4.1 Dolphin Wahoo FMP

4.1.1 Dolphin

Fishery Management Unit

Common dolphin, *Coryphaena hippurus*, and pompano dolphin, *Coryphaena equiselis*, are in the fishery management unit for the Fishery Management Plan for the Dolphin Wahoo Fishery of the Atlantic. Pompano dolphin are rarely landed, don't reach the minimum size limit for common dolphin, and are included in the landings data for common dolphin. At the September 2009 meeting, the Council directed staff to develop alternatives to designate pompano as an ecosystem component species or consider them a part of a multispecies group for MSY, OFL, and ABC values.

Pompano dolphin is considered as part of a multispecies group herein. Pompano dolphin are included in the landings of common dolphin and it is the Councils' intent that the MSY, OY, OFL, ABC, ACL, and AM parameters set for common dolphin also include pompano dolphin. Thus it is not necessary, nor possible to specify these parameters separately for pompano dolphin.

The Dolphin Wahoo FMP was implemented in 2004 and included the following:

1. Added Dolphin and Wahoo the the Fishery Management Unit and established MSY, OY, MFMT and MSST; dealer permits; vessel permits; operator permits; reporting requirements (ACCSP); framework procedure; allowable gear; gear prohibitions in HMS closed areas; EFH/EFH-HAPCs; and the fishing year as January 1 through December 31.
2. Prohibit sale of recreationally caught dolphin or wahoo in or from the Atlantic EEZ except for allowing for-hire vessels that possess the necessary state and Federal commercial permits to sell dolphin harvested under the bag limit in or from the Atlantic EEZ.
3. Establish a cap of 1.5 million pounds or 13% of total landings, whichever is greater, for the commercial fishery for dolphin. Should the catch exceed this level, the Council will review the data and evaluate the need for additional regulations which may be established through the framework.
4. Establish a recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. Headboats (with a valid certificate of inspection) will be allowed a bag limit of 10 dolphin per paying passenger.
5. Establish a minimum size limit for dolphin of 20 inches fork length off Florida and Georgia and no minimum size limit north of Georgia.

Maximum Sustainable Yield (MSY), Minimum Stock Size Threshold (MSST) and Maximum Fishing Mortality Threshold (MFMT)/Overfishing Level (OFL)

Maximum Sustainable Yield (MSY)

The Councils have determined that the Maximum Sustainable Yield (MSY) for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 18.8 and 46.5 million pounds. There is no updated MSY estimate, and the SSC did not provide any new guidance on MSY. Therefore, the existing MSY will remain until a SEDAR assessment is conducted.

Minimum Stock Size Threshold (MSST)

The Councils have determined that the Minimum Stock Size Threshold (MSST) for dolphin in the Atlantic, U.S. Caribbean, and Gulf of Mexico is defined as a ratio of current biomass (Bcurrent) to biomass at MSY or (1-M)*B_{MSY}, where 1-M should never be less than 0.5. Using the best available estimates of natural mortality (M = 0.68-0.80) in the formula results in a MSST of 50% B_{MSY}. The stock would be overfished if current biomass (Bcurrent) was less than MSST and would be recovered when current biomass was equal or greater than the biomass at MSY. There is no updated MSST estimate, and the SSC did not provide any new guidance on MSST. Therefore, the existing MSST will remain until a SEDAR assessment is conducted.

Overfishing Level (OFL)

The SSC provided the following OFL at their April 2010 meeting: "The existing MSY estimate for dolphin (Prager 2000) applies to the Gulf of Mexico, South Atlantic, and Caribbean regions (i.e., no MSY value specific for the Atlantic stock exists). Therefore, the SSC decided to use landings data to estimate OFL. However, given dolphin's distribution and stock structure the OFL should be based on landings data for the entire Atlantic stock (i.e., not just South Atlantic). The SSC also discussed the decline in recreational landings (the bulk of total dolphin landings) during 2008-2009, which the group thought was strongly influenced by the economic downturn and associated reduction in recreational effort (number of fishing trips). The SSC decided not to use these years for developing the OFL estimate. Other points were also brought up regarding regulations that probably have kept dolphin landings down since 2004. The committee decided to use the period 1994-1997 (Atlantic coast landings data obtained from the Dolphin Wahoo FMP) to calculate average landings as the OFL estimate (OFL = 11,882,898 pounds; the mean was used instead of the median because of the short landings time series)."

Currently, the Councils (South Atlantic, Mid-Atlantic and New England Councils) specified the following value for MFMT through the original Dolphin Wahoo FMP:A maximum fishing mortality threshold (MFMT) - In the Atlantic, U.S. Caribbean, and Gulf of Mexico overfishing for dolphin is defined as a fishing mortality rate (F) in excess of F_{MSY} ($F_{30\%Static\ SPR}$).

The SSC has provided a new value for MFMT which is now called the Overfishing Level (OFL) (**Table 4-33a**). The NMFS SEFSC has corrected and updated the 1994-1997 data used by the SSC. The Council reviewed the new data at their March 2011 meeting and accepted the new catch data as being the best available data (**Table 4-33b**). The Council also requested the SSC use the corrected and updated data to provide the OFL; using the new data and the SSC's methodology, results in the OFL = 13,709,523. The South Atlantic Council is withdrawing the MFMT for the Atlantic and replacing the value with the OFL = 13,709,523 pounds.

Table 4-33a. Landings data used by the SSC to develop the OFL value.

Dolphin Landings (whole weight) from Dolphin Wahoo FMP (SAFMC 2003; Table 8)					
Year	**Rec. Total**	**%Rec**	**Com. Total**	**%Com**	**Com. & Rec. Total**
1994	9,500,580	88%	1,252,553	12%	10,753,133
1995	13,092,212	85%	2,231,787	15%	15,323,999
1996	8,002,144	87%	1,216,682	13%	9,218,826
1997	10,640,713	87%	1,594,920	13%	12,235,633
SSC's	**OFL = Mean 1994-1997**				11,882,898

Table 4-33b. Corrected and updated landings data for use by the SSC to develop the OFL value.

Corrected/Updated Dolphin Landings (whole weight) from SEFSC					
Year	**Rec. Total**	**%Rec**	**Com. Total**	**%Com**	**Com. & Rec. Total**
1994	11,067,791	90%	1,200,064	10%	12,267,855
1995	13,824,090	87%	2,136,532	13%	15,960,622
1996	10,557,938	90%	1,220,769	10%	11,778,707
1997	13,228,677	89%	1,602,230	11%	14,830,907
SSC's	**OFL = Mean 1994-1997**				13,709,523

The Council has requested the SSC consider the Gulf Council's Control Rule which would use mean, mean + 0.5 to 2.0 times the SD of the last 10 years landings. The SSC will meet April 5-7, 2011 in Charleston and will consider this request. Their action could change the OFL/ABC recommendation for dolphin (and wahoo).

4.1.1.1 Action 16: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for dolphin

During their March 2011 meeting, the Council approved the following motion: For dolphin and wahoo, provide guidance to the SSC that based on biology and productivity and not overfishing/overfished status, the Council is comfortable using mean landings over the last 10 years + 1.0 standard deviation to set ABC.

Alternative 1 (No Action). Do not establish an ABC Control Rule for Dolphin.

Alternative 2 (Preferred). Establish an ABC Control Rule where ABC equals OFL. This is 13,709,523 lbs whole weight.

Alternative 3. Adopt the SAFMC's SSC Control Rule and set ABC equal to a percentage of OFL

Subalternative 3a. ABC = 65%OFL = 8,911,190 lbs whole weight.
Subalternative 3b. ABC = 75%OFL = 10,282,142 lbs whole weight.
Subalternative 3c. ABC = 85%OFL = 11,653,095 lbs whole weight.

Alternative 4. Establish ABC based on the Gulf Council's ABC control rule. Note: The Gulf Council's Control Rule, if applied to dolphin, would likely be Tier 3a and would set the OFL = mean 10 years most recent landings + 2 SD and set the ABC = mean or mean + 0.5-1.5 SD.

4.1.1.1.1 Biological Effects

Alternative 1 (No Action) would not establish an acceptable biological catch (ABC) control rule for dolphin. For stock and stock complexes required to have an ABC, the NS 1 guidelines for the Reauthorized Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) state the ABC will be set on the basis of the ABC control rule. Therefore, **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act.

Alternatives 2-4 would specify an ABC control rule for dolphin. Under **Alternative 2**, the ABC would be 11,882,898 pounds whole weight and would be equal to the OFL specified by the Council's Scientific and Statistical Committee (SSC) at their April 2010 meeting based on average landings during 1994-1997 (**Table 4-33**). The NS 1 guidelines recommend OFL be the upper bound of ABC, but ABC should usually be reduced from the OFL to account for scientific uncertainty in the estimate of OFL. Since there would be no buffer between ABC and OFL, the biological effect of **Alternative 2** would be less than **Alternatives 3 and 4**. In contrast to **Alternative 2**, **Alternatives 3 and 4** would account for scientific uncertainty by providing a buffer between ABC and OFL.

Alternative 3 would set the ABC as a percentage of the OFL. **Subalternative 3a** would be the most conservative sub-alternative where ABC = 65%OFL and would equal 7,723,884 lbs whole weight. **Subalternative 3c (Preferred)** would be the least conservative subalternative where ABC = 85%OFL and would equal 10,100,463 lbs gutted weight. **Preferred Subalternative 3c** would provide a greater buffer between OFL and ABC than **Alternatives 2 or 4** and would therefore have a greater positive biological effect.

Alternative 4 would specify an ABC control rule based on the Gulf Council SSC's ABC control rule (**Table 4-34**). As stated, **Alternative 4** would follow Tier 3a of the Gulf's Council SSC's ABC control rule: "No assessment is available, but landings data exist. The probability of exceeding the overfishing limit in a given year can be approximated from the variance about the mean of recent landings to produce a buffer between the overfishing limit and acceptable biological catch. Based on expert evaluation of the best scientific information available, recent historical landings are without trend, landings are small relative to stock biomass, or the stock is unlikely to undergo overfishing if future landings are equal to or moderately higher than the mean of recent landings. For stock complexes, the determination of whether a stock complex is in Tier 3a or 3b will be made using all the information available, including stock specific catch trends."

For species where no assessment is available, but based on expert opinion recent landings levels could be unsustainable, the Gulf Council SSC suggests the use of Tier 3b, where ABC would be set as a portion of OFL. **Alternatives 2** and **3** (along with its subalternatives) capture the range of ABCs that provide a buffer between the ABC and OFL described in Tier 3b.

Alternative 4, which is based on Tier 3a of the Gulf Council SSC's ABC control rule for unassessed species (**Table 4-34**) would result in a higher allowable catch (**Table 4-35**) than an ABC control rule based on South Atlantic Council SSC's control rule (**Alternatives 2 and 3**) and higher than the OFL specified by the South Atlantic Council's SSC, which is based on average landings from 1994-1997 (**Table 4-33**). Therefore, the biological effect of **Alternative 4** would likely be less than **Subalternative 3c (Preferred)**.

Table 4-34. Acceptable Biological Catch (ABC) Control Rule as accepted by the Gulf Council's SSC in January 2011 and accepted by the Gulf Council in February 2011.

Tier 1 Acceptable Biological Catch Control Rule	
Condition for Use	A quantitative assessment provides both an estimate of overfishing limit based on MSY or its proxy and a probability density function of overfishing limit that reflects scientific uncertainty. Specific components of scientific uncertainty can be evaluated through a risk determination table.
OFL	OFL = yield resulting from applying F_{MSY} or its proxy to estimated biomass.
ABC	The Council with advice from the SSC will set an appropriate level of risk (P*) using a risk determination table that calculates a P* based on the level of information and uncertainty in the stock assessment. ABC = yield at P*.
Tier 2 Acceptable Biological Catch Control Rule	
Condition for Use*	An assessment exists but does not provide an estimate of MSY or its proxy. Instead, the assessment provides a measure of overfishing limit based on alternative methodology. Additionally, a probability density function can be calculated to estimate scientific uncertainty in the model-derived overfishing limit measure. This density function can be used to approximate the probability of exceeding the overfishing limit, thus providing a buffer between the overfishing limit and acceptable biological catch.
OFL	An overfishing limit measure is available from alternative methodology.
ABC	Calculate a probability density function around the overfishing limit measure that accounts for scientific uncertainty. The buffer between the overfishing limit and acceptable biological catch will be based on that probability density function and the level of risk of exceeding the overfishing limit selected by the Council. a. Risk of exceeding OFL = 45% b. Risk of exceeding OFL = 35% c. Risk of exceeding OFL = 25% (default level for unassigned stocks) d. Risk of exceeding OFL = 15% Set ABC = OFL – buffer at risk of exceeding OFL
Tier 3a Acceptable Biological Catch Control Rule	
Condition for Use*	No assessment is available, but landings data exist. The probability of exceeding the overfishing limit in a given year can be approximated from the variance about the mean of recent landings to produce a buffer between the overfishing limit and acceptable biological catch. Based on expert evaluation of the best scientific information available, recent historical landings are without trend, landings are small relative to stock biomass, or the stock is unlikely to undergo overfishing if future landings are equal to or moderately higher than the mean of recent landings. For stock complexes, the determination of whether a stock complex is in Tier 3a or 3b will be made using all the information available, including stock specific catch trends.
OFL	Set the overfishing limit equal to the mean of recent landings plus two standard deviations. A time series of at least ten years is recommended to compute the mean of recent landings, but a different number of years may be used to attain a representative level of variance in the landings.
ABC	Set acceptable biological catch using a buffer from the overfishing limit that represents an acceptable level of risk due to scientific uncertainty. The buffer will be predetermined for each stock or stock complex by the Council with advice from the SSC as: a. ABC = mean of the landings plus 1.5 * standard deviation (risk of exceeding OFL = 31%) b. ABC = mean of the landings plus 1.0 * standard deviation (default) (risk of exceeding OFL = 16%) c. ABC = mean of the landings plus 0.5 * standard deviation (risk of exceeding OFL = 7%) d. ABC = mean of the landings (risk of exceeding OFL = 2.3%)
Tier 3b Acceptable Biological Catch Control Rule	
Condition for Use*	No assessment is available, but landings data exist. Based on expert evaluation of the best scientific information available, recent landings may be unsustainable.
OFL	Set the overfishing limit equal to the mean of landings. A time series of at least ten years is recommended to compute the mean of recent landings, but a different number of years may be used to attain a representative level of variance in the landings.
ABC	Set acceptable biological catch using a buffer from the overfishing limit that represents an acceptable level of risk due to scientific uncertainty. The buffer will be predetermined for each stock or stock complex by the Council with advice from its SSC as: e. ABC = 100% of OFL f. ABC = 85% of OFL g. ABC = 75% of OFL (default level for unassigned stocks)

	h. ABC = 65% of OFL

*Changes in the trend of a stock's landings or a stock complex's landings in three consecutive years shall trigger a reevaluation of their acceptable biological catch control rule determination under Tiers 2, 3a, or 3b.
Note: There may be situations in which reliable landings estimates do not exist for a given data-poor stock. The approach and methodology for setting OFL and ABC will be determined on a case-by-case basis, based on expert opinion and the best scientific information available.

Table 4-35. ABC for dolphin (pounds) based on the mean and mean plus 0.5, 1.0, and 1.5 standard deviations above mean landings during 2000-2009. Note: OFL = mean + 2SD = 16,743,471 pounds.

Mean	Mean + 0.5 SD	Mean + 1 SD	Mean + 1.5 SD
11,431,682	12,795,629	14,087,576	15,415,524

Establishing an ABC control rule for dolphin would not directly affect protected species because these parameters are not used in determining immediate harvest objectives. Future specific management actions based on the ABC control rule may affect protected species. The biological effects to protected species from future management actions will be evaluated as they are developed.

4.1.1.1.2 Economic Effects

In general, the higher the ABC, the higher the commercial quota and recreational allocation. Subsequently, a higher quota and allocation, the higher the short-term economic benefits and the lower the long-term economic benefits. **Alternative 2** proposes the largest ABC levels of the alternatives developed by the South Atlantic Council's SSC and is therefore expected to produce the highest short-term economic benefits with **Subalternative 3a** offering the lowest ABC. **Subalternative 3c (Preferred)** proposes the next largest ABC level and provides a buffer between OFL and ABC and is therefore expected to provide the greatest long-term economic benefits, but smaller short-term economic benefits than **Alternatives 2 and 4**. **Alternative 4** would offer lower long-term benefits as subalternatives under **Alternative 3**.

