

Black Sea Bass – Advisory Panel Information Document

November 2017

Biology

Black sea bass, *Centropristis striata*, occur in the Western Atlantic, from Maine to northeastern Florida, and in the eastern Gulf of Mexico. The Gulf of Mexico black sea bass are considered a separate subspecies and thus, managed as its own stock. Early studies suggesting separate populations of black sea bass north and south of Cape Hatteras, North Carolina (Wenner et al. 1986), prompted management as two separate stocks: Mid-Atlantic and South Atlantic. More recent studies support this separation (McCartney and Burton 2011; McCartney et al 2013). Tagging studies also point to minimal movement of adult black sea bass in the South Atlantic region (SEDAR 25 2011).

Black sea bass are common around rock jetties and on rocky bottoms in shallow water (Robins and Ray 1986) at depths from 7-394 ft (2-120 m) where they feed primarily on shrimp, crabs, and fish (Sedberry 1988). Most adults occur at depths from 66-197 ft (20-60 m) (Vaughan et al. 1995).

Black sea bass change sex from female to male (protogyny). The minimum size and age of maturity for females studied off the southeastern U.S. coast is 10 cm (3.6 in) standard length (SL) and age 0. All females are mature by 18 cm (7.1 in) SL and age three (McGovern et al. 2002). Wenner et al. (1986) reported that spawning occurs from March through May in the South Atlantic Bight. McGovern et al. (2002) indicated that black sea bass females are in spawning condition during March-July, with a peak during March through May (McGovern et al. 2002). Some spawning also occurs during September and November. Spawning takes place in the evening (McGovern et al. 2002). McGovern et al. (2002) noted that the size at maturity and the size at transition of black sea bass was smaller in the 1990s than during the early 1980s. Black sea bass appear to compensate for the loss of larger males by changing sex at smaller sizes and younger ages.

Females dominate the first five year classes. Individuals over the age of five are more commonly males. Black sea bass live for at least 10 years. Maximum reported size is 26 inches (66.0 cm) total length and 7.9 pounds (3.6 kg) (McGovern et al. 2002).

Stock Status

An update to the black sea bass assessment was conducted in 2013 with data through 2012. Most of the data sources were simply updated with the two additional years of observations available since the SEDAR 25 (2011). The SEDAR 25 Update (2013) concluded that black sea bass were **not overfished** and **overfishing was not occurring**. The spawning stock biomass (SSB) in 2012 was estimated to be slightly above the spawning stock biomass at maximum sustainable yield (SSB_{MSY}), indicating that the stock was rebuilt. The Scientific and Statistical Committee (SSC) provided an overfishing limit (OFL) and acceptable biological catch (ABC) values for three years and requested that an assessment update be available in time to provide

ABC and OFL recommendations for 2016 and beyond. At that time, the SSC noted estimates of ABC over the next few years exceed the equilibrium estimates of maximum sustainable yield (MSY) from the base run of the assessment model. This was determined to be largely due to recent recruitment being higher than expected average recruitment and a slightly greater stock biomass than the biomass expected at maximum sustainable yield (MSY) conditions. The SSC stated that sustainability of ABCs above equilibrium MSY would depend on recruitment conditions in the future.

The SEDAR 56 assessment was originally scheduled to take place over a series of webinars from February to August 2017. However, the SEDAR Steering Committee approved delaying completion of the SEDAR 56 assessment and advancing the terminal year of the assessment to 2016. The SEDAR 56 schedule was revised to accommodate the change in terminal year with webinars running through February 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. In the case of the sea basses (black sea bass, bank sea bass, and rock sea bass), the fishery management unit/management regime applies only from Cape Hatteras, North Carolina south.

The original FMP (effective 8/31/83) specified an 8-inch total length (TL) minimum size limit for black sea bass and a 4-inch trawl mesh size.

Amendment 4 to the Snapper Grouper FMP (SAFMC 1991) established a 10-year rebuilding program for black sea bass beginning in 1991. The amendment also prohibited fish traps, entanglement nets, and longline gear within 50 fathoms and allowed the use of black sea bass pots north of Cape Canaveral, Florida.

In 1999, Amendment 9 (SAFMC 1998) established a 10-inch TL minimum size limit for both recreational and commercial sectors and a 20-fish per person per day recreational bag limit for black sea bass. The amendment also required escape vents and escape panels with degradable hinges and fasteners in black sea bass pots and specified minimum dimensions of an escape vent opening.

Amendment 13C to the Snapper Grouper FMP (SAFMC 2006) put in place substantial management modifications affecting black sea bass including:

- a step-wise decrease over a three-year period in the commercial quota starting with 477,000 pounds gutted weight in year 1 to 309,000 pounds gutted weight in year 3 with harvest and/or possession limited to the bag limit after the quota was reached (no sale);
- at least a 2” mesh for the entire back panel of black sea bass pots;
- a step-wise decrease in the recreational allocation over a three-year period starting with 633,000 pounds gutted weight in year 1 to 409,000 pounds gutted weight in year 3;

- An increase in the recreational minimum size limit from 10 inches to 11 inches TL in year 1 and to 12 inches TL in year 2 to approximate the level of harvest allocated to the recreational sector;
- a reduction in the recreational bag limit from 20 to 15 black sea bass per person per day; and
- a change in the fishing year from the calendar year to June 1 through May 31 (both sectors).

In 2008, the Council established a 10-year rebuilding schedule and a rebuilding strategy for black sea bass (Amendment 15A) and, in 2011 (Amendment 17B; SAFMC 2010), defined the existing commercial and recreational quotas (specified through Amendment 13C) as annual catch limits (ACLs) to meet the mandates of the 2007 Magnuson-Stevens Act reauthorization. In addition, Amendment 17B specified accountability measures to ensure the ACLs would not be exceeded and to correct for any landings overages. Also, in 2011, the recreational bag limit was reduced from 15 to 5 fish per person per day (Regulatory Amendment 9; SAFMC 2011).

