preferred Alternative 2. Establish a commercial trip limit for the GA-NC stock of hogfish in the South Atlantic region.

Sub-alternative 2a. 100 lbs ww per trip.
Sub-alternative 2b. 250 lbs ww per trip.
Preferred Sub-alternative 2c. 500 lbs ww per trip.
Sub-alternative 2d. 750 lbs ww per trip.
Sub-alternative 2e. No trip limit

Preferred Alternative 3. Establish a commercial trip limit for the ~~Florida Keys/East Florida~~ FLK/EFL stock of hogfish in the South Atlantic region.

Preferred Sub-alternative 3a. 25 lbs ww per trip.
Sub-alternative 3b. 50 lbs ww per trip.
Sub-alternative 3c. 100 lbs ww per trip.
Sub-alternative 3d. 150 lbs ww per trip.
Sub-alternative 3e. 200 lbs ww per trip.
Sub-alternative 3f. No trip limit

Comparison of Alternatives

Action 9 proposes a range of trip limit options for each of the hogfish stocks. **Alternative 1 (No Action)** would not impose a commercial trip limit for hogfish in the South Atlantic but would not take into account the latest scientific evidence that establishes two genetically distinct stocks. Hence this alternative is no longer adequate to manage hogfish in their respective geographic areas. **Preferred Alternative 2** and its sub-alternatives includes options for a commercial trip limit for the Georgia through North Carolina (GA-NC) stock ranging from 100 lbs ww to no trip limit. The range of alternatives was selected based on the distribution of commercial trips in that geographic area. The South Atlantic Council selected a commercial trip limit of 500 lbs ww (**Preferred Sub-alternative 2c**) as their preferred alternative for the GA-NC stock. The preferred commercial annual catch limit (ACL) for the GA-NC stock is 23,456 lbs ww (**Action 4**) and, based on commercial landings between 2012 and 2014, only 1% of commercial trips in that region land 500 lbs ww or more per trip (**Figure D-4**). In addition, landings resulting from all size limit (**Action 8**) and trip limit alternatives (**Action 9**) are expected to be less than the ACL of 23,456 lbs ww (**Table D-19**). Therefore, it is expected that an in-season closure for the commercial sector of the GA-NC stock would not occur. For **Preferred Alternative 2** in **Action 9**, there would be little difference in estimated landings among **Sub-alternatives 2a** through **2e**. Since the status of the GA-NC stock is unknown but average commercial landings are below the proposed commercial ACL for 2017 (23,456 lbs ww;

Action 4), indicating that there is currently no need to constrain commercial harvest, there would be no difference in potential biological effects among the alternatives.

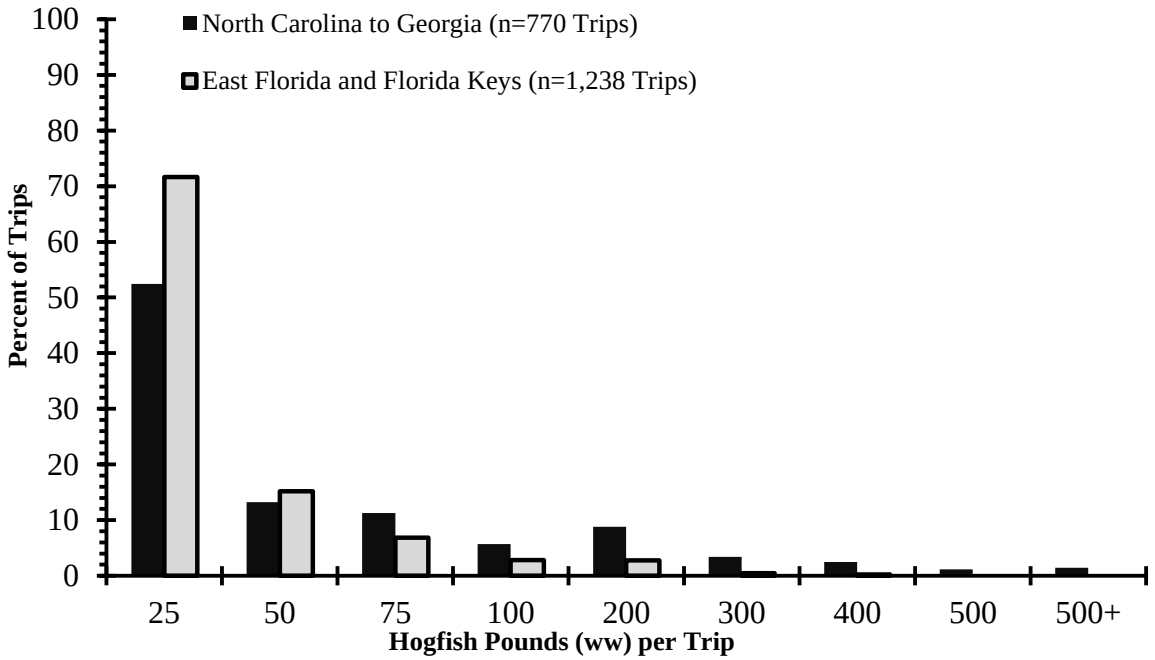


Figure D-4. Distribution of commercially harvested hogfish per trip (lbs ww) by area (GA-NC and FLK/EFL) from 2012 through 2014.
Source: Commercial logbook dataset accessed April 2, 2015.

Table D-19. Estimated landings (lbs ww) in first year of implementation (2017) for GA-NC under all ACL alternatives under Action 4 and various minimum size limit (Action 8) and trip limit (Action 9) combinations*.

	Action 9 Trip Limit (lbs ww)				
Action 8 Size Limit (inches FL)	**100 (Alt 2a)**	**250 (Alt 2b)**	**500 (Alt 2c)**	**750 (Alt 2d)**	**No trip limit (Alt 2e)**
12 (Alt 1 – No Action)	11,745	16,554	19,339	19,951	20,534
16 (Alt2a)	11,672	16,450	19,218	19,826	20,406
17 (Alt 2b)	11,513	16,226	**18,956**	19,556	20,128
18 (Alt 2c)	11,392	16,057	18,758	19,351	19,918
19 (Alt 2d)	11,095	15,637	18,268	18,846	19,398
20 (Alt 2e)	10,822	15,253	17,820	18,383	18,921
15/18/20 (Alt 2f**)	11,724	16,525	19,305	19,915	20,498

Source: NMFS SERO
* This assumes that effort and catch rates will not change in response to management measures, only landings will change.
Note 1: Season length here will be 365 days +1 if leap year. Because season length will not be affected, and because there was minimal variability in monthly average prices, changes in landings and econ effects were modeled at the annual level only.

Note 2: Because the estimated landings are not expected to exceed even the most conservative ACL alternative, each trip limit/size limit combination is expected to have the same effect for all ACL alternatives.
Note 3: Trip limit and size limit alternatives will not be considered separately from action to form two management areas, NC to GA and East FL/FL Keys.
**Alt 2f in Action 8 uses a stepped approach to increasing the size limit with an increase to 15 inches in year 1, 18 inches in year 2, and 20 inches in year 3. Given the uncertainty associated with predicting further into the future, the effects are based only on the 15 inches size limit increase that would occur in year 1.