4.1.1.1.3 Social Effects

As with the previous alternative, setting of the biological parameters for harvest thresholds have few direct social effects as the effects are more indirect from implementation of the ABC and any subsequent reduction. **Alternative 1** does not establish an ABC control rule for dolphin and ABC would need to be set in some other manner. Certainly, the more risk averse a control rule or threshold is, the more chances of negative social effects accruing in the short term if harvest is reduced. **Alternative 2** is not as risk averse as other alternatives as there would be no reduction from the OFL. With the ABC equal to the OFL, there is more of a chance that fluctuations in the stock will occur inducing management and rebuilding which might cause more volatility in the fishery. **Alternative 3** would be the most restrictive and places a less restrictive threshold moving from **Subalternative 3a to Preferred 3c**. Using the Gulf Council's Control rule in **Alternative 4** would be less restrictive to **Alternative 3**. However, the combined effect of any of the reductions in harvest levels is difficult to assess with other actions. Certainly for those

alternatives that are the most restrictive the potential of negative social effects, both short term and long term, becomes more likely even though there may be long term biological benefit.

4.1.1.1.4 Administrative Effects

The establishment of an ABC Control Rule is a procedural exercise. The rule is established by the Council's SSC for consideration by the Council. Although the control rule can have implications on management actions, no specific management actions are required through the specification of the control rule. The administrative impacts of establishing a control rule are minimal and would not differ much between the proposed alternatives.

4.1.1.1.5 Council Conclusions

The Council is setting the ABC = OFL and is setting ACL = 85% of the ABC in order to address management uncertainty. Dolphin are short lived, reproduce at an early age, and very productive and so the Council concluded an appropriate buffer to account for assessment uncertainty was setting the ACL = 85% of the ABC. The Council also considered the Gulf Council's ABC Control Rule and recognized, like the South Atlantic Council's Control Rule, it also is based solely on landings data. As such, the variability of landings data does not provide much of a measure of assessment uncertainty. A stock assessment is planned for 2014 (SEDAR 43), and the Council will reevaluate the ABC based on the assessment results. Any necessary changes will be made through the framework or amendment process.

The Council concluded the preferred alternative best meets the purpose and need to prevent overfishing while minimizing costs, meeting the objectives of the Dolphin Wahoo Fishery Management Plan, and complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.1.2 Action 17: Specify Allocations for Dolphin

[Note: When considering two sectors (Commercial and Recreational), the Recreational sector includes private recreational (shore/rental boats and charter boats), as well as headboats. When considering three sectors (Commercial, Recreational, and For-hire), the Recreational sector includes only private recreational (shore/rental boats) and for-hire includes headboats and charter boats.]

Alternative 1 (No Action). Continue to use the allocations for dolphin specified in the Dolphin Wahoo FMP (13% commercial/87% recreational).

Alternative 2. Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 1999-2008. The allocation would be 7% commercial and 93% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Note: Using the new landings data to calculate allocations based on the Council's formula results in no change to Alternative 2 but it does change Alternatives 3 & 4. Alternative 3 percentages go from 8% to 7.3% commercial and from 92% to 92.7% recreational. Alternative 4 percentages go from 7.7% to 7.3% commercial, from 0.3 to 38.4% for-hire although the previous for-hire number only included headboats, and from 92% to 54.4% private because charterboats have been moved to the for-hire sector.

Alternative 3 (Preferred). Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector:
Sector apportionment = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 7.3% commercial and 92.7% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 4. Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector:
Sector apportionment = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 7.3% commercial, 38.4% for-hire, and 54.4% private recreational. The commercial, for-hire, and private recreational allocations specified for 2011 would remain in effect beyond 2011 until modified.

4.1.1.2.1 Biological Effects

Alternative 1 (No Action) was implemented through The Fishery Management Plan for the Dolphin and Wahoo Fishery of the South Atlantic (FMP), which established a non-binding allocation of 13% on the commercial harvest and 87% for the recreational harvest in the Atlantic exclusive economic zone (SAFMC 2003). The Dolphin Wahoo FMP also established a "soft

cap" on the commercial sector. This soft cap does not trigger a closure of the commercial sector; however, it does trigger a review of the data and a determination whether action is necessary. The 13% cap was met in 2009.

The Council's intent was to monitor the fishery and if commercial landings exceeded the non-binding allocation, determine if additional regulations are necessary. Although the recreational landings have historically greatly exceeded the commercial, this action was taken to prevent the potential future expansion of the commercial fishery. Dolphin is predominantly a recreational fishery, and the Council wanted to maintain this structure.

Table 4-36. Annual landings of dolphin by sector for the NEFMC, MAFMC, and SAFMC areas of jurisdiction. **NEW TABLE.**

Year	Commercial	Private	For-Hire	Total Rec	Total Com	Total	% Com	%Rec
1999	1,046,580	6,157,434	5,208,432	11,365,866	1,046,580	12,412,446	8%	92%
2000	987,623	8,462,750	6,017,689	14,480,440	987,623	15,468,063	6%	94%
2001	764,823	10,006,719	4,420,779	14,427,499	764,823	15,192,322	5%	95%
2002	670,415	6,567,523	7,358,279	13,925,801	670,415	14,596,216	5%	95%
2003	722,921	7,112,286	2,741,572	9,853,858	722,921	10,576,779	7%	93%
2004	856,517	4,452,548	3,779,531	8,232,079	856,517	9,088,596	9%	91%
2005	576,671	4,774,541	4,798,153	9,572,695	576,671	10,149,366	6%	94%
2006	650,004	5,370,256	4,163,860	9,534,116	650,004	10,184,120	6%	94%
2007	967,151	6,300,261	4,136,398	10,436,659	967,151	11,403,810	8%	92%
2008	780,818	4,964,915	3,259,429	8,224,344	780,818	9,005,162	9%	91%
2009	1,135,531	5,672,189	1,844,661	7,516,851	1,135,531	8,652,382	13%	87%

Source: SERO ACL landings database from data provided by SEFSC.

Alternatives 2-4 would modify the allocations specified in the FMP in favor of the recreational sector. The allocations in **Alternatives 2-4** would be extremely similar. **Alternatives 2 and 3 (Preferred)** would use a different time series of years resulting in allocations of 7-8% commercial/93-92% recreational. **Alternative 3 (Preferred)** uses a formula that would equal 50% * average of long catch range (lbs) 1999-2008) + 50% * average of recent catch trend (lbs) 2006-2008 thereby balancing the total time series with the more recent. **Alternative 4**, which uses a similar formula as **Alternative 3 (Preferred)** would divide the recreational component of the catch into for-hire and private recreational sectors.

A Fishery Management Council may decide, but is not required, to divide the ACL into sector ACLs. "Sector" for purposes of the NS1 guidelines means a distinct user group to which separate management strategies and catch quotas apply. The NS1 guidelines states it is up to each fishery management council to decide how to designate sectors, if any. If sector-ACLs are established, sector AMs must be developed for each sector ACL. Sector specific ACLs and AMs could have a greater biological benefit than one ACL because both sectors would be required to have AMs, and the chance of exceeding the OFL would be less. However, recreational landings of dolphin dominate the catch and are very large. Therefore there is greater certainty with recreational landing estimates than for species, which are rarely encountered by the Marine Recreational Fisheries Statistics Survey. Alternatives that shift a greater proportion of landings from the commercial to the recreational sector would be expected to have a negative biological effect because there would be greater certainty of exceeding the recreational ACL. Therefore, **Alternative 1 (No Action),** which would maintain the allocation of 13% commercial/87% recreational, would have the greatest positive biological effect. There is a reduction in the allocations to the commercial sector under **Alternatives 2-4** with a commercial allocation of 7% in **Alternative 2** and 8% in **Alternatives 3 (Preferred)** and 7.7% in **Alternative 4**. The biological benefits of **Alternatives 2 and 3 (Preferred)** would be slightly less than **Alternative 1 (No Action)**. The biological benefit of **Alternative 4** would be less than all other alternatives since dividing landings in the recreational sector could increase the uncertainty associated with the estimates.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin/wahoo fishery would not affect smalltooth sawfish or marine mammals and was not likely adversely affect *Acropora* species. **Alternatives 2-4** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles from **Alternatives 2-4** are unclear. If the sector allocations perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles will likely decrease, providing additional biological benefits to these species.

4.1.1.2.2 Economic Effects

The economic effects of allocations between commercial and recreational fisheries are distributional in nature. There is no quantifiable difference in the aggregate benefit to the Nation of any one of the alternatives over another, at this time.

Commercial Fishery

Alternatives 2-4 would result in decreases in commercial landings from current levels. In 2009, the commercial fishery landed almost 804,000 pounds. **Alternative 2** would propose the largest decrease in commercial landings with a loss from 13% to 7%. **Preferred Alternative 3** would propose a drop of 5% and would benefit the commercial fishery the most after **Alternative 1 (No Action)**.

4.1.1.2.3 Social Effects

Because there exist sector allocations between the recreational and commercial already, **Alternative 1 (No Action)** would maintain an overall ACL and may have few social effects. However, determining accountability may become an issue if a closure were to occur. With **Alternative 2** there would be a decrease in the commercial allocation which could have some negative social effects, especially if other actions further decreased the harvest thresholds. **Alternative 3** would also decrease the commercial allocation from the present level. In **Alternative 4**, the recreational sector allocation is further divided into the private and for-hire sectors which may allow more certainty in the for-hire sector, because monitoring the recreational sector is difficult. As mentioned, there can be many different social effects that result as further allocations are divided and perceptions are formed. Again, it is difficult to predict the social effects with any allocation scheme as it would depend upon other actions in conjunction with this one. A reduction in allocation for one sector may be compounded by a restrictive choice of ABC or ACL and may have further effects that could be either negative or positive depending upon the combination of effects. Therefore, the choice of an allocation will need to be assessed with other actions within this amendment to determine the overall social effects and whether short term losses are offset by any long-term biological gains.

4.1.1.2.4 Administrative Effects

Alternative 1 (No Action) would retain the current allocations of 13% recreational and 78% commercial. Under any of the proposed alternatives, administrative impacts will occur as allocations will need to be monitored and enforced to ensure that the sectors do not exceed their allocation and if so, appropriate overages are accounted for. The administrative impact associated with the proposed alternatives is expected to be similar to the administrative impacts under **Alternative 1 (No Action).** None of the action alternatives are expected to increase the administrative impacts more than the others.

4.1.1.2.5 Council Conclusions

The Council concluded it was necessary to allocate the ACL between the recreational and commercial sectors to limit each sector to their portion of the ACL and thereby prevent overfishing. The Council considered allocation to the for-hire and private recreational but rejected this approach as being unnecessary and it would make it more difficult to track the recreational landings. The Council considered several different allocation alternatives but concluded the preferred alternative best balances historical and recent landings between the two

sectors. The Council concluded this approach was fair and equitable given the consideration of historical and recent landings.

The Council concluded the preferred alternative best meets the objectives of the Dolphin Wahoo Fishery Management Plan while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.1.3 Action 18: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Dolphin

Alternative 1 (No Action). There is no ACL specified for dolphin. OY for dolphin is the amount of harvest that can be taken by fishermen while not exceeding 75% of MSY (between 14.1 and 34.9 million pounds).

Alternative 2. ACL = OY =ABC = 13,709,523 pounds.

Alternative 3 (Preferred). ACL = OY = 85% of the ABC = 11,653,095 pounds.

Alternative 4. ACL = OY = 75% of the ABC = 10,282,142 pounds.

Alternative 5. ACL = OY = 65% of the ABC = 8,911,190 pounds.

Discussion

The Dolphin/Wahoo FMP (SAFMC 2004) established what is called a "soft cap" on the commercial sector. This soft cap does not trigger a closure of the commercial sector; however, it does trigger a review of the data and a determination whether action is necessary. The wording is as follows:

> **ACTION 12**. Establish a cap of 1.5 million pounds or 13% of total landings, whichever is greater, for the commercial fishery for dolphin. Should the catch exceed this level, the Council will review the data and evaluate the need for additional regulations which may be established through the framework.

The AP discussed adding an alternative that would set ACL equal to 65%, 75%, or 85% of 46.5 million pounds (the top end of the current MSY range). The AP could not provide an ACL recommendation at this time given the problems with the landings data. The AP did recommend the Council examine a regional approach to allocating the quotas.

4.1.1.3.1 Biological Effects

Alternatives 2-5 would set OY equal to the ACL or some percentage of the ACL and would represent the management area specified in the FMP for Dolphin and Wahoo. Setting OY equal to ACL would provide greater assurance that overfishing is prevented, the long-term average biomass is near or above B_{MSY}. Setting OY equal to the ACL in **Alternative 2 (Preferred)** or to some portion of the ACL in **Alternatives 3-5**, would be based on the ABC specified through the

Council's preferred ABC control rule alternative and therefore take into consideration scientific uncertainty in the specification of OFL.

Alternative 1 (No Action), would retain the current regulations established for dolphin, which includes a "soft cap" for the commercial sector of 1.5 million pounds or 13% of total landings, whichever is greater. The final NS1 guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to overfishing limits (OFL), acceptable biological catch, annual catch limit (ACL), annual catch target, and accountability measure (AM) in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as Fishery Management Councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species which triggers some sort of AM to ensure overfishing of a species does not occur. Therefore ACLs are in place for dolphin in the form of a soft TAC. However, the Council's Scientific and Statistical Committee (SSC) has specified an OFL of 11,882,898 lbs whole weight for dolphin and this document provides alternatives for ABC specified as a portion of the OFL based on an ABC control selected by the Council. **Alternatives 2-5** would set the ACL based on the Council's choice of ABC. Therefore, retention of the status quo ACL may not be an appropriate option.

Preferred Alternative 2 would set the ACL equal to the ABC. The preferred alternative in **Action 16** specified an ABC = 85% OFL where ABC = 10,100,463 lbs whole weight. Based on the preferred allocation alternatives in **Action 17**, 8% (808,037 lbs whole) of the ACL would be allocated to the commercial sector and 92% (9,292,426 lbs whole weight) of the ACL would be allocated to the recreational sector (**Table 4-37**).

Alternatives 3-5 would have a greater positive biological effect than **Preferred Alternative 2** because they would create a buffer between the ACL and ABC, with **Alternative 5** setting the most conservative ACL at 65% of the ABC. The ACLs under each alternative, based on the Council's Preferred ABC control rule are provided in **Table 4-37**. Creating a buffer between the ACL and ABC would provide a greater assurance of preventing overfishing by accounting for scientific uncertainty. Setting a buffer between the ACL and ACT would be appropriate in situations where there is uncertainty in whether or not management measures are constraining fishing mortality to target levels. ACTs, which are not required, can be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin/wahoo fishery would not affect smalltooth sawfish or marine mammals and was not likely adversely affect *Acropora* species. **Alternatives 2-5** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles from **Alternatives 2-5** are unclear. If they perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles will likely decrease, providing additional biological benefits to these species.

Table 4-37. ACL formula and ACL value (lbs whole weight) for dolphin under Alternatives 2-5. Commercial and recreational ACL values are based on preferred allocation alternative (7.3% commercial/92.7% recreational) in Action 17. NEW TABLE

Alternative	ACL Formula	ACL value	Comm ACL	Rec ACL
Alternative 2	ABC	13,709,523	1,000,795	12,708,728
Alternative 3 (**Preferred**)	85% ABC	11,653,095	850,676	10,802,419
Alternative 4	75% ABC	10,282,142	750,596	9,531,546
Alternative 5	65% ABC	8,911,190	650,517	8,260,673

4.1.1.3.2 Economic Effects

Commercial Fishery
In general, the higher the ACL, the larger the short-term economic benefits and the smaller the long-term economic benefits. **Alternative 2** offers the highest short-term economic benefits compared to **Alternatives 3-5**. **Alternative 5** offers the most conservative ACL and therefore is expected to yield the highest long-term economic benefits. **Alternatives 3 and 4** fall in between **Alternatives 2 and 5**.