To cap effort in the commercial pot fishery, the Council implemented an endorsement program for black sea bass pots in 2012 through implementation of Amendment 18A (SAFMC 2012). The amendment established:

- eligibility criteria that resulted in the issuance of 32 black sea bass pot endorsements in the South Atlantic region south of Cape Hatteras;
- a 35-pot limit for endorsement holders;
- a requirement to bring pots back to shore at the conclusion of each trip;
- a 1,000-pound gutted weight commercial trip limit;
- an increase in the commercial minimum size limit from 10 inches TL to 11 inches TL; and
- an increase in the recreational minimum size limit from 12 inches TL to 13 inches TL.

The increase in the recreational minimum size limit was expected to slow down the rate of harvest because the ACL was being met very quickly resulting in early closures. For the commercial sector the minimum size limit was set at 11 inches because of concerns that a larger minimum size limit would increase mortality of undersized fish in pots.

In response to a stock assessment update (SEDAR 25 2013 Update) that indicated the black sea bass stock was no longer overfished and overfishing was not occurring, the Council revised fishing levels increasing the commercial ACL over a three-year period to 640,063 pounds gutted weight and the recreational ACL to 848,455 pounds gutted weight (1,001,177 pounds whole weight) (Regulatory Amendment 19; SAFMC 2013). These fishing levels have remained in place until the present. In addition, the amendment implemented an annual closure on the use of black sea bass pots from November 1 through April 30. This was in response to concerns over gear interactions with North Atlantic right whales.

In 2014, Regulatory Amendment 14 (SAFMC 2014) changed the commercial fishing year from June 1 through May 31, to January 1 through December 31. For the recreational sector, fishing year changed from the calendar year to April 1 through March 31. In addition, a trip limit of 300 pounds (whole weight) was specified for the hook-and-line component of the

commercial sector from January 1 through April 30, when the use of black sea bass pots is prohibited. The amendment retained the 1,180-pound whole weight (1,000 pounds gutted weight) trip limit for the remainder of the commercial fishing year (May 1 through October 31) for both pots and hook-and-line gear.

In 2016, the Council increased the recreational bag limit from 5 to 7 fish per person per day (Regulatory Amendment 25; SAFMC 2016a) and revised the area where fishing for black sea bass pots from November 1 through April 30 is prohibited (Regulatory Amendment 16; SAFMC 2016b). Additional markings for pot gear were also required.

Fishery-independent Trends

Abundance of black sea bass in the South Atlantic region is tracked independent of landings by the Southeast Reef Fish Survey (SERFS). The survey has been operating in the region since 1978. **Figure 1** shows the relative catch per unit effort (CPUE) of black sea bass since 1990 in surveys conducted through the Marine Resources Monitoring, Assessment and Prediction (MARMAP) program, the Southeast Area Monitoring and Assessment Program (SEAMAP) and the Southeast Fishery Independent Survey (SEFIS). Sampling for these surveys is conducted at various stations in the South Atlantic using an array of gear (i.e., chevron traps, rod and reel, bottom longlines) and video cameras. Survey data indicate that abundance of black sea bass has declined since 2011 (**Figure 1**)

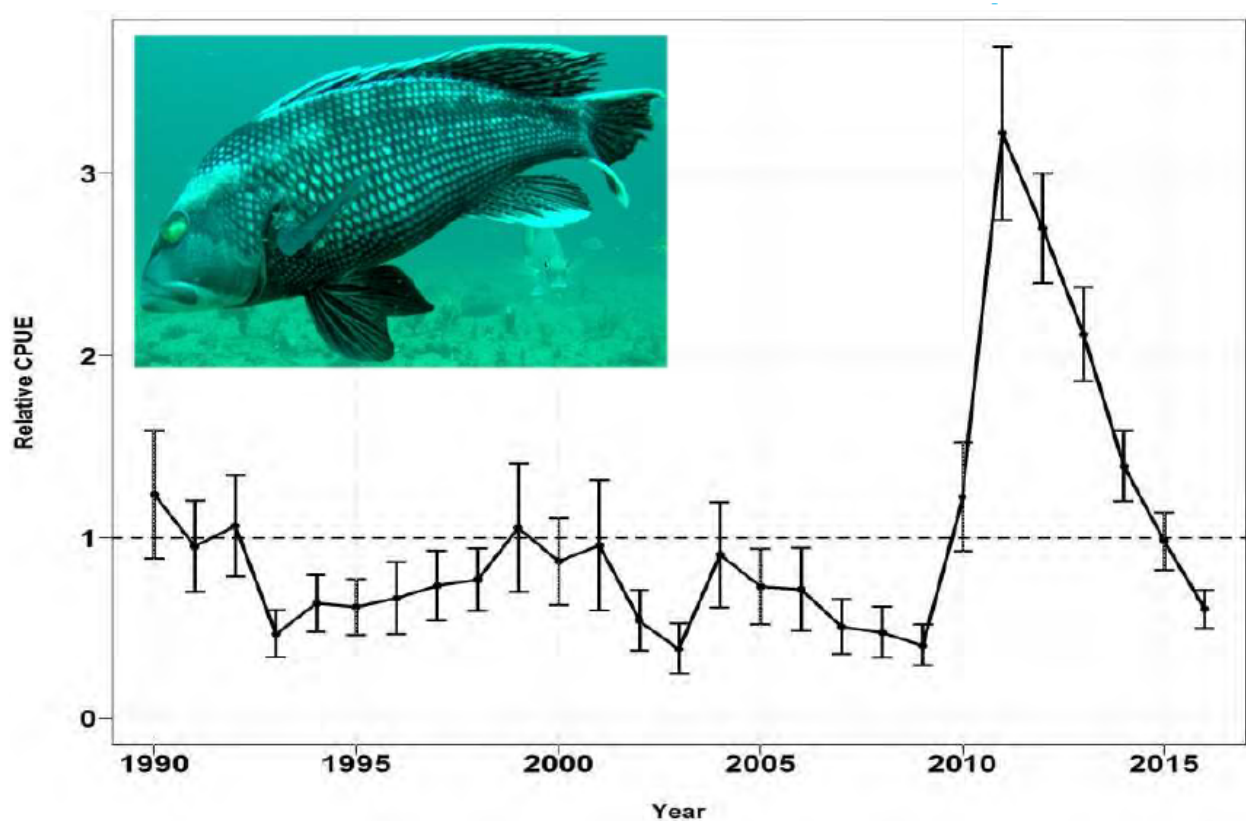


Figure 1. Relative catch per unit effort of black sea bass in fishery-independent surveys in the South Atlantic region, 1990-2016.

