Greater Amberjack – Advisory Panel Information Document

April 2018

Biology

Greater amberjack, *Seriola dumerili*, is a pelagic species in the Jacks family (Carangidae) (Manooch and Potts 1997a). This species occurs in the Indo-West Pacific, and in the Western and Eastern Atlantic Oceans. In the Western Atlantic, it occurs as far north as Nova Scotia, Canada, southward to Brazil, including the Gulf of Mexico (Carpenter 2002, Manooch and Potts 1997a, Manooch and Potts 1997b).

Spawning in the South Atlantic region occurs from January through June, with a peak in April and May. Harris et al. (2007) caught fish in spawning condition from North Carolina through the Florida Keys; however, spawning appears to occur primarily off south Florida and the Florida Keys (Harris et al. 2007). Greater amberjack in spawning condition were found in different depths, although the bulk of samples were from the shelf break. Tagging data indicated that greater amberjack are capable of extensive movement that might be related to spawning activity. Greater amberjack tagged off South Carolina have been recaptured off Georgia, east Florida, Florida Keys, west Florida, Cancun Mexico, Cuba, and the Bahamas (MARMAP, unpublished data).

This species is the largest jack with a maximum reported size of 190 cm (75 in) and 80.6 kg (177.7 pounds) (Paxton et al. 1989). Female greater amberjack are generally larger at age than males (Harris et al. 2007). Maximum reported age is 17 years (Manooch and Potts 1997a). According to Harris et al. (2007), the size at which 50% of males are mature is 644 mm FL (25 in), whereas all males are mature at 751-800 mm FL (29.5-31 in) and age 6. The size at 50% maturity among female greater amberjack is 733 mm FL (29 in). Age at 50% maturity for females was 1.3 years and all females were mature by 851-900 mm FL (33.5-35 in) and age 6.

Primary food items include fishes, such as bigeye scad, and invertebrates (Paxton et al. 1989).

Stock Status

The SEDAR 15 benchmark assessment (2008) was the first peer-reviewed assessment of South Atlantic greater amberjack. The assessment was completed in 2008 using data through 2006 and concluded that greater amberjack in the South Atlantic are **not overfished and overfishing is not occurring**. The fishing mortality (F) during the last year of the assessment (2006) was found to be about half of the fishing mortality that would produce maximum sustainable yield (F_{MSY}) ($F_{2006}/F_{MSY} = 0.531$). The spawning stock biomass (SSB) during the last year of the assessment was found to be just above the spawning stock biomass that would produce maximum sustainable yield (SSB_{MSY}) ($SSB_{2006}/SSB_{MSY} = 1.096$).

The Scientific and Statistical Committee (SSC) reviewed the SEDAR 15 assessment at its June 2008 meeting. The SSC deemed that SEDAR 15 was conducted using the best available science and recommended its use in managing the South Atlantic stock of greater amberjack. The overfishing limit (OFL) was set at the same level as the maximum sustainable yield (MSY) value and the acceptable biological catch (ABC) was set at the same level as optimum yield (OY), which is the yield at 75% F_{MSY}. A standard assessment of the South Atlantic stock of greater amberjack (SEDAR 59) is being conducted in 2018.

Management Overview

The Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP; SAFMC 1983) established a management regime for the fishery for snappers, groupers and related reef species under the area of authority of the South Atlantic Fishery Management Council and the territorial seas of the states, extending from the North Carolina/Virginia border through the Atlantic side of the Florida Keys.

The original FMP (effective 8/31/83) specified a 4-inch trawl mesh size and gear limitations.

In 1992, Amendment 4 (SAFMC 1991) to the Snapper Grouper FMP specified prohibited gear in the snapper grouper fishery including powerheads and bangsticks in designated special management zones (SMZs) off South Carolina. The amendment established a recreational minimum size limit for greater amberjack of 28 inches fork length (FL) and a 3-fish per person per day bag limit. For the commercial sector, a minimum size limit of 36 inches FL or 28 inches core length was established. Commercial harvest of greater amberjack above the recreational bag limit was prohibited annually during April south of Cape Canaveral, FL. The amendment also required offloading of snapper grouper species with head and fins intact, with the exception of greater amberjack.

In 1999, Amendment 9 (SAFMC 1998) to the Snapper Grouper FMP implemented the following for greater amberjack:

- Reduced the recreational bag limit to one fish per person per day.
- For commercial and for-hire vessels, during April each year, the amendment specified one greater amberjack per person per day or one per trip, whichever is more restrictive, in both state and federal waters.
- Prohibited commercial sale and purchase during April each year.
- Established a commercial quota of 1,169,931 pounds gutted weight (1,216,728 pounds whole weight) and prohibited harvest after the quota was met.
- Changed the fishing year from the calendar year to begin May 1.
- Prohibited coring (28 inches recreational and 36 inches commercial).
- Prohibited bag limit sales of greater amberjack when the commercial fishery closed.

Additionally, a commercial trip limit of 1,000 pounds was proposed in the original amendment but was not implemented until 2000.

Amendment 15B (SAFMC 2008) prohibited the sale of snapper grouper species harvested from or possessed in the exclusive economic zone under the bag limits and prohibited the sale of snapper grouper species harvested or possessed under the bag limits by vessels with a Federal

charter vessel/headboat permit for South Atlantic snapper grouper regardless of where the fish were harvested (i.e., state or federal waters).

In 2011, implementation of Regulatory Amendment 9 (SAFMC 2011a) increased the commercial trip limit for greater amberjack to 1,200 pounds gutted weight.

