Framework Action
Blueline Tilefish

Revised Decision Document
September 11, 2015

This revised Decision Document incorporates the SSC's recommendations from the June 9, 2015 webinar meeting to review blueline tilefish projections.

Background

A stock assessment for the blueline tilefish stock off the U.S. east coast was conducted through the Southeast Data, Assessment, and Review (SEDAR) process in 2013 (SEDAR 32 2013). The assessment used data through 2011 and found the stock of blueline tilefish in the Atlantic to be overfished[1] and undergoing overfishing. At their December 2013 meeting, the South Atlantic Council initiated development of Amendment 32 and voted to request emergency action to reduce overfishing of blueline tilefish immediately while Amendment 32 was being developed. The emergency rule, which was effective on April 17, 2014, set the blueline tilefish ACL at the yield at $75\%F_{MSY}$ = 224,100 pounds whole weight (lbs ww). Amendment 32 was approved and implemented on March 30, 2015. The amendment set the ACL for the South Atlantic region at 98% of the recommended ABC based on projections at the recommended P* level according to the South Atlantic Council's ABC Control Rule; the remaining 2% was set aside to account for landings north of North Carolina based on average landings at the time. ACLs for 2015 through 2018 are shown in **Table 1**.

Table 1. Commercial and recreational annual catch limits (lbs ww) for blueline tilefish as implemented through Amendment 32.

	Blueline Tilefish ACL (lbs ww)		
Year	**Total**	**Commercial**	**Recreational**
2015	35,632	17,841	17,791
2016	53,457	26,766	26,691
2017	71,469	35,785	35,685
2018 and beyond until modified	87,974	44,048	43,925

Although the blueline tilefish stock is currently treated as one unit along the U.S. east coast, the Amendment 32 regulations only apply to vessels in the South Atlantic Council's area of jurisdiction. Concerns about rapidly increasing commercial and party/charter landings of blueline tilefish north of the NC/VA boundary, particularly in New Jersey, prompted the Mid-Atlantic Fishery Management Council in February 2015 to request emergency action to implement a commercial trip limit of 300 pounds (whole weight) and a recreational possession limit of 7 fish per person within its jurisdiction. Commercial landings from Virginia and farther north increased on average from 11,000 pounds to 217,000 pounds in 2014 and party/charter vessel landings increased on average from 2,400 fish per year to over 10,000 fish.

[1] Effective November 6, 2014, Regulatory Amendment 21 changed the definition of MSST for several snapper grouper species with low natural mortality, including blueline tilefish. Under the revised definition ($MSST = 75\% SSB_{MSY}$) the blueline tilefish stock is not considered overfished.

Representatives from the Mid-Atlantic Council attended the South Atlantic Council's March 2015 meeting in St. Simons Island, GA and discussed concerns about applying the 2013 blueline tilefish stock assessment results throughout the species' range. The South Atlantic Council approved a motion requesting extension of regulations through the Mid-Atlantic and New England areas contingent on the South Atlantic Council's Scientific and Statistical Committee's (SSC) review of SEDAR 32's applicability to the area north of North Carolina. The South Atlantic Council's SSC, including members that are also on the Mid-Atlantic Council's SSC, reviewed the stock assessment during its April 28-30, 2015 meeting in N. Charleston, SC and determined the SEDAR 32 assessment constituted best available science and should be applicable to the blueline tilefish stock throughout its range along the US east coast. Based on this determination, the South Atlantic Council requested that NMFS take emergency action to apply the Amendment 32 measures to the Mid-Atlantic and New England Councils' areas of jurisdiction north of the NC/VA border (**Appendix A in 8/21/15 version**).

On June 4, NMFS approved the Mid-Atlantic Council's request for emergency action and implemented a commercial trip limit of 300 pounds (whole weight) and a recreational possession limit of 7 fish per person. The Mid-Atlantic Council initiated development of an amendment to their Golden Tilefish Fishery Management Plan to include blueline tilefish in the fishery management unit and implement permanent management measures before the emergency rule regulations expire on June 5, 2016 (the original emergency rule expires on December 1, 2015 but can be extended for an additional 186 days). The South Atlantic Council's emergency action request is currently under review.

In a memo dated May 22, 2015 (**Appendix B in 8/21/15 version**), the Southeast Regional Administrator requested that the Southeast Fisheries Science Center (SEFSC) provide scientific advice on whether the SEDAR 32 projections represented the current state of the blueline tilefish stock given that the level of reported blueline tilefish landings in 2014 approached the biomass estimated by the projections. The request was to inform deliberations by the South Atlantic Council's SSC, which was scheduled to convene via webinar on June 3, 2015, to review the SEDAR 32 projections and possibly provide new reference points and fishing level recommendations to the South Atlantic Council. The SEFSC responded, in a memo dated May 29 (**Appendix C**), that the SEDAR 32 projections constituted the Best Scientific Information Available. The South Atlantic Council's SSC later concluded that "…the projections were properly prepared using accepted methods, incorporate typical assumptions and uncertainties, and reflect expected outcomes given the parameters with which they were prepared. However, given the concerns noted with continued shifts in the fishery since the assessment was completed, potential spatial patterns to the population and impacts of such patterns on productivity, and the inability of the projections to address effort shifts in the same manner as the assessment, the existing projections may not accurately reflect the population and fishery as they now exist, and therefore, cannot be considered Best Scientific Information Available. Based on this decision the Committee recommends that revised projections be prepared." (see **Appendix D in 8/21/15 version**).

Hence, following the South Atlantic Council's June 2015 meeting in Key West, FL, a memo (dated June 18, 2015) was sent to the SEFSC requesting revised projections for the blueline tilefish stock to "address recent landings and concerns over continued effort

shifts and apparent spatial differences in stock productivity" (see **Appendix E in 8/21/15 version**). The request specified P* values for the projections, as recommended by the South Atlantic Council's SSC, and inclusion of 2014 landings and the best estimate of 2015 landings to capture higher recruitment during the projection period than that which was estimated in the SEDAR 32 base projections. In addition, the request included approaches that should be used to address the range of recruitment uncertainty. As of this writing, the SEFSC had not provided the requested projections.

Projections with updated landings information were received on August 12, 2015 (**Appendix F in 8/21/15 version**). The SEFSC did not conduct the additional projections requested because "based on several internal and external discussions it was decided that there was not sufficient scientific support to assume the recruitment scenarios requested for the projections." As an alternative, the SEFSC updated the handline index. On August 18, 2015, the South Atlantic Council requested that the projections be re-done with actual landings for 2012-2015 (**Appendix G in 8/21/15 version**).

On September 9, 2015, the South Atlantic Council's SSC convened again via webinar to review the new projections and consider other approaches to recommend a revised ABC for the blueline tilefish stock. **The SSC recommended setting the ABC at the equilibrium yield at 75%F_{MSY}. This value, 224,100 lbs ww, was adopted temporarily as the Annual Catch Limit while the Council developed Amendment 32 to implement fishing levels based on the SEDAR 32 (2013) projections.**

NOTE: ATTACHMENT 2B (1ST BB) INCLUDES APPENDICES THAT ARE NOT REPEATED IN THIS REVISED DECISION DOCUMENT. NEW INFORMATION/SECTIONS IN THE REVISED DECISION DOCUMENT ARE SHOWN IN YELLOW OR THE HEADING IS IN YELLOW.