Fishery Performance

The following summary of black sea bass 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 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.

ACCSP: In addition to submitting reports to the SEFSC, commercial dealers and fishermen submit reports to the Atlantic Coastal Cooperative Statistics Program (ACCSP). The commercial landings and value information (reported by dealers) for 2016 presented below were obtained from ACCSP.

MRIP: These are the recreational data collected directly by the Marine Recreational Information Program (MRIP). Landings are estimated from intercepted trips and a separate phone survey for effort. The SEFSC uses a different methodology to convert the recreational catch in numbers to weight than MRIP does. Headboat landings are not collected through MRIP but through the SRHS mentioned above.

Commercial Landings

Commercial landings in pounds whole weight (lbs ww) 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 ACLs are shown in **Figure 2**. Due to the limited number of commercial fishermen landing black seas bass in Georgia, Georgia landings were combined with South Carolina landings to prevent issues with confidentiality.

Table 1. South Atlantic black sea bass total commercial landings (lbs ww) and quota/ACL (where applicable) from 2000 through 2016, by state. Data for Georgia and South Carolina were aggregated due to confidentiality concerns.

| South Atlantic Black Sea Bass Commercial Landings (lbs ww) | | | | | | |
|--|--------------------|---------|---------|---------|------------|----------------|
| Year | Source | FL | GA + SC | NC | Total Comm | Comm Quota/ACL |
| 2000 | ALS | 2,993 | 83,238 | 414,281 | 500,512 | |
| 2001 | ALS | 4,560 | 92,785 | 477,134 | 574,479 | |
| 2002 | ALS | 7,694 | 58,736 | 431,332 | 497,762 | |
| 2003 | ALS | 6,027 | 101,367 | 476,507 | 583,901 | |
| 2004 | ALS | 8,772 | 218,852 | 506,371 | 733,995 | |
| 2005 | ALS | 7,603 | 121,595 | 321,866 | 451,064 | |
| 2006 | ALS | 9,045 | 88,304 | 443,572 | 540,921 | 563,300 |
| 2007 | ALS | 7,680 | 114,918 | 277,471 | 400,069 | 498,800 |
| 2008 | ALS | 9,437 | 133,125 | 275,777 | 418,339 | 364,210 |
| 2009 | ALS | 48,015 | 172,367 | 437,971 | 658,353 | 364,210 |
| 2010 | ALS | 91,196 | 99,609 | 292,883 | 483,688 | 364,210 |
| 2011 | ALS | 134,616 | 99,663 | 173,684 | 407,963 | 364,210 |
| 2012 | ALS | 72,013 | 117,749 | 194,782 | 384,544 | 364,210 |
| 2013 | ALS | 55,374 | 162,796 | 241,412 | 459,582 | 780,020 |
| 2014 | ALS | 28,112 | 125,034 | 316,428 | 469,574 | 780,020 |
| 2015 | ALS | 11,414 | 13,463 | 226,327 | 251,204 | 780,020 |
| 2016 | ACCSP ¹ | 10,341 | 54,224 | 421,169 | 485,734 | 755,275 |

¹ 2016 data are from the ACCSP data warehouse. This differs from previous year's landings, which present landings in the SEFSC's Accumulated Landings System (ALS). It is unknown how comparable these two data sources are, therefore caution should be used when consulting these data.

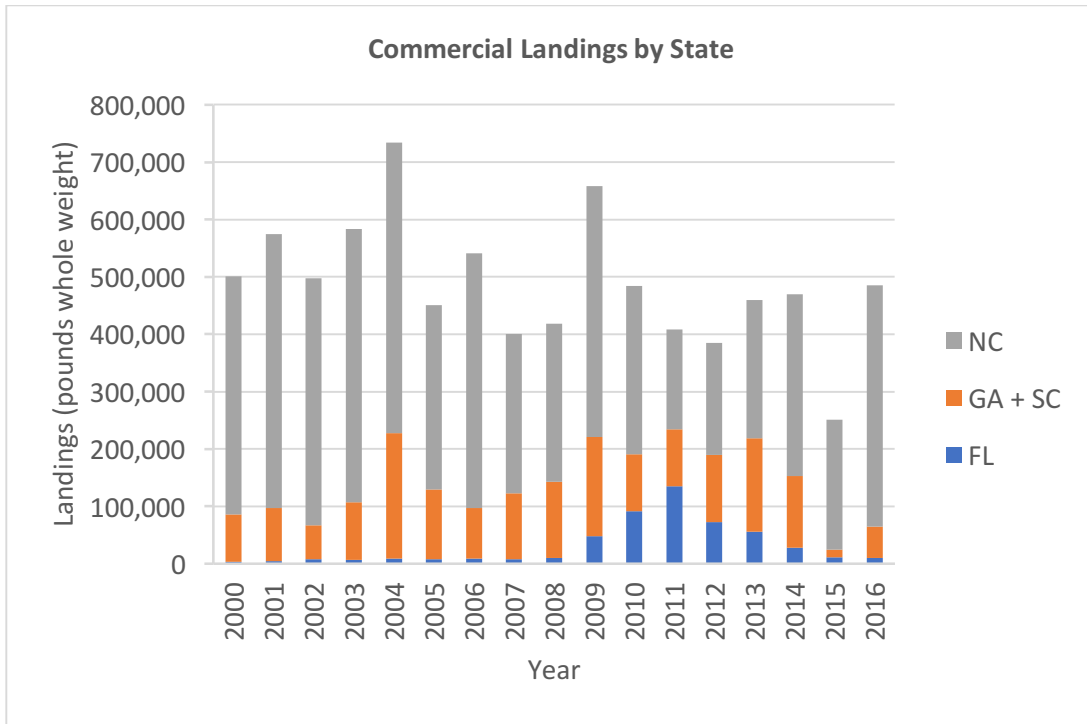


Figure 1. Commercial landings (pounds whole weight) of black sea bass in the South Atlantic region (south of Cape Hatteras) from 2000 through 2016 by state. Data for Georgia and South Carolina were aggregated due to confidentiality concerns.