The Comprehensive ACL Amendment (SAFMC 2011b) specified annual catch limits (ACL) for many unassessed snapper grouper species, including greater amberjack. The commercial ACL for greater amberjack was set at 800,163 pounds whole weight and the recreational ACL was set at 1,167,837 pounds whole weight. Also in 2012, the Comprehensive Ecosystem-based Amendment 2 (SAFMC 2011c) limited the harvest of snapper grouper species in South Carolina SMZs to the recreational bag limit.

The fishing year (commercial and recreational) for greater amberjack was again changed in 2014 to begin March 1 through implementation of Regulatory Amendment 14 (SAFMC 2014).

Fishery-independent Trends

The Southeast Reef Fish Survey (SERFS) provides fishery-independent information for many Council-managed snapper grouper species. The survey uses a combination of fish traps (chevron traps) and bottom longline gear to sample reef species. Greater amberjack, however, are not often sampled in this survey as they are pelagic (not bottom-dwellers). Consequently, there are limited fishery-independent data in the South Atlantic for this species.

Fishery Performance

The following summary of greater amberjack landings was prepared using various data sources as detailed below:

ALS: The Accumulated Landings System (ALS) is the system used by the Southeast Fisheries Science Center (SEFSC) to track commercial landings in the South Atlantic. It includes commercial dealer reports. These data are provided to the Council each year.

SEFSC: These are the recreational data, which are a combination of the Marine Recreational Information Program (MRIP) survey data and the Southeast Region Headboat Survey (SRHS) data. The MRIP data are provided to the SEFSC in numbers and are subsequently converted to weight using a method unique to the Southeast Region. These data are transmitted to the Council each year.

To access an online tool displaying data presented in this summary, click here.

Commercial Landings

Commercial landings of greater amberjack in pounds whole weight from 2000 through 2016 by state are presented in **Table 1**. Landings by state are presented graphically in **Figure 1** and total landings relative to the quota/ ACL are shown in **Figure 2**. Georgia landings were combined with South Carolina landings to maintain confidentiality.

Table 1. South Atlantic greater amberjack total commercial landings (pounds whole weight) and quota/ACL (where applicable) from 2000 through 2016, by state. Data for Georgia and South Carolina were aggregated to maintain confidentiality. From 2000-2014 the fishing year started on May 1. In subsequent years, the fishing year started on March 1.

Year	Fishing Year	NC	SC + GA	FL	Total	Comm Quota/ACL
2000	00-01	32,305	103,255	712,123	847,683	1,216,728
2001	01-02	30,824	97,227	646,633	774,684	1,216,728
2002	02-03	30,157	129,405	554,451	714,013	1,216,728
2003	03-04	36,237	115,914	769,089	921,240	1,216,728
2004	04-05	27,648	147,369	740,404	915,420	1,216,728
2005	05-06	30,179	72,871	564,587	667,638	1,216,728
2006	06-07	27,371	106,161	477,430	610,962	1,216,728
2007	07-08	26,158	79,676	533,219	639,053	1,216,728
2008	08-09	41,013	100,307	639,457	780,777	1,216,728
2009	09-10	34,620	125,294	777,341	937,255	1,216,728
2010	10-11	18,504	96,502	802,102	917,108	1,216,728
2011	11-12	16,680	105,075	969,707	1,091,462	1,216,728
2012	12-13	21,731	219,793	748,221	989,745	800,163
2013	13-14	41,999	116,557	733,164	891,720	800,163
2014	14-15	106,364	119,971	565,630	791,965	800,163
2015	15-16	89,905	76,110	582,098	748,113	800,163

Source: ALS

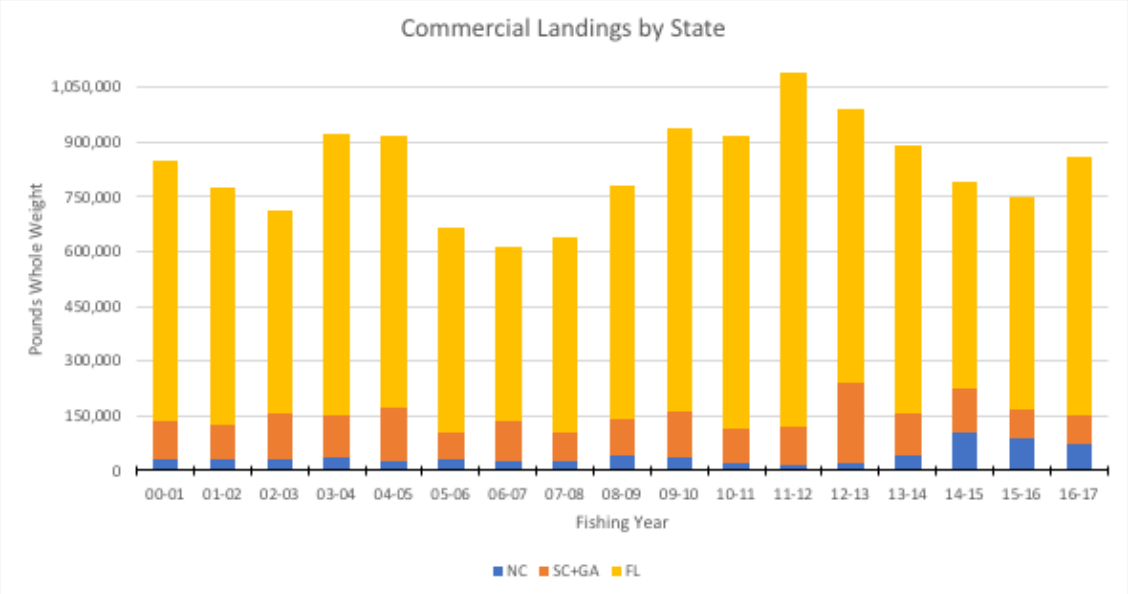

Figure 1. Commercial landings (pounds whole weight) of greater amberjack in the South Atlantic region from 2000 through 2016 by state. Data for Georgia and South Carolina were aggregated to maintain confidentiality. From 2000-2014 the fishing year started on May 1. In subsequent years, the fishing year started on March 1.