I. Possible Approaches for ABC

When the South Atlantic Council's SSC convenes via webinar on September 9, 2015, they may discuss several approaches to recommend an ABC for blueline tilefish. If new projections are provided in response to the Council's request and based on the SSC's recommendations from their June 3 discussion, then those projections may be what the SSC focuses on. However, if no new projections are provided, the SSC may discuss the following approaches:

Approach 1. No Action. Set the ABC for 2016 and beyond using the projection values from SEDAR 32 and implemented through Amendment 32:

Year	ABC
2016	54,548
2017	72,928
2018	89,769

NOTE: THESE VALUES ARE BASED ON PROJECTIONS THAT ARE NO LONGER CONSIDERED TO BE BEST AVAILABLE SCIENCE

SSC Recommended Approach 2. Use the equilibrium yield at 75%F_{MSY} from the SEDAR 32 assessment. The corresponding value is 224,100 pounds whole weight (lbs ww) and constitutes the ABC that was temporarily put in place through emergency action while the South Atlantic Council developed Amendment 32.

Approach 3. P* projections with updated landings for 2012-2015. Note; The South Atlantic Council requested these projections be redone with more accurate landings data.

Acceptable biological catch (ABC) of blueline tilefish based on the annual probability of overfishing P* = 0.3 (left panel) and P*=0.5 (right panel). Landings were set to those observed for 2012, 2013, 2014, and 2015 (partial year), with the ABC associated with the specified probability of overfishing calculated for the remaining years (2016-2020). L=Landings, D=Discards.

Year	P*=0.3				P*=0.5			
	ABC-L (1000 lb)	ABC-D (1000 lb)	ABC-L (1000 fish)	ABC-D (1000 fish)	ABC-L (1000 lb)	ABC-D (1000 lb)	ABC-L (1000 fish)	ABC-D (1000 fish)
2016	30.669	0.033	6.703	0.008	48.391	0.052	10.700	0.011
2017	47.832	0.052	9.702	0.010	70.848	0.077	14.481	0.016
2018	65.536	0.079	12.559	0.014	92.465	0.100	17.937	0.019
2019	81.253	0.088	14.878	0.016	110.039	0.119	20.482	0.022
2020	93.496	0.101	17.934	0.019	122.596	0.133	24.713	0.027

Approach 4. Other option(s) recommended by the SSC.

II. Specifying the blueline tilefish ACL for the South Atlantic region

Once an ABC is specified for blueline tilefish, it will be applicable to the entire stock along the U.S. east coast. The South Atlantic Council would then have to specify an ACL for its area of jurisdiction only. The alternatives below provide percentages to deduct from the ABC to account for blueline tilefish landings in the area north of the South Atlantic Council's jurisdiction (north of the NC/VA border) based on landings including Monroe County (**Table 2** and **Figure 1**) since all of Monroe County landings are counted towards the South Atlantic and were included in the SEDAR 32 assessment.

Table 2. Percent of total landings of blueline tilefish by area and for various time periods. Data include commercial landings, Southeast Headboat Survey, Marine Recreational Information Program, and the Northeast for-hire Vessel Trip Report (VTR). Landings not shown due to data confidentiality.

Years	% VA-ME	% NC-FL
2005-2013	6.6	93.4
2011-2013	11.3	88.7
2005-2010	4.3	95.7
2005-2014	11.6	88.4
2011-2014	22.1	77.9

NOTE: 2011 landings were affected by the 240' closure in the South Atlantic. In 2014, there was an ACL closure in the South Atlantic very early in the season.
Source: Mike Errigo, SAFMC staff

Table 3 shows percent landings by jurisdiction excluding 2011 (due to 240' closure) and 2014 (due to closure from meeting ACL early in the season). **Figure 2** shows jurisdictional landings from 2005 through 2014.

Table 3. Percent of total landings of blueline tilefish by area excluding 2011 and 2014. Data include commercial landings, Southeast Headboat Survey, Marine Recreational Information Program, and the Northeast for-hire Vessel Trip Report (VTR). Landings not shown due to data confidentiality.

Years	% VA-ME	% SA
2007-2013	7.1%	92.9%
2007-2010	4.7%	95.3%
2012-2013	12.1%	87.9%
All years exclude 2011 due to 240' closure.		

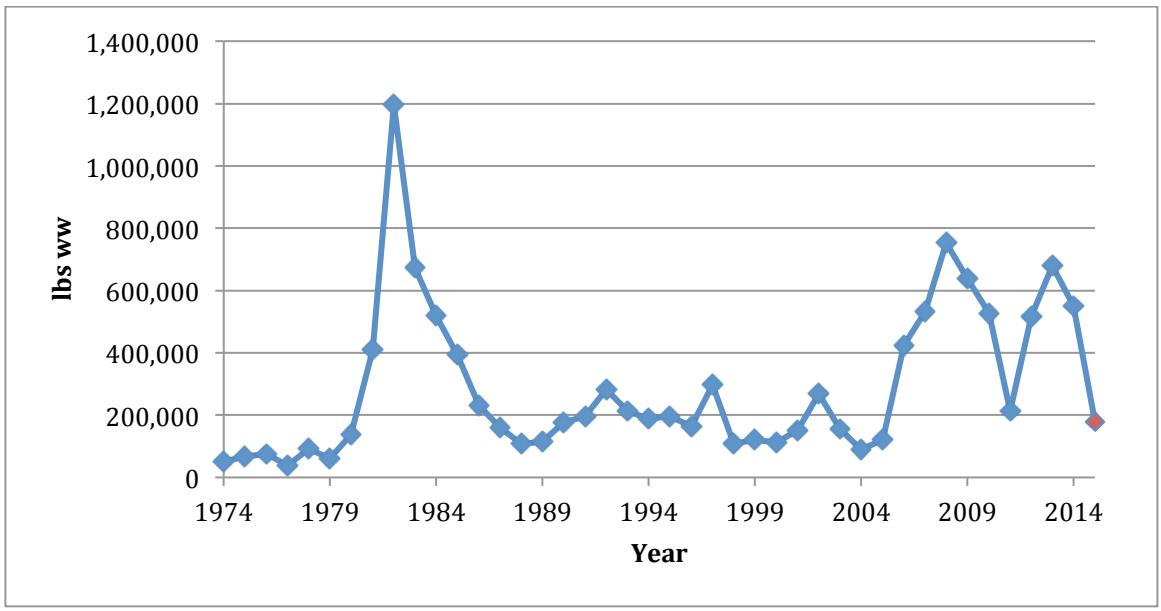

Figure 1. Total landings (commercial and recreational) of blueline tilefish off the U.S. Atlantic coast, 1974-2015 (preliminary).
Source: M. Errigo, SAFMC staff