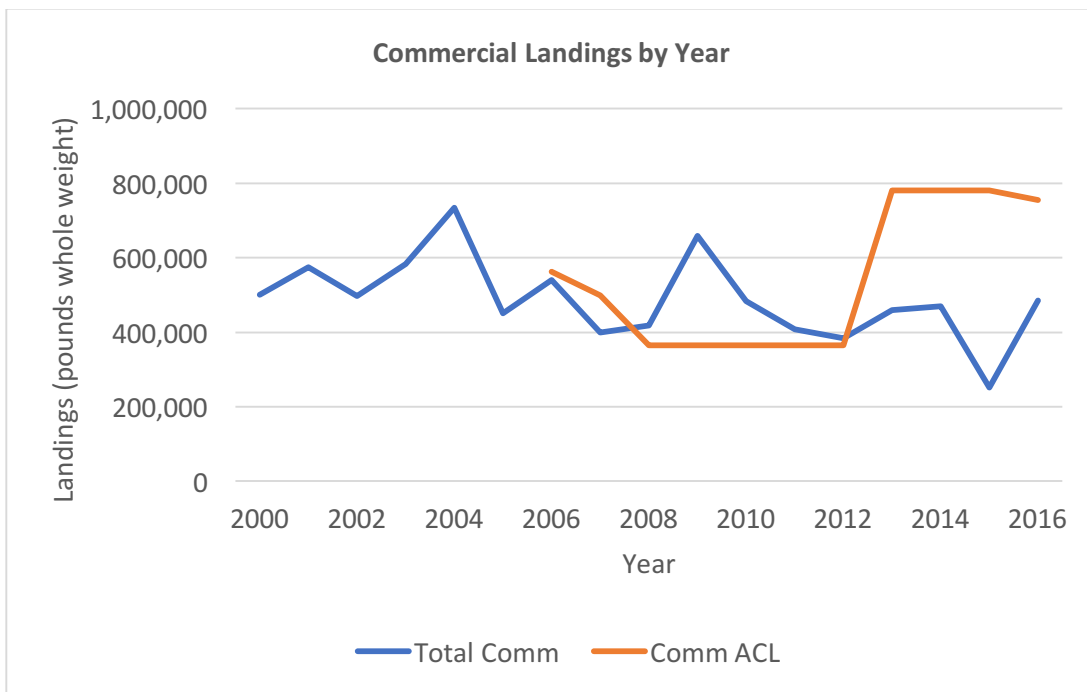


Figure 2. Commercial landings (pounds whole weight) of black sea bass in the South Atlantic region (south of Cape Hatteras) from 2000 through 2016 (blue line). Quotas/commercial ACLs are shown since 2006, when first implemented (orange line).

North Carolina has dominated commercial landings of black sea bass in the South Atlantic (south of Cape Hatteras) since 2000 whereas black sea bass commercial landings in Florida were essentially non-existent until about 2009, increased to a peak in 2011 and declined thereafter (**Figure 1**).

Black sea bass commercial landings since 2000 have been between 400,000 and 600,000 pounds whole weight (lbs ww). Landings exceeded the commercial quota from 2008 through 2010 and the ACL in 2011 and 2012. Since then, commercial landings have been below the ACL (**Figure 2**) and generally increased as the ACL increased. However, landings in 2015 were well below the ACL.

Figure 3 and **Figure 4** show the seasonality of commercial landings. **Figure 3** displays the average monthly commercial landings from 2000 through 2007, the period prior to Amendment 15A when the commercial ACL constrained the harvest. **Figure 4** shows landings from 2008 through 2016.