Source: ALS

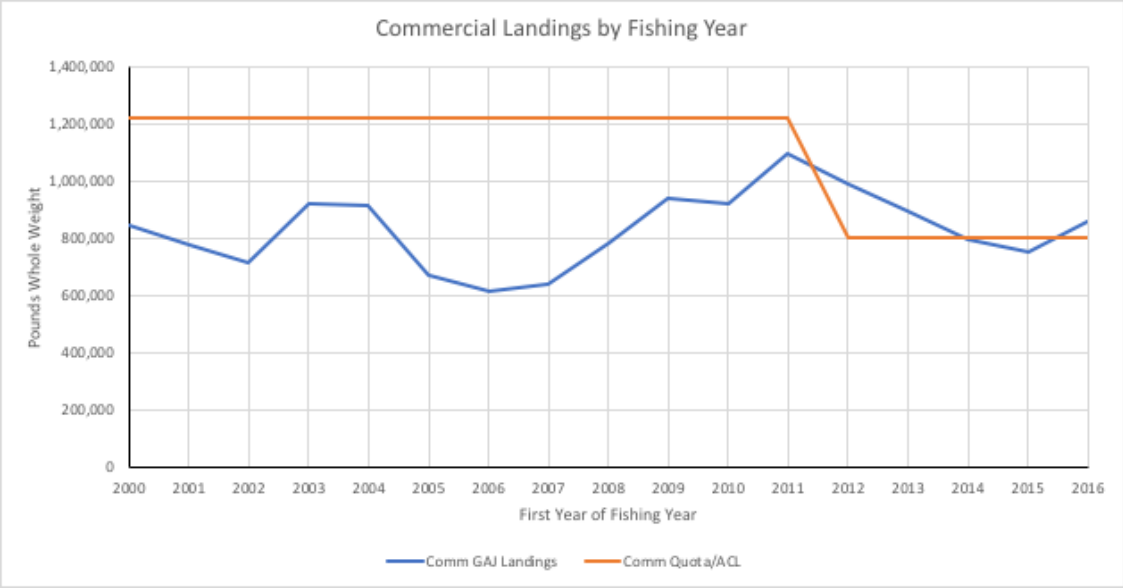

Figure 2. Commercial landings (pounds whole weight) of greater amberjack in the South Atlantic region from 2000 through 2015 (blue line) and quota/commercial ACL (orange line). From 2000-2014 the fishing year started on May 1. In subsequent years, the fishing year started on March 1.
Source: ALS

Greater amberjack commercial landings since 2000 have ranged from a low of 610,962 pounds whole weight in 2006 to a high of 1,091,462 pounds whole weight in 2011 (**Table 1**). The vast majority of greater amberjack landed commercially in the South Atlantic are landed in Florida. Over the time period examined, landings have generally fluctuated. After peaking in 2011, commercial landings of greater amberjack decreased until 2015 showing an increase thereafter (**Figures 1 & 2**). Landings exceeded the commercial quota/ACL during the 2012/2013 and 2013/2014 fishing years by about 22% and 10%, respectively. An in-season closure occurred during the 2015-2016 fishing year (on 1/21/16); however, landings only reached 92% of the commercial ACL[1].

Figures 3 & 4 show the seasonality and distribution of commercial landings, respectively. **Figure 3** displays the average monthly commercial landings of greater amberjack in the South Atlantic region from 2000 through 2016. **Figure 4** displays the same information by state. The commercial fishery for greater amberjack occurs mainly during later winter and early spring, except during April when the spawning season closure is in effect for the commercial sector. Commercial landings of greater amberjack peak annually during the month of May (**Figure 3**). Average landings during May are about three times the monthly average landings observed in June through January. **Figure 4** clearly shows that greater amberjack are harvested commercially almost exclusively in Florida.

[1]http://sero.nmfs.noaa.gov/sustainable_fisheries/acl_monitoring/commercial_sa/historical/pdfs/sa_commercial_historical.pdf