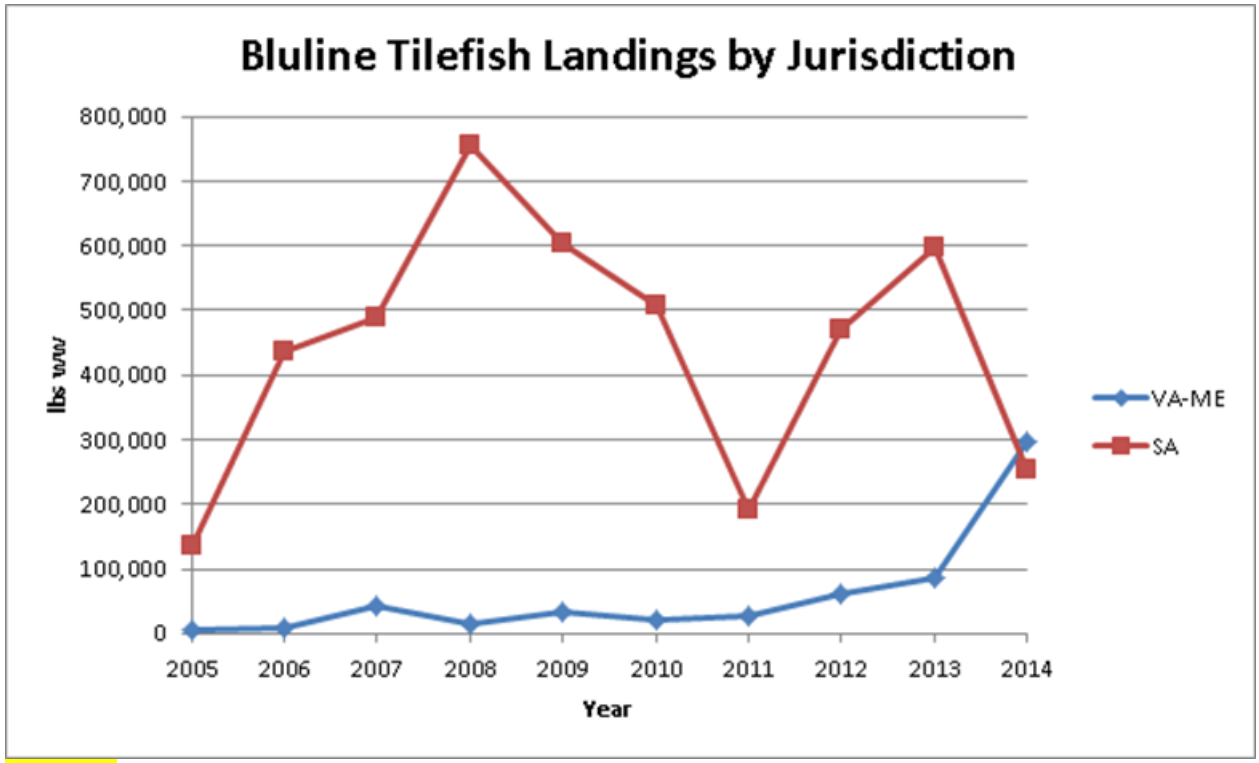

Figure 2. Total landings (commercial and recreational) of blueline tilefish off the U.S. Atlantic coast, 2005-2014by jurisdiction.
Source: M. Errigo, SAFMC staff

Possible Alternatives

Alternative 1 (No Action). ACL = OY = 98%ABC. Commercial and recreational annual catch limits are based on 50.07% commercial and 49.93% recreational.

ACL = OY = 0.98* 54,548 = 53,457 lbs ww.
Commercial ACL = 26,766 lbs ww
Recreational ACL = 26,691 lbs ww

Alternative 2. ACL = OY = 93%ABC (based on landings 2005-2013). Specify commercial and recreational annual catch limits based on existing sector allocations (50.07% commercial and 49.93% recreational).

ACL = OY = 0.93*224,100 = 208,413 lbs ww
Commercial ACL = 104,352 lbs ww
Recreational ACL = 104,061 lbs ww

Alternative 3. ACL = OY = 89%ABC (based on landings 2011-2013). Specify commercial and recreational annual catch limits based on existing sector allocations (50.07% commercial and 49.93% recreational).

ACL = OY = 0.89*224,100 = 199,449 lbs ww
Commercial ACL = 99,864 lbs ww
Recreational ACL = 99,585 lbs ww

Alternative 4. ACL = OY = 96%ABC (based on landings 2005-2014). Specify commercial and recreational annual catch limits based on existing sector allocations (50.07% commercial and 49.93% recreational).

ACL = OY = 0.96*224,100 = 215,136 lbs ww
Commercial ACL = 107,719 lbs ww
Recreational ACL = 107,417 lbs ww

Alternative 5. ACL = OY = 88%ABC (based on landings 2005-2014). Specify commercial and recreational annual catch limits based on existing sector allocations (50.07% commercial and 49.93% recreational).

ACL = OY = 0.88*224,100 = 197,208 lbs ww
Commercial ACL = 98,742 lbs ww
Recreational ACL = 98,466 lbs ww

Alternative 6. ACL = OY = 78%ABC (based on landings 2011-2014). Specify commercial and recreational annual catch limits based on existing sector allocations (50.07% commercial and 49.93% recreational).

ACL = OY = 0.78*224,100 = 174,798 lbs ww
Commercial ACL = 87,521 lbs ww
Recreational ACL = 87,277 lbs ww

COMMITTEE ACTION:

ACTION 1. ADJUSTMENT TO ABC/ACL

OPTION 1. APPROVE RANGE OF ALTERNATIVES UNDER ACTION 1.

OPTION 2. SELECT ALTERNATIVE X AS PREFERRED.

OPTION 3. OTHERS?

ACTION 2. CONSIDER A CHANGE TO THE COMMERCIAL TRIP LIMIT FROM AMENDMENT 32 (see Appendix A; the alternatives below are numbered the same as Amendment 32 so the analyses are easily compared)

OPTION 1. NO ACTION. ~~NO COMMERCIAL TRIP LIMIT FOR BLUELINE TILEFISH~~. OPTION 1 WAS THE NO ACTION ALTERNATIVE IN AMENDMENT 32 BUT THE PREFERRED ALTERNATIVE IN AMENDMENT 32 WAS OPTION 2. OPTION 2 IS THE CURRENT NO ACTION ALTERNATIVE.

OPTION 2. 100-LB GW COMMERCIAL TRIP LIMIT FOR BLUELINE TILEFISH.

OPTION 3. 200-LB GW COMMERCIAL TRIP LIMIT FOR BLUELINE TILEFISH.

OPTION 4. 300-LB GW COMMERCIAL TRIP LIMIT FOR BLUELINE TILEFISH.

ACTION 3. CONSIDER A CHANGE TO THE RECREATIONAL BAG LIMIT FROM AMENDMENT 32 (see Appendix B; the alternatives below are numbered the same as Amendment 32 so the analyses are easily compared)

OPTION 1. NO ACTION. ~~REMOVE BLUELINE TILEFISH FROM THE 3 FISH/PERSON/DAY AGGREGATE BAG LIMIT~~. OPTION 1 WAS THE NO ACTION ALTERNATIVE IN AMENDMENT 32 BUT THE PREFERRED ALTERNATIVE IN AMENDMENT 32 WAS OPTION 4. OPTION 4 IS THE CURRENT NO ACTION ALTERNATIVE.