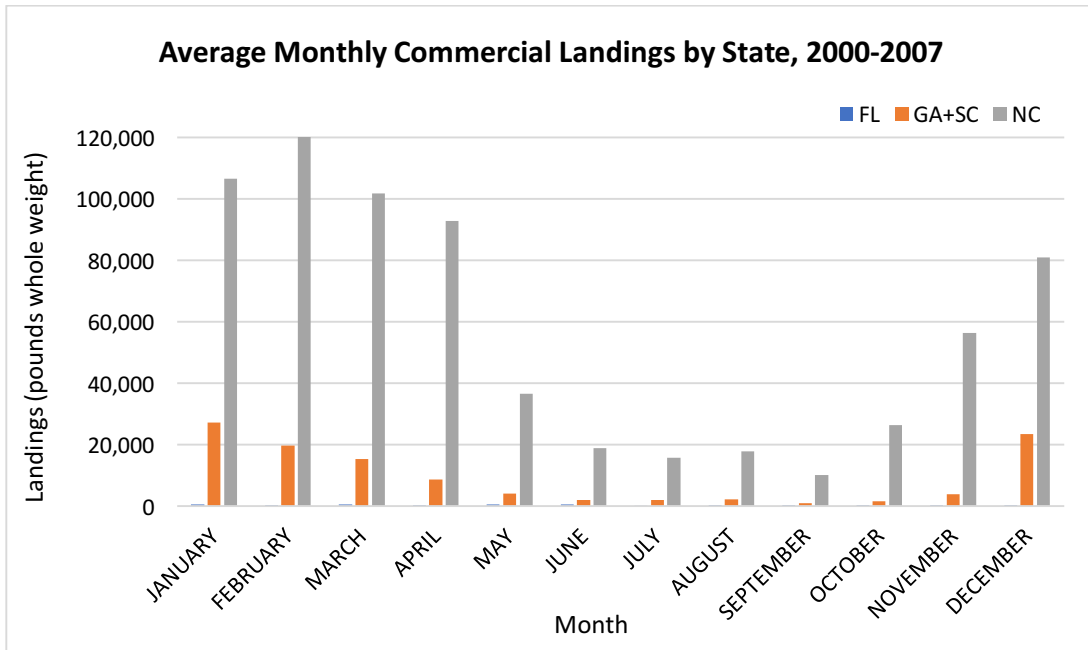


Figure 3. Average monthly commercial landings (pounds whole weight) of black sea bass in the South Atlantic region (south of Cape Hatteras) by state from 2000 through 2007. Data for Georgia and South Carolina were aggregated due to confidentiality concerns. Source: ACCSP.

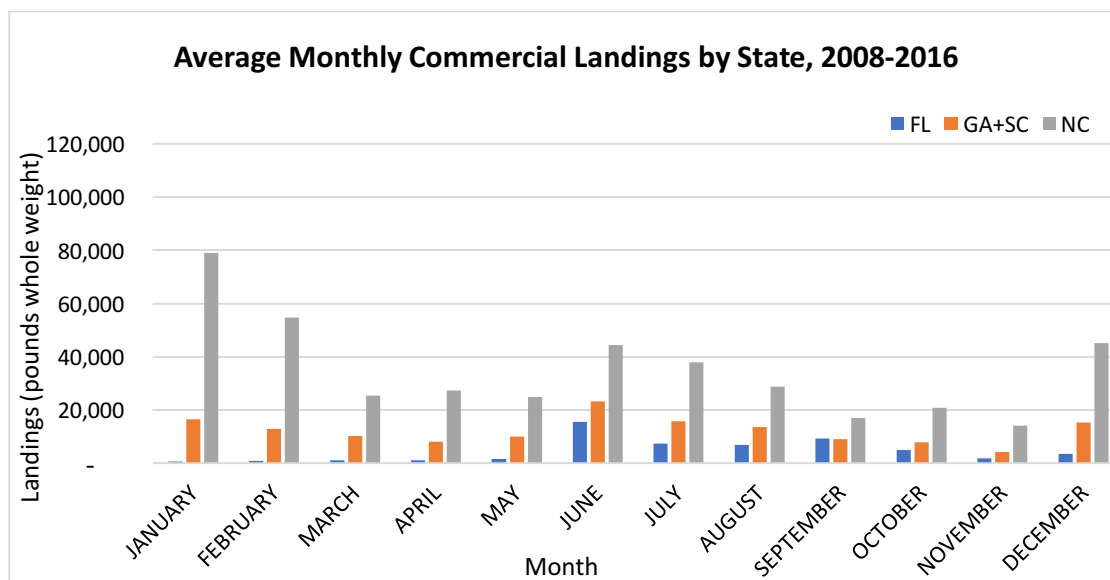


Figure 4. Average monthly commercial landings (pounds whole weight) of black sea bass in the South Atlantic region (south of Cape Hatteras) by state from 2008 through 2016. Data for Georgia and South Carolina were aggregated due to confidentiality concerns. Source: ACCSP.

When landings are examined on a monthly basis, a shift in the seasonality of the fishery is evident: landings primarily occurred in the winter and spring prior to 2008 (**Figure 3**) whereas a predominance in landings in the summer months takes place subsequently (**Figure 4**). This seasonal change in the fishery is likely reflective of the management actions that altered the ACL, accountability measures, fishing year, and the sea bass pot fishery.

Recreational Landings

Recreational landings in pounds whole weight (lbs ww) from 2000 through 2016 by state are presented in **Table 2**. Landings by state are presented graphically in **Figure 5** and total landings relative to ACLs are shown in **Figure 6**. **Figure 7** shows the seasonality of recreational black sea bass landings by displaying average recreational harvest of black seabass by 2-month wave for the same time period. Directed effort, which includes recreational trips that either harvested or targeted black sea bass, is shown in **Figure 8** for the South Atlantic Region annually.

Table 2. South Atlantic black sea bass total recreational landings (lbs ww) and quota/ACL (where applicable) from 2000 through 2016, by state.

| South Atlantic Black Sea Bass Recreational Landings (lbs ww) | | | | | | | |
|--|--------|---------|---------|---------|---------|-----------|---------------|
| Year | Source | FL | GA | SC | NC | Total Rec | Rec Quota/ACL |
| 2000 | SEFSC | 94,929 | 42,589 | 114,652 | 158,312 | 410,481 | |
| 2001 | SEFSC | 142,772 | 112,585 | 192,244 | 224,203 | 671,804 | |
| 2002 | SEFSC | 107,092 | 23,771 | 140,481 | 144,108 | 415,451 | |
| 2003 | SEFSC | 115,368 | 106,521 | 121,335 | 167,678 | 510,902 | |
| 2004 | SEFSC | 273,993 | 86,083 | 332,480 | 428,509 | 1,121,065 | |
| 2005 | SEFSC | 245,755 | 81,366 | 127,918 | 378,469 | 833,509 | |
| 2006 | SEFSC | 221,854 | 75,812 | 266,309 | 146,883 | 710,857 | 746,700 |