4.1.1.3.3 Social Effects

Establishing an ACL for dolphin will have social effects similar to the discussions under previous actions. As discussed previously, choosing a more restrictive ACL like **Alternative 5** would likely have more negative effects in the short term than would **Alternative 3 or 4**. The overall effects would also be tied to other actions and how they combine to affect a particular sector. Under **Alternative 1 (No Action)** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long term consequences if a stock is vulnerable. Choosing **Preferred Alternative 2** would be less restrictive than the **Alternatives 3-5.**

4.1.1.3.4 Administrative Effects

The specification of ACL/OY is a procedural exercise. Although ACL/OY can have implications on management actions, no specific management actions are required through the specification of ACL/OY. The administrative impacts of specifying ACL/OY are minimal and would not differ much between the proposed alternatives.

Specifying an ACL or sector ACLs alone would not increase the administrative burden over the status-quo. However, the monitoring and documentation needed to track the ACL can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative 1 (No Action),** would not meet the requirements of the Magnuson-Stevens Act for some species, and could be subject to litigation, which would result in a significant administrative burden on the agency. The administrative impacts of specifying an ACL through **Alternatives 2 (Preferred)-5** are minimal and would not differ much between the three action alternatives. However, once the ACL is specified, the

administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures would likely increase. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.1.1.3.5 Council Conclusions

The Council considered setting the ACL equal to a percentage of the ABC (65%, 75%, or 85%) to address management uncertainty. However, dolphin are short lived, reproduce at an early age, and very productive and so the Council concluded it was inappropriate to establish another buffer to account for management uncertainty. The Council concluded the ability to track commercial landings is sufficient to prevent exceeding the commercial ACL while a slight step-down to the Recreational ACT will provide the necessary buffer for management uncertainty. A stock assessment is planned for 2014 (SEDAR 43), and the Council will reevaluate the ACL based on the assessment results. Any necessary changes will be made through the framework or amendment process.

The Council concluded the preferred alternative best meets the purpose and need to prevent overfishing while minimizing costs, meeting the objectives of the Dolphin Wahoo Fishery Management Plan, and complying with the requirements of the Magnuson-Stevens Act and other applicable law.

4.1.1.4 Action 19: Establish Accountability Measures for Dolphin

Alternative 1 (No Action). Do not specify sector ACTs or AMs for dolphin. There is no hard quota for dolphin and there are no AMs in place for dolphin.

Commercial
Alternative 2. Specify commercial sector ACTs for dolphin, apply to commercial AM Alternatives 3 and 4.

Subalternative 2a (Preferred). Do not specify a commercial sector ACT.

Subalternative 2b. The commercial sector ACT equals 90% of the commercial sector ACL.

Subalternative 2c. The commercial sector ACT equals 80% of the commercial sector ACL.

Table 4-38. The commercial sector ACT for each of the alternatives. Values are in lbs gutted weight.

Species	Preferred Commercial ACL	Commercial Sector ACT		
		ACT Subalt. 2a (Preferred); No ACT	ACT Subalt. 2b; ACT=90%(ACL)	ACT Subalt. 2c; ACT=80%(ACL)
Dolphin	850,676	N/A	765,608	680,541

Alternative 3 (Preferred). After the commercial ACL is met or projected to be met, all purchase and sale of dolphin is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4. If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage.

Recreational

Alternative 5. Specify recreational sector ACTs for dolphin, apply to recreational AM Alternatives 6-7.

Subalternative 5a. The recreational sector ACT equals 85% of the recreational sector ACL.

Subalternative 5b. The recreational sector ACT equals 75% of the recreational sector ACL.

Subalternative 5c (Preferred). The recreational sector ACT equals sector ACL[(1-PSE) or 0.5, whichever is greater] Council guidance in December was to use the 3-year average (7.0)

Table 4-39. Proportional Standard Errors (PSEs) for dolphin from numbers estimates (A+B1) for all modes.
Obtained from http://www.st.nmfs.noaa.gov on May 13, 2010.

Species	2003	2004	2005	2006	2007	2008	2009	3 year average (2007-09)	5 year average (2005-09)
Dolphin	7.2	6.4	10.2	6.3	6.7	7.1	7.1	7.0	7.5

Note: The Council decided to use the 3 year average PSE because this better represented recent catches than the 5 year average.

Table 4-40a. The recreational ACT for each of the alternatives. Values are in lbs whole weight.

Species	Preferred Recreational Sector ACL	Recreational Sector ACT		
		ACT Subalt. 5a; ACT=85%(ACL)	ACT Subalt. 5b; ACT=75%(ACL)	ACT Subalt. 5c; ACT equals sector ACL[(1-PSE) or 0.5, whichever is greater]
Dolphin	10,802,419	9,182,056	8,101,814	10,046,249

Alternative 6. For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the average landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running average.

Subalternative 6a. If the recreational sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternative 6b. If the recreational sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing year.

Subalternative 6c (Preferred). If the recreational sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the bag limit by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing year.

Alternative 7. The Regional Administrator shall publish a notice to close the recreational fishery when the ACL is projected to be met.

4.1.1.4.1 Biological Effects

Currently, there are only size limits, trip limits, and bag limits in place to restrict harvest of dolphin in the South Atlantic. There is no hard quota that would trigger the fishery to be closed once a certain level of harvest is reached. Implementing AMs would provide a mechanism to maintain harvest levels at or below the Council's choice of ACL or ACT for the fishery. As is the case for many fisheries, accurate in-season monitoring of ACTs and ACLs for the purposes of triggering AMs when needed can be very difficult for the recreational sector. The challenges associated with monitoring in-season harvest in recreational fisheries often leads to the utilization of projections that estimate the level of harvest at any given time; however, projections are not 100% accurate and can be highly variable if anomalous harvest events are recorded. To account for such variations created by environmental, biological, and human factors, without extreme reactive AMs the Council is considering using a three year running average of recreational landings that would be compared to the specified recreational ACL **(Alternative 6)**.

Overall, the most biologically conservative approach to specifying AMs for dolphin, would be to establish in-season and post-season AMs. By establishing both types of AMs, exceeding the ACL or ACT could be avoided, provided adequate in-season monitoring is possible, and an additional backstop would exist if the ACL or ACT should be exceeded despite the in-season controls.

Establishing an ACT **(Alternative 2)** for the commercial sector would be somewhat more straight-forward than for the recreational sector since all commercial landings of dolphin are reported through dealer trip tickets, which can be used to monitor in-season harvest. Therefore, projections of when the ACT would likely be met, or estimates of by how much an ACT is exceeded would be more reliable than for the recreational sector. A higher degree of harvest projection accuracy would reduce the risk of AMs being triggered too soon or too late. Under this action the most biologically beneficial ACT alternative for the commercial sector would be **Subalternative 2c**, which would create the largest buffer between the ACT and ACL. **Subalternative 2b** would result in greater biological benefits than **Subalternative 2a (Preferred)**, but fewer biological benefits when compared to **Subalternative 2c**. The least biologically beneficial ACT alternative would be **Subalternative 2a (Preferred)** since it would not establish a level of harvest lower than that of the ACL in order to trigger an AM to prevent ACL overages. **Alternative 3 (Preferred)** would remove the incentive to target dolphin on commercial trips since all purchase and sale would be prohibited once the ACL is met. This alternative would also still allow some level harvest, the bag limit, which may prevent an inordinate level of regulatory discards after the ACL has been harvested.

Alternative 4 would provide protection to the dolphin stock in the form of an ACL reduction following the year in which an ACL overage occurred. The ACL can be reduced by the approximate amount as that taken in excess the year before, and may serve to shorten the season if the lower ACL is met earlier in the year. A shortened season may result in increased regulatory discards of dolphin.

If the Council chose to pair **Alternative 5** with a recreational AM, it could serve to reduce the risk of the ACL being exceeded. **Subalternatives 5a, 5b, and 5c (Preferred)** would establish an ACT as an actual harvest level that presumably once exceeded would trigger an AM as intended under NS 1 guidelines. **Subalternative 5a** would set an ACT that is 85% of the ACL; whereas, under **Subalternative 5b**, the ACT would be 75% of the ACL. **Subalternative 5c** could have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or the percent standard error from the recreational fishery, whichever is greater. The lower the value of the PSE (percent standard error) the more reliable the landings data would be considered to be. A PSE of 7 for dolphin is fairly low and suggests little variability in the data. By using PSE in **Subalternative 5c** more precaution is taken in the estimate of the ACL with increasing variability and uncertainty in the landings data. **Subalternatives 5a, 5b, and 5c (Preferred)** would hedge against an ACL overage because the AM would be triggered at a level lower that than that of the ACL, and therefore provide a buffer between the ACT and ACL and help account for management uncertainty. Establishing an ACT below the recreational ACL would also reduce the need to close or implement post season AMs that are meant to correct for an ACL overage.

Alternative 6 would compare the ACL to average landings over a series of three years. As a result, anomalies such as spikes or troughs in recreational landings would be accounted for under **Subalternatives 6a-c**. Using an average also helps to account for data uncertainties that exist in the recreational landings data, and could prevent unnecessary AMs from being triggered. **Subalternative 6a** would reduce the next year's ACL by the amount of the previous year's overage, in essence shortening the season to correct for past excess harvest. Under this alternative there is no guarantee that the reduced ACL or ACT would not be exceeded too; therefore, it may not significantly reduce the risk of overfishing from year to year. If the ACL, reduced or not, is continually exceeded, additional AMs may need to be implemented to reduce harvest. The NS 1 Guidelines states that ''if catch exceeds the ACL for a given stock or stock complex more than once in the last 4 years, the system of ACLs and AMs should be reevaluated, and modified if necessary, to improve its performance and effectiveness.'' Amendment 17B followed this guidance for performance measures with an action to update the framework procedure to allow for adjustments to OFL, ABC, and ACL based on SEDAR reports or other new information. Under the updated framework procedure, the SSC would examine the social and economic impact analyses for a specific allocation, ACL, ACT, AM, quota, bag limit, or other fishing restriction. If it was determined by the Council and its SSC that the management measures in place are not constraining catch to a target level, adjustments could be made through a future regulatory amendment.

Subalternative 6b provides the Regional Administrator greater latitude in the amount of time the fishing season would be reduced, and thus could prove to be more biologically beneficial for dolphin since harvest could potentially be reduced more than under **Subalternative 6a**.

However, the shorter the fishing season is, the greater the regulatory discards would be. Allowing some harvest, such as a reduced bag limit, may decrease the magnitude of regulatory discards of dolphin during a shortened fishing season. **Subalternative 6c (Preferred)** would reduce the bag limit the year following an ACL overage. Because the bag limit is currently 10 per person per day, it would be highly unlikely that the bag limit would ever be reduced to zero. Therefore, it can be assumed that, barring any extreme environmental or human event, harvest at some level would be allowed for the recreational sector. Allowing even a small bag limit to be retained could reduce the magnitude of regulatory discards, while still correcting for the previous year's ACL overage. **Subalternative 6c (Preferred)** is the most biologically beneficial recreational AM alternative considered for South Atlantic dolphin.

Alternative 7 would require in-season monitoring to project when the recreational ACL is going to be met. As mentioned previously, there is currently no real-time reporting mechanism for the recreational fishery; therefore, a lag time between when the fish are harvested and when those landings are reported and made accessible in the MRFSS database could cause the ACL to be met or exceeded before fishery managers become aware of the overage. The potential for repeated ACL overages makes this alternative one of the least biologically beneficial of all the recreational AM alternatives considered. In-season recreational closures have been considered for other species that are overfished in order to allow stock rebuilding to continue without pause. Dolphin is not considered to be overfished or experiencing overfishing.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin component of the coastal migratory pelagics fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-7** and the associated sub-alternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-7** and the associated sub-alternatives are unclear. If they perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.1.1.4.2 Economic Effects

Commercial Fishery

Subalternative 2a would provide the largest short-term economic benefits to the commercial fishery in that it would provide the largest amount of landings that could be taken. However, if there is uncertainty as to how well the ACT can be tracked, **Subalternatives 2b and 2c** may be more economically beneficial in that they provide a buffer. **Preferred Alternative 3** could result in interruption in the market supply and eliminate customers if closures occurred early in the season. **Alternative 4** would take any overage off of the following year's ACL and help maintain long-term economic benefits. Together, **Preferred Alternatives 3 and Alternative 4** are expected to provide positive long-term economic benefits.

The setting of AMs or ACTs for dolphin can have significant direct and indirect effects on the social environment as they usually impose some restriction on harvest. The long-term effects should be beneficial as they provide protection from further negative impacts on the stock. While the negative effects are usually short term, they may at times induce other indirect effects through changes in fishing behavior or business operations that could have long term social effects.

4.1.1.4.3 Social Effects

The setting of Accountability Measures or Annual Catch Targets for dolphin can have significant direct and indirect effects on the social environment as they usually impose some restriction on harvest. The long-term effects should be beneficial as they provide protection from further negative impacts on the stock. While the negative effects are usually short term, they may at times induce other indirect effects through changes in fishing behavior or business operations that could have long-term social effects. **Alternative 1 (No Action)** may have few short-term social impacts as it would not impose further restrictions on harvest for either sector relying on existing AMs. **Preferred Subalternative 2a** would be less restrictive than **Subalternatives 2b or 2c** and therefore there is an increasing possibility of negative short-term social effects going from **Subalternative 2a to 2c,** although only for the commercial sector. The payback that is implemented in **Alternative 4** would further assist with rebuilding where **Preferred Alternative 3** would not. The payback provision does allow for accountability in **Alternative 4** as overages will be compensated for with reductions in the following season in the commercial sector. For the recreational sector the similar **Subalternatives 5a through Preferred 5c** would impose a more restrictive buffer, respectively. **Alternative 6** would impose post season AMs for the recreational sector with **Preferred Subalternative 6c** reducing the bag limit the next year adding some payback. **Alternative 7** would impose accountability measures with no payback provision.

4.1.1.4.4 Administrative Effects

Alternative 1 (No Action) would not produce near-term administrative impacts. However, this alternative would not comply with Reauthorized Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. Administrative

impacts of **Alternatives 5-7** would be greatest relative to the commercial AMs proposed (**Alternatives 2-4**), since recreational landings would need to be monitored on a continuing basis. Tracking recreational landings is difficult because there is a delay in the availability of recreational data, and the data can be highly variable. Therefore, tracking recreational landings, using the proposed multiple year landings averages, and subsequent AM implementation coordination would create a moderate burden on the administrative environment.

Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status-quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternatives 5-7** would require tracking the commercial and recreational landings every year, which would be averaged over three years on a continuous basis. The tracking of recreational landings can be challenging and would likely impose a burden on the administrative environment. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.1.1.4.5 Council Conclusions

4.1.1.5 Action 20: Establish Management Measures for Dolphin

Note: The Council's preferred recreational ACT does not require a reduction based on 2005-2009 average recreational catch; in fact, the average catch (2005-09) is 2% below the ACT (**Table 4-40b**). The commercial sector will be closed when the commercial ACL is met or projected to be met.

Alternative 1 (No Action). Retain current management regulations.

- Sale of recreationally caught dolphin in or from the Atlantic EEZ prohibited. For-hire vessels possessing the necessary state and Federal commercial permits can sell dolphin harvested under the bag limit in or from the Atlantic EEZ.
- Commercial soft cap of 1.5 million pounds or 13% of total landings, whichever is greater.
- Recreational daily bag limit of 10 dolphin per person per day in or from the EEZ not to exceed 60 dolphin per boat per day whichever is less. Bag limit of 10 dolphin per paying passenger on headboats.
- Minimum size limit for dolphin of 20 inches fork length off Florida and Georgia, and no minimum size limit north of Georgia. Note: Florida regulations require a minimum size limit of 20 inches fork length; a 10 fish per person bag limit with a 60 fish boat limit; and a saltwater products license, a restricted species endorsement, and a federal commercial vessel permit to sell dolphin, exceed the10-fish bag limit, or exceed 60 per vessel per day statewide.
- Vessel permits and operator permits are required for commercial and for-hire sectors.

Alternative 2 (Preferred). Prohibit bag limit sales of dolphin from for-hire vessels.
Note: It is the Council's intent that if a for-hire vessel has a commercial permit, they would be allowed to sell their catch only when they are not operating under a for-hire mode.

Alternative 3 (Preferred). Establish a minimum size limit of 20 inches fork length off South Carolina.

Alternative 4. Establish a minimum size limit of 20 inches fork length from Florida through New England.

Alternative 5. Increase the minimum size limit in Florida and Georgia to 22 inches or 24 inches fork length.

Alternative 6. Reduce the boat limit (e.g. reduce by 1/3). Note: this applies only to charterboats and recreational vessels, not headboats.