OPTION 2. BLUELINE TILEFISH BAG LIMIT OF 1/PERSON/DAY.

OPTION 3. BLUELINE TILEFISH VESSEL LIMIT OF 1/VESSEL/DAY.

OPTION 4. NO ACTION. BLUELINE TILEFISH VESSEL LIMIT OF 1/VESSEL/DAY MAY THROUGH AUGUST (CLOSED REST OF YEAR).

OPTION 5. BLUELINE TILEFISH VESSEL LIMIT OF 1/VESSEL/DAY MAY AND JUNE (CLOSED REST OF YEAR).

OPTION 6. BLUELINE TILEFISH VESSEL LIMIT OF 1/VESSEL/DAY IN MAY (CLOSED REST OF YEAR).

OPTION 7. BLUELINE TILEFISH VESSEL LIMIT OF 1/VESSEL/DAY IN JUNE (CLOSED REST OF YEAR).

DRAFT TIMING

- Review draft Actions/Alternatives and select preferred alternatives – September 2015
- Approve for public hearings – September 2015
- Hearings held via webinar in November 2015 and hearing at the December 2015 meeting
- Final approval and send for formal review – December 2015
- Regulations effective as soon as possible in 2016 (April 1st or May 1st target)

COMMITTEE ACTION:

OPTION 1. DIRECT STAFF TO PREPARE SNAPPER GROUPER REGULATORY AMENDMENT X (BLUELINE TILEFISH), APPROVE FOR PUBLIC HEARING, AND ADOPT TIMING SHOWN ABOVE

OPTION 2. MODIFY AND APPROVE ALTERNATE SCHEDULE

OPTION 3. OTHERS?

References

SEDAR (Southeast Data, Assessment, and Review) 32. 2013. South Atlantic Blueline Tilefish. Southeast Data, Assessment and Review, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405. Available at: http://www.sefsc.noaa.gov/sedar/

APPENDIX A. ANALYSES ON COMMERCIAL TRIP LIMIT FROM AMENDMENT 32

4.7 Action 7. Establish a Trip Limit for Blueline Tilefish for the Commercial Sector

4.7.1 Biological Effects

Alternatives
(preferred alternatives in bold)

ACL=annual catch limit

1. No action. No commercial trip limit for blueline tilefish [1]
2. **100-lb gw commercial trip limit for blueline tilefish.**
3. 200-lb gw commercial trip limit for blueline tilefish.
4. 300-lb gw commercial trip limit for blueline tilefish.

[1]The current management measures for blueline tilefish for the commercial sector include gear restrictions, limited access, and area closures.

Under **Action 3**, the Council is considering four alternatives for the blueline tilefish ACL, including the no action alternative. The preferred alternative under **Action 3** would set the commercial ACL equal to 17,841 lbs ww (15,929 pounds gutted weight (lbs gw)) in 2015. The Council is considering trip limits of 100, 200, and 300 lbs gw in **Alternatives 2 (Preferred)-4**. Using the ACL and trip limit scenarios, analysts have predicted when the ACLs would be reached and the commercial sector closed (**Table 4.7.1**). The commercial trip limit analysis is contained in **Appendix K.**

When fishery managers prohibit a particular species, anglers may continue to catch the prohibited species and return the fish to the water as "bycatch". Such is often the case with the snapper grouper fishery, which is considered a "multi-species fishery". This means that anglers, at times, may be targeting several species at once, and not just a single species. In a multi-species fishery, fishery managers may increase bycatch (also referred to as "regulatory discards") by lowering an ACL and implementing trip limits. A significant portion of the released fish may not survive following its release. As discussed in detail in **Appendix F (Bycatch Practicability Analysis)**, adverse effects to blueline tilefish from an increase in bycatch are not likely to be substantial. Blueline tilefish represented 96% of the landings in the Deepwater Complex; therefore, fishing effort for the other species in the complex would likely be greatly reduced if blueline tilefish is prohibited because the other species are likely not targeted. In addition, blueline tilefish is largely caught separately from other deepwater species such as snowy grouper; therefore, incidental catch of blueline tilefish is not expected.

Table 4.7.1. The expected closure dates for the commercial sector under various trip limits for the ACL alternatives.

ACL Alternative (Action 3)	Commercial ACL	Trip Limit	Days Fishing	Predicted End Date
2 ACL = ABC	16,254 lb gw	No Limit	22	22-Jan
		100 lb gw	161	10-Jun
		200 lb gw	118	28-Apr
		300 lb gw	102	12-Apr
3 (Preferred) ACL = 98% ABC	**15,929 lb gw**	**No Limit**	**20**	**20-Jan**
		100 lb gw	**156**	**5-Jun**
		200 lb gw	**116**	**26-Apr**
		300 lb gw	**101**	**11-Apr**
4 ACL = 90% ABC	14,629 lb gw	No Limit	13	13-Jan
		100 lb gw	149	29-May
		200 lb gw	108	18-Apr
		300 lb gw	86	27-Mar

The biological effects of the **Alternatives 2 (Preferred)** through **4** would be expected to be neutral compared with **Alternative 1 (No Action)**, because ACLs and AMs are in place to cap harvest, and take action if ACLs are exceeded. Alternatives with larger trip limits could present a greater biological risk to blueline tilefish in terms of exceeding the ACL since the rate of harvest would be greater. However, improvements have been made to the quota monitoring system, and the Council has approved a Dealer Reporting Amendment (GMFMC and SAFMC 2013b; effective August 7, 2014), which should enhance data reporting. Larger trip limits could also result in earlier commercial closures of blueline tilefish. Early closures can lead to regulatory discards, and release mortality for blueline tilefish is 100%, which would not be beneficial to the stock. Similarly smaller trip limits could increase bycatch if a trip is not ended and fishermen continue to target co-occurring species when the blueline tilefish trip limit is met. Therefore, little difference in the biological effects of the trip limit alternatives is expected.

Regardless of the ACL selected in **Action 3**, none of the alternatives in **Action 7** are anticipated to have adverse effects on listed *Acropora* species, large whales, or any DPS of Atlantic sturgeon. Previous ESA consultations determined the hook-and-line sector of the snapper grouper fishery was not likely to adversely affect *Acropora* species, large whales, or any DPS of Atlantic sturgeon. Regardless of the ACL selected in **Action 3**, in all possible scenarios, **Alternative 1 (No Action)** is likely to be the most biological beneficial to sea turtles and smalltooth sawfish because the fishing effort likely to occur under each scenario is the lowest relative to the other alternatives. Sea turtles nest along the East Coast of the United States from April-October, with peak nesting occurring from May-July. Sea turtle nesting brings gravid females closer to shore where they are more susceptible to interaction with snapper grouper fishing gear. **Alternative 4** (300-lb gw trip limit) would be the next most biologically beneficial to sea turtles and smalltooth

sawfish. The fishing season under this alternative would only overlap with a small portion of the sea turtle nesting season and none of the peak nesting season. The fishing effort under **Alternative 4** would likely be lower than **Alternatives 2 (Preferred)** and **3**, reducing the potential risks to sea turtles and smalltooth sawfish. Simply because of the length of time fishing could occur for blueline tilefish, **Alternative 2** (100-lb gw trip limit) is likely to be the least beneficial alternative for sea turtles and smalltooth sawfish. Fishing under this alternative would extend the longest into the sea turtle nesting season and would occur during a portion of the peak nesting season. The biological benefits from **Alternative 3** are likely to be greater than **Preferred Alternative 2** but less than **Alternative 4**.