| South Atlantic Black Sea Bass Recreational Landings (lbs ww) | | | | | | | |
|--|-------------------|---------|---------|---------|---------|-----------|---------------|
| Year | Source | FL | GA | SC | NC | Total Rec | Rec Quota/ACL |
| 2007 | SEFSC | 185,524 | 49,716 | 205,487 | 266,498 | 707,225 | 661,200 |
| 2008 | SEFSC | 122,270 | 99,817 | 144,378 | 98,472 | 464,937 | 482,790 |
| 2009 | SEFSC | 185,855 | 33,939 | 93,181 | 161,440 | 474,415 | 482,790 |
| 2010 | SEFSC | 267,262 | 30,339 | 354,440 | 232,507 | 884,549 | 482,790 |
| 2011 | SEFSC | 270,693 | 63,422 | 132,762 | 137,801 | 604,678 | 482,790 |
| 2012 | SEFSC | 136,835 | 19,957 | 199,175 | 160,051 | 516,017 | 482,790 |
| 2013 | SEFSC | 131,667 | 108,411 | 70,249 | 103,436 | 413,762 | 1,033,980 |
| 2014 | SEFSC | 180,347 | 58,371 | 171,377 | 150,701 | 560,796 | 1,033,980 |
| 2015 | SEFSC | 92,174 | 58,754 | 78,345 | 144,757 | 374,030 | 1,033,980 |
| 2016 | MRIP ¹ | 170,217 | 10,396 | 39,792 | 128,012 | 348,417 | 1,001,177 |

¹Data from the MRIP website. They do not include headboat data and they do not use the SEFSC's weight conversion methodology, which differs from the MRIP methodology for converting numbers to weight. Caution should be used when consulting these data.

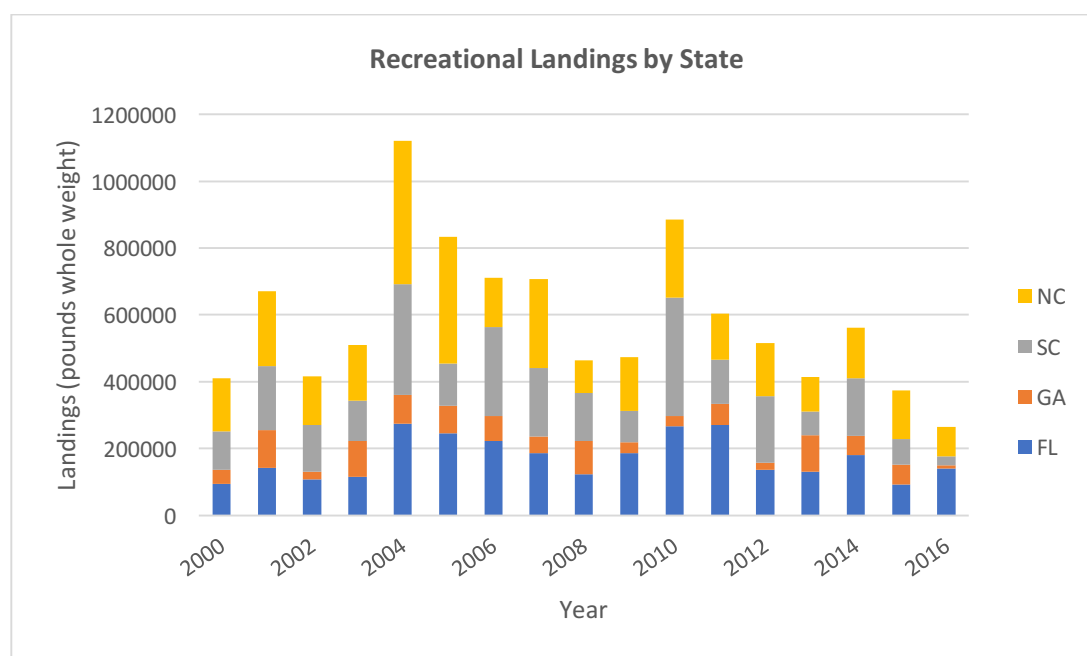


Figure 5. Recreational landings (pounds whole weight) of black sea bass in the South Atlantic region (south of Cape Hatteras) from 2000 through 2016 by state. Data for 2016 are from the Marine Recreational Information Program (MRIP) whereas data for prior years are from the Accumulated Landings System (ALS).

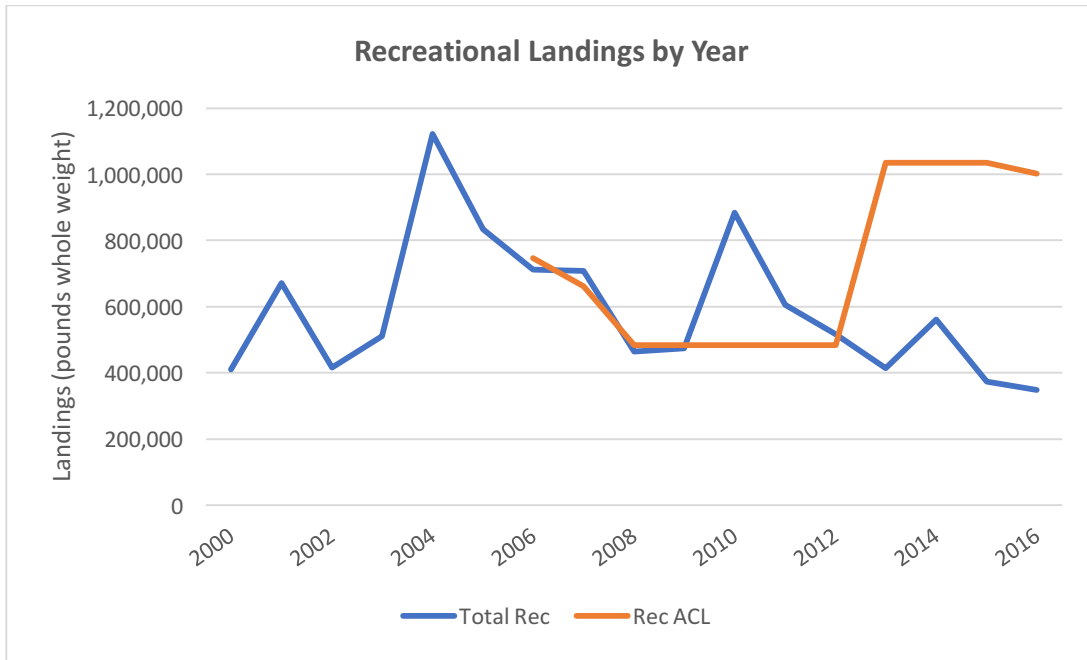


Figure 6. Recreational landings (pounds whole weight) of black sea bass in the South Atlantic region (south of Cape Hatteras) from 2000 through 2016 (blue line). Quotas/recreational ACLs are shown since 2006, when first implemented (orange line).