Subalternative 6a. Reduce the boat limit by 25%.
Subalternative 6b. Reduce the boat limit by 33%.
Subalternative 6c. Reduce the boat limit by 50%.

Table 4-40b. Dolphin OFL, ABC, ACL, ACT alternatives with the required recreational reductions.

						Formula	%Recreational Reduction from various time periods			
Dolpin	**OFL**	**ABC**	**ACL=OY=85%ABC**	**Com ACL(7.3%)**	**Rec ACL(92.7%)**	**Rec ACT**	**PH Avg**	**2005-09**	**2006-09**	**2004-09**
Preferred SAFMC	13,709,523	13,709,523	11,653,095	850,676	10,802,419	10,046,249	-3%	-2%	-2%	-3%
Preferred & Rec ACL	13,709,523	11,653,095	9,905,130	723,075	9,182,056		5%	7%	6%	6%
GMFMC Tier 3a*	16,743,471	15,415,524	13,103,195	956,533	12,146,662	11,296,396	-16%	-14%	-15%	-16%
Mean + 1.0 Std.Dev.		14,087,576	11,974,440	874,134	11,100,306	10,323,284	-6%	-4%	-5%	-6%
Mean + 0.5 Std.Dev.		12,759,629	10,845,685	791,735	10,053,950	9,350,173	4%	5%	5%	4%
Mean		11,431,682	9,716,929	709,336	9,007,593	8,377,062	14%	15%	15%	14%
*GMFMC Tier 3a OFL = mean + 2.0 Std.Dev.; ABC = mean + 1.5 Std.Dev.										
IPT recommends using 2005-09 average.										

Alternative 7. Consider a series of trip limits for the commercial fishery (e.g., 4,000 pounds with alternatives higher and lower).

Subalternative 7a. Establish a 3,000 pound trip limit for dolphin north of 31° N. Latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia) in the EEZ southward through the SAFMC's area of jurisdiction for dolphin (landed head and tail intact) with no transfer at sea allowed.

Subalternative 7b. Establish a 5,000 pound trip limit.

Subalternative 7c. Establish a 4,000 pound trip limit.

Subalternative 7d. Establish a 3,000 pound trip limit.

Subalternative 7e. Establish a 2,000 pound trip limit.

Subalternative 7f. Establish a 1,000 pound trip limit.

Alternative 8. Reduce the recreational bag limit to 9 dolphin per person .

4.1.1.5.1 Biological Effects

Alternative 1 (No Action) would retain the current regulations for dolphin. These regulations include: A "soft cap" on the commercial sector, which requires a review of the data and a determination whether action is necessary but does not close the fishery; a prohibition on the sale of recreationally caught dolphin in or from the Atlantic exclusive economic zone (EEZ) except for for-hire vessels that possess the necessary state and Federal commercial permits; a 10 fish per day bag limit for dolphin, which cannot exceed 60 dolphin per boat per day, except on headboats; and a 20 inch fork length minimum size limit off Florida and Georgia. There is no minimum size limit north of Georgia.

Prager (2000) conducted the first comprehensive exploratory stock assessment for dolphin based on landings from the U.S. Atlantic and Gulf of Mexico. In the South Atlantic, dolphin is not overfished and is not experiencing overfishing. Dolphin grow very rapidly attaining 40 pounds in 12 months and reach sexual maturity by 3 to 4 months of age. They spawn intermittently year-round throughout their 4-year life span. The life history of dolphin and estimates generated by Prager (2000) suggest the species may be able to withstand a relatively high rate of exploitation.

Although dolphin is neither overfished nor experiencing overfishing, reductions in harvest of dolphin may be needed to ensure the OFL is not exceeded. The Council's Scientific and Statistical Committee has specified an overfishing limit (OFL) of 11,882,898 lbs whole weight. This value is greater than the average commercial and recreational catch during 1999-2009 (**Table 4-41**). The Council's Preferred ABC control rule would set ABC = 85%OFL and would equal 10,100,463 lbs whole weight. Using the Council's Preferred ABC control rule, the preferred alternative for ACL would be 10,100,463 with 808,037 pounds whole weight allocated to the commercial sector and 9,292,426 pounds whole weight allocated to the recreational sector (**Section 4.4.1.1**). Based on average data from 1999-2009, the commercial ACL would be met and a commercial closure would occur. For the recreational sector, an 11% reduction in average 1999-2009 recreational landings would be needed to ensure the recreational ACT was not exceeded.

This table and analyses will be updated with new data.

Table 4-41. Commercial and recreational landings of dolphin in the Atlantic (New England to east Florida during 1999-2009.

Year	Total Comm	*Headboat	MRFSS Total	Total
1999	1,049,678	49,796	10,076,034	11,175,508
2000	990,723	69,888	13,068,113	14,128,724
2001	779,269	72,524	13,607,058	14,458,851
2002	746,458	39,236	11,314,090	12,099,784
2003	748,195	16,546	8,948,533	9,713,274
2004	821,765	26,973	7,303,410	8,152,148
2005	584,053	23,658	9,389,766	9,997,477
2006	645,615	25,903	9,518,059	10,189,577
2007	979,508	47,494	10,422,491	11,449,493
2008	835,406	12,825	8,234,566	9,082,797
2009	803,572	0	4,528,259	5,331,831
Avg.	816,749	34,986	9,673,671	10,525,406

*Headboat South Atlantic only. Data for 2009 are incomplete.

Accountability measures under **Action 19** include alternatives such as closing the fishery when landings approach an ACL to ensure overfishing does not occur. The Council is considering additional management measures in this section that would reduce the chance ACLs are exceeded and perhaps prevent seasonal closures of the fishery.

Alternatives 2-8 would all be expected to have positive biological effects. **Alternative 2** would prohibit bag limit sales of dolphin from for-hire vessels. Currently, for-hire fishermen who possess the necessary state and Federal permits can sell bag limit quantities of dolphin. With the possibility of more restrictive catch limits for dolphin being imposed on recreational and commercial fishermen, the Council is concerned that when for-hire fishermen sell their catch to dealers, catch will be counted toward the commercial quota resulting in early filling of commercial ACL. In addition, sales of bag limit fish may result in double counting if catches are reported through the Marine Recreational Fisheries Statistics Survey and through commercial dealers. Therefore, the Council is considering alternatives to prohibit the sale of bag limit caught dolphin. The intent of this action is to ensure regulations are fair and equitable, fish harvested by the recreational sector are not counted toward commercial quotas, and total landings data are accurate.

Alternative 3 would establish a minimum size limit of 20 inches FL off South Carolina. The current minimum size limit is 20 inches fork length off of Florida and Georgia but there is not a minimum size limit north of Georgia. Among sectors, the average size of dolphin landed by state is smallest for headboat fishermen. Among states, the average size of dolphin landed is largest for South Carolina. Length data are not available for all sectors north of North Carolina (**Table 4-42**)

Table 4-42. Average size (inches FL) of dolphin landed by state during 2004-2008.

State	Comm	HB	Private	Charter
FL	28.2	23.4	26.6	26.8
GA*	28.9	28.2	-	26.6
SC	33.7	27.5	31.0	32.0
NC	27.9	24.1	28.4	29.1
VA	-	-	-	25.4
MD	-	-	33.2	22.5
DE	-	-	21.7	26.3
NJ	-	-	18.4	22.5
NY	-	-	22.8	-

*GA data are confidential for HB. GA are expressed as GA and North Florida for headboat.

A small percentage of dolphin less than 20 inches FL are landed in SC (**Table 4-43**). Based on the proportion of landings in the different sectors, establishing a 20 inch FL minimum size limit for dolphin landed in South Carolina would be expected to reduce total harvest of dolphin by 1.4%. The overall reduction in total kill would be less when release mortality is considered. There are currently no estimates of release mortality for dolphin. However, since dolphin are caught at the surface release mortality would likely be low and a function of hooking injuries and effects of handling when removing the hook.

Table 4-43. Percentage of dolphin less than 20 inches FL for Florida, Georgia, South Carolina, and North Carolina during 2004-2008.
Length data are not available for areas north of North Carolina.

State	Comm	HB	Private	Charter
FL	3.06%	14.04%	7.24%	5.37%
GA*	0.00%	0.00%	0.00%	5.26%
SC	1.07%	8.70%	0.00%	5.06%
NC	10.87%	16.07%	3.96%	2.85%
total	5.66%	13.19%	6.07%	3.26%

*GA data are confidential for HB. GA are expressed as GA and North Florida for headboat.

Alternative 4 would increase the minimum size limit for Florida through New England to 20 inches FL. Data are not available for areas north of North Carolina and a 20 inch FL size limit is already in place for Florida and Georgia. Establishing a 20 inch FL size limit for dolphin in South Carolina and North Carolina would be expected to reduce harvest of dolphin by about 5% (**Table 4-43a**). A minimum size limit of 21 inched FL would provide about a 14% reduction in harvest and would provide slightly more than the 11% reduction in harvest needed to ensure the recreational ACT is not exceeded.

Table 4-43a. Reduction in harvest provided by establishing a minimum size limit in South Carolina and North Carolina of 20 inches FL or greater based on data from 2004-2008.

Sector	20 inch limit	21 inch limit	22 inch limit	23 inch limit	24 inch limit
Comm	11.23	15.78	20.69	25.53	28.66
Headboat	15.11	21.58	25.90	30.22	33.09
Private	5.84	14.81	21.69	31.56	34.55
Charter	4.56	10.85	17.13	27.73	32.73
All sectors	5.39	14.11	21.43	32.98	37.98
Rec sector	4.98	12.03	18.46	28.82	33.25

Alternative 5 would increase the minimum size limit in Florida and Georgia to 22 inches or 24 inches fork length. Among all sectors combined, an increase in the minimum size limit from 20 inches FL to 22 inches FL would be expected to reduce harvest by about 17% (**Table 4-43b**) and would provide more than the 11% reduction in harvest needed to ensure the recreational ACT would not be exceeded. This value assumes the same amount of non-compliance with the size limit would continue with a change in the minimum size limit. Increasing the minimum size limit to 24 inches FL would be expected to provide a 35% reduction in harvest among all sectors off of FL and GA and therefore would have a greater biological effect than increasing the size limit to 22 inches FL.

Table 4-43b. Reduction in harvest provided by increasing the minimum size limit in Florida and Georgia from 20 inches FL based on data from 2004-2008.
Analyses take into consideration non-compliance with the 20 inch FL minimum size limit.

Sector	21 inch limit	22 inch limit	23 inch limit	24 inch limit
Comm	5.43	12.05	18.83	24.74
Headboat	9.88	19.73	28.38	36.31
Private	7.94	17.24	26.37	35.97
Charter	7.96	17.01	26.49	36.13
All sectors	7.72	16.75	25.70	34.96
Rec sector	7.94	17.19	26.35	35.94

Alternative 6 would reduce the boat limit for private and charter recreational fishermen from a maximum of 60 fish per vessel to a maximum of 45 fish per vessel in **Subalternative 6a**, 40 fish per vessel in **Subalternative 6b**, and 30 fish in **Subalternative 6c**. Proposed reductions in the vessel limit would reduce harvest of dolphin by 6% to 18% (**Table 4-44**).

Table 4-44. Reduction in harvest of dolphin for Atlantic states provided by a reduction in the vessel limit.

	Charter	Private	All
Vessel limit	**Reduction**	**Reduction**	**Reduction**
50	3.88	0	3.14
45	7.39	0	5.99
40	10.85	0	8.80
35	16.91	0.12	13.74
30	22.4	0.4	18.24
25	29.67	1.06	24.27
20	37.4	2.29	30.77
15	46.94	4.57	38.94
10	57.73	9.29	48.58
9	60.54	11.24	51.23
8	63.29	13.41	53.87
7	66.31	16.2	56.84
6	69.5	19.68	60.09
5	72.99	24.09	63.76
4	76.78	29.68	67.88
3	81.07	37.06	72.76
2	86.04	48	78.86
1	92.01	65.68	87.03

Alternative 7 would establish a commercial trip limit for dolphin. **Subalternative 7a** would establish a 3,000 pound trip limit for dolphin north of 31° N. latitude and a 1,000 pound trip limit for dolphin south of 31° N. Latitude (between Jekyll Island and Little Cumberland Island, Georgia). A 3,000 pound gutted weight trip limit would be expected to reduce harvest north of 31° N. latitude by about 3.6% (**Table 4-45**), and a 1,000 pound gutted weight trip limit would reduce harvest of dolphin by about 31% for areas south of 31° N. Latitude (**Table 4-46**). **Subalternatives 7b-7f** would establish a trip limit for dolphin throughout the South Atlantic ranging from 5,000 pounds gutted weight (**Subalternative 7b**) to 1,000 pounds (**Subalternative 7f**). The trip limit of 5,000 pounds gutted weight proposed in **Subalternative 7b** would do little to reduce harvest of dolphin (**Table 4-47**). The greatest biological effect among the trip limit sub-alternatives would be provided by **Subalternative 7f**, which would be expected to provide a 26% reduction in dolphin harvest for all areas.

Table 4-45. Estimated reduction in commercial harvest from trip limit. Based on data from Georgia, South Carolina, and North Carolina (North of 31°N) for 2005-2008.

Trip Limit (lbs gutted weight)	Avg no. trips	Avg pounds over limit	Expected catch	% trips over limit	% reduction in catch from limit
0	848.0	85,522	0	100.0%	100.0%
23	463.5	69,152	16,370	54.7%	80.9%
45	299.0	59,948	25,574	35.3%	70.1%
68	223.8	53,516	32,006	26.4%	62.6%
90	171.0	48,614	36,908	20.2%	56.8%
104	147.0	46,235	39,286	17.3%	54.1%
135	109.0	41,730	43,791	12.9%	48.8%
158	98.3	39,140	46,382	11.6%	45.8%
180	82.3	36,899	48,623	9.7%	43.1%
225	61.5	33,389	52,133	7.3%	39.0%
270	46.5	30,780	54,742	5.5%	36.0%
450	21.0	24,192	61,330	2.5%	28.3%
541	17.3	22,275	63,246	2.0%	26.0%
631	13.8	20,736	64,786	1.6%	24.2%
721	13.3	19,382	66,139	1.6%	22.7%
811	11.5	18,136	67,386	1.4%	21.2%
901	11.0	17,029	68,492	1.3%	19.9%
991	10.5	15,968	69,554	1.2%	18.7%
1,081	9.5	14,967	70,554	1.1%	17.5%
1,171	9.3	14,040	71,482	1.1%	16.4%
1,261	9.0	13,127	72,395	1.1%	15.3%
1,351	8.8	12,249	73,273	1.0%	14.3%
1,441	8.3	11,389	74,133	1.0%	13.3%
1,532	7.5	10,618	74,904	0.9%	12.4%
1,622	7.3	9,884	75,638	0.9%	11.6%
1,712	6.3	9,227	76,295	0.7%	10.8%
1,802	6.0	8,623	76,899	0.7%	10.1%
2,027	5.3	7,173	78,349	0.6%	8.4%
2,252	4.5	5,985	79,537	0.5%	7.0%
2,477	4.0	4,921	80,601	0.5%	5.8%
2,703	3.8	3,928	81,594	0.4%	4.6%
2,928	3.5	3,049	82,472	0.4%	3.6%
3,153	1.8	2,319	83,202	0.2%	2.7%
3,378	1.8	1,882	83,640	0.2%	2.2%
3,604	1.3	1,510	84,012	0.1%	1.8%
3,829	1.3	1,197	84,325	0.1%	1.4%
4,054	1.0	892	84,630	0.1%	1.0%
4,279	1.0	642	84,880	0.1%	0.8%
4,505	0.8	412	85,110	0.1%	0.5%
4,730	0.5	250	85,272	0.1%	0.3%
4,955	0.5	125	85,397	0.1%	0.1%

Table 4-46. Estimated reduction in commercial harvest from trip limit. Based on data from east Florida (South of 31°N) for 2005-2008.