Preferred Alternative 3 includes sub-alternatives for commercial trip limits ranging from 25 to 200 lbs ww per trip (**Preferred Sub-alternative 3a**) to no trip limit (**Sub-alternative 3f**) for the Florida Keys/East Florida (FLK/EFL) stock of hogfish. **Table D-20** uses the average size of a commercially-caught hogfish (SEDAR 37) to estimate the equivalent number of fish under each proposed trip limit.

Table D-20. Proposed commercial trip limits for the FLK/EFL stock of hogfish in pounds and numbers of fish based on an average weight of 3.21 lbs per fish (from the SEDAR 37 stock assessment). NOTE: Table not in main document

Comm trip limit Alternatives for the FLK/EFL stock	
lbs	**num**
25	8
50	16
75	23
100	31
150	47
200	62

Source: SAFMC

In Florida and the Florida Keys commercial harvest is very minimal compared to that of the recreational sector with 72% of the commercial trips landing 25 lbs ww or less per trip (**Figure D-5**). Under the preferred commercial ACL (**Action 6**) of 3,510 lbs ww and under the preferred minimum size limit (**Action 8**) and commercial trip limit (**Action 9**) alternatives (15 inches FL and 25 lbs ww, respectively) it is expected that the commercial season would be open for 159 days (**Table D-21**). **Table D-22** shows the expected percent decrease in commercial landings, by gear, under the various proposed trip and minimum size limit alternatives. **Preferred Sub-alternative 3a** would result in a overall decrease in harvest for the commercial sector of 42%.

Table D-21. Estimated commercial season length (days open) for the FLK/EFL stock of hogfish under ACL **Preferred Alt 2b (3,510 lbs ww)** in Action 6 and different minimum size limit (Action 8) and trip limit (Action 9) alternatives in first year of implementation (2017).

	Action 9 Trip Limit (lbs ww)					
Action 8 Size Limit (inches FL)	**25 (Alt 3a)**	**50 (Alt 3b)**	**100 (Alt 3c)**	**150 (Alt 3d)**	**200 (Alt 3e)**	**No trip limit (Alt 3f)**
12 (Alt 1 – No Action)	92	71	62	59	59	58
14 (Alt 3a)	147	127	121	119	118	118
15 (Alt 3b)	**159**	136	129	127	127	127
16 (Alt 3c)	181	141	133	131	131	131
17 (Alt 3d)	187	144	136	134	133	133
14/16 (Alt 3e*)	147	127	121	119	118	118

Source: NMFS SERO

* Alt 3e in Action 8 is a step increase, with an increase to 14 inches in year 1 and an increase to16 inches in year 3. Model uncertainty is such that year 3 predictions would be highly uncertain. As such, estimates are for year 1 only and match those associated with Alt 3a in Action 8.

Table D-22. Percent decrease in landings by gear and for all gear, for various commercial hogfish trip limits for FLK/EFL.

Alternative 3; Trip Limit (lbs ww)	**Hook-and-Line**	**Spear**	**All Gears (incl. hook-and-line, spear, gill nets, traps, etc.)**
Sub-alternative 3a - 25	**7.7%**	**27.1%**	**42.1%**
Sub-alternative 3b - 50	4.3%	13.1%	21.9%
Sub-alternative 3c - 100	2.0%	3.8%	8.1%
Sub-alternative 3d - 150	1.4%	1.6%	4.3%
Sub-alternative 3e - 200	0.8%	1.1%	2.6%
Sub-alternative 3f – No trip limit	0.0%	0.0%	0.0%

Source: South Atlantic commercial logbook data, 2012-2014.

Generally, trip limits are not considered to be economically efficient because they require an increase in the number of trips and associated trip costs to land the same amount of fish. The fewer the number of trips that have to stop targeting hogfish because the trip limit has been reached would result in the least amount of direct negative economic effect. There are no specific trip costs available for average trip costs associated with either stock, therefore specific values associated with trip costs cannot be estimated.

The entire commercial sector ACL for the GA-NC stock is not expected to be landed under all of the sub-alternatives of **Preferred Alternative 2**. **Table D-23** shows what percent of the ACL is expected to be landed and the expected ex-vessel revenue for each commercial trip limit. The ranking of **Sub-alternatives 2a** through **2e** in terms of least to most direct positive economic effect are **2a**, **2b**, **Preferred Sub-alternative 2c**, **2d**, and **2e/(Alternative 1-No Action)**.

Table D-23. Expected percent of the ACL landed (**Action 2, Preferred Alternative 2b**) and commercial ex-vessel value (in 2014 $) of the trip limits proposed for the GA-NC stock.

	Trip Limit	Expected % of ACL Landed	Commercial Ex-vessel
Sub-alt. 2a	100 lbs	50%	$43,926
Sub-alt. 2b	250 lbs	71%	$61,912
Preferred 2c	**500 lbs**	**82%**	**$72,328**
Sub-alt. 2d	750 lbs	85%	$74,617
Sub-alt. 2e	No limit	88%	$76,797

The entire commercial sector ACL for the Florida Keys/Florida East Coast stock is expected to be caught under all of the sub-alternatives of **Preferred Alternative 3**. The only difference is the number of trips it is expected to take to catch the entire commercial sector ACL; therefore, there are no estimated differences in aggregate expected ex-vessel revenue among the sub-alternatives of **Preferred Alternative 3**. The lower the trip limit, the more likely some commercial vessels will be negatively affected. Lower trip limits may reduce profits through a reduction in efficiency and the severity of such impacts will be based on the overall dependence a vessel has on hogfish and the vessel's ability to substitute other species revenue.

Commercial fishermen in the communities identified in **Section 3.4** would likely be those affected by a change in the hogfish commercial trip limit. However, it is likely that fishermen who have targeted hogfish in recent years also target other species, and would be able to adjust their businesses to adapt to regulatory changes. In general, a commercial trip limit may help slow the rate of harvest, lengthen a season, and prevent the ACL from being exceeded, but trip limits that are too low may make fishing trips inefficient and too costly if fishing grounds are too far away. Additionally, if the trip limit is too low, the commercial ACL may not be met.

Snapper Grouper AP Recommendations:

MOTION: RECOMMEND THAT THE COUNCIL CONSIDER ADDITIONAL SUB-ALTERNATIVES FOR 150 AND 200 POUND COMMERCIAL TRIP LIMIT FOR GA-NC (ACTION 9).

Action 9. Establish a commercial trip limit for the GA-NC and the Florida Keys/East Florida (FLK/EFL) stocks of hogfish

APPROVED BY AP (1 OPPOSED)

Public Comments:

GA-NC:

- Concern that the 25-pound proposed commercial trip limit in Florida will cause effort shift to Carolinas.
- Council should consider a two-month spawning season (May-June) closure for hogfish in the Carolinas (for both sectors) and 500-pound commercial trip limit. OR no spawning closure and decrease the trip limit to 350 pounds.
- No commercial trip limit or the largest possible. Consider implementing commercial trip limit similar to what is currently in place in NC. Otherwise, consider commercial trip limit of 700 pounds.