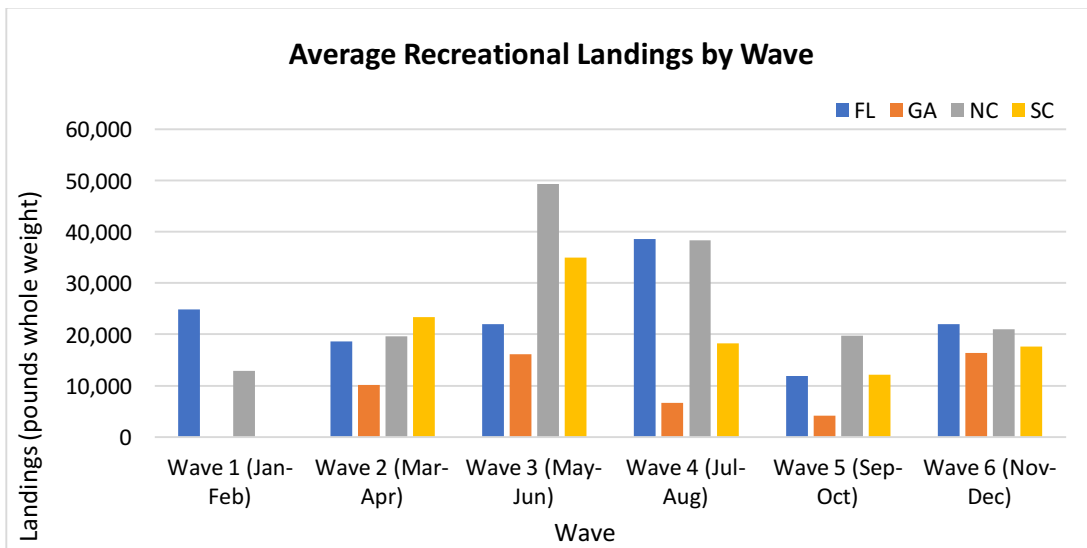


Figure 7. Average recreational landings of black sea bass in the South Atlantic region by wave and by state from 2000 through 2016. Source: ACCSP.



Figure 8. Directed recreational trips (targeted or harvest) for black sea bass in the South Atlantic region (south of Cape Hatteras) from 2000 through 2016. Source: ACCSP.

Recreational landings of black sea bass have been more evenly distributed among South Atlantic states than commercial landings. Peaks occurred in 2004-2005 and 2010-2011 (**Figure 5**). A declining trend in recreational landings is evident since 2010, when landings exceeded the recreational quota by the largest amount (**Figure 6**). Although the ACL increased substantially in 2013, a subsequent increase in recreational landings has not occurred (**Figure 6**). In general, recreational landings of black seabass peak during the summer months (**Figure 7**). Overall, directed effort for black sea bass has generally decreased since 2007 (**Figure 8**).

Discards

The number of black sea bass discarded has generally increased since 2009 in the private and charter modes of the recreational fishery (**Figure 9**). The commercial and headboat components of the fishery, on the other hand, contribute very little to the number of discards. Release mortality for black sea bass is 1% for commercial pot gear and 7% for commercial and recreational hook-and line gear (SEDAR 25 Update 2013). A recent study to examine release mortality of black sea bass off coastal North Carolina (Rudershausen et al. 2014) using internal anchor tags reported an 19% release mortality for black sea bass sampled using hook-and-line gear in 65 to 115 feet of water (20-35 meters), and 14% for fish sampled using traps (pots) in 36 to 95 feet (11-29 meters).

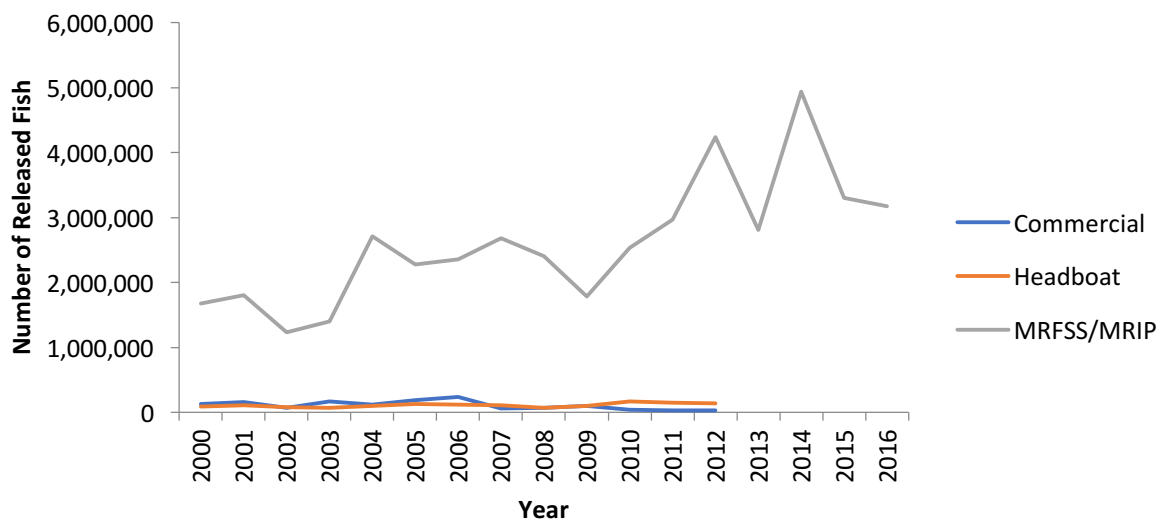


Figure 9. Number of black sea bass by component of the snapper grouper fishery. Number of fish released from the commercial and headboat component were pulled from SEDAR 25 Update (2013) as well as 2000 to 2003 for MRFSS/MRIP, which used the MRFSS estimation method to calculate number of released fish. MRFSS/MRIP from 2004 to 2016 used the MRIP estimation method to calculate number of released fish, and data were pulled from the MRIP website for black sea bass caught south of Cape Hatteras.