4.7.2 Economic Effects

Action 7 proposes three alternatives beyond the No Action alternative for trip limits of 100 lbs, 200 lbs, and 300 lbs gw. Under **Alternative 1 (No Action)**, no trip limit would be imposed on the harvest of blueline tilefish and the pace of fishing is not expected to be altered. Therefore, it is expected the commercial ACL would be met very quickly (i.e., 13-22 days; **Table 4.7.1**).

In general, a larger trip limit is expected to result in a shorter season for commercial fishermen, which would likely result in an increase in regulatory discards. A smaller trip limit could result in a longer season for commercial fishermen and decrease the chances of exceeding the ACL and contributing to overfishing. However, a larger trip limit could result in more profitable trips because fishermen would be able to take larger amounts of fish for similar operating costs. These potential short-term economic benefits depend on geographic location and would likely lead to long-term adverse economic effects. Distance to fishing grounds for blueline tilefish is likely to differ depending on port. Therefore, lower trip limits would likely be more appealing to fishermen located closer to fishing grounds (those with smaller vessels) while higher trip limits would likely appeal more to fishermen located further away from fishing grounds (those with larger vessels) where blueline tilefish can be accessed.

Appendix K contains a trip limit analysis based on different ACL levels that correspond to **Action 3,** and trip limits from **Action 7**. As stated in **Appendix K**, trip limit analyses were done using trip level information for 2013 from the Coastal Logbooks, updated as of 4/28/14. While the Coastal Logbook data may still be incomplete, it was deemed that these were the best data to use, as it was the most recent time frame that had a full year of blueline tilefish fishing without closures. Data from 2012 were not used because of the restriction on possession or harvest of eight deepwater snapper grouper species in waters greater than 240 ft from Jan 1 – May 10th and the closure of the Deepwater Complex on Sept 9th due to exceeding the ACL.

Preferred Alternative 2 proposes a 100-lb gw trip limit under the three possible ACL scenarios identified in **Action 3**. Based on 2013 logbook landings data, the results of imposing a 100-lb gw trip limit indicate that the blueline tilefish commercial fishing

season that starts January 1 could last until June 10th, June 5th, and May 29th based on the scenario where ACL = ABC, ACL = 98% of ABC, and ACL = 90% of ABC **(see Table 4.7.1** above**)**. **Alternative 3** proposes a 200-lb gw trip limit, which indicates a commercial season closure of April 28th for the scenario where ACL=ABC and April 26th for the scenario where ACL=98% of ABC **(Table 4.7.1)**. Under the scenario where ACL=90% of ABC, the season is expected to close April 18th **(Table 4.7.1)**. Under the same analysis and scenarios, a 300 lb gw trip limit **(Alternative 4)** would result in an April 12th, April 11th, and March 27th closure date **(Table 4.7.1)**.

These results indicate that the lower trip limits imply a longer season while the higher trip limits imply a shorter season. As mentioned above, the lower trip limit could indicate lower profits and, for some, the inability to make a trip at all. A higher trip limit would indicate the opposite. **Section 3.3.1.2** describes the importance of blueline tilefish harvest relative to revenues from all species for vessels that harvest blueline tilefish. Dockside revenue from blueline tilefish landings represented, on average, 48% of annual dockside revenue (2012 $) from complex landings from 2003 through 2007 and 85% from 2008 through 2012. **Table 4.7.2** shows the usage of handline versus longline gear. The data indicate a steady increase in the use of longline over handline since 2007, peaking in 2011 at approximately 81%. On average, over the period from 2002 to 2011, 39% of the commercial landings can be attributed to longline gear.

Table 4.7.2. Blueline tilefish landings by gear type, 2002-2011.

Year	Handline	Longline	Other	Total	% Handline	% Longline
2002	140,673	124,815	70	265,558	52.97%	47.00%
2003	78,996	34,954	5,129	119,079	66.34%	29.35%
2004	42,415	27,003	7,291	76,709	55.29%	35.20%
2005	59,083	18,364	6,489	83,936	70.39%	21.88%
2006	110,545	47,358	15,099	173,002	63.90%	27.37%
2007	68,717	6,904	9,482	85,103	80.75%	8.11%
2008	210,865	186,846	14,467	412,178	51.16%	45.33%
2009	260,283	199,873	14,688	474,844	54.81%	42.09%
2010	137,744	291,514	88,791	518,049	26.59%	56.27%
2011	19,904	114,343	7,255	141,502	14.07%	80.81%

Source: SEDAR 32 (2013).

Currently, most blueline tilefish landed commercially are caught with longline gear. For those fishermen that use longline gear exclusively, the lower trip limit may not be large enough to make a profitable trip. If a lower trip limit is chosen by the Council, a redistribution of income from longliners to hook-and-line gear vessels may occur. Hook-and-line gear users may be able to make a profitable trip when other species are targeted if a lower trip limit is chosen by the Council. Fishermen's input will be important in determining the preferred alternative since sufficient information does not exist at this time regarding how large a trip limit has to be to make a blueline tilefish trip profitable with use of longline or hook and line gear.

4.7.3 Social Effects

In general, commercial trip limits may help slow the rate of harvest, lengthen a season, and prevent the ACL from being exceeded. However, trip limits that are too low may make fishing trips inefficient and too costly if fishing grounds are far away, which could affect business decisions and fishing behavior for commercial fishermen. The costs and benefits to fishermen when considering commercial trip limits depend on whether a longer season with a consistent supply of blueline tilefish is more important than maximizing efficiency on fishing trips, even if the season is shorter. Overall, it would be expected that fishermen and crew working on longline vessels in Wanchese, North Carolina would be the most affected by the proposed trip limits in **Alternatives 2 (Preferred)-4** as noted in **Section 3.3.3** where that community has the largest share of regional quotient for blueline tilefish by a wide margin over other communities in the South Atlantic region.

Alternative 1 (No Action) would be most beneficial for vessels that wish to maximize trip efficiency and have other species to target when blueline tilefish is not available. However, with a low proposed commercial ACL in **Action 3**, it is likely that the commercial season would be much shorter than in recent years with no trip limit in place (**Table 4.7.1**). For fishing businesses that would benefit more from a higher trip limit than a longer season due to alternative species to target in other times of the year, **Alternative 4** would be the most beneficial, followed by **Alternative 3** and then **Preferred Alternative 2**. Any changes to fishing trips could affect captains, crew, fish houses and dealers, and businesses associated with blueline tilefish harvest. However, the trip limits in **Alternatives 2 (Preferred)-4** would likely prohibit a vessel from making a trip only to target blueline tilefish, and would require multi-species trips. This could change fishing behavior for fishermen harvesting blueline tilefish, and could affect associated businesses and communities such as Wanchese, North Carolina, and possibly Murrells Inlet and Little River in South Carolina. However, **Alternatives 2 (Preferred)-4** could also be considered a bycatch allowance and allow fishermen to keep some blueline tilefish caught on trips targeting other species, which could improve profitability and efficiency of the trip. The negative effects of trip limits on fishermen using longline gear is expected to be more severe than on fishermen using hook and line, due to time and effort required for the longline component of the blueline tilefish portion of the snapper grouper fishery.