- Consider a head count trip limit for commercial sector in the Carolinas because there is a lot of variation in weight among hogfish in that region.

FLK/EFL:

- Commercial fishermen who target hogfish in the Keys stated that the proposed trip limit would impact them significantly because they engage in multi-day trips. At 25 pounds per trip, they would not be able to stay in business.
- If trip limit needs to go in place, consider daily trip limit for Florida hogfish.
- Consider no commercial trip limit in Florida, as the commercial sector has not hit its ACL.

COMMITTEE ACTION:

OPTION 1. APPROVE IPT'S SUGGESTED EDITS TO ACTION 9

OPTION 2. DO NOT APPROVE IPT'S SUGGESTED EDITS TO ACTION 9 (COMMITTEE TO SUGGEST CHANGES AND APPROVE).

OPTION 3. CONSIDER PUBLIC COMMENTS FOR RANGE OF ALTERNATIVES AND SELECTION OF PREFERRED

OTHERS?

Action 10. Modify and/or establish recreational bag limits for the Georgia through North Carolina (GA-NC) and the Florida Keys/East Florida (FLK/EFL) stocks of hogfish

Alternative 1 (No Action). ~~Do not modify and/or establish recreational bag limits for the GA-NC and Florida Keys/East Florida (FLK/EFL) stocks of hogfish in the South Atlantic Region. Currently~~ The recreational bag limit is 5 fish per person per day in federal waters off east Florida and there is no recreational bag limit in federal waters off Georgia, South Carolina, and North Carolina.

Preferred Alternative 2. Establish a recreational bag limit for the GA-NC stock of hogfish ~~in the South Atlantic region.~~

Preferred Sub-alternative 2a. 2 fish per person per day.
Sub-alternative 2b. 1 fish per person per day.
Sub-alternative 2c. 1 fish per vessel per day.

Preferred Alternative 3. Modify the recreational bag limit for the ~~Florida Keys/East Florida (~~FLK/EFL~~)~~ stock of hogfish ~~in the South Atlantic region.~~

Sub-alternative 3a. 3 fish per person per day.
Sub-alternative 3b. 2 fish per person per day.
Preferred Sub-alternative 3c. 1 fish per person per day.
Sub-alternative 3d. 1 fish per vessel per day.

Comparison of Alternatives

MRIP catch and effort files from 2012 to 2014 were explored to determine recreational trips that harvested hogfish in the South Atlantic. Five hundred fifty-five recreational trips (194 MRIP and 361 Headboat trips) from North Carolina through Monroe County, Florida harvested hogfish. None of the headboat trips harvested more than 1 hogfish per person. The MRIP private and charter trips had 78% of the trips harvest 2 hogfish per person or less, 14% of the trips harvested 3-4 hogfish per person, and 8% of the trips harvested 5 hogfish or more per person (**Figure D-6**).

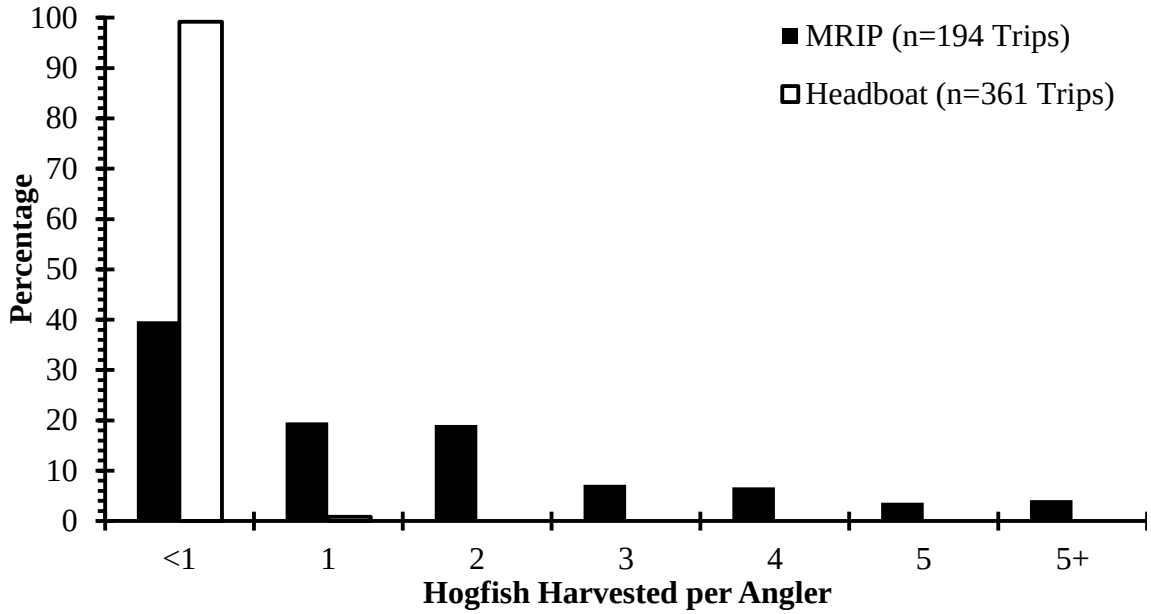


Figure D-6. Distribution of hogfish harvested per person from two recreational datasets (MRIP and Headboat) during 2012-2014, in the South Atlantic.

Figure D-7 shows the distribution of hogfish harvested per vessel during 2012-2014. Among headboats trips, 87% harvested 1 hogfish per vessel, 10% harvested 2 hogfish, 1% harvested 3 hogfish, and 2% harvested more than 5 hogfish per vessel. For the MRIP private and charter recreational trips, 19% harvested 1 hogfish per vessel, 34% harvested 2 hogfish per vessel, 19% harvested 4 hogfish per vessel, and 28% harvested more than 5 hogfish per vessel (**Figure D-7**).