Trip Limit (lbs gutted weight)	Avg no. trips	Avg pounds over limit	Expected catch	% trips over limit	% reduction in catch from limit
0	1,308.3	137,484	0	100.0%	100.0%
23	681.3	112,830	24,654	52.1%	82.1%
45	453.5	99,069	38,415	34.7%	72.1%
68	337.3	89,253	48,231	25.8%	64.9%
90	261.3	81,811	55,673	20.0%	59.5%
104	225.8	78,160	59,324	17.3%	56.9%
135	161.5	71,555	65,929	12.3%	52.0%
158	138.5	67,785	69,699	10.6%	49.3%
180	110.8	64,691	72,793	8.5%	47.1%
225	79.3	59,947	77,537	6.1%	43.6%
270	60.8	56,504	80,980	4.6%	41.1%
450	20.0	49,172	88,312	1.5%	35.8%
541	15.0	47,439	90,046	1.1%	34.5%
631	12.5	46,088	91,396	1.0%	33.5%
721	10.8	44,921	92,563	0.8%	32.7%
811	9.8	43,900	93,584	0.7%	31.9%
901	8.0	43,011	94,474	0.6%	31.3%
991	8.0	42,211	95,274	0.6%	30.7%
1,081	7.5	41,417	96,068	0.6%	30.1%
1,171	7.5	40,667	96,818	0.6%	29.6%
1,261	7.5	39,917	97,568	0.6%	29.0%
1,351	7.3	39,191	98,294	0.6%	28.5%
1,441	7.0	38,475	99,010	0.5%	28.0%
1,532	6.8	37,780	99,705	0.5%	27.5%
1,622	6.8	37,105	100,380	0.5%	27.0%
1,712	6.5	36,450	101,034	0.5%	26.5%
1,802	6.3	35,820	101,664	0.5%	26.1%
2,027	5.8	34,363	103,121	0.4%	25.0%
2,252	5.5	32,947	104,537	0.4%	24.0%
2,477	5.0	31,627	105,857	0.4%	23.0%
2,703	5.0	30,377	107,107	0.4%	22.1%
2,928	4.8	29,128	108,356	0.4%	21.2%
3,153	4.5	27,991	109,493	0.3%	20.4%
3,378	4.3	26,914	110,570	0.3%	19.6%
3,604	4.0	25,889	111,595	0.3%	18.8%
3,829	4.0	24,889	112,595	0.3%	18.1%
4,054	4.0	23,889	113,595	0.3%	17.4%
4,279	4.0	22,889	114,595	0.3%	16.6%
4,505	4.0	21,889	115,595	0.3%	15.9%
4,730	4.0	20,889	116,595	0.3%	15.2%
4,955	4.0	19,889	117,595	0.3%	14.5%

Table 4-47. Estimated reduction in commercial harvest from trip limit. Based on data from east FL to NC during 2005-2008.

Trip Limit (lbs gutted weight)	Avg no. trips	Avg pounds over limit	Expected catch	% trips over limit	% reduction in catch from limit
0	2,183.0	226,587	0	100.0%	100.0%
23	1,164.8	184,987	41,600	53.4%	81.6%
45	767.0	161,592	64,996	35.1%	71.3%
68	574.3	144,985	81,602	26.3%	64.0%
90	442.3	132,349	94,238	20.3%	58.4%
104	382.5	126,173	100,414	17.5%	55.7%
135	278.8	114,729	111,858	12.8%	50.6%
158	243.3	108,188	118,399	11.1%	47.7%
180	198.3	102,704	123,883	9.1%	45.3%
225	144.5	94,213	132,375	6.6%	41.6%
270	110.5	87,983	138,604	5.1%	38.8%
450	42.5	73,627	152,961	1.9%	32.5%
541	33.0	69,854	156,733	1.5%	30.8%
631	26.8	66,895	159,692	1.2%	29.5%
721	24.3	64,335	162,252	1.1%	28.4%
811	21.5	62,044	164,543	1.0%	27.4%
901	19.0	60,040	166,547	0.9%	26.5%
991	18.5	58,179	168,409	0.8%	25.7%
1,081	17.0	56,384	170,203	0.8%	24.9%
1,171	16.8	54,706	171,881	0.8%	24.1%
1,261	16.5	53,043	173,544	0.8%	23.4%
1,351	16.0	51,440	175,148	0.7%	22.7%
1,441	15.3	49,864	176,724	0.7%	22.0%
1,532	14.3	48,398	178,190	0.7%	21.4%
1,622	14.0	46,989	179,599	0.6%	20.7%
1,712	12.8	45,677	180,911	0.6%	20.2%
1,802	12.3	44,443	182,145	0.6%	19.6%
2,027	11.0	41,536	185,052	0.5%	18.3%
2,252	10.0	38,932	187,655	0.5%	17.2%
2,477	9.0	36,548	190,039	0.4%	16.1%
2,703	8.8	34,304	192,283	0.4%	15.1%
2,928	8.3	32,178	194,410	0.4%	14.2%
3,153	6.3	30,310	196,277	0.3%	13.4%
3,378	6.0	28,796	197,791	0.3%	12.7%
3,604	5.3	27,398	199,189	0.2%	12.1%
3,829	5.3	26,086	200,501	0.2%	11.5%
4,054	5.0	24,780	201,807	0.2%	10.9%
4,279	5.0	23,530	203,057	0.2%	10.4%
4,505	4.8	22,300	204,287	0.2%	9.8%
4,730	4.5	21,138	205,449	0.2%	9.3%
4,955	4.5	20,013	206,574	0.2%	8.8%

Alternative 8 would reduce the recreational bag limit to level that will provide the reduction in harvest needed to not exceed the recreational ACL. An 11% reduction in average 1999-2009 recreational landings would be needed to ensure the recreational ACT was not exceeded. In December the Council approved a motion for a bag limit of 9 dolphin per person but not as a preferred alternative. Based on data from the South Atlantic during 2007-2009 (**Table 4-48**), a 9 fish bag limit would reduce catches by 2%. The bag limit would have to be reduced to 5 dolphin per person to achieve the necessary reduction (**Table 4-48**). A higher bag limit would achieve the reduction needed if combined with a modification in the minimum size limit in **Alternatives 3 and 4.**

Table 4-48. Reduction in harvest of dolphin provided by reduction in the bag limit. Based on data from from NC to FL during 2007-2009.

Bag Limit	Headboat	Charter	Private	All sectors
10	0%	0%	0%	0.0%
9	0%	5%	1%	2.2%
8	0%	8%	2%	3.8%
7	0%	13%	3%	6.2%
6	1%	18%	5%	9.4%
5	1%	25%	7%	13.3%
4	2%	34%	11%	18.6%
3	4%	44%	17%	26.0%
2	7%	57%	26%	36.4%
1	15%	74%	45%	54.6%

In August 2009, the Dolphin Wahoo Advisory Panel (AP) recommended **Alternative 1 (No Action)** at this time because there is no problem identified that needs to be addressed. The AP recognized that this will need to be revisited once the Scientific and Statistical Committee presents their Overfishing Level (OFL) and Acceptable Biological Catch (ABC) recommendations.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin/wahoo fishery would not affect smalltooth sawfish or marine mammals and was not likely adversely affect *Acropora* species. **Alternatives 2-7** and the associated sub-alternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles from **Alternatives 2-7** and the associated sub-alternatives are unclear. If the management measures perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles will likely decrease, providing additional biological benefits to these species.

4.1.1.5.2 Economic Effects

Commercial Fishery

A smaller size limit would benefit the commercial fishery in the long-term but could have negative short-term economic effects since it would require some discarding and perhaps lower harvest levels in some areas. Biologically, while **Alternatives 3-5** all offer long-term economic benefits, **Alternative 5** is the most conservative and would therefore likely yield the largest long-term economic benefits in excess of the benefits expected under **Alternatives 3 and 4**. However, effects would differ by state and **Alternative 3** would result in negative short-term economic effects for South Carolina. **Alternative 4** would also have negative short-term economic effects for the Carolinas but larger negative short-term economic effects for Florida with **Alternative 5** having the largest short-term negative economic effects for Florida.

Alternative 7 proposes commercial trip limits. In general, smaller trip limits benefit smaller vessels and disadvantage larger vessels. While trip limits can be used to slow a derby fishery, they are not economically beneficial to vessels that typically catch larger average catches than the proposed trip limit. **Subalternative 7a** splits the trip limit by area and could result in a decrease in average landings of about 3,000 pounds (about $5,700 in ex-vessel revenue) north of 31^{o}N and 42,000 pounds (almost $80,000 in ex-vessel revenue) south of 31^{o}N based on the average number of pounds historically caught in excess of the proposed trip limits. In the same way, **Subalternatives 7b-7f** could result in average ex-vessel revenue losses of $38,000 to $110,000, respectively. The lower trip limits could result in long-term economic benefits to fishermen harvesting from a stock in danger of overfishing. However, if there is no concern regarding overfishing, trip limits would have negative short-term and long-term economic effects. **Alternative 8** would propose bag limits and a bag limit of 5 would have negative short-term economic impacts.

4.1.1.5.3 Social Effects

The effects on the social environment would depend upon the suite of management measures chosen by the council to include in the amendment. **Alternative 1 (No Action)** would likely induce few social effects. **Alternative 2** prohibiting bag limit sales of dolphin from for-hire vessels would likely have negative social effects on for-hire crew, at least in the short term. However, the lack of prohibiting sale could also have negative social effects as fish caught recreationally could be counted toward the commercial quota. Requiring a minimum size limit in South Carolina in **Alternative 3** may have some social effects north of Georgia as there is no size limit. **Alternative 4** may have similar social effects as it establishes the size limit from Florida through New England. These alternatives may be a viable means of meeting threshold criteria for reductions that may be implemented elsewhere in this amendment. The same is true for **Alternative 5** by establishing a more restrictive size limit. **Alternative 6** and its associated subalternatives would accomplish similar reductions for the charter sector with its decreasing boat limit moving from **Subalternatives 6a to 6c,** respectively. **Alternative 7** would accomplish similar reductions for the commercial sector with its decreasing trip limit moving from **Subalternatives 7b to 7f,** respectively. **Subalternative 7a** would split the trip limit near

Jekyll Island with a smaller 1,000 pound limit to the south and 3,000 lb trip limit to the north. **Alternative 8** would propose bag limits and a bag limit of 5 would have negative short-term social impacts.

4.1.1.5.4 Administrative Effects

Alternative 1 (No Action) would not add to management burden. **Alternatives 2- 7** would increase the administrative burden over the status-quo. The monitoring and documentation needed to track these changes can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. Especially since once the changes are specified, the administrative burden associated with monitoring and enforcement, and implementing the new measures would increase. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.1.1.5.5 Council Conclusions

4.1.2 Wahoo

Fishery Management Unit

The management unit is the population of wahoo (*Acanthocybium solandri*) from the U.S. South Atlantic, the Mid-Atlantic, and the New England coasts.

The Dolphin Wahoo FMP was implemented in 2004 and included the following:

1. Added Wahoo to the Fishery Management Unit and established MSY, OY, MFMT and MSST; dealer permits; vessel permits; operator permits; reporting requirements (ACCSP); framework procedure; allowable gear; gear prohibitions in HMS closed areas; EFH/EFH-HAPCs; and the fishing year as January 1 through December 31.
2. Prohibit sale of recreationally caught wahoo in or from the Atlantic.
3. Establish a commercial trip limit for wahoo (landed head and tail intact) of 500 pounds with no transfer at sea allowed.
4. Establish a recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ.

Maximum Sustainable Yield (MSY), Minimum Stock Size Threshold (MSST) and Maximum Fishing Mortality Threshold (MFMT)/Overfishing Level (OFL)

Maximum Sustainable Yield

The Councils have determined that the Maximum Sustainable Yield (MSY) proxy for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico is between 1.41 and 1.63 million pounds. There is no updated MSY estimate, and the SSC did not provide any new guidance on MSY. Therefore, the existing MSY proxy of 1.41 – 1.63 million pounds will remain until a SEDAR assessment is conducted.

Minimum Stock Size Threshold (MSST)

The Councils have determined that the Minimum Stock Size Threshold (MSST) for wahoo in the Atlantic, U.S. Caribbean, and Gulf of Mexico is defined as a ratio of current biomass ($B_{current}$) to biomass at MSY or (1-M)*B_{MSY}, where 1-M should never be less than 0.5. The stock would be overfished if current biomass ($B_{current}$) was less than MSST and would be recovered when current biomass was equal or greater than the biomass at MSY. There is no updated MSST estimate, and the SSC did not provide any new guidance on MSST. Therefore, the existing MSST will remain until a SEDAR assessment is conducted.

Overfishing Level (OFL)

The Scientific and Statistical Committee provided the following OFL at their April 2010 meeting: Since no MSY estimate is available for wahoo OFL was estimated from landings data (Atlantic coast landings data also obtained from the Dolphin-Wahoo FMP). Similar to dolphin, wahoo landings were thought to be impacted by economic trends as well as the 2004 regulations (for wahoo, 2-fish bag limit and a 500 lb trip limit). OFL (1,101,231 pounds) was determined as the median of landings for the period 1994-2003 (used the median instead of the mean since this was a longer time series than used for dolphin).

Currently, the Councils (South Atlantic, Mid-Atlantic and New England Councils) specified the following value for MFMT through the original Dolphin/Wahoo FMP:
A maximum fishing mortality threshold (MFMT) - In the Atlantic, U.S. Caribbean, and Gulf of Mexico overfishing for wahoo is defined as a fishing mortality rate (F) in excess of F_{MSY} ($F_{30\%Static\ SPR}$).

The SSC has provided a new value for MFMT which is now called the Overfishing Level (OFL) (**Table 4-49a**). The NMFS SEFSC has corrected and updated the 1994-1998 data used by the SSC. The Council reviewed the new data at their March 2011 meeting and accepted the new catch data as being the best available data (**Table 4-49b**). The Council also requested the SSC use the corrected and updated data to provide the OFL; using the new data and the SSC's methodology, results in the OFL = 1,202,939 pounds. The South Atlantic Council is withdrawing the MFMT for the Atlantic and replacing the value with the OFL = 1,202,939 lbs whole weight.

Table 4-49a. Wahoo landings (whole weight) used by the SSC in April 2010.

Year	Rec. Total	%Rec	Com. Total	%Com	Com. & Rec. Total
1994	814,588	90%	88,036	10%	902,624
1995	981,257	90%	109,506	10%	1,090,763
1996	844,014	91%	82,281	9%	926,295
1997	890,402	90%	93,857	10%	984,259
1998	949,035	92%	78,477	8%	1,027,512
1999	1,405,653	93%	99,159	7%	1,504,812
2000	1,083,721	94%	65,283	6%	1,149,004
2001	1,050,625	95%	61,073	5%	1,111,698
2002	1,244,854	95%	60,703	5%	1,305,557
2003	1,099,259	95%	60,720	5%	1,159,979
2004	950,112	94%	65,485	6%	1,015,597
2005	815,846	94%	47,744	6%	863,590
2006	763,145	95%	41,539	5%	804,684
2007	1,924,492	97%	59,558	3%	1,984,050
2008	631,525	94%	41,586	6%	673,111
SSC's OFL	= Median 1994-2003				1,101,231

Source: 1994-98 from Table 26 in Dolphin Wahoo FMP (SAFMC 2003); 1999-2008 from Dolphin Wahoo Decision Document.

Table 4-49b. Wahoo landings (whole weight) used by the SSC in April 2010.

Year	Rec. Total	%Rec	Com. Total	%Com	Com. & Rec. Total
1994	926,279	92%	84,966	8%	1,011,245
1995	1,109,907	91%	107,497	9%	1,217,404
1996	918,492	92%	83,288	8%	1,001,780
1997	1,055,915	92%	92,964	8%	1,148,879
1998	1,019,871	93%	77,964	7%	1,097,835
1999	1,559,673	94%	99,286	6%	1,658,959
2000	1,122,639	94%	65,834	6%	1,188,473
2001	1,159,384	95%	58,594	5%	1,217,978
2002	1,433,225	96%	58,560	4%	1,491,785
2003	1,251,164	96%	58,673	4%	1,309,837
2004	1,100,738	94%	65,118	6%	1,165,856
2005	852,671	95%	44,542	5%	897,213
2006	765,654	95%	39,824	5%	805,478
2007	2,041,154	97%	57,290	3%	2,098,444
2008	663,732	94%	40,525	6%	704,257
2009	792,687	95%	43,126	5%	835,813
SSC's OFL	**= Median 1994-2003**				1,202,939

The Council has requested the SSC consider the Gulf Control Rule which would use mean, mean + 0.5 to 2.0 times the SD. The SSC will meet April 5-7, 2011 in Charleston and will consider this request. Their action could change the OFL/ABC recommendation for wahoo (and dolphin).