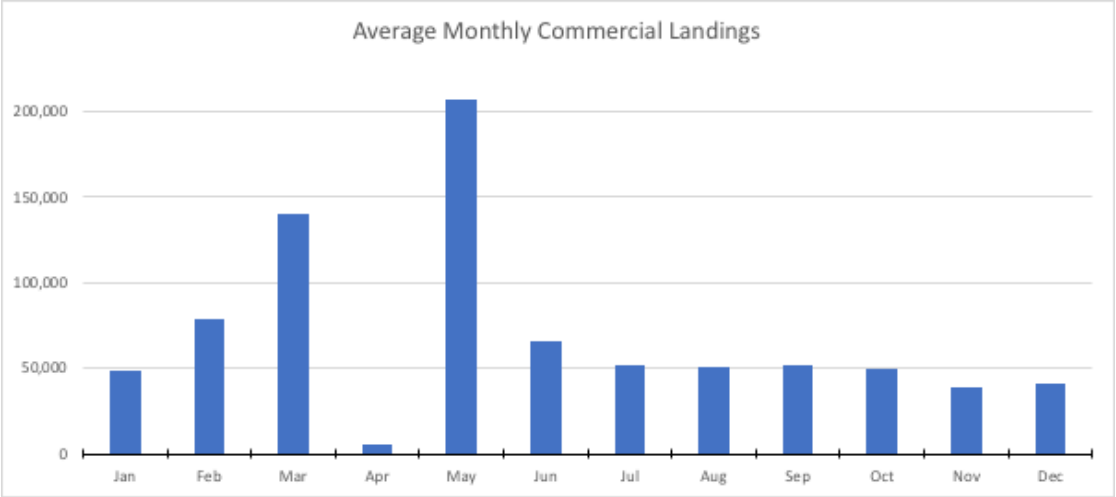

Figure 3. Average monthly commercial landings (pounds whole weight) of greater amberjack in the South Atlantic region, 2000-2016. Source: ALS.

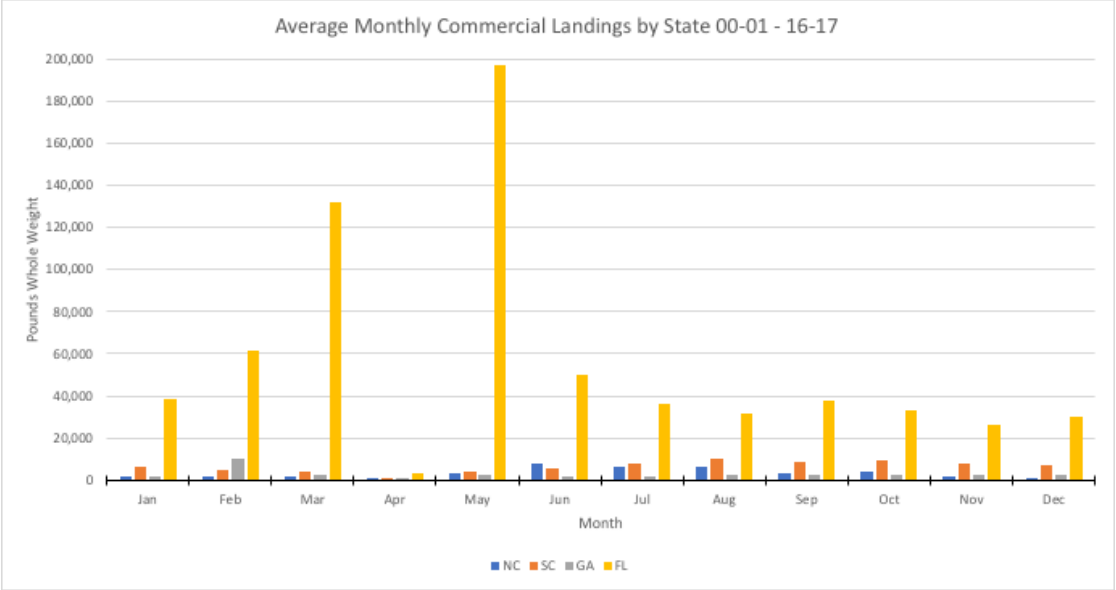

Figure 4. Average monthly commercial landings (pounds whole weight) of greater amberjack by state from 2000 through 2016.
Source: ALS.

Recreational Landings

Recreational landings of greater amberjack in pounds whole weight from 2000 through 2016 by state are presented in **Table 2**. Landings by state are presented graphically in **Figure 5.** Recreational landings of greater amberjack have ranged from a low of about 482,000 pounds whole weight in 2005/2006 to a high of almost 1.4 million pounds in 2008/2009 (**Table 2**). In terms of geographical distribution, similar to commercial landings, total recreational landings of greater amberjack can be attributed to Florida. During the time period examined, greater amberjack recreational landings in North Carolina were most prominent from 2008/2009 to 2010/2011 (**Figure 5**).

Table 2. South Atlantic greater amberjack total recreational landings (pounds whole weight) and recreational ACL (where applicable) from 2000 through 2016, by state. From 2000-2014 the fishing year started on May 1. In subsequent years, the fishing year started on March 1.

Year	Fishing Year	NC	SC	GA	FL	Total	Rec ACL
2000	00-01	142,988	116,311	21,697	660,700	941,697	
2001	01-02	98,295	24,359	5,046	773,374	901,076	
2002	02-03	149,609	62,360	7,739	650,040	869,749	
2003	03-04	153,755	85,994	28,114	834,166	1,102,030	
2004	04-05	56,361	110,504	20,573	452,803	640,242	
2005	05-06	63,825	11,504	38,513	368,153	481,994	
2006	06-07	322,214	24,024	27,857	731,025	1,105,119	
2007	07-08	102,670	83,065	45,046	944,784	1,175,565	
2008	08-09	461,072	67,007	38,909	828,742	1,395,731	
2009	09-10	439,504	66,910	26,434	705,052	1,237,900	
2010	10-11	389,645	55,455	20,100	713,964	1,179,165	
2011	11-12	113,297	12,882	827	402,219	529,225	
2012	12-13	204,431	18,859	3,554	500,495	727,339	1,167,837
2013	13-14	166,546	35,238	36,764	549,509	788,057	1,167,837
2014	14-15	72,343	57,819	50,095	716,179	896,436	1,167,837
2015	15-16	257,258	66,644	20,705	954,158	1,298,765	1,167,837
2016	16-17	215,881	49,867	23,236	827,056	1,116,039	1,167,837