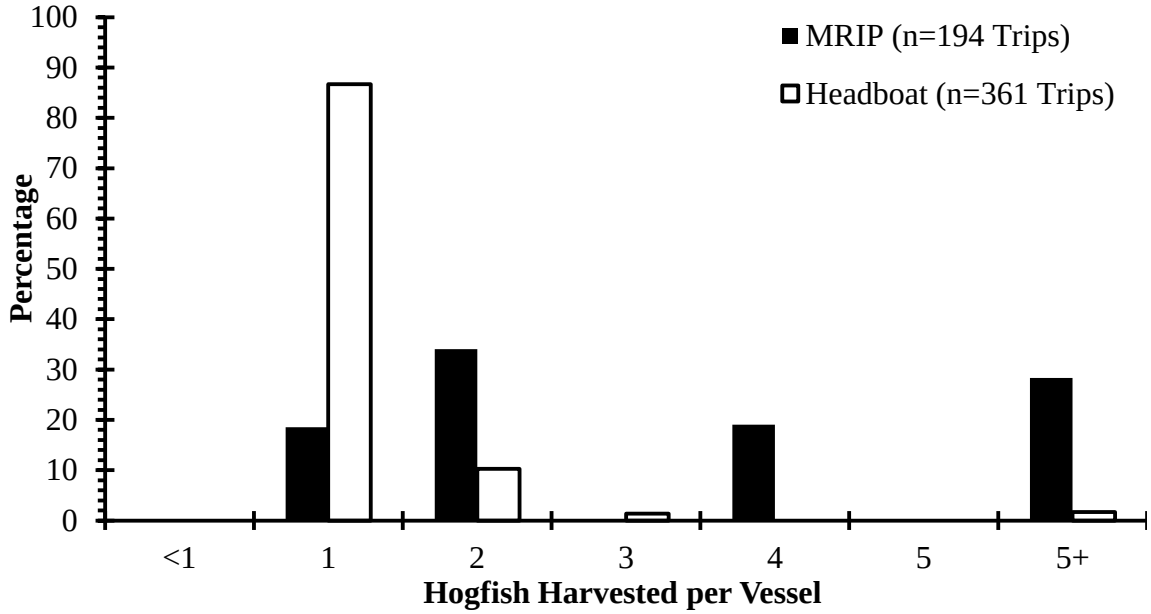


Figure D-7. Distribution of hogfish harvested per vessel from two recreational datasets (MRIP and Headboat) during 2012-2014, in the South Atlantic.

Reductions in landings from the proposed bag limits in **Preferred Alternatives 2** and **3** (and their sub-alternatives) were calculated. A discard mortality of 10% (SEDAR 37 2014) was applied to the bag limit analysis. The majority of the MRIP trips from 2012-2014 harvested hogfish were with spearfishing gear (56%, n=109 trips). Discard mortality for spearfishing trips was assumed to be zero because spearfishing is very selective and any reduction in bag limit would result in the spearing of fewer fish. For example, if the bag limit is reduced from five to three fish, then spear fishermen would focus their efforts to only spear three fish, and it is assumed the spear fishermen would not spear five fish and then release two in the water.

The calculated percent decrease in landings for the bag limits under consideration are shown by mode in **Table D-24**. There were no calculated reductions in landings for headboat bag limits per person because there were no trips in 2012 to 2014 that harvested more than one hogfish per person. The percent decrease in landings from the bag limits per person from North Carolina to Georgia was very small, because only 5% (n=9 trips) of the MRIP trips occurred from North Carolina to Georgia from 2012 to 2014. In both regions, the bag limits per vessel had higher reductions because this would restrict the catch to only one hogfish per trip for the entire vessel.

Table D-24. Estimated percent decrease in recreational landings from decreasing the bag limit in the South Atlantic. Percent decrease in landings is presented by mode for the GA-NC and EFL/FLK stocks were from 2012 through 2014.

Bag Limit	MRIP		Headboat
	Charter	Private	
North Carolina to Georgia Preferred Alternative 2			
2 per Person (Sub-alternative 2a)	**0.0**	**0.0**	**0.0**
1 per Person (Sub-alternative 2b)	0.0	0.4	0.0
1 per Vessel (Sub-alternative 2c)	33.3	75.0	41.1
Florida Keys/East Florida Preferred Alternative 3			
3 per Person (Sub-alternative 3a)	3.1	12.9	0.0
2 per Person (Sub-alternative 3b)	7.8	25.4	0.0
1 per Person (Sub-alternative 3c)	**20.3**	**48.9**	**0.0**
1 per Vessel (Sub-alternative 3d)	92.4	99.7	25.0

Source: NMFS SERO

For the GA-NC stock, there would be no percent decrease in recreational landings under **Preferred Sub-alternative 2a** (2 fish per person) for private, charter, and headboat (**Table D-24**), because most of the recreational harvest of hogfish is from the FLK/EFL stock. For FLK/EFL stock, there would be no decrease in harvest for headboats under **Preferred Sub-alternative 3c** (1 fish per person) but a 20% decrease in landings for the charter mode and a 49% decrease in private recreational landings (**Table D-24**). For charter and private modes, **Sub-alternative 3d** would have the largest percent decrease, followed by **Sub-alternative 3c (Preferred)**, **3b**, and **3a** (**Table D-24**). The percent reductions in landings are higher for the private mode than the charter mode calculations because private recreational anglers harvest more hogfish per vessel compared to headboats (**Figure D-7**).

Table D-25 shows projected reductions of headboat and MRIP landings of hogfish in the GA-NC and FLK/EFL stocks by month under the proposed bag limits under **Preferred Alternatives 2** and **3** (including their respective sub-alternatives), during 2012-2014. For the GA-NC stock, the percent reduction in harvest for all modes is zero for all the months of the year under **Preferred Sub-alternative 2a** (2 fish per person) **(Table D-25A)**. For FLK/EFL, the percent reductions are highest for July (64%) and August (68%) for headboats, March and April (32% for each month) for charterboats, and 42% and greater for all the months of the year, for the private mode **(Table D-25B)**.

Table D-25. Projected reductions in recreational harvest of hogfish (in numbers of fish) for headboat, charter, and private modes, by month, for A) GA-NC and B) FLK/EFL, under proposed bag/vessel limits.

A) GA-NC

Headboat (2012-2014), Numbers												
Month	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2 fish/person	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**
1 fish/person	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1 fish/vessel	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%
MRIP Charter (2012-2014) Numbers												
Month	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2 fish/person	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**
1 fish/person	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1 fish/vessel	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
MRIP Private (2012-2014) Numbers												
Month	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2 fish/person	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**
1 fish/person	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1 fish/vessel	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%

Note: Data were pooled to achieve a minimum sample size of 30 fish per estimate.

B) FLK/EFL

Headboat (2012-2014), Numbers												
Month	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3 fish/person	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2 fish/person	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
1 fish/person	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**
1 fish/vessel	32%	21%	18%	17%	22%	35%	64%	68%	27%	27%	26%	29%
MRIP Charter (2012-2014) Numbers												
Month	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3 fish/person	5%	5%	5%	5%	4%	4%	5%	5%	0%	0%	0%	0%
2 fish/person	16%	16%	15%	15%	11%	11%	10%	10%	4%	4%	5%	5%
1 fish/person	**24%**	**24%**	**32%**	**32%**	**23%**	**23%**	**23%**	**23%**	**17%**	**17%**	**11%**	**11%**
1 fish/vessel	91%	91%	95%	95%	94%	94%	92%	92%	93%	93%	91%	91%
MRIP Private (2012-2014) Numbers												
Month	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
3 fish/person	10%	10%	12%	12%	14%	14%	11%	11%	14%	14%	11%	11%
2 fish/person	22%	22%	24%	24%	26%	26%	21%	21%	29%	29%	23%	23%
1 fish/person	**42%**	**42%**	**43%**	**43%**	**49%**	**49%**	**45%**	**45%**	**49%**	**49%**	**43%**	**43%**
1 fish/vessel	99%	99%	99%	99%	99%	99%	100%	100%	99%	99%	93%	93%

Note: Data were pooled to achieve a minimum sample size of 30 fish per estimate.