4.7.4 Administrative Effects

Alternatives 2 (Preferred) through **4** would increase administrative costs as these alternatives would implement commercial trip limits for blueline tilefish. These alternatives would add to the administrative burden in the form of cost, time, or law enforcement efforts.

APPENDIX B. ANALYSES ON RECREATIONAL BAG LIMIT FROM AMENDMENT 32

4.8 Action 8. Adjust the Bag Limit for Blueline Tilefish for the Recreational Sector

4.8.1 Biological Effects

Under **Action 3**, the Council is considering four alternatives for the blueline tilefish ACL, including the no action alternative. The preferred alternative under **Action 3** would set the recreational ACL equal to 17,791 lbs ww in 2015. Using the ACL and bag limit scenarios, analysts have predicted when the ACLs would be reached and the sector closed (**Tables 4.8.2** and **4.8.4**). The recreational bag limit analysis is contained in **Appendix L.**

Reductions in harvest associated with various bag and seasonal prohibitions were compared to the status quo **Alternative 1** using the Council's preferred ACL alternative in **Action 3** (98% of the ABC). The largest reductions were seen in the vessel limits for all modes (**Table 4.8.1**), particularly for bag limits, which also included a reduced fishing season. The bag limit reductions were largest for private anglers, followed by headboats and charter boats.

Alternatives

(preferred alternatives in bold)

1. No action. Blueline tilefish is included in the 3 fish/person/day aggregate bag limit.[1]
2. Remove blueline tilefish from the 3 fish/person/day aggregate bag limit.
3. Blueline tilefish bag limit of 1/person/day
4. Blueline tilefish vessel limit of 1/vessel/day
5. **Blueline tilefish vessel limit of 1/vessel/day May through August (closed rest of year)**
6. Blueline tilefish vessel limit of 1/vessel/day May and June (closed rest of year)
7. Blueline tilefish vessel limit of 1/vessel/day in May (closed rest of year)
8. Blueline tilefish vessel limit of 1/vessel/day in June (closed rest of year)

Table 4.8.1. Projected reductions of blueline tilefish landings by month for various alternatives for a) Headboats, b) Marine Recreational Information Program (MRIP) private, and c) MRIP charter. Warmer colors denote higher reductions.

A) Headboats

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/person/day (Alt 3)	55%	55%	27%	27%	58%	58%	63%	63%	88%	88%	78%	78%
1/vessel/day (Alt 4)	99%	99%	97%	97%	99%	99%	99%	99%	99%	99%	99%	99%
1/vessel/day from May –Aug (Alt 5)	**100%**	**100%**	**100%**	**100%**	**99%**	**99%**	**99%**	**99%**	**100%**	**100%**	**100%**	**100%**
1/vessel/day from May –Jun (Alt 6)	100%	100%	100%	100%	99%	99%	100%	100%	100%	100%	100%	100%
1/vessel/day in May only (Alt 7)	100%	100%	100%	100%	99%	100%	100%	100%	100%	100%	100%	100%
1/vessel/day in June only (Alt 8)	100%	100%	100%	100%	100%	99%	100%	100%	100%	100%	100%	100%

B) MRIP private

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/person/day (Alt 3)	79%	79%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
1/vessel/day (Alt 4)	93%	93%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%
1/vessel/day from May –Aug (Alt 5)	**100%**	**100%**	**100%**	**100%**	**86%**	**86%**	**86%**	**86%**	**100%**	**100%**	**100%**	**100%**
1/vessel/day from May –Jun (Alt 6)	100%	100%	100%	100%	86%	86%	86%	86%	100%	100%	100%	100%
1/vessel/day in May only (Alt 7)	100%	100%	100%	100%	86%	86%	86%	86%	100%	100%	100%	100%
1/vessel/day in June only (Alt 8)	100%	100%	100%	100%	86%	86%	86%	86%	100%	100%	100%	100%

C) MRIP charter

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/person/day (Alt 3)	55%	55%	46%	46%	29%	29%	70%	70%	51%	51%	51%	51%
1/vessel/day (Alt 4)	88%	88%	87%	87%	87%	87%	94%	94%	89%	89%	88%	88%
1/vessel/day from May –Aug (Alt 5)	**100%**	**100%**	**100%**	**100%**	**87%**	**87%**	**94%**	**94%**	**100%**	**100%**	**100%**	**100%**
1/vessel/day from May –Jun (Alt 6)	100%	100%	100%	100%	87%	87%	100%	100%	100%	100%	100%	100%
1/vessel/day in May only (Alt 7)	100%	100%	100%	100%	87%	100%	100%	100%	100%	100%	100%	100%
1/vessel/day in June only (Alt 8)	100%	100%	100%	100%	100%	87%	100%	100%	100%	100%	100%	100%

Alternative 2 would remove blueline tilefish from the grouper tilefish aggregate bag limit, while **Alternatives 3-8** would specify a bag limit for blueline tilefish within the aggregate. **Alternatives 3** and **4**, which would allow for a 1-blueline tilefish per person (**Alternative 3**) or 1 blueline tilefish per vessel (**Alternative 4**) with no seasonal closure, would result in the greatest percentage of the ACL being landed (**Table 4.8.2**). Under

Alternatives 3 and **4**, the recreational ACL would be met in January and July, respectively, based on data from 2013. Vessel limits (**Alternatives 6-8**) that include a short open season (May – Jun, May only, and June only) would result in very low projected landings and a small portion of the ACL being caught.

Table 4.8.2. The expected closure dates for the recreational sector under various bag limits for the preferred ACL alternative based on 2013 data.

	Projected Closure date	**Projected Days Open**	**Projected Landings (ww)**	**Percentage of ACL**
Status quo (Alt 1)	Jan – 5	4	17,791	100%
1/person/day (Alt 3)	Jan – 26	25	17,791	100%
1/vessel/day (Alt 4)	Jul – 15	195	17,791	100%
1/vessel/day from May – Aug (Alt 5)	**Sep – 1**	**123**	**14,397**	**80.9%**
1/vessel/day from May – Jun (Alt 6)	Jul – 1	61	579	3.3%
1/vessel/day in May only (Alt 7)	Jun – 1	31	293	1.6%
1/vessel/day in June only (Alt 8)	Jul – 1	30	287	1.6%

In 2013, very high landings were reported in Wave 1 (January-February), which may not be representative of future landings (**Table 4.8.3**). A sensitivity analysis was conducted using the 12 most recent months of data available (**Table 4.8.4**). This included MRIP landings from the ACL datasets for Waves 1 and 2 from 2014, and all remaining data were from 2013. The sensitivity analysis lengthened the season length for **Alternatives 1 (No Action), 3,** and **4**, but had no effect on the other alternatives because they would be closed during Wave 1. In comparison to the status quo **Alternative 1**, using data in the sensitivity analysis would extend the season length by 100 days under **Alternative 3** (1 fish per person per day) and 210 days under **Alternative 4** (1fish per vessel per day).