Source: SEFSC

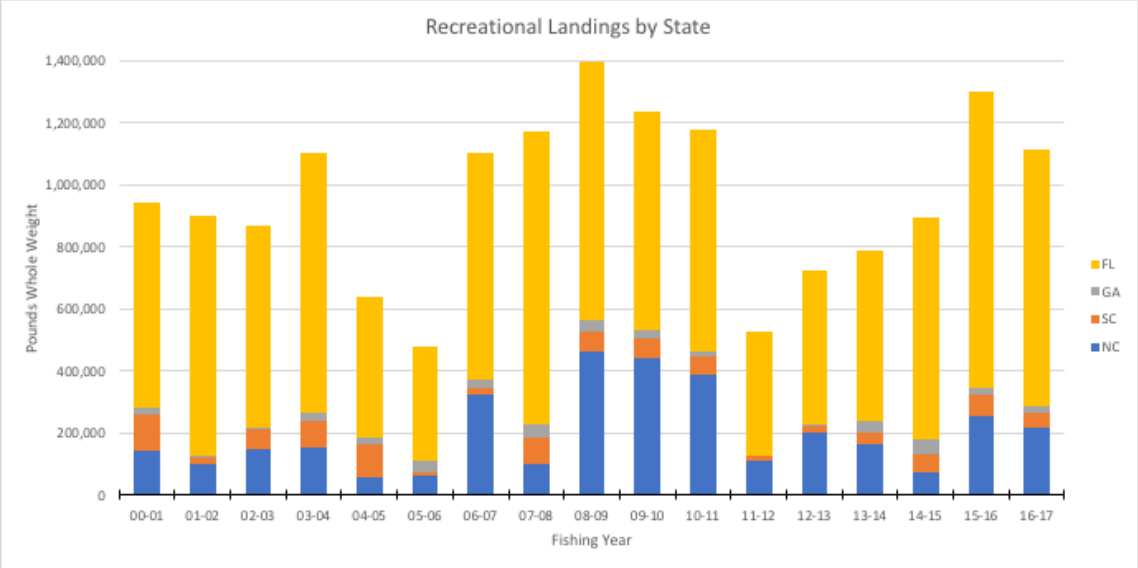

Figure 5. Recreational landings (pounds whole weight) of greater amberjack by state from 2000 through 2016. From 2000-2014 the fishing year started on May 1. In subsequent years, the fishing year started on March 1. Source: SEFSC.

Total landings by year are shown in **Figure 6**. The recreational ACL for greater amberjack was specified in 2012 using the SEDAR 15 (2008) stock assessment. That assessment used data from the Marine Recreational Fisheries Statistics Program (MRFSS). When the MRFSS was replaced with the current Marine Recreational Information Program (MRIP) in 2013, landings estimates from 2004 onwards were calibrated to MRIP "units" to allow for a continuous time series of catch to be available for all species from 2004 past the 2013 implementation of MRIP. However, the ACL for greater amberjack was set from an assessment using MRFSS numbers, therefore all landings for greater amberjack need to be back-calibrated to MRFSS "units" to allow the National Marine Fisheries Service to properly track the recreational ACL. Landings shown in **Figure 6**, however, are the standard MRIP calibrated numbers from 2004 onward; therefore, they should not be compared directly to the current recreational ACL (red line). Instead, the purple line in **Figure 6**, the back-calibrated MRFSS landings, shows the appropriate catch level for that comparison. Two significant drops in greater amberjack recreational landings occurred in 2005 and 2011 (**Table 2, Figure 6**). For fishing year 2016/2017, recreational landings surpassed the ACL by about 5% resulting in a closure effective 11/30/16[2].

[2]http://sero.nmfs.noaa.gov/sustainable_fisheries/acl_monitoring/recreational_historical/sa_recreational_historical/sa_recreational_historical.pdf