For the preferred recreational ACL for the GA-NC stock (988 fish; **Preferred Sub-alternative 2b** under **Action 4**), no reduction in recreational harvest at the preferred bag limit of 2 fish per person per day is expected. Hence, in terms of biological effects, there would be no difference among the sub-alternatives under **Preferred Alternative 2**.

The recreational annual catch limit (ACL) would be expected to be met under every sub-alternative for **Alternative 3**. Thus, there is little biological difference in the sub-alternatives because ACLs and accountability measures (AMs) are in place to ensure overfishing does not occur. The effect of the various sub-alternatives would variations in the length of time that the recreational sector was closed during the fishing year.

Individual recreational anglers who catch hogfish from the GA-NC stock rarely catch more than one fish. This is evident when comparing the expected total consumer surplus **Alternative 1 (No Action)** and **Sub-alternatives 2a** and **2b** as shown in **Table D-26**. However, it appears that if one angler on a vessel catches at least one hogfish, others on the vessel will do the same as there is a large drop in the expected recreational consumer surplus between 1 fish per person per day (**Sub-alternative 2b**) and 1 fish per vessel per day (**Sub-alternative 2c**). In terms of least to highest expected positive direct economic effects for the GA-NC stock are **Sub-alternative 2c** (1 fish/ vessel/day), **2b** (1 fish/person/day), and **Preferred Sub-alternative 2a** (2 fish/person/day)/**Alternative 1 (No Action)** (No bag limit).

Table D-26. Expected recreational consumer surplus (in 2014 $) for **Alternative 2** proposed bag limits.

	Bag Limit	Recreational CS
Alternative 1	No bag limit	$5,331
Preferred 2a	**2 fish/person/day**	**$5,331**
Sub-alt. 2b	1 fish/person/day	$5,307
Sub-alt. 2c	1 fish/vessel/day	$1,658

Source: Hogfish Recreational Decision Tool, **Appendix ??**

The sub-alternatives of **Alternative 3** (FLK/EFL stock) would establish a recreational trip limit that would be more restrictive than the current five fish per person limit (**Alternative 1 (No Action)**). Under (**Alternative 1 (No Action)**) and each **Alternative 3** sub-alternative except (**Sub-alternative 3d**), the entire recreational sector portion of the ACL is expected to be caught rather quickly. Historically, most recreational hogfish trips in FLK/EFL stock would be affected by the sub-alternatives of **Alternative 3** as shown in **Table D-27**. In terms of least to highest expected positive direct economic effects for the Florida Keys/Florida East Coast stock would be **Sub-alternative 3d** (1 fish/ vessel/day), **Alternative 1 (No Action)** (5 fish/person/day), **Sub-alternative 3b** (2 fish/person/day), **3a** (3 fish/person/day), and lastly, **Preferred Sub-alternative 3c** (1 fish/person/day).

Table D-27. Expected recreational consumer surplus (in 2014 $) for **Alternative 3** proposed bag limits.

	Bag Limit	**Recreational CS**
Alternative 1	5 fish/person/day	$216,438
Sub-alt. 3a	3 fish/person/day	$218,306
Sub-alt. 3b	2 fish/person/day	$217,551
Preferred 3c	1 fish/person/day	$219,011
Sub-alt. 3d	1 fish/vessel/day	$21,883

Source: Hogfish Recreational Decision Tool, **Appendix ??**

In general, social benefits from improved recreational fishing opportunities would result from a bag limit that has the largest portion of the year open to recreational harvest, with the highest number of fish per person, as long as the recreational ACL is not exceeded and there is no in-season closure or post-season payback. **Alternative 1 (No Action)** would be the most beneficial to recreational fishermen in the short-term but could detract from measures to rebuild the FLK/EFL stock and sustain the GA-NC stock. For the GA-NC stock, **Sub-alternative 2c** would be the most restrictive by designating a vessel limit of one fish, and would in particular be expected to negatively affect private recreational anglers (**Table D-24**). **Preferred Sub-alternative 2a** and **Sub-alternative 2b** would be expected to have little or no effects on recreational fishing opportunities, similar to **Alternative 1 (No Action)**.

For the FLK/EFL stock, the most restrictive recreational limit (**Sub-alternative 3d**) may eliminate recreational fishing opportunities for charter and private recreational anglers (**Table D-24**). Less restrictive recreational limits in **Sub-alternative 3a, 3b** and **3c (Preferred)** and **Alternative 1 (No Action**) would improve benefits to the recreational sector and associated businesses, but may also shorten the fishing season under the recreational ACL specified in **Action 6**.

Snapper Grouper AP Recommendations:

MOTION: RECOMMEND THE COUNCIL CONSIDER A RECREATIONAL BAG LIMIT FOR THE GA-NC STOCK OF 2 FISH PER PERSON PER DAY (SUB-ALTERNATIVE 2A).
Action 10. Modify and/or establish recreational bag limits for the GA-NC and the Florida Keys/East Florida (FLK/EFL) stocks of hogfish
Alternative 2. Establish a recreational bag limit for the GA-NC stock of hogfish in the South Atlantic Region.

Sub-alternative 2a. 2 fish per person per day.

APPROVED BY AP

MOTION: RECOMMEND THE COUNCIL CONSIDER SUB-ALTERNATIVE 3B (2 FISH PER PERSON PER DAY) FOR THE FLK/EFL STOCK OF HOGFISH
Action 10. Modify and/or establish recreational bag limits for the GA-NC and the Florida Keys/East Florida (FLK/EFL) stocks of hogfish
Alternative 3. Modify the recreational bag limit for the Florida Keys/East Florida (FLK/EFL) stock of hogfish in the South Atlantic Region.

Sub-alternative 3b. 2 fish per person per day.

APPROVED BY AP

Public Comments:

GA-NC: No opposition to preferred bag limit (2/person/day). Suggestion to establish 5 fish limit currently in place in FL.

FLK/EFL:

- Consider a 3-fish bag limit or add to snapper aggregate.
- Support for bag limit of 2 per person per day or 2 per vessel per day, whichever is more restrictive.
- Some support for 1 hogfish per person per day.

COMMITTEE ACTION:

OPTION 1. APPROVE IPT'S SUGGESTED EDITS TO ACTION 10

OPTION 2. DO NOT APPROVE IPT'S SUGGESTED EDITS TO ACTION 10 (COMMITTEE TO SUGGEST CHANGES AND APPROVE).

OPTION 3. CONSIDER PUBLIC COMMENTS FOR RANGE OF ALTERNATIVES AND SELECTION OF PREFERRED

OTHERS?

Action 11. Establish a recreational fishing season for the ~~GA-NC and~~ Florida Keys/East Florida (FLK/EFL) stock~~s~~ of hogfish

Alternative 1 (No Action). There is no recreational fishing season for hogfish in the South Atlantic. ~~Currently,~~ The recreational fishing year for hogfish is January 1 through December 31.

Preferred Alternative 2. Establish a recreational fishing season for the ~~Florida Keys/East Florida (~~FLK/EFL~~)~~ stock of hogfish in the South Atlantic region.