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 black sea bass fishery has fluctuated over time with peaks in the mid and late 2000s. Since approximately 2010, recreational harvest and effort have generally decreased in the recreational black sea bass fishery, with the economic value and impacts of the fishery likely decreasing as well.

Changing focus to the commercial sector, **Figure 10** shows the average inflation adjusted price per pound for black sea bass regionally and state by state (in 2016 dollars) from 2000 through 2016. Total ex-vessel value for black seabass in the South Atlantic Region is presented in **Figure 11** in both nominal and inflation adjusted figures. Over the timeframe, the price per pound for black sea bass has generally increased with the overall ex-vessel value fluctuating from year to year with no apparent trend. Although 2016 landings are preliminary at this time, based on currently available data, 2016 saw the highest ex-vessel value for commercial black seabass landings at \$1.54 million.

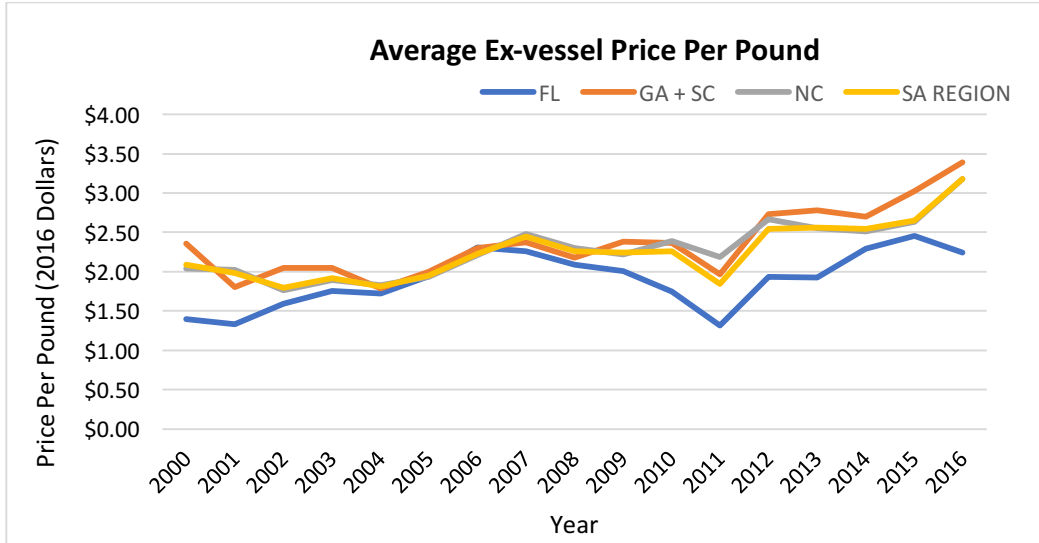


Figure 10. Average ex-vessel price per pound (2016 dollars) by state for commercial black sea bass landings from 2000 through 2016. Data for Georgia and South Carolina were aggregated due to confidentiality concerns. Inflation adjustments use the U.S. GDP deflator. Sources: U.S. Bureau of Economic Analysis and ACCSP.

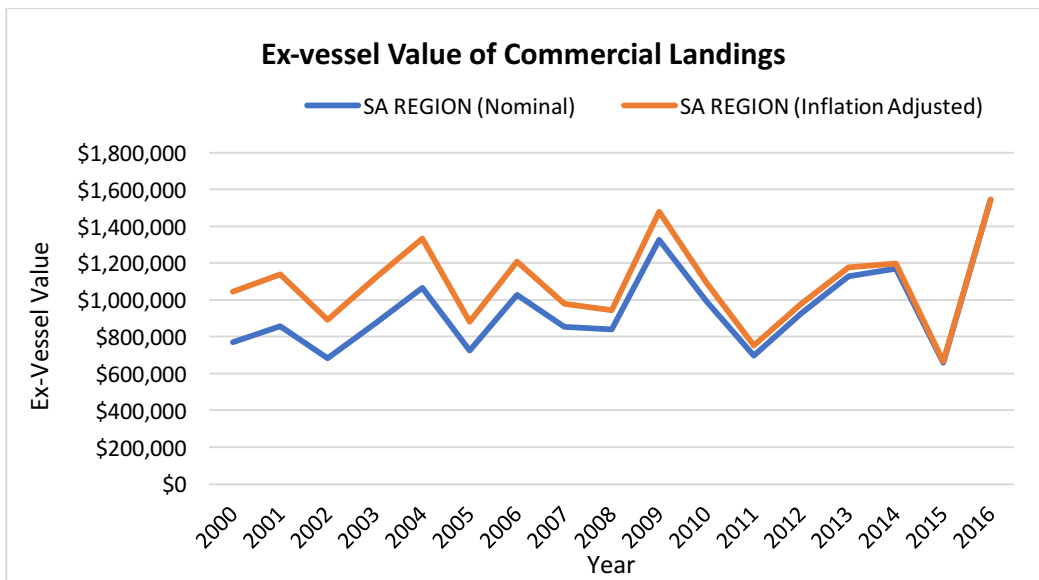


Figure 11. Nominal and inflation adjusted (2016 dollars) ex-vessel value of commercial black sea bass landings from 2000 through 2016. Inflation adjustments use the U.S. GDP deflator. Sources: U.S. Bureau of Economic Analysis and ACCSP.

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