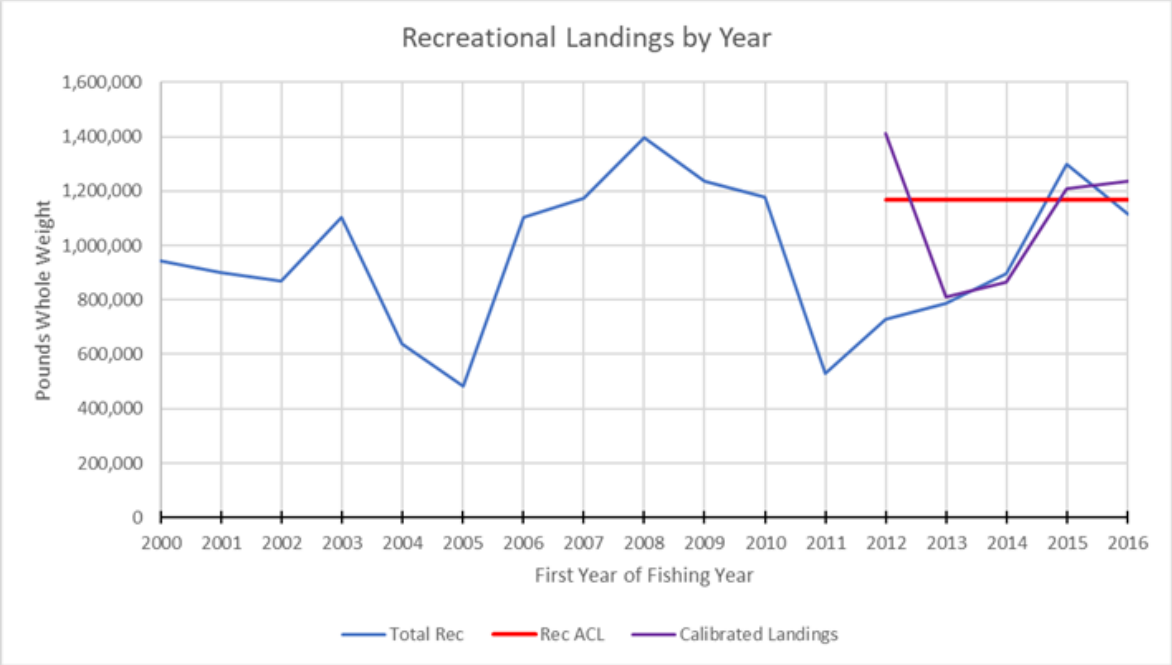

Figure 6. Total recreational landings (pounds whole weight) of greater amberjack in the South Atlantic region from 2000 through 2016 (blue line). Recreational ACL (red line) is shown since 2012, when first implemented. Calibrated landings since 2012 (comparable to the ACL) are shown in purple. From 2000-2014 the fishing year started on May 1. In subsequent years, the fishing year started on March 1. Source: SEFSC.

Average recreational landings of greater amberjack by state and by 2-month wave (as reported through the MRIP) are shown in **Figure 7**. As expected, the majority of greater amberjack recreational landings occur in wave 3 (May-June) and primarily in Florida, while North Carolina reports most recreational landings of greater amberjack in waves 3 and 4 (May-August; **Figure 7**). Directed (target or harvest) greater amberjack recreational trips for the South Atlantic region are summarized in **Figure 8**. The number of directed trips on greater amberjack show an increasing trend from 2005 through 2008 and again from 2012 onwards (**Figure 8**).

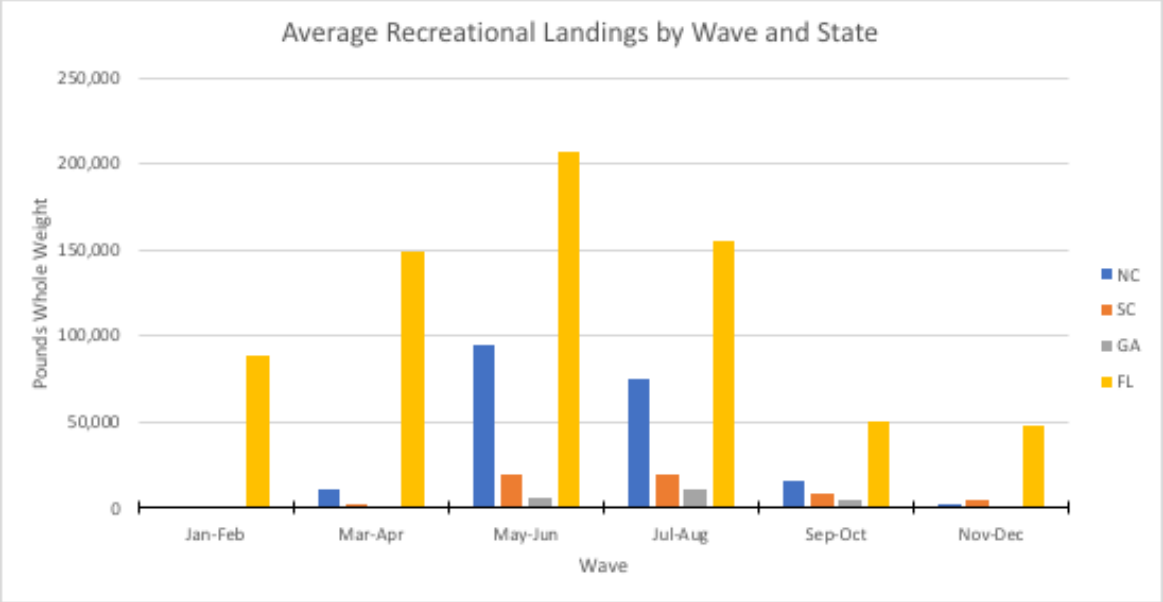

Figure 7. Average recreational landings of greater amberjack in the South Atlantic region by wave and by state from 2000 through 2016. Source: SEFSC.