4.1.2.1 Action 21: Establish an Acceptable Biological Catch (ABC) Control Rule and ABC for Wahoo

During their March 2011 meeting, the Council approved the following motion: For dolphin and wahoo, provide guidance to the SSC that based on biology and productivity and not overfishing/overfished status, the Council is comfortable using mean landings over the last 10 years + 1.0 standard deviation to set ABC.

Alternative 1 (No Action). Do not establish an ABC Control Rule for wahoo.

Alternative 2. Establish an ABC Control Rule where ABC equals OFL. OFL = 1,202,939 lbs whole weight.

Alternative 3. Adopt the SAFMC's SSC ABC Control Rule and set ABC equal to a percentage of OFL.

Subalternative 3a. ABC=65%OFL = 781,910 lbs whole weight.
Subalternative 3b. ABC=75%OFL = 902,204 lbs whole weight.
Subalternative 3c (Preferred). ABC=85%OFL = 1,022,498 lbs whole weight.

Alternative 4. Establish ABC based on the Gulf Council's ABC control rule.
Note: The Gulf Control Rule as applied to wahoo would likely be Tier 3a and would set the OFL = mean 10 years landings + 2 SD (OFL=1,994,417 lbs) and set the ABC = mean or mean + 0.5-1.5 SD (1,171,513 or 1,377,239 or 1,582,965 or 1,788,691 lbs).

4.1.2.1.1 Biological Effects

Alternative 1 (No Action) would not establish an acceptable biological catch (ABC) control rule for wahoo. For stock and stock complexes required to have an ABC, the National Standard 1 (NS 1) guidelines for the Reauthorized Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) state the ABC will be set on the basis of the ABC control rule. Therefore, **Alternative 1 (No Action)** would not meet the requirements of the Magnuson-Stevens Act.

Alternatives 2-4 would specify an ABC control rule for wahoo. Under **Alternative 2**, the ABC would be 1,101,231 lbs whole weight and would be equal to the OFL specified by the Council's Scientific and Statistical Committee (SSC) at their April 2010 meeting. OFL was determined as the median of landings for the period 1994-2008 based on landings in the FMP (**Table 4-49**).

The NS 1 guidelines recommend OFL be the upper bound of ABC, but ABC should usually be reduced from the OFL to account for scientific uncertainty in the estimate of OFL. Since there would be no buffer between ABC and OFL, the biological effect of **Alternative 2** would be less than **Alternatives 3-4**. **Preferred Alternative 3c** and would provide a greater buffer between OFL and ABC than **Alternatives 2 or 4** and would therefore have a greater biological effect.

Alternative 4 would specify an ABC control rule based on the Gulf Council SSC's ABC control rule (**Table 4-50**). As stated, **Alternative 4** would follow Tier 3a of the Gulf's Council SSC's ABC control rule. According to **Table 4-50** the ABC control described for Tier 3a would be used in situations where landings are small relative to stock biomass and recent historical landings are without trend. Tier 3a would be used for species where no assessment is available, but landings data exist, and the probability of exceeding the OFL in a given year can be approximated from the variance about the mean of recent landings to produce a buffer between the OFL and ABC.

For species where no assessment is available, but based on expert opinion recent landings levels could be unsustainable, the Gulf Council SSC suggests the use of Tier 3b, where ABC would be set as a portion of OFL. **Alternatives 2** and **3** (along with its subalternatives) capture the range of ABCs that provide a buffer between the ABC and OFL described in Tier 3b.

The Gulf Council will select a preferred alternative in February, 2011. Alternative 4, which is based on Tier 3a of the Gulf Council SSC's ABC control rule for unassessed species (**Table 4-50**) would result in a higher allowable catch (**Table 4-51**) than an ABC control rule based on South Atlantic Council SSC's control rule (**Alternatives 2 and 3**) and higher than the OFL specified by the South Atlantic Council's SSC, which is based on average landings from 1994-1997 (**Table 4-49**). Therefore, the biological effect of **Alternative 4** would likely be less than **Subalternative 3c (Preferred)**.

Table 4-50. Acceptable Biological Catch (ABC) Control Rule as accepted by the Gulf Council's SSC in January 2011 and accepted by the Gulf Council in February 2011.

Tier 1 Acceptable Biological Catch Control Rule	
Condition for Use	A quantitative assessment provides both an estimate of overfishing limit based on MSY or its proxy and a probability density function of overfishing limit that reflects scientific uncertainty. Specific components of scientific uncertainty can be evaluated through a risk determination table.
OFL	OFL = yield resulting from applying F_{MSY} or its proxy to estimated biomass.
ABC	The Council with advice from the SSC will set an appropriate level of risk (P*) using a risk determination table that calculates a P* based on the level of information and uncertainty in the stock assessment. ABC = yield at P*.
Tier 2 Acceptable Biological Catch Control Rule	
Condition for Use*	An assessment exists but does not provide an estimate of MSY or its proxy. Instead, the assessment provides a measure of overfishing limit based on alternative methodology. Additionally, a probability density function can be calculated to estimate scientific uncertainty in the model-derived overfishing limit measure. This density function can be used to approximate the probability of exceeding the overfishing limit, thus providing a buffer between the overfishing limit and acceptable biological catch.
OFL	An overfishing limit measure is available from alternative methodology.
ABC	Calculate a probability density function around the overfishing limit measure that accounts for scientific uncertainty. The buffer between the overfishing limit and acceptable biological catch will be based on that probability density function and the level of risk of exceeding the overfishing limit selected by the Council. e. Risk of exceeding OFL = 45% f. Risk of exceeding OFL = 35% g. Risk of exceeding OFL = 25% (default level for unassigned stocks) h. Risk of exceeding OFL = 15% Set ABC = OFL – buffer at risk of exceeding OFL
Tier 3a Acceptable Biological Catch Control Rule	
Condition for Use*	No assessment is available, but landings data exist. The probability of exceeding the overfishing limit in a given year can be approximated from the variance about the mean of recent landings to produce a buffer between the overfishing limit and acceptable biological catch. Based on expert evaluation of the best scientific information available, recent historical landings are without trend, landings are small relative to stock biomass, or the stock is unlikely to undergo overfishing if future landings are equal to or moderately higher than the mean of recent landings. For stock complexes, the determination of whether a stock complex is in Tier 3a or 3b will be made using all the information available, including stock specific catch trends.
OFL	Set the overfishing limit equal to the mean of recent landings plus two standard deviations. A time series of at least ten years is recommended to compute the mean of recent landings, but a different number of years may be used to attain a representative level of variance in the landings.
ABC	Set acceptable biological catch using a buffer from the overfishing limit that represents an acceptable level of risk due to scientific uncertainty. The buffer will be predetermined for each stock or stock complex by the Council with advice from the SSC as: i. ABC = mean of the landings plus 1.5 * standard deviation (risk of exceeding OFL = 31%) j. ABC = mean of the landings plus 1.0 * standard deviation (default) (risk of exceeding OFL = 16%) k. ABC = mean of the landings plus 0.5 * standard deviation (risk of exceeding OFL = 7%) l. ABC = mean of the landings (risk of exceeding OFL = 2.3%)
Tier 3b Acceptable Biological Catch Control Rule	
Condition for Use*	No assessment is available, but landings data exist. Based on expert evaluation of the best scientific information available, recent landings may be unsustainable.
OFL	Set the overfishing limit equal to the mean of landings. A time series of at least ten years is recommended to compute the mean of recent landings, but a different number of years may be used to attain a representative level of variance in the landings.
ABC	Set acceptable biological catch using a buffer from the overfishing limit that represents an acceptable level of risk due to scientific uncertainty. The buffer will be predetermined for each stock or stock complex by the Council with advice from its SSC as: m. ABC = 100% of OFL n. ABC = 85% of OFL o. ABC = 75% of OFL (default level for unassigned stocks) p. ABC = 65% of OFL

*Changes in the trend of a stock's landings or a stock complex's landings in three consecutive years shall trigger a reevaluation of their acceptable biological catch control rule determination under Tiers 2, 3a, or 3b.

Note: There may be situations in which reliable landings estimates do not exist for a given data-poor stock. The approach and methodology for setting OFL and ABC will be determined on a case-by-case basis, based on expert opinion and the best scientific information available.

Table 4-51. ABC for wahoo (pounds) based on the mean and mean plus 0.5, 1.0, and 1.5 standard deviations above mean landings during 2000-2009. Note: OFL = mean + 2SD = 1,994,417 pounds.

Mean	Mean + 0.5 SD	Mean + 1 SD	Mean + 1.5 SD
1,171,513	1,377,239	1,582,965	1,788,691

Establishing an Acceptable Biological Catch (ABC) control rule for wahoo would not directly affect the protected species because these parameters are not used in determining immediate harvest objectives. Future specific management actions based on the ABC control rule may affect protected species. The biological effects to protected species from future management actions will be evaluated as they are developed.

4.1.2.1.2 Economic Effects

In general, the higher the ABC, the higher the commercial quota. Subsequently, a higher quota means higher short-term economic benefits and lower long-term economic benefits. **Alternative 2** proposes the largest ABC level and is therefore expected to produce the highest short-term economic benefits. Among the **Alternative 3** subalternatives, **Subalternative 3a** offers the lowest ABC and the lowest short-term economic benefits. While **Subalternative 3a** proposes the smallest ABC level and the largest buffer between OFL and ABC, it also offers the greatest long-term economic benefits. **Subalternative 3c** proposes the largest short-term economic benefits of the **Alternative 3** subalternatives. **Alternative 4** would offer lower long-term benefits as subalternatives under **Alternative 3**.

4.1.2.1.3 Social Effects

As with the previous action, setting of the biological parameters for harvest thresholds have few direct social effects as the effects are more indirect from the implementation of the allowable biological catch and any subsequent reduction. **Alternative 1 (No Action)** does not establish an ABC control rule for wahoo and ABC would need to be set in some other manner. Certainly, the more risk averse a control rule or threshold is, the more chances of negative social effects accruing in the short term if harvest is reduced. **Alternative 2** is not as risk averse as other alternatives as there would be no reduction from the OFL. With the ABC equal to the OFL, there is more of a chance that fluctuations in the stock will occur inducing management and rebuilding which might cause more volatility in the fishery. **Alternative 3** would be the most restrictive and places a less restrictive threshold moving from **Subalternative 3a to Preferred 3c**. Using the Gulf Council's SSC recommendations in **Alternative 4** would be less restrictive than **Alternative 3** and its subalternatives. However, the combined effect of any of the reductions in harvest levels is difficult to assess without knowing how other actions may affect the final threshold. Certainly for those alternatives that are the most restrictive the potential of negative social effects, both short term and long term, becomes more likely even though there may be long term biological benefit.

4.1.2.1.4 Administrative Effects

The establishment of an ABC Control Rule is a procedural exercise. The rule is established by the Council's SSC for consideration by the Council. Although the control rule can have implications on management actions, no specific management actions are required through the

specification of the control rule. The administrative impacts of establishing a control rule are minimal and would not differ much between the proposed alternatives.

4.1.2.1.5 Council Conclusions

4.1.2.2 Action 22: Specify Allocations for Wahoo

[Note: When considering two sectors (Commercial and Recreational), the Recreational sector includes private recreational (shore/rental boats and charter boats), as well as headboats. When considering three sectors (Commercial, Recreational, and For-hire), the Recreational sector includes only private recreational (shore/rental boats) and for-hire includes headboats and charter boats.]

Note: Using the new landings data to calculate allocations based on the Council's formula results in no change to Alternative 2 but it does change Alternatives 3 & 4. Alternative 3 percentages go from 5% to 4.3% commercial and from 95% to 95.7% recreational. Alternative 4 percentages go from 4.7% to 4.3% commercial, from 0.49% to 29.1% for-hire, and from 94.9% to 66.6% private.

Alternative 1 (No Action). Do not define allocations for wahoo.

Alternative 2. Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on landings from the years 2006-2008. The allocation would be 4% commercial and 96% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

Alternative 3 (Preferred). Define allocations for wahoo based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector:

> Sector apportionment = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 4.3% commercial and 95.7% recreational. The commercial and recreational allocation specified for 2011 would remain in effect beyond 2011 until modified.

IPT Recommendation: Delete last sentence because new data are presented by sector.

Alternative 4. Define allocations for dolphin based upon landings from the ALS, MRFSS, and headboat databases. The allocation would be based on the following formula for each sector: Sector apportionment = (50% * average of long catch range (lbs) 1999-2008) + (50% * average of recent catch trend (lbs) 2006-2008). The allocation would be 4.3% commercial, 29.1% for-hire, and 66.6% private recreational. The commercial, for-hire, and private recreational allocations specified for 2011 would remain in effect beyond 2011 until modified.

4.1.2.2.1 Biological Effects

Alternative 1 (No Action) would not establish allocations for wahoo. If an allocation is not specified then it would not be possible to identify the annual catch limit (ACL) in the recreational sector. Only a single ACL could be established for both sectors and options for an accountability measure (AM) would be limited.

The allocations in **Alternatives 2-4** would be similar. Under **Alternative 2** the allocations would be 4% commercial/96% recreational. **Alternative 3 (Preferred)** would result in 5% commercial/95% recreational, respectively, through the use of a formula that would equal 50% * average of long catch range (lbs) 1999-2008) + 50% * average of recent catch trend (lbs) 2006-2008. **Alternative 4**, which uses a similar formula as **Alternative 3 (Preferred)** would divide the recreational component of the catch into for-hire and private recreational sectors. Under **Alternative 4**, the allocation would be 4.7% commercial, 0.4% for-hire, and 94.9% private recreational. Catches by sector are shown in **Table 4-52**.

Table 4-52. Annual landings of wahoo by sector for the NEFMC, MAFMC, and SAFMC areas of jurisdiction. **NEW TABLE.**

Year	Commercial	Private	For-Hire	Total Rec	Total Com	Total	% Com	%Rec
1999	99,286	784,753	774,921	1,559,673	99,286	1,658,959	6%	94%
2000	65,834	639,889	482,750	1,122,639	65,834	1,188,473	6%	94%
2001	58,594	701,917	457,466	1,159,384	58,594	1,217,978	5%	95%
2002	58,560	676,847	756,379	1,433,225	58,560	1,491,785	4%	96%
2003	58,673	847,598	403,566	1,251,164	58,673	1,309,837	4%	96%
2004	65,118	611,130	489,608	1,100,738	65,118	1,165,856	6%	94%
2005	44,542	600,230	252,441	852,671	44,542	897,213	5%	95%
2006	39,824	546,314	219,340	765,654	39,824	805,478	5%	95%
2007	57,290	1,649,855	391,299	2,041,154	57,290	2,098,444	3%	97%
2008	40,525	457,160	206,573	663,732	40,525	704,257	6%	94%
2009	43,126	583,845	208,842	792,687	43,126	835,813	5%	95%

Note: Bag limit became effective in 2004.

4.1.2.2.2 Economic Effects

The economic effects of allocations between commercial and recreational fisheries are distributional in nature. There is no quantifiable difference in the aggregate benefit to the Nation of any one of the alternatives over another, at this time. Because there is a biological drawback resulting from **Alternative 4** due to the division of the recreational sectors, the economic effects from this action are negative compared to **Alternatives 2 and 3**.

Commercial Fishery

Alternatives 2-4 would result in limits on commercial landings. **Alternative 2** proposes the smallest allocation for the commercial fishery at 4%. **Preferred Alternative 3** would result in an allocation of 5% and would benefit the commercial fishery the most after **Alternative 1 (No Action)** with **Alternative 4** in between **Alternatives 2 and 4**. However, the differences among the three alternatives are small.

4.1.2.2.3 Social Effects

Alternative 1 (No Action) would maintain an overall ACL and may have few social effects. However, determining accountability may become an issue for the recreational sector. With **Alternatives 2-4** there would be a similar commercial allocation between 4% and 5% harvest allocations. In **Alternative 4**, the recreational sector allocation is further divided into the private and for-hire sectors which may allow more certainty in the for-hire sector, but monitoring the recreational sector is difficult. **Preferred Alternative 3** does not split the recreational sector. As mentioned, there can be many different social effects that result as further allocations are divided and perceptions are formed. Again, it is difficult to predict the social effects with any allocation scheme as it would depend upon other actions in conjunction with this one. A reduction in allocation for one sector may be compounded by a restrictive choice of ABC or ACL and may have further effects that could be either negative or positive depending upon the combination of effects. Therefore, the choice of an allocation will need to be assessed with other actions within this amendment to determine the overall social effects and whether short term losses are offset by any long term biological gains.