Sub-alternative 2a. May-June

Sub-alternative 2b. July-August

Preferred Sub-alternative 2c. July-September

Comparison of Alternatives

In **Action 6**, the South Atlantic Council is considering a recreational annual catch limit (ACL) that would end overfishing of the Florida Keys/East Florida (FLK/EFL) hogfish stock. In **Action 12**, the South Atlantic Council's preferred alternative would close the recreational sector when the recreational ACL is expected to be met. With the reduction in harvest associated with the ACL alternatives being considered in **Action 6**, it is expected that recreational harvest of hogfish will not last the whole fishing year. Preliminary analyses indicate that with the January 1 start date of the fishing year, it is expected that the South Atlantic Council preferred recreational ACL in **Action 6** would be met in March (see Table 4.11.1 in main document. NOTE: Information in table utilizes Recreational Decision Tool that assumes a change in the recreational ACL based on preferred size and bag limit alternatives. The RDT is pending review by the SSC).

Under **Preferred Alternative 2**, the South Atlantic Council is considering alternatives for a recreational season, which would allow fishing for hogfish during a specified time period. **Sub-alternatives 2a** and **2b** would each establish 2-month seasons spanning May though June and July through August, respectively. These sub-alternatives correspond to Marine Recreational Information Program (MRIP) waves 3 and 4, respectively. **Preferred Sub-alternative 3c** would establish a 3-month season for the FLK/EFL stock from July through September, spanning MRIP wave 4 and half of wave 5. Of the proposed alternatives, **Sub-alternative 2b** (July-August) and **Preferred Sub-alternative 2c** (July-September) would capture the period of time during which average recreational landings have been highest (**Figure D-8**). **Sub-alternative 2a** (May-June), on the other hand, would coincide with a decrease in average recreational landings.

Average recreational landings of hogfish throughout the South Atlantic during 2012-2014 peak in July and August and decrease markedly thereafter (**Figure D-8**).

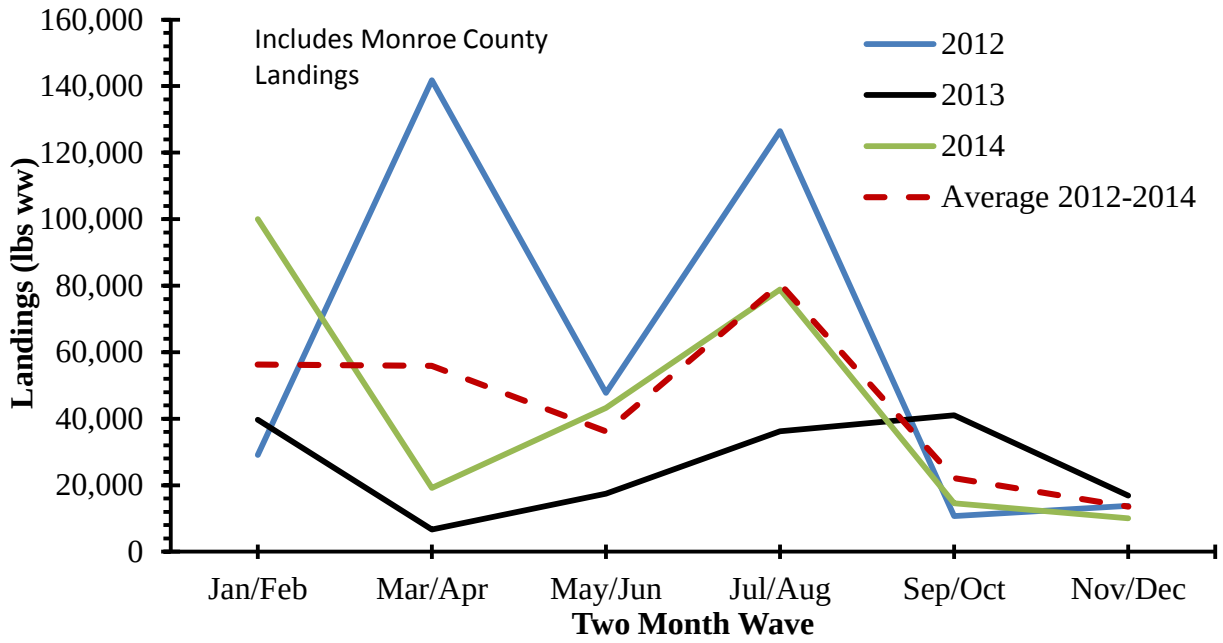


Figure D-8. Recreational landings (lbs ww) by two-month waves during 2012-2014 for the South Atlantic Region, including Monroe County, Florida.
Source: NMFS SERO

Peak spawning activity for hogfish in Florida and the Caribbean occurs during the winter and spring months (Davis 1976, Colin 1982, Claro et al. 1989, McBride and Johnson 2007, Collins and McBride 2008, Munoz et al 2010). These studies have demonstrated that spawning activity occurs predominantly during the months of December through April, and begins (and ends) slightly earlier in the Florida Keys than on the West Florida shelf (Davis 1976, McBride et al. 2008). Hence, none of the proposed recreational season sub-alternatives would interfere with hogfish spawning activity off east Florida and the Florida Keys. In terms of biological effects, therefore, the proposed sub-alternatives would be neutral because fishing would occur outside of the spawning season, and ACLs and accountability measures (AMs) will ensure overfishing does not occur. Compared to **Alternative 1 (No Action)**, all of the proposed sub-alternatives would impart biological benefit because **Alternative 1 (No Action)** would allow fishing to occur during the spawning season. Further, because hogfish are not caught with other species, as is the case with other species in the snapper grouper complex, a recreational season is not expected to result in an increased level of discards.

The economic effects of establishing a set recreational season for hogfish would depend on several factors. The factors would include whether or not the season was restrictive enough to keep the recreational ACL from being exceeded or if the season was too restrictive and unnecessarily restricting access to the resource, thus preventing achievement of optimum yield.

Under each of the alternatives/sub-alternatives of **Action 11** the recreational season for hogfish would last less than one two-month MRIP wave based on **Action 6**, **Preferred Alternative 2**, **Preferred Sub-alternative 2b**. **Table D-28** shows what the expected consumer surplus would be for each of the proposed recreational fishing seasons. The differences in consumer surplus as calculated by the Recreational Decision Tool (**Appendix X**) largely depend

on heterogeneous wave-level daily catch rates. Additionally, the differences in consumer surplus among the **Alternative 2 (Preferred)** sub-alternatives depend on when the in-season closure is triggered. **Sub-alternative 2b** and **Preferred Sub-alternative 2c** both have the same start date and projected date of reaching the recreational sector ACL at the end of July, hence the same expected consumer surplus values.

Table D-28. Expected recreational consumer surplus (in 2014 $) for season lengths proposed by Action 11, **Preferred Alternative 2** and its sub-alternatives.