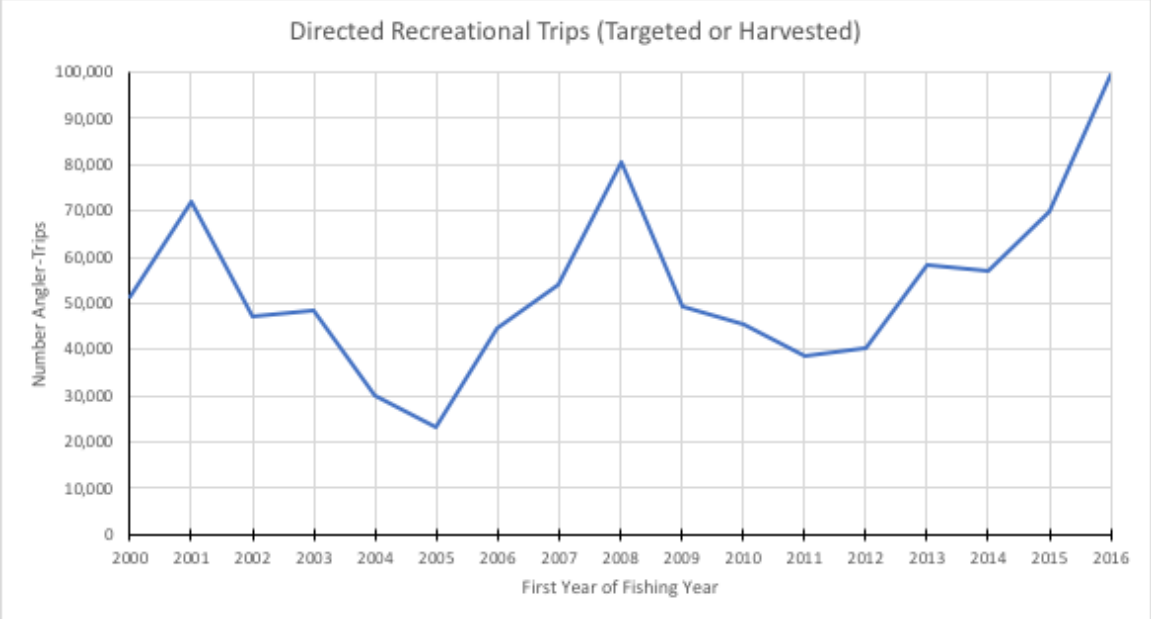

Figure 8. Directed greater amberjack recreational trips (targeted or harvest) in the South Atlantic region from 2000 through 2016. From 2000-2014 the fishing year started on May 1. In subsequent years, the fishing year started on March 1. Source: SEFSC.

Economic Performance

Metrics that are often readily available to evaluate economic trends for the commercial sector on a species by species basis (such as price per pound or ex-vessel value) are not available for

the recreational sector. Nevertheless, trends in harvest and effort are often linked to economic trends in a recreational fishery, with harvest often being associated with economic value and effort (the number of fishing trips) being associated with both value and economic impacts (i.e. jobs, income, business sales). As such, trends in harvest and effort can be used to broadly evaluate likely trends in the economic performance of a recreational fishery. Using the estimated recreational harvest (**Figure 6)** or effort (**Figure 8**) as a proxy for the economic performance of the fishery, it is clear that the economic performance of the recreational greater amberjack fishery has fluctuated over time with peaks in the late 2000s and in recent years. Since approximately 2012, recreational harvest and effort have generally increased in the recreational greater amberjack fishery, with the economic value and impacts of the fishery likely increasing as well.

Changing focus to the commercial sector, **Figure 9** shows the average inflation adjusted price per pound for greater amberjack regionally and state by state (in 2016 dollars) from 2000 through 2016. Total ex-vessel value for greater amberjack in the South Atlantic Region is presented in **Figure 10** in inflation adjusted figures (2016 dollars). For the beginning of the timeframe, the ex-vessel price per pound for greater amberjack was fairly flat until approximately the 2009/2010 fishing year when prices generally increased along with the overall ex-vessel value, which offset some the decrease in landings observed in recent years. The overall ex-vessel value peaked in fishing year 2011/2012 at approximately $1.24 million (2016 dollars), with ex-vessel value in 2015/2016 slightly lower at $1.16 million (2016 dollars).

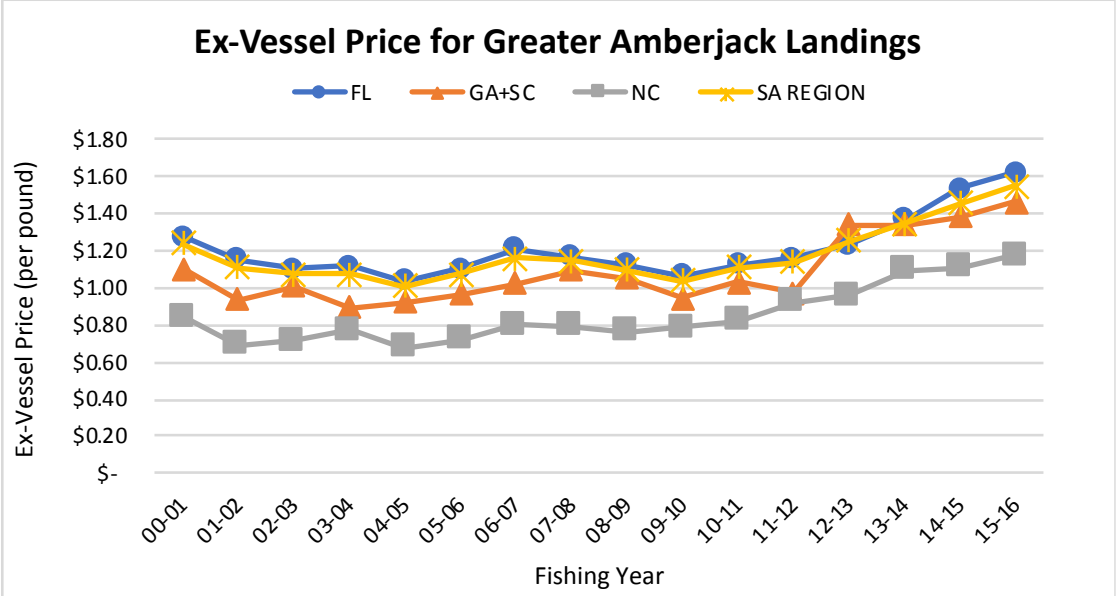

Figure 9. Average ex-vessel price per pound (2016 dollars) by state for commercial greater amberjack landings in the South Atlantic Region from 2000 through 2016. Data for Georgia and South Carolina were aggregated due to confidentiality concerns. From 2000-2014 the fishing year started on May 1. In subsequent years, the fishing year started on March 1Inflation adjustments use the U.S. GDP deflator. Sources: U.S. Bureau of Economic Analysis and SEFSC.