4.1.2.2.4 Administrative Effects

Alternative 1 (No Action) would retain the current allocations and would result in the least administrative burden. **Alternatives 2** through **4** could increase the administrative impacts to NOAA Fisheries Service as landings would need to be monitored and enforced for the commercial and recreational portion to ensure that the sectors do not exceed their allocation and if so, appropriate overages are accounted for.

4.1.2.2.5 Council Conclusions

4.1.2.3 Action 23: Establish Annual Catch Limits (ACL) and Optimum Yield (OY) for Wahoo

Alternative 1 (No Action). There is no ACL specified for wahoo. Currently OY for wahoo is the amount of harvest that can be taken by fishermen while not exceeding 100% of MSY (between 1.41 and 1.63 million pounds).

Alternative 2 (Preferred). ACL = OY = ABC = 1,022,498 pounds.

Alternative 3. ACL = OY = 85% of the ABC = 869,123 pounds.

Alternative 4. ACL = OY = 75% of the ABC = 766,874 pounds.

Alternative 5. ACL = OY = 65% of the ABC = 664,624 pounds.

ACL values are shown in **Table 4-53**.

IPT Recommendations: Replace Table 4-53 with new Table 4-53 based on new data.

Note: If the Council chooses to change how ABC is calculated, then the number in this table and the analyses will need to be updated.

Table 4-53. ACL formula and ACL value (lbs whole weight) for wahoo under Alternatives 2-5. Commercial and recreational ACL values are based on preferred allocation alternative (4.3% commercial/95.7% recreational) in Action 22.

Alternative	ACL Formula	ACL value	Comm ACL	Rec ACL
Alternative 2 (**Preferred**)	ABC	1,022,498	43,967	978,531
Alternative 3	85% ABC	869,123	37,372	831,751
Alternative 4	75% ABC	766,874	32,976	733,898
Alternative 5	65% ABC	664,624	28,579	636,045

4.1.2.3.1 Biological Effects

Revisions to the Reauthorized Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) in 2006 require that by 2010, Fishery Management Plans (FMPs) for fisheries determined by the Secretary to be subject to overfishing must establish a mechanism for specifying Annual Catch Limits (ACLs) at a level that prevents overfishing and does not exceed the recommendations of the respective Council's Scientific and Statistical Committee (SSC) or other established peer review processes. These FMPs must also establish, within this timeframe, measures to ensure accountability. By 2011, FMPs for all other fisheries, except fisheries for species with annual life cycles, must meet these requirements. Amendments 17A and 17B, under Secretarial review, would specify ACLs for species subject to overfishing.

Alternative 1 (No Action), would not specify an ACL for wahoo. The final National Standard 1 (NS1) guidelines recognize that existing FMPs may use terms and values that are similar to, associated with, or may be equivalent to overfishing limits (OFL), acceptable biological catch, annual catch limit (ACL), annual catch target, and accountability measure (AM) in many fisheries for which annual specifications are set for different stocks or stock complexes. In these situations the guidelines suggest that, as Fishery Management Councils revise their FMPs, they use the same terms as set forth in the NS1 guidelines. The ACL serves as a catch limit for a species which triggers some sort of AM to ensure overfishing of a species does not occur. Currently, there are no quotas in place that could serve as ACLs for either the commercial or recreational sector. Therefore, **Alternative 1 (No Action)** would not meet the requirements specified in the Magnuson-Stevens Act.

Alternatives 2-5 would set ACL/OY equal to the ABC or a percentage of the ABC and would represent the management area specified in the FMP for Dolphin and Wahoo. Setting ACL/OY equal to a percentage of the ABC would provide greater insurance that overfishing is prevented, the long term average biomass is near or above B_{MSY}. Setting ACL/OY equal to the ABC (**Preferred Alternative 2**) does not take into account scientific uncertainty. Setting ACL/OY equal to some percentage of the ACL in **Alternatives 3-5**, would be based on an ABC control that sets ABC below OFL and therefore take into consideration scientific uncertainty in the specification of OFL.

Alternative 2 would set the ACL equal to the ABC. The preferred alternative in **Action 22** specified an ABC = 85% OFL where ABC = 936,046 lbs whole weight. Based on the preferred allocation alternatives in **Action 22**, 5% (46,802 lbs whole) of the ACL would be allocated to the recreational sector and 95% (889,244 lbs whole weight) of the ACL would be allocated to the recreational sector (**Table 4-53**).

Alternatives 3-5 would have a greater positive biological effect than **Alternative 2** because they would create a buffer between the ACL and ABC, with **Alternative 5** setting the most conservative ACL at 65% of the ABC. The ACLs under each alternative, based on the Council's Preferred ABC control rule is provided in **Table 4-53**. Creating a buffer between the ACL and ABC would provide greater assurance against overfishing. 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. ACTs, which are not required, can also be set below the ACLs to account for management uncertainty and provide greater assurance overfishing does not occur.

Preferred Alternative 2 would set ACL equivalent to the ABC whereas **Alternatives 3-5** would set ACL as a percentage of ABC and therefore take into consideration scientific uncertainty in the specification of OFL. Taking no action on specifying ACL/OY could have negative biological effects as it could allow ACL/OY to be greater than the ABC. Setting ACL/OY equal to a percentage of ABC would provide greater insurance that overfishing is prevented, the long term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt in as short a time as possible.

Similar to the relationship between OFL and ABC, OY is prescribed on the basis of the MSY from the fishery, as reduced by relevant economic, social or ecological factors. In the case of an overfished fishery, OY provides for rebuilding to a level consistent with producing MSY in such a fishery. For overfished stocks, ABC must also be set to reflect the annual catch that is consistent with the rebuilding plan for that stock. In NS 1, use of the phrase, "achieving, on a continuing basis, the optimum yield from each fishery" means producing, from each stock, stock complex or fishery a long-term series of catches such that the average catch is equal to OY, overfishing is prevented, the long term average biomass is near or above B_{MSY}, and overfished stocks are rebuilt in as short a time as possible.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin/wahoo fishery would not affect smalltooth sawfish or marine mammals and was not likely adversely affect *Acropora* species. **Alternatives 2-5** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles from **Alternatives 2-5** are unclear. If they perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles will likely decrease, providing additional biological benefits to these species.

4.1.2.3.2 Economic Effects

Commercial Fishery

Alternative 2 would provide the largest short-term economic benefits to the commercial fishery in that it would provide the largest amount of commercial landings that could be taken. However, **Alternative 2** is expected to yield the smallest long-term economic benefits. **Alternative 5** would offer the smallest short-term economic benefits in that it allows the smallest amount of landings with **Alternatives 3 and 4** falling in between **Alternatives 2 and 5**. **Alternative 5** also is expected to result in the largest long-term economic benefits. If there is uncertainty as to how well the ACT can be tracked, **Alternatives 3 and 4** may be more economically beneficial in that they would provide a buffer.

4.1.2.3.3 Social Effects

Establishing an ACL for wahoo will have social effects similar to the discussions under previous actions. As discussed previously, choosing a more restrictive ACL like **Alternative 5** would likely have more negative effects in the short term than would **Alternative 3 or 4**. The overall effects would also be tied to other actions and how they combine to affect a particular sector. In **Alternative 1 (No Action)** there would likely be few direct effects depending upon how other actions would affect the biological thresholds and the implications for stock status. With more liberal choices in setting thresholds in other actions, there could be long term consequences if a stock is vulnerable. Choosing **Alternative 2** would be less restrictive than the **Alternatives 3 and 4**.

4.1.2.3.4 Administrative Effects

Specifying an ACL or sector ACLs alone would not increase the administrative burden over the status quo. However, the monitoring and documentation needed to track the ACL can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternative1 (No Action),** would not meet the requirements of the Magnuson-Stevens Act for some species, and could be subject to litigation, which would result in a significant administrative burden on the agency. The administrative impacts of specifying an ACL through **Alternatives 2- 5** are minimal and would not differ much between the three action alternatives. However, once the ACL is specified, the administrative burden associated with monitoring and enforcement, implementing management measures, and accountability measures, will increase. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.1.2.3.5 Council Conclusions

4.1.2.4 Action 24: Establish Accountability Measures for Wahoo

Alternative 1 (No Action). There is no hard quota for wahoo and there are no AMs in place for wahoo.

Commercial

Alternative 2. Establish commercial sector ACT for wahoo, apply to commercial AM Alternatives 3 or 4.

Subalternative 2a (Preferred). Do not specify a commercial sector ACT.

Subalternative 2b. The commercial sector ACT equals 90% of the commercial sector ACL.

Subalternative 2c. The commercial sector ACT equals 80% of the commercial sector ACL.

Numbers in table will change if the Council changes ABC.

Table 4-54. Commercial sector ACTs for each of the alternatives.
Values are in lbs whole weight.

Species	Preferred Commercial ACL	Commercial Sector ACT Subalternatives		
		2a - No ACL	2b - 90%(ACL)	2c - 80%(ACL)
Wahoo	43,967	N/A	39,570	35,174

Alternative 3 (Preferred). After the commercial ACL is met or projected to be met, all purchase and sale of wahoo is prohibited and harvest and/or possession is limited to the bag limit.

Alternative 4. If the commercial sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the commercial sector ACL in the following season by the amount of the overage.

Recreational

Alternative 5. Establish recreational sector ACT for wahoo, apply to recreational AM Alternatives

Subalternative 5a. The recreational sector ACT equals 85% of the recreational sector ACL.

Subalternative 5b. The recreational sector ACT equals 75% of the recreational sector ACL.

Subalternative 5c (Preferred). The recreational sector ACT equals sector ACL[(1-PSE) or 0.5, whichever is greater] based on the 5 year average PSE (2005-09) of 13.9. The recreational sector ACT = 765,639 lbs whole weight.

Table 4-55. Proportional Standard Errors (PSEs) for wahoo from numbers estimates (A+B1) for all modes.
Obtained from http://www.st.nmfs.noaa.gov on May 13, 2010.

Species	2003	2004	2005	2006	2007	2008	2009	3 year average (2007-09)	5 year average (2005-09)
Wahoo	17.3	17.7	14.4	11.1	13.3	15.5	15.4	14.7	13.9

Note: The Council decided to use the 5 year average PSE because this better represented recent catches than the 3 year average.

Table 4-56a. The recreational ACT for each of the alternatives. Values are in lbs whole weight.

Species	Preferred Recreational Sector ACL	Recreational Sector ACT Subalternatives		
		5a - 85%(ACL)	5b - 75%(ACL)	5c – ACL [(1-PSE) or 0.5, whichever is greater]
Wahoo	978,531	831,751	733,898	842,515

Alternative 6 (Preferred). For post-season accountability measures, compare recreational ACL with recreational landings over a range of years. For 2011, use only 2011 landings. For 2012, use the average landings of 2011 and 2012. For 2013 and beyond, use the most recent three-year running average.

Subalternative 6a. If the recreational sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage.

Subalternative 6b. If the recreational sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the length of the following fishing year by the amount necessary to ensure landings do not exceed the recreational sector ACL for the following fishing year.

Subalternative 6c (Preferred). If the recreational sector ACL is exceeded, the Regional Administrator shall publish a notice to reduce the bag limit to 1 fish and reduce the season as necessary to ensure landings do not exceed the recreational sector ACL for the following fishing year.

Alternative 7. The Regional Administrator shall publish a notice to close the recreational fishery when the ACL is projected to be met.

4.1.2.4.1 Biological Effects

Currently, there are only size limits, trip limits and bag limits in place to restrict harvest of wahoo in the South Atlantic. There is no hard quota that would trigger the fishery to be closed once a certain level of harvest is reached. Implementing AMs would provide a mechanism to maintain harvest levels at or below the Council's choice of ACL or ACT for the fishery. As is the case for many fisheries, accurate in-season monitoring of ACTs and ACLs for the purposes of triggering AMs when needed can be very difficult for the recreational sector. The challenges associated with monitoring in-season harvest in recreational fisheries often leads to the utilization of projections that estimate the level of harvest at any given time; however, projections are not 100 percent accurate and can be highly variable if anomalous harvest events are recorded. To account for such variations created by environmental, biological, and human factors, without extreme reactive AMs the Council is considering using a three year running average of recreational landings that would be compared to the specified recreational ACL **(Alternative 6)**.

Overall, the most biologically conservative approach to specifying AMs for wahoo, would be to establish in-season and post-season AMs. By establishing both types of AMs, exceeding the ACL or ACT could be avoided, provided adequate in-season monitoring is possible, and an additional backstop would exist if the ACL or ACT should be exceeded despite the in-season controls.

Establishing an ACT **(Alternative 2)** for the commercial sector would be somewhat more straight-forward than for the recreational sector since all commercial landings of wahoo are reported through dealer trip tickets, which can be used to monitor in-season harvest. Therefore, projections of when the ACT would likely be met, or estimates of by how much an ACT is exceeded would be more reliable than for the recreational sector. A higher degree of harvest projection accuracy would reduce the risk of AMs being triggered too soon or too late. Under this action the most biologically beneficial ACT alternative for the commercial sector would be **Subalternative 2c**, which would create the largest buffer between the ACT and ACL. **Subalternative 2b** would result in greater biological benefits than **Subalternative 2a (Preferred)**, but fewer biological benefits when compared to **Subalternative 2c**. The least biologically beneficial ACT alternative would be **Subalternative 2a (Preferred)** since it would not establish a level of harvest lower than that of the ACL in order to trigger an AM to prevent ACL overages. **Alternative 3 (Preferred)** would remove the incentive to target wahoo on commercial trips since all purchase and sale would be prohibited once the ACL is projected to be met. This alternative would also still allow some level harvest, the bag limit, which may prevent an inordinate level of regulatory discards after the ACL has been harvested.

Alternative 4 would provide protection to the wahoo stock in the form of an ACL reduction following the year in which an ACL overage occurred. The ACL can be reduced by the approximate amount as that taken in excess the year before, and may serve to shorten the season if the lower ACL is met earlier in the year. A shortened season may result in increased regulatory discards of wahoo if no level of harvest is permitted after the ACL is reached.

If the Council chose to pair **Alternative 5** with a recreational AM, it could serve to reduce the risk of the ACL being exceeded. **Subalternative 5a** would set an ACT that is 85% of the ACL; whereas, under **Subalternative 5b**, the ACT would be 75% of the ACL. **Subalternative 5c** would have the greatest biological benefit of the three subalternatives by adjusting the ACL by 50% or the percent standard error from the recreational fishery, whichever is greater. The lower the value of the PSE (percent standard error) the more reliable the landings data would be considered to be. By using PSE in **Subalternative 5c** more precaution is taken in the estimate of the ACL with increasing variability and uncertainty in the landings data. **Subalternatives 5a, 5b, and 5c (Preferred)** specify ACT control rules that would hedge against an ACL overage because the AM would be triggered at a level lower that than that of the ACL, and therefore provide a buffer between the ACT and ACL and account for management uncertainty. Establishing an ACT below the recreational ACL would also reduce the need to close or implement post season AMs that are meant to correct for an ACL overage.

Alternative 6 would compare the ACL to average landings over a series of three years. As a result, anomalies such as spikes or troughs in recreational landings would be accounted for under **Subalternatives 6a-c**. Using an average also helps to account for data uncertainties that exist in the recreational landings data, and could prevent unnecessary AMs from being triggered. **Subalternative 6a** would reduce the next year's ACL by the amount of the previous year's overage, in essence shortening the season to correct for past excess harvest. Under this alternative there is no guarantee that the reduced ACL or ACT would be exceed too, therefore; it may not significantly reduce the risk of overfishing from year to year. If the ACL, reduced or not, is continually exceeded, additional AMs may need to be implemented to reduce harvest. The National Standard 1 Guidelines states that ''if catch exceeds the ACL for a given stock or stock complex more than once in the last 4 years, the system of ACLs and AMs should be reevaluated, and modified if necessary, to improve its performance and effectiveness.'' Amendment 17B followed this guidance for performance measures with an action to update the framework procedure to allow for adjustments to OFL, ABC, and ACL based on SEDAR reports or other new information. Under the updated framework procedure, the SSC would examine the social and economic impact analyses for a specific allocation, ACL, ACT, AM, quota, bag limit, or other fishing restriction. If it was determined by the Council and its SSC that the management measures in place are not constraining catch to a target level, adjustments could be made through a future regulatory amendment. **Subalternative 6b** provides the Regional Administrator greater latitude in the amount of time the fishing season would be reduced, and thus could prove to be more biologically beneficial for wahoo since harvest could potentially be reduced more than under **Subalternative 6a**. However, the shorter the fishing season is, the greater the regulatory discards for the recreational sector would be. Allowing some harvest, such as a reduced bag limit, may decrease the magnitude of regulatory discards of wahoo during a shortened fishing season. **Subalternative 6c (Preferred)** would reduce the bag limit the year following an ACL overage. Because the bag limit is currently 2 per person per day, the bag limit could be reduced to zero in order to correct for a previous year's ACL overage. **Subalternative 6c (Preferred)** is the most biologically beneficial recreational AM alternative considered for South Atlantic wahoo.