Table 4.8.3. MRIP landings from the ACL database over time.

Year	**Wave 1**	**Wave 2**	**Wave 3**	**Wave 4**	**Wave 5**	**Wave 6**
2014	4,548	18,089	NA	NA	NA	NA
2013	178,302	5,905	4,366	108,849	4,027	43,024
2012	388	3,300	33,190	27,886	19,609	7,711
2011	2,797	326	6,195	26,492	9,084	166
2010	11,453	12,596	30,297	6,293	6,570	3,675

Table 4.8.4. Estimated projected closures and landings using 2014 data for MRIP waves 1 and 2, and 2013 data for all other months/waves.

	Projected Closure date	Projected Days Open	Projected Landings (ww)	Percentage of ACL
Status quo (Alt 1)	Apr – 4	93	17,791	100%
1/person/day (Alt 3)	Jul – 13	193	17,791	100%
1/vessel/day (Alt 4)	Oct – 31	303	17,791	100%
1/vessel/day from May – Aug (Alt 5)	**Sep – 1**	**123**	**14,397**	**79.3%**
1/vessel/day from May – Jun (Alt 6)	Jul – 1	61	579	3.3%
1/vessel/day in May only (Alt 7)	Jun – 1	31	293	1.6%
1/vessel/day in June only (Alt 8)	Jul – 1	30	287	1.6%

When fishery managers prohibit harvest of a particular species, anglers may continue to catch the prohibited species and return the fish to the water as "bycatch". Such is often the case with the snapper grouper fishery, which is considered a "multi-species fishery". This means that anglers, at times, may be targeting several species at once, and not just a single species. In a multi-species fishery, fishery managers may increase bycatch (also referred to as "regulatory discards") by lowering an ACL and implementing bag limits. Depending on the release mortality rates for a species, a portion of the released fish may not survive following its release. As discussed in detail in **Appendix F (Bycatch Practicability Analysis)**, adverse effects to blueline tilefish from an increase in bycatch are not likely to be substantial. Blueline tilefish represented 96% of the landings in the Deepwater Complex; therefore, fishing effort towards the other species in the Deepwater Complex would likely be greatly reduced if blueline tilefish is prohibited because the other species in the complex are likely not targeted. In addition, blueline tilefish is largely caught separately from other deepwater species such as snowy grouper; therefore, incidental catch of blueline tilefish is not expected.

Using the MRIP Website effort queries, the number of trips that caught and landed blueline tilefish were compared to the number of trips that were targeting blueline tilefish as its primary species to obtain additional information with respect to discards and the bag limit analysis. In 2013, 83% of all trips catching blueline tilefish were targeting blueline tilefish. This value is variable though when looking at data since 2006, with an average of 37% of the trips targeting blueline tilefish. According to the blueline tilefish stock assessment (SEDAR 32; Table 2.11), the number of recreational blueline tilefish discarded was low with 12% discarded in 2010 and 3% of blueline tilefish were discarded in 2011 when the 240-foot harvest prohibition of 8 species (including blueline tilefish) was in place. The MRIP Website provides an estimate of 1,345 (5%) and 1,200 (2%) blueline tilefish discarded in 2012 and 2013, respectively. Discards would vary

depending on whether fishermen continued to target blueline tilefish after the bag limit was met or the species was incidentally caught when harvest was prohibited. The reduction in blueline tilefish discards during the 240 foot harvest prohibition of the 8 snapper grouper species in 2011 may imply that fishermen were not actively targeting this species. This may be an indication that once the season closes or the bag limit is reached, fishermen may cease to target blueline tilefish, which would limit the discards. The maximum discards that could be expected would be the differences between the alternatives and the status quo, and with the high projected reductions for some alternatives, increased discards should be considered when choosing an alternative.

The biological effects of removing blueline tilefish from the grouper aggregate under **Alternative 2** would not be different from **Alternative 1 (No Action)** because the grouper aggregate is rarely met (**Tables 4.8.5** and **4.8.6**). In addition, the average catch of blueline tilefish within the grouper aggregate is less than 1 fish per person per day (**Tables 4.8.5** and **4.8.6**). The biological effects of **Alternative 2** when compared to **Alternative 1 (No Action)** are expected to be neutral.

Table 4.8.5. Number of trips that caught a species in aggregate grouper bag limit, the grouper aggregate of 3 fish, and blueline tilefish by year from MRIP data.

MRIP	2009	2010	2011	2012	2013
Trips that caught an aggregate fish (landed or discarded)	145	448	278	446	359
Positive aggregate trips (landed an aggregate fish)	72	139	96	167	118
Average aggregate CPA (max = 3)	0.45	0.29	0.29	0.34	0.33
Average aggregate CPA, positive trips (max = 3)	0.90	0.92	0.84	0.90	1.0
Trips that landed blueline tilefish	10	40	22	42	25
% aggregate trips that landed blueline tilefish	7%	9%	8%	9%	7%
Average blueline tilefish CPA (max = 1)	0.15	0.11	0.10	0.18	0.16
Average blueline tilefish CPA, positive trips (max = 1)	2.20	1.21	1.23	1.95	2.27

Table 4.8.6. Number of trips that caught a species in aggregate grouper bag limit, the grouper aggregate of 3 fish, and blueline tilefish by year from HBS data.

HBS	2009	2010	2011	2012	2013
Trips that caught an aggregate fish	4967	4916	3772	4572	4423
Positive aggregate trips (landed an aggregate fish)	2583	2344	1988	1926	2007
Average aggregate CPA (max = 3)	0.13	0.13	0.16	0.13	0.12
Average aggregate CPA, positive trips (max = 3)	0.24	0.28	0.31	0.30	0.27
Trips that landed blueline tilefish	55	59	99	75	56
% aggregate trips that landed blueline tilefish	1.1%	1.2%	2.6%	1.6%	1.3%
Average CPA BLT (max = 1)	0.02	0.02	0.05	0.05	0.04
Average blueline tilefish CPA, positive trips (max = 1)	1.74	1.66	2.04	2.93	3.25

The biological effects of **Alternatives 3** through **8** are expected to be neutral compared with **Alternative 1 (No Action)**, because ACLs and AMs are in place to cap harvest, and take action if ACLs are exceeded. However, alternatives with larger bag limits could present a greater biological risk to blueline tilefish in terms of exceeding the ACL since the rate of harvest would be greater. For example, **Alternative 3** would implement a bag limit of one blueline tilefish per person per day with an expected closure date occurring as early as January (**Table 4.8.2**). If this alternative is implemented, and the recreational ACL is reached in January, fishery managers would not be aware that the ACL was reached until later in the fishing season. In this scenario, it is possible that the recreational ACL would be exceeded, unless NMFS anticipated the overage and implemented an in-season recreational closure. If less conservative bag limits increase the probability of an overage of the ACL, then more conservative bag limit alternatives (**Alternatives 6** through **8**) would have greater beneficial effects to the resource than less conservative alternatives (**Alternatives 3** through **5 (Preferred)**). This is evident by the percentage of ACL for each alternative shown in **Tables 4.8.2** and **4.8.4**. Removing blueline tilefish from the three fish aggregate bag limit (**Alternative 2**) would positively affect the blueline tilefish population on trips where the aggregate bag limit is limiting harvest of the species. The effect may be greater for private trips compared to charter and headboat trips; the average catch per angler was 2.8, 1.9, and 1.8 for the private, charterboat, and headboat trips, respectively.