	Season	Recreational CS
Alternative 1	All year season	$216,438
Sub-alt. 2a	May-June	$218,281
Sub-alt. 2b	July-August	$215,325
Preferred 2c	July-September	$215,325

Source: Hogfish Recreational Decision Tool, **Appendix ??**

In each case, the sub-alternatives of **Alternative 2** are more restrictive than **Alternative 1 (No Action)**. However, depending on how quickly the recreational sector ACL is expected to be caught, it is impossible to know whether setting an exact season is more beneficial to the recreational sector because of the delay related to processing MRIP landings estimates. Too long of a delay in closing the recreational sector could result in very large overages and shortened future seasons. Until there is analysis of the sub-alternatives of **Alternative 2**, it will not be known whether setting a fixed season, or which fixed season is most appropriate for either the GA-NC or FLK/EFL hogfish stocks.

The expected differences in CS between the alternatives/sub-alternatives of **Action 11** are negligible at only 1-2% difference among them. From least to greatest positive direct economic effects are **Sub-alternative 2b/Preferred Sub-alternative 2c**, **Alternative 1 (No Action)**, and **Sub-alternative 2a**.

The social effects of **Sub-alternatives 2a, 2b,** and **2c (Preferred)** under **Preferred Alternative 2** compared to **Alternative 1 (No Action)** would depend on when recreational effort is the highest for FLK/EFL hogfish, and the effect of the proposed recreational bag limits in **Action 10** on constraining catch to stay within the proposed ACLs in **Action 6**. Because hogfish is an important recreational species for south Florida and particularly the Florida Keys, it is likely that any seasonal restriction on recreational harvest under **Preferred Alternative 2** could have negative effects on recreational fishing opportunities.

Snapper Grouper AP Recommendations:

MOTION: RECOMMEND THAT THE COUNCIL CONSIDER A SPAWNING SEASON CLOSURE FOR GA-NC (MAY-JUNE) AND KEEP THE CALENDAR YEAR AS THE FISHING YEAR FOR THE RECREATIONAL SECTOR.
APPROVED BY AP

NOTE: *Under "Other Business", the AP approved the following motion regarding the fishing year for hogfish. After the meeting, the AP Chair corroborated the AP's preference for a July 1 start date for both sector.*
MOTION: RECOMMEND THE COUNCIL START THE HOGFISH COMMERCIAL AND RECREATIONAL FISHING YEAR ON JULY 1.
APPROVED BY AP

MOTION: RECOMMEND AN ADDITIONAL SUB-ALTERNATIVE 3C UNDER ACTION 11 FOR A RECREATIONAL SEASON FOR FL HOGFISH MAY 1 THROUGH SEPTEMBER 30.

Public Comments:

GA-NC:

- Council should consider a two-month spawning season (May-June) closure for hogfish in the Carolinas (for both sectors) and 500-pound commercial trip limit. OR no spawning closure and decrease the trip limit to 350 pounds.

FLK/EFL:

- Suggest prohibiting recreational harvest of hogfish during August (lobster mini-season) to reduce discards.
- Suggestion to close recreational harvest of hogfish during June through August.

COMMITTEE ACTION:

OPTION 1. APPROVE IPT'S SUGGESTED EDITS TO ACTION 11

OPTION 2. DO NOT APPROVE IPT'S SUGGESTED EDITS TO ACTION 11 (COMMITTEE TO SUGGEST CHANGES AND APPROVE).

OPTION 3. CONSIDER PUBLIC COMMENTS FOR RANGE OF ALTERNATIVES AND SELECTION OF PREFERRED

OTHERS?

Action 12. Establish commercial and recreational accountability measures (AMs) for the Georgia through North Carolina (GA-NC) and the Florida Keys/East Florida (FLK/EFL) stocks of hogfish

Alternative 1 (No Action). ~~Do not establish AMs for the GA-NC and Florida Keys/East Florida (FLK/EFL) stocks of hogfish.~~ Current commercial and recreational AMs apply to hogfish throughout the South Atlantic Council's area of jurisdiction.

Preferred Alternative 2. If commercial landings reach or are projected to reach the commercial annual catch limit (ACL), NMFS would close the commercial sector for the remainder of the fishing year. On and after the effective date of such a notification, all sale or purchase is prohibited and harvest or possession of hogfish in or from the EEZ would be limited to the recreational bag and possession limit. Additionally, if the commercial ACL is exceeded, NMFS would reduce the commercial ACL in the following fishing year by the amount of the commercial overage, only if hogfish is overfished **and** the total ACL (commercial ACL and recreational ACL) of the respective stock is exceeded.

Preferred Sub-alternative 2a. For the GA-NC stock of hogfish.

Preferred Sub-alternative 2b. For the ~~Florida Keys/East Florida (~~FLK/EFL~~)~~ stock of hogfish.

Preferred Alternative 3. If recreational landings reach or are projected to reach the recreational ACL, NMFS would close the recreational sector for the remainder of the fishing year, unless, using the best scientific information available, NMFS determines that a closure is unnecessary.

Sub-alternative 3a. For the GA-NC stock of hogfish if the stock is overfished.

Preferred Sub-alternative 3b. For the GA-NC stock of hogfish regardless of stock status.

Sub-alternative 3c. For the ~~Florida Keys/East Florida (~~FLK/EFL~~)~~ stock of hogfish if the stock is overfished.

Preferred Sub-alternative 3d. For the ~~Florida Keys/East Florida (~~FLK/EFL~~)~~ stock of hogfish regardless of stock status.

Preferred Alternative 4. If recreational landings exceed the recreational ~~annual catch limit (~~ACL~~)~~, then during the following fishing year, recreational landings will be monitored for a persistence in increased landings. If necessary, NMFS would reduce the length of fishing season and the recreational ACL in the following fishing year by the amount of the recreational overage, only if the species is overfished **and** the total ACL (commercial ACL and recreational ACL) of the respective stock is exceeded. The length of the recreational season and recreational ACL will not be reduced if NMFS determines, using the best scientific information available, that a reduction is unnecessary.

Preferred Sub-alternative 4a. For the GA-NC stock of hogfish.

Preferred Sub-alternative 4b. For the ~~Florida Keys/East Florida (~~FLK/EFL~~)~~ stock of hogfish.

Alternative 5. If recreational landings exceed the recreational ~~annual catch limit (~~ACL~~)~~ for two consecutive fishing years, then during the following (*i.e.*, third) fishing year, recreational

landings will be monitored for a persistence in increased landings. If necessary, NMFS would reduce the length of fishing season and the recreational ACL after two consecutive years of exceeding the recreational ACL in the following fishing year by the amount of the average annual recreational overage, only if the species is overfished **and** the total ACL (commercial ACL and recreational ACL) of the respective stock is exceeded. The length of the recreational season and recreational ACL will not be reduced if NMFS determines, using the best scientific information available, that a reduction is unnecessary.

Sub-alternative 5a. For the GA-NC stock of hogfish.

Sub-alternative 5b. For the ~~Florida Keys/East Florida (~~FLK/EFL~~)~~ stock of hogfish.