Alternative 7 would require in-season monitoring to project when the recreational ACL is going to be met. As mentioned previously, there is currently no real-time reporting mechanism for the

recreational fishery; therefore, a lag time between when the fish are harvested and when those landings are reported and made accessible in the MRFSS database could cause the ACL to be met or exceeded before fishery managers become aware of the overage. The potential for repeated ACL overages makes this alternative one of the least biologically beneficial of all the recreational AM alternatives considered. In season recreational closures have been considered for other species that are overfished in order to allow stock rebuilding to continue without pause. The overfished and overfishing status of wahoo is unknown.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the wahoo component of the coastal migratory pelagics fishery was not likely to adversely affect marine mammals or *Acropora* species. **Alternatives 2-7** and the associated sub-alternatives are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles and smalltooth sawfish from **Alternatives 2-7** and the associated sub-alternatives are unclear. If they perpetuate the existing amount of fishing effort they are unlikely to change the level of interaction between sea turtles and smalltooth sawfish and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles and smalltooth sawfish, if any. However, if these alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles and smalltooth sawfish will likely decrease, providing additional biological benefits to these species.

4.1.2.4.2 Economic Effects

Commercial Fishery

Subalternative 2a would provide the commercial fishery with the highest landings level and result in the greatest short-term and long-term economic benefits. However, if there is uncertainty as to whether a buffer is needed to prevent exceeding the commercial ACL, **Subalternatives 2b and 2c** could provide greater long-term economic benefits than **Subalternative 2a**. **Preferred Alternative 3** would prohibit all purchase and sale once the ACL is projected to be met and limit harvest to the bag limit. This could interrupt market supply and eliminate customers if closures occurred early in the season. **Alternative 4** would take any overage off of the following year's ACL helping maintain long-term economic benefits. Together, **Preferred Alternative 3** and **Alternative 4** are expected to provide positive long-term economic benefits.

4.1.2.4.3 Social Effects

The setting of Accountability Measures or Annual Catch Targets for wahoo can have significant direct and indirect effects on the social environment as they usually impose some restriction on harvest. The long term effects should be beneficial as they provide protection from further negative impacts on the stock. While the negative effects are usually short term, they may at times induce other indirect effects through changes in fishing behavior or business operations that could have long term social effects. **Alternative 1 (No Action)** may have few short term social impacts as it would not impose further restrictions on harvest for either sector, however, with no existing AMs in place it may become difficult to maintain a viable stock status if

overages occur. **Preferred Subalternative 2a** would be less restrictive than **Subalternatives 2b or 2c** and therefore there is an increasing possibility of negative short term social effects going from **Subalternative 2a to 2c,** although only for the commercial sector. The payback that is implemented in **Alternative 4** would further assist with rebuilding where **Alternative 3** would not. The payback provision does allow for accountability in **Alternative 4** as overages will be compensated for with reductions in the following season in the commercial sector. For the recreational sector the similar **Subalternatives 5a through Preferred 5c** would impose a more restrictive buffer respectively. **Preferred Alternative 6** with its **Subalternative 6a – Preferred Subalternative 6c** impose various post season accountability measures. These measures may impose short-term negative social effects but should be positive overall as stocks recover. However, if postseason AMs are repeatedly applied, then adjustments should be made elsewhere. **Alternative 7** would impose accountability measures with no payback.

4.1.2.4.4 Administrative Effects

Alternative 1 (No Action) would not produce near-term administrative impacts. However, this alternative would not comply with Reauthorized Magnuson-Stevens Act requirements and therefore, may trigger some type of legal action for not doing so. If this scenario were to occur, the burden on the administrative environment could be significant in the future. Administrative impacts of **Alternatives 5-7** would be greatest relative to the commercial AMs proposed (**Alternatives 2-4**), since recreational landings would need to be monitored on a continuing basis. Tracking recreational landings is difficult because there is a delay in the availability of recreational data, and the data can be highly variable. Therefore, tracking recreational landings, using the proposed multiple year landings averages, and subsequent AM implementation coordination would create a moderate burden on the administrative environment.

Specifying an ACT or sector ACTs alone would not increase the administrative burden over the status-quo. However, the monitoring and documentation needed to track how much of the ACT has been harvested throughout a particular fishing season can potentially result in a need for additional cost and personnel resources if a monitoring mechanism is not already in place. **Alternatives 5-7** would require tracking the commercial and recreational landings every year, which would be averaged over three years on a continuous basis. The tracking of recreational landings can be challenging and would likely impose a burden on the administrative environment. Other administrative burdens that may result from all of the alternatives considered would take the form of development and dissemination of outreach and education materials for fishery participants.

4.1.2.4.5 Council Conclusions

4.1.2.5 Action 25: Establish Management Measures for Wahoo

Note: The Council's preferred recreational ACT (842,515 pounds) does not require a reduction based on average recreational landings (2005-2009, excluding 2007); in fact, the average catch is 10% below the ACT (Table 4-56b). The commercial sector will be closed when the commercial ACL is met or projected to be met.

Alternative 1 (Preferred) (No Action). Retain current management measures for wahoo.

- Sale of recreationally caught wahoo in or from the Atlantic EEZ is prohibited.
- 500 pound commercial trip limit for wahoo (landed head and tail intact) with no transfer at sea allowed.
- Recreational bag limit of 2 wahoo per person per day in the Atlantic EEZ.

Alternative 2. Establish a boat limit of 2-12 wahoo per boat/**v**essel per day in the recreational fishery.

Sub-alternative a. Establish a boat limit of 12 wahoo per boat/vessel per day.
Sub-alternative b. Establish a boat limit of 11 wahoo per boat/vessel per day.
Sub-alternative c. Establish a boat limit of 10 wahoo per boat/vessel per day.
Sub-alternative d. Establish a boat limit of 9 wahoo per boat/vessel per day.
Sub-alternative e. Establish a boat limit of 8 wahoo per boat/vessel per day.
Sub-alternative f. Establish a boat limit of 7 wahoo per boat/vessel per day.
Sub-alternative g. Establish a boat limit of 6 wahoo per boat/vessel per day.
Sub-alternative h. Establish a boat limit of 5 wahoo per boat/vessel per day.
Sub-alternative i. Establish a boat limit of 4 wahoo per boat/vessel per day.
Sub-alternative j. Establish a boat limit of 3 wahoo per boat/vessel per day.
Sub-alternative k. Establish a boat limit of 2 wahoo per boat/vessel per day.

The IPT recommended the Council modify Alternative 2 to have separate subalternatives and the Council agreed. The Council made Alternative 1 their Preferred and Alternative 3 is now included in the Sub-Alternatives for Alternative 2 so it should be deleted.

~~**Alternative 3 (Preferred).** Establish a recreational limit of 2 wahoo per vessel per day.~~

Table 4-56b. Wahoo OFL, ABC, ACL, ACT alternatives with the required recreational reductions.

							%Rec. Reduction from various time periods				Avg 05,06
Wahoo	**OFL**	**ABC**	**ACL=OY=ABC**	**Com ACL (4.3%)**	**Rec ACL (95.7%)**	**Rec ACT**	**PH Avg**	**2005-09**	**2006-09**	**2004-09**	**08 & 09**
Prefered SAFMC	1,202,939	1,022,498	1,022,498	43,967	978,531	842,515	18%	21%	24%	22%	-10%
Preferred & Rec ACL	1,202,939	1,022,498	1,022,498	43,967	978,531		4%	8%	12%	10%	-27%
GMFMC Tier 3a*	1,994,417	1,788,691	1,788,691	76,914	1,711,777	1,473,840	-44%	-38%	-33%	-36%	-92%
Mean + 1.0 Std.Dev.		1,582,965	1,582,965	68,068	1,514,898	1,304,327	-27%	-22%	-17%	-20%	-70%
Mean + 0.5 Std.Dev.		1,377,239	1,377,239	59,221	1,318,018	1,134,814	-11%	-6%	-2%	-5%	-48%
Mean		1,171,513	1,171,513	50,375	1,121,138	965,300	6%	10%	13%	11%	-26%
*GMFMC Tier 3a OFL = mean + 2.0 Std.Dev.; ABC = mean + 1.5 Std.Dev.											
PH = Public Hearings; IPT recommends using 2005-09 average.											

Note: The Council decided to calculate reductions in harvest for wahoo using average landings for years 2005-2009 excluding 2007. The bag limit specified for wahoo was first implemented in 2004 and the reduction is reflected in the 2005 landings after full implementation. Landings from 2007 are excluded because they are much higher than years since the bag limit was implemented, and the Council concluded this was more of a sampling factor than actual catches.

4.1.2.5.1 Biological Effects

Alternative 1 (No Action) would retain the management measures currently in place including a: Prohibition on sale of recreationally caught wahoo in or from the Atlantic exclusive economic zone; 500 pound commercial trip limit for wahoo (landed head and tail intact); and recreational bag limit of 2 wahoo per person per day.

The overfishing and overfished status of wahoo is unknown. The Council's Scientific and Statistical Committee has specified an overfishing limit (OFL) of 1,101,231 lbs whole weight based on landings from 1994-2008 to ensure overfishing does not occur. This value is slightly higher than the average commercial and recreational catch during 1999-2009 (**Table 4-58**). The Council's Preferred ABC control rule would set ABC = 85%OFL and would equal 936,046 lbs whole weight. The Council's preferred alternative for ACL would set ACL at 936,046 lbs whole weight with 46,802 pounds whole weight allocated to the commercial sector and 889,244 pounds whole weight allocated to the recreational sector (**Table 4-53**). Based on average data from 1999-2009, the commercial and recreational ACLs would be met. The commercial sector will be closed once the commercial ACL is projected to be met. The recreational ACT is 765,639 pounds which requires a 30% reduction based on average data from 1999-2008. At the December 2010 meeting the Council discussed a 20% reduction based on 1999-2009 average recreational catch of 1,024,211 pounds; however, 2009 landings were incomplete at the time. (**Table 4-57**)

Table 4-57. Commercial and recreational landings of wahoo in the Atlantic (New England to east Florida during 2005-2009.

Year	Total Comm	*Headboat	MRFSS Total	Total
2005	47,744	5,790	810,056	863,590
2006	41,539	3,001	760,144	804,684
2007	59,558	10,425	1,914,067	1,984,050
2008	41,586	2,767	628,758	673,111
2009	12,296	0	297,090	309,386
Avg.	40,545	4,397	882,023	926,964

Table 4-58. Commercial and recreational landings of wahoo in the Atlantic (New England to east Florida during 1999-2009.

Year	Total Comm	*Headboat	MRFSS Total	Total
1999	99,159	5,358	1,400,295	1,504,812
2000	65,283	5,467	1,078,254	1,149,004
2001	61,073	863	1,049,762	1,111,698
2002	60,703	4,881	1,239,973	1,305,557
2003	60,720	623	1,098,636	1,159,979
2004	65,485	5,216	944,896	1,015,597
2005	47,744	5,790	810,056	863,590
2006	41,539	3,001	760,144	804,684
2007	59,558	10,425	1,914,067	1,984,050
2008	41,586	2,767	628,758	673,111
2009	12,296	0	297,090	309,386
Avg.	55,922	4,036	1,020,176	1,080,133

Accountability measures under **Action 24** include alternatives such as closing the fishery when landings approach an ACL to ensure overfishing does not occur. The Council is considering additional management measures in this section that would reduce the chance ACLs are exceeded and perhaps prevent seasonal closures of the fishery.

Alternative 2 would establish a boat limit for private and charter recreational fishermen ranging from 2 to 12. Proposed reductions in the vessel limit would reduce harvest of wahoo in the private and recreational sectors range from 0.75% for a 12 vessel limit to 26% for a 2-fish per vessel limit (**Table 4-59**). Restricting the vessel limit to 2-fish per vessel would have the greatest biological effect and would provide the greatest assurance the ACL would not be exceeded.

Alternative 3 (Preferred) would establish a recreational limit of 2 wahoo per vessel per day, which would provide an estimated 26% reduction in wahoo harvest in the recreational fishery (**Table 4-59**). The biological benefits of **Preferred Alternative 3** would be expected to be greater than options under **Alternative 2** that would have boat limit greater than 2 fish per vessel per day. An 18.9% reduction is required to keep catches below the recreational ACL and this would be accomplished by a 2 fish vessel limit. However, a 1 fish vessel limit would be required to keep catches below the recreational ACT.

Table 4-59. Reduction (percent) in harvest of wahoo for Atlantic states provided by a reduction in the vessel limit.

	Charter	Private	All
Vessel limit	Reduction	Reduction	Reduction
12	1.00	0.00	0.75
10	1.45	0.00	1.09
9	1.90	0.00	1.42
8	2.56	0.68	2.10
7	3.79	1.69	3.27
6	5.80	3.38	5.20
5	8.47	5.41	7.71
4	12.15	7.43	10.98
3	17.28	11.49	15.84
2	28.43	17.23	25.65
1	48.72	42.23	47.11

The Dolphin Wahoo Advisory Panel (AP) recommended **Alternative 1 (No Action)** because there is no problem identified that needs to be addressed.

There is likely to be no additional biological benefit to protected species from **Alternative 1 (No Action)** because it would perpetuate the existing level of risk for interactions between ESA-listed species and the fishery. Previous ESA consultations determined the dolphin/wahoo fishery would not affect smalltooth sawfish or marine mammals and was not likely adversely affect *Acropora* species. **Alternatives 2 and 3 (Preferred)** are unlikely to alter fishing behavior in a way that would cause new adverse effects to these species. The biological benefits to sea turtles from **Alternative 2 and 3 (Preferred)** are unclear. If the alternative perpetuates the existing amount of fishing effort it is unlikely to change the level of interaction between sea turtles and the fishery as a whole. This scenario is likely to provide little additional biological benefits to sea turtles, if any. However, if this alternatives reduce the overall amount of effort in the fishery the risk of interaction with sea turtles will likely decrease, providing additional biological benefits to these species.

4.1.2.5.2 Economic Effects

There would be no economic impacts from **Alternative 1 (No Action)** in the short term but there could be negative impacts in the long term if reductions were required in the future. **Alternative 2** and **Preferred Alternative 3** would establish vessel limits and would impose negative impacts in the short term but positive impacts are expected in the long term from preventing the ACL/ACT from being exceeded.

4.1.2.5.3 Social Effects

The social effects from **Alternative 1 (No Action)** may be minimal as it would require no changes in regulation. **Alternative 2** would impose a varying degrees of reduction in catch depending upon which boat limit was chosen with the most restrictive being **Preferred**

Alternative 3 with a 2 fish limit which would impose a 26% reduction and may impose substantial negative social effects.

4.1.2.5.4 Administrative Effects

Under the **Alternative 1 (No Action),** no new administrative impacts are expected. Under the status quo, there are currently administrative impacts associated with monitoring and enforcing the commercial trip limit and the recreational bag limit. **Alternative 2** proposes to change the recreational bag limit, but this is not expected to have an impact on monitoring or enforcement. **Alternative 2** would require rulemaking, education and outreach which would result in minor administrative impacts. **Alternative 3 (Preferred)** establishes a recreational bag limit of 2 wahoo per vessel per day, which would not add significantly to the existing administrative impacts.

4.1.2.5.5 Council Conclusions

The Council decided to calculate reductions in harvest for wahoo using average landings for years 2005-2009 excluding 2007. The bag limit specified for wahoo was first implemented in 2004 and the reduction is reflected in the 2005 landings after full implementation. Landings from 2007 are excluded because they are much higher than years since the bag limit was implemented, and the Council concluded this was more of a sampling factor than actual catches.