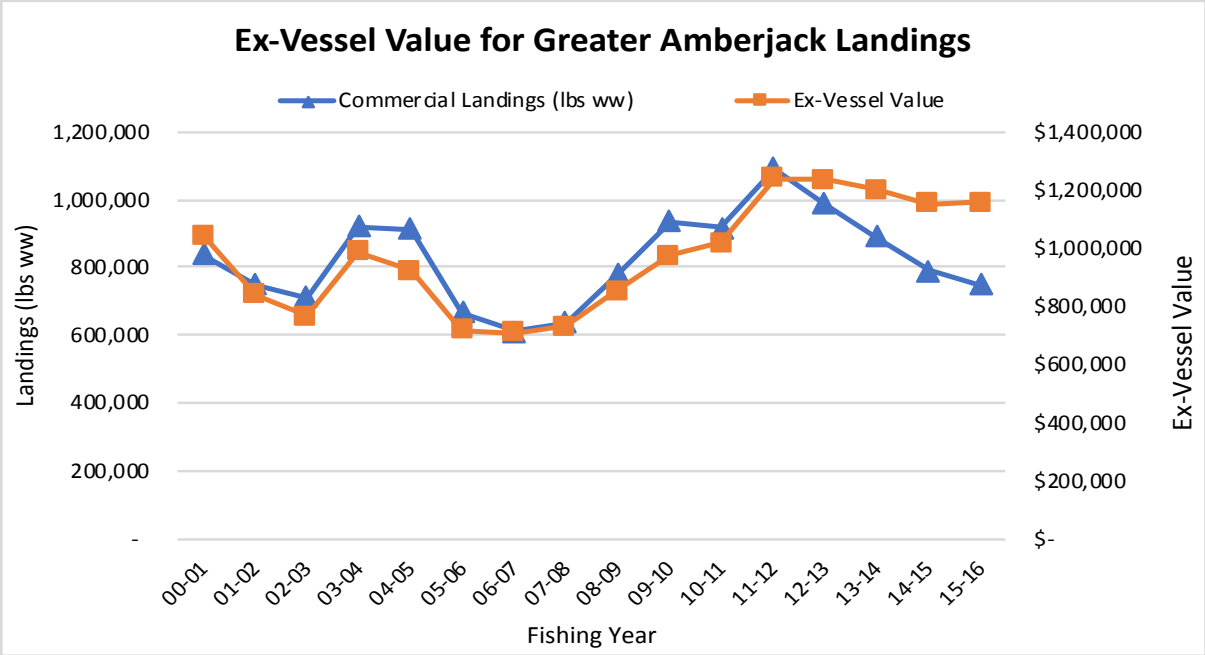

Figure 10. Weight and inflation adjusted (2016 dollars) ex-vessel value of commercial greater amberjack landings in the South Atlantic Region from 2000 through 2016. From 2000-2014 the fishing year started on May 1. In subsequent years, the fishing year started on March 1Inflation adjustments use the U.S. GDP deflator. Sources: U.S. Bureau of Economic Analysis and SEFSC.

References

Carpenter, K.E. 2002. The living marine resources of the western central Atlantic, volume 3: bony fishes, part 2 (Opistognathidae to Molidae), sea turtles and marine mammals. FAO (Food and Agriculture Organization of the United Nations) species identification guide for fishery purposes and American Society of Ichthyologists and Herpetologists Special Publication 5. FAO, Rome.

Harris, P.J., D.M. Wyanski, D.B. White, P.P. Mikell and P.B. Eyo. 2007. Age, Growth, and Reproduction of Greater Amberjack off the Southeastern U.S. Atlantic Coast. Transactions of the American Fisheries Society 136(6): 1534-1545.

Manooch, C.S., III, and J.C. Potts. 1997a. Age, growth and mortality of greater amberjack from the southeastern United States. Fisheries Research 30: 229-240.

Manooch, C.M., III and J.C. Potts. 1997b. Age, growth, and mortality of greater amberjack, Seriola dumerili, from the Gulf of Mexico headboat fishery. Bulletin of Marine Science 61:671-683.

Paxton, J.R., D.F. Hoese, G.R. Allen, and J.E. Hanley. 1989. Pisces. Petromyzontidae to Carangidae. Zoological Catalogue of Australia, Vol. 7. Australian Government Publishing Service, Canberra, 665 p.

SAFMC (South Atlantic Fishery Management Council). 1983. Fishery Management Plan, Regulatory Impact Review and Final Environmental Impact Statement for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Circle, Suite 306, Charleston, South Carolina, 29407-4699.

SAFMC (South Atlantic Fishery Management Council). 1991. Amendment 4, Regulatory Impact Review, Initial Regulatory Flexibility Analysis and Environmental Assessment for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 200 pp.

SAFMC (South Atlantic Fishery Management Council). 1998. Amendment 9, Final Supplemental Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 1 Southpark Cir., Suite 306, Charleston, S.C. 29407-4699. 246 pp.

SAFMC (South Atlantic Fishery Management Council). 2008. Amendment 15B, Final Environmental Impact Statement, Initial Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2011a. Regulatory Amendment 9, Final Environmental Assessment, Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2011b. Comprehensive Annual Catch Limit (ACL) Amendment (Amendment 25 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region). South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2011c. Comprehensive Ecosystem Based Amendment 2, Final Environmental Assessment, Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. (Amendment 23 to the Snapper Grouper FMP). South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

SAFMC (South Atlantic Fishery Management Council). 2014. Regulatory Amendment 14 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

SEDAR (Southeast Data, Assessment and Review) 15. 2008. Stock Assessment Report of South Atlantic Greater Amberjack. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405. Available from the SEDAR website: www.sedarweb.org