Comparison of Alternatives

The proposed action would contribute to creating a consistent regulatory environment in the South Atlantic. The Generic Accountability Measures (AMs) and Dolphin Allocations Amendment (Amendment 34 to the Snapper Grouper FMP), which became effective on February 22, 2016, would make AMs for hogfish consistent with those for other snapper grouper species. However, since this amendment proposes two hogfish stocks, AMs need to be specified for each stock. Current AMs (**Alternative 1 (No Action)**) for hogfish throughout the South Atlantic region are below:

Commercial: If commercial landings, as estimated by the Science and Research Director, reach or are projected to reach the commercial ACL, the Assistant Administrator will file a notification with the Office of the Federal Register to close the commercial sector for the remainder of the fishing year. On and after the effective date of such a notification, all sale or purchase is prohibited and harvest or possession of this species in or from the South Atlantic EEZ is limited to the bag and possession limit. This bag and possession limit applies in the South Atlantic on board a vessel for which a valid Federal commercial or charter vessel/headboat permit for South Atlantic snapper grouper has been issued, without regard to where such species were harvested, i.e., in state or Federal waters. If commercial landings exceed the ACL, and the species is overfished, based on the most recent Status of U.S. Fisheries Report to Congress, the Assistant Administrator will file a notification with the Office of the Federal Register, at or near the beginning of the following fishing year to reduce the ACL for that following year by the amount of the overage in the prior fishing year.

Recreational: If recreational landings, as estimated by the Science and Research Director, exceed the recreational ACL, then during the following fishing year, recreational landings will be monitored for a persistence in increased landings and, if necessary, the Assistant Administrator will file a notification with the Office of the Federal Register, to reduce the length of the following recreational fishing season by the amount necessary to ensure recreational landings do not exceed the recreational ACL in the following fishing year. However, the length of the recreational season will also not be reduced during the following fishing year if the Regional Administrator determines, using the best scientific information available, that a reduction in the length of the following fishing season is unnecessary.

For the commercial sector, the payback provision under **Preferred Alternative 2** would be triggered infrequently, because the payback would only be required if two criteria are met: (1)

hogfish is overfished *and* the total ACL has been exceeded. At this time, both of these scenarios cannot take place at the same time for the GA-NC stock of hogfish, since the status of the stock is unknown. As such, **Preferred Sub-alternative 2a** is the least biologically beneficial alternative for the GA-NC stock of hogfish because a commercial payback would never be triggered, even when it was biologically needed. For the FLK/EFL stock of hogfish, while the likelihood of both of these scenarios taking place at the same time is small, one of the two criteria to trigger a commercial payback has already been met as the stock is overfished. Hence, **Preferred Sub-alternative 2b** may impart biological benefits to the FLK/EFL stock. However, since **Preferred Alternative 2** would prohibit harvest in-season if the commercial ACLs for the respective hogfish stock was met or was projected to be met, overages of the total ACL (commercial and recreational combined) would be unlikely.

Preferred Alternatives 3 and **4**, and **Alternative 5** would apply to the recreational sector. **Preferred Sub-alternatives 3b** and **3d** would trigger an in-season closure for the GA-NC stock and the FLK/EFL stock, respectively, regardless of stock status. These sub-alternatives have the potential to result in biological benefits to both stocks compared to **Sub-alternatives 3a** and **3c** since an overfished determination would not be needed to trigger a closure and thus ACL overages would be avoided. Under **Preferred Alternative 4**, if the recreational ACL is exceeded, recreational landings during the following year would be monitored for persistence in increased landings. If necessary, the recreational season *and* the recreational ACL would be reduced the following fishing year but only if the respective hogfish stock is overfished and the total ACL (commercial + recreational) is exceeded. In this respect, **Preferred Alternative 4** is almost identical to **Preferred Alternative 2** for the commercial sector; however, the Regional Administrator would determine, based upon the best scientific information available, whether a payback is actually needed. Thus, **Preferred Alternative 4** would maintain the ability of the Regional Administrator to interpret landings data to determine whether a payback is needed. However, these sub-alternatives would all allow the payback to take the form of a recreational ACL reduction *and* a season length reduction, compared to **Alternative 1 (No Action)**, which only allows for a season length reduction as a form of payback. However, **Preferred Alternative 3** would allow the Regional Administrator to close the recreational sector when the recreational ACL for the respective hogfish stock is met or projected to be met. Therefore, if in-season closures are implemented when needed to prevent recreational ACLs from being exceeded, the need to initiate an ACL payback the following year would be greatly reduced. Under **Alternative 5**, if the recreational ACL is exceeded for two consecutive fishing years, recreational landings during the third year would be monitored for persistence in increased landings. If necessary, the recreational season *and* the recreational ACL would be reduced the third year, but only if the respective hogfish stock is overfished and the total ACL (commercial + recreational) is exceeded. **Alternative 5** is the least conservative alternative considered under this action, it would allow the recreational ACL to be exceeded for two years, possibly three, due to the delay in the availability of recreational data, and would result in the least biological benefits to the hogfish stock.

Since **Preferred Alternatives 2** and **3** would prohibit commercial and recreational harvest in-season if the sector ACLs were met or were projected to be met and since overages of the total ACL (commercial and recreational combined) would be unlikely to occur, significant biological impacts, beneficial or adverse, on the GA-NC and FLK/EFL stocks of hogfish are not expected.

The selection of any of the sub-alternatives of **Preferred Alternative 2** through **Alternative 5** does not change the basic premise of **Alternative 1 (No Action)** that commercial fishing would be stopped when the commercial ACL has been met or projected to be met or the following recreational fishing season shortened when recreational ACL is exceeded. Thus, only when overages occur would the various alternatives have possibly differing economic effects. The relative magnitude of short-term economic effects of the various alternatives would depend on the likelihood of triggering the hogfish AMs. The alternatives' long-term economic effects would depend on their effects on the sustainability of the stock to support continued fishing opportunities for the commercial and recreational fishing participants, overall the potential economic impacts of **Preferred Alternatives 2** through **Alternative 5** are not expected to be significant.

There is no expected economic effects difference between **Alternative 1 (No Action)**, **Preferred Alternative 2 (Preferred Sub-Alternatives 2a** and **2b)**, **Preferred Alternative 4 (Preferred Sub-Alternatives 4a** and **4b)**, and **Alternative 5**.

AMs can have significant direct and indirect social effects because, when triggered, can restrict harvest in the current season or subsequent seasons. However, AMs are critical in keeping landings from exceeding the recommended catch levels, which is crucial under a rebuilding plan.

Snapper Grouper AP Recommendations:

The AP had no recommendations on accountability measures.

Public Comments:

The public had no comments on accountability measures.

COMMITTEE ACTION:

OPTION 1. APPROVE IPT'S SUGGESTED EDITS TO ACTION 12

OPTION 2. DO NOT APPROVE IPT'S SUGGESTED EDITS TO ACTION 12 (COMMITTEE TO SUGGEST CHANGES AND APPROVE).

OPTION 3. CONSIDER PUBLIC COMMENTS FOR RANGE OF ALTERNATIVES AND SELECTION OF PREFERRED

OTHERS?