Larger bag limits could also result in earlier closures of blueline tilefish. Early closures can lead to regulatory discards and release mortality for blueline tilefish is 100%, which would not be beneficial to the stock. Similarly larger bag limits could increase bycatch if a trip is not ended and fishermen continue to target co-occurring

species when the blueline tilefish trip limit is met. Therefore, little difference in the biological effects of the trip limit alternatives is expected.

None of the alternatives in **Action 8** are anticipated to have adverse effects on listed *Acropora* species, large whales, or any DPS of Atlantic sturgeon. Previous ESA consultations determined the hook-and-line sector of the snapper grouper fishery was not likely to adversely affect *Acropora* species, large whales, or any DPS of Atlantic sturgeon. **Alternative 1 (No Action)** is likely to provide the most biological benefits to sea turtles and smalltooth sawfish because the fishing season would remain open for the fewest number of days relative to the other alternatives and would not occur at all during sea turtle nesting season. Sea turtles nest along the East Coast of the United States from April-October, with peak nesting occurring from May-July. Sea turtle nesting brings gravid females closer to shore where they are more susceptible to interaction with snapper grouper fishing gear. **Alternative 3** would be second most biologically beneficial to sea turtles and smalltooth sawfish. While the fishing season would remain open longer than in **Alternative 1 (No Action)**, there would be fewer fishing days than all remaining alternatives, and no fishing would occur during the nesting season. **Alternatives 7** and **8** would have the same biological benefits. While the fishing season would be the shortest under these alternatives, all fishing effort under each would occur during one month of the peak nesting season. **Alternative 6** is likely to be less biologically beneficial than **Alternatives 7** and **8**. The fishing season under **Alternative 6** would be longer than those two alternatives and would occur only during the entire peak nesting season. **Alternatives 4** and **5 (Preferred)** are likely to be the least biologically beneficial. The fishing seasons under **Alternative 4** would be open the longest and would occur during sea turtle nesting season, including large portions of the peak nesting season. **Preferred Alternative 5** would have a shorter fishing reason relative to **Alternative 4**, but the season would be open during the entire peak sea turtle nesting season, as well as September.

4.8.2 Economic Effects

In general, the short-term economic effects of bag limit changes for the recreational sector depend on the change in access to the resource. **Alternative 1 (No Action)** allows the recreational sector the greatest access to retain blueline tilefish with up to three blueline tilefish kept per trip. While this may result in higher catch rates by the recreational sector, it does not directly affect long-term economic benefits, which are largely ruled by the ACL and the ability of AMs to be enforced. **Alternative 2** would likely have negative long-term economic effects associated with the biological effects of no bag limit for blueline tilefish, such as lower ACLs or limited access to the resource. This is the least economically beneficial alternative for the recreational fishery in the short-term. **Appendix L** and **Tables 4.8.2** and **4.8.4** contain an analysis of **Alternatives 3** through **8**.

The bag limit analysis results in **Table 4.8.2** show that **Alternative 1 (No Action)** could result in a January 5th closure data with a recreational fishing season of four days.

The remaining alternatives (other than **Alternative 2**) have projected season lengths of 25 days (**Alternative 3**), approximately 30 days (**Alternatives 7 and 8**), 61 days (**Alternative 6**), 123 days (**Preferred Alternative 5**), and 195 days (**Alternative 4**). Season lengths would be extended based on a sensitivity analysis that substitutes 2014 data for data from Waves 1 and 2 in 2013 (**Table 4.8.4**). **Alternative 4**, which proposes 1 fish per vessel per day is expected to result in the greatest number of days available for recreational fishermen to access the resource. **Alternative 4** is also expected to result in the greatest capture of the recreational ACL. Therefore, **Alternative 4** is expected to result in the largest short-term economic benefits to the recreational sector. **Alternatives 6**, **7**, and **8** offer the least amount the ACL to be taken (3.3%, 1.6%, and 1.6%, respectively). These last three alternatives are among the least economically beneficial for the recreational sector after **Alternative 2**.

4.8.3 Social Effects

In general, the social effects of modifying the recreational bag or vessel limit would be associated with the biological costs of each alternative (see **Section 4.8.1**), as well as the effects on current recreational fishing opportunities. The aggregate bag limit (**Alternative 1 (No Action)**) would not contribute to directed management of blueline tilefish. Additionally, as shown in **Appendix L** and **Tables 4.8.2 and 4.8.4**, **Alternative 1 (No Action)** would result in the shortest projected season (4 days). The biological and social effects of removing blueline tilefish from the grouper aggregate under **Alternative 2** would not be different from **Alternative 1 (No Action)** because the grouper aggregate is rarely met and an average of less than 1 blueline tilefish per person is caught within the grouper aggregate. **Alternatives 3-8** would limit recreational fishing opportunities for blueline tilefish but would also be expected to contribute to successful rebuilding of the stock. Establishing a recreational season for blueline tilefish under **Alternatives 5 (Preferred)-8** could contribute to rebuilding the stock and reducing discards of blueline tilefish by confining recreational landings to a small portion of each year.

Different levels of recreational fishing opportunities through limited seasons under each of these alternatives could affect recreational fishermen who target blueline tilefish. In general, longer fishing seasons for blueline tilefish would be more beneficial for recreational fishermen. The following analysis incorporates an in-season closure established under **Action 6**, and incorporates the bag limit analysis in **Appendix L**. Recreational harvest under **Alternative 3** would not be projected to continue past January (**Table 4.8.2**). Additionally, having only January open would likely prohibit recreational fishermen in the northern part of the region from having any opportunity to fish for blueline tilefish. **Alternative 4** would be expected to increase recreational fishing opportunities with a projected season into July.

Although **Preferred Alternative 5** would limit recreational harvest of blueline tilefish to May-August, the projected season length suggest recreational fishermen would be able to target blueline tilefish throughout the entire four months. **Alternative 6**, however, would limit recreational harvest to only May and June. If this occurred, some

of the recreational ACL could not be harvested. **Alternatives 7** and **8** would limit the recreational harvest to only one month, but both would at least allow the respective month to be open the entire time. Overall, the benefits and costs to recreational fishermen under each alternative would depend on the most popular time to target blueline tilefish compared with season length.

4.8.4 Administrative Effects

Alternatives 3 through **8** would increase administrative costs as these alternatives would implement recreational bag limits for blueline tilefish. These alternatives would add to the administrative burden in the form of cost, time, or law enforcement efforts. The administrative adverse effects of **Alternatives 5 (Preferred)** through **8** would be greater than the other alternatives since the bag limits are only specified for a specific time of the year versus a year-round bag limit. Changing bag limits may require more outreach in order to notify the public and more law enforcement efforts to enforce the regulations.