Snapper Grouper Advisory Panel Red Porgy Fishery Performance Report: April 2018

SAMFC Snapper Group Advisory Panel

SEDAR60-RD15

31 July 2018

Snapper Grouper Advisory Panel
Red Porgy Fishery Performance Report
April 2018

At their April 2018 meeting, the South Atlantic Fishery Management Council's (Council) Snapper Grouper Advisory Panel (AP) reviewed fishery information for red porgy and developed this fishery performance report (FPR). The purpose of the FPR is to assemble information from AP members' experience and observations on the water and in the marketplace to complement scientific and landings data. The FPR for red porgy will be provided to the Scientific and Statistical Committee (SSC) and the Socio-Economic Panel (SEP) to complement material being used in the standard assessment (SEDAR 60) scheduled for completion in spring 2019 and to inform future management.

Advisory Panel Members:

David Moss (Chairman; Recreational/FL)
Jimmy Hull (Vice-Chairman; Commercial/Dealer/Retail/FL)
Robert Johnson (Charter/FL)
Rusty Hudson (Commercial/FL)
Vincent Bonura (Commercial/FL)
James Freeman (Commercial/FL)
Greg Mercurio (Charter/FL)
Richard Gomez (Charter/FL)
David Snyder (Consumer Rep/GA)
Deidra Jeffcoat (Charter/GA)
Gary Manigault Sr. (Charter/SC)
Kerry Marhefka (Commercial/Dealer/SC)
Jim Moring (Recreational/SC)
Jim Atack (Recreational/NC)
Red Munden (Conservation/NC)
Robert Lorenz (Recreational/NC)
Dick Brame (NGO/Recreational/NC)*
Robert Freeman (Charter/NC)
Andy Piland (Charter/NC)
Scott Buff (Commercial/NC)
Jack Cox (Commercial/Dealer/NC)
Todd Kellison (At-large/NOAA)
Ron Rozier (Recreational/GA)*
James Paskiewicz (Recreational/FL)*
*not in attendance

Fishery Overview

Summary information on the red porgy fishery in the South Atlantic region is presented in a Fishery Information Document (**Appendix A**) intended to provide an overview of several aspects of the fishery including life history of the species, stock status, management overview, and trends in landings and fishery economics for both the commercial and recreational (for-hire and private) sectors. The information was provided as background to elicit the discussion presented in this Fishery Performance Report. The Fishery Information Document presents data from 2000 through 2016.

Observations on Stock Abundance

AP members generally agreed that abundance of red porgy has increased in recent years or has remained constant.

Fishermen maintain that commercial landings of red porgy have declined in recent years due to closures and trip limits. Making trips to catch red porgy is more difficult now than it used to be.

The 2016 recreational landings estimate may not be accurate since keeper-sized fish aren't typically found at depths accessible to most recreational fishermen. In addition, recreational fishermen tend to target known ledges and wrecks and that is not the type of habitat red porgy prefer.

Off northeast Florida, red porgy are available year-round. Charter customers can catch their limit if they want to. However, the fish are in at least 120 feet of water and most of them are further offshore, closer to the shelf edge and beyond.

Off Ponce Inlet, Florida, red porgy are more abundant in the winter.

In south Florida, red porgy are rarely encountered by recreational fishermen unless they fish in deep water. Commercial fishermen catch red porgy while targeting blueline tilefish in 400-450 feet.

Observations on Fish Size

AP members generally agreed that large red porgy are found in deeper water. Catches of red porgy are restricted by the current minimum size limits. Fishermen say they will occasionally see 16 or 17-inch fish.

North Carolina

Commercial fishermen used to catch three- to four-pound red porgy in 60 to 70 feet of water in the 1980s. Now there's so much pressure inshore that you can no longer find fish that big in those depths.

Most of the red porgy caught on for-hire vessels off North Carolina are in waters 120 feet and deeper. Five to six-pound fish can be found in about 200 feet. Even larger fish (7 pounds) have been reported northeast and southwest of the Big Rock area, in about 60 fathoms (360 feet).

The commercial sector targets bigger fish since the trip limit is specified in numbers of fish. A charter captain from North Carolina told of catching 500 pounds of red porgy (4 to 7 pounds) 25 years ago in a spot where now there are hardly any.

Recreational fishermen catch legal-sized red porgy during grouper season (after May 1) in 120-180 feet of water. The fish are always there and no one fishes specifically for them ("everybody is praying and hoping for a grouper"). In fact, fishermen maintain that "where there are pinkies, there will be red grouper and scamp".

South Carolina & Georgia

Off Charleston, red porgy can be found in 70 to 80 feet over live bottom and they are a commonly caught species in the charter business.

Off Georgia, fishermen maintain they are catching more red porgy now than a few years back. The fish are smaller, but they are catching them in 80 to 90 feet of water. They are a little bigger past 120 feet and large ones are found beyond 180 feet.

Florida

Larger fish are found off of St. Augustine in winter and early spring. In this area they inhabit

low relief habitat that fishermen call "porgy bottom". This type of habitat also harbors gray triggerfish.

An AP member shared that in the 1980s, while fishing with bandit reels, he would catch large red porgy in an area known as "The Steeples". The fish were thick at that time. However, captains no longer frequent the area to catch them since there are plenty of them inshore.

Observations on Effort Shifts

North Carolina

Commercial fishermen who depend on catches of vermilion snapper switch to targeting red porgy when vermilion close down.

South Carolina & Georgia

Off South Carolina, there may be a stock of red porgy that is in much deeper water (70 to 100 fathoms [360-600 feet]) that is protected and not part of the main fishery northeast of the Georgetown Hole. Large red porgy are caught in this area by commercial fishermen targeting golden tilefish and snowy grouper. They are bigger and lighter colored than red porgy commonly seen inshore.

Off Georgia, red porgy are being targeted by charter fishermen along with vermilion snapper.

Florida

Commercial and charter fishermen agreed that nowadays they catch what they can get to make a trip. Red porgy are no different in this respect and they are an important part of fishermen's livelihoods in the South Atlantic region.

Observations on Discards

A private recreational angler from North Carolina shared his opinion that red porgy are an "abused fish" in terms of discarding. He recounts that, along southeast North Carolina, local fishermen maintain that "pinkies make good grouper bait" referring to red grouper and scamp. He claims this belief was first introduced by local charter captains. He claims he'd see five or six red porgies, twelve inches, chopped up for bait and put on the hooks; and yes, you caught a grouper with them.

On the commercial sector, fishermen indicated that there are discards in the early part of the year when red porgy are closed and vermilion are not. However, red porgy are quite hardy and most survive being released even when caught in deep water while fishing for snowy grouper.

Observations on Price and Demand

For fish markets in North Carolina, it is nice to have something cheaper to offer to restaurants and individual consumers. It is a very popular fish.

A dealer from South Carolina agreed and added that red porgy do really well in the market as they fill the need of restaurants looking for a whole fish presentation.

A restaurant owner from St. Simons Island, Georgia, concurs with the observation that demand has gone up in recent years. Red porgy are a more affordable alternative to grouper so customers like it.

According to a commercial fisherman off Ponce Inlet, Florida, both price and demand for red porgy have increased. Currently the price per pound is $2.75 for large fish and $2.50 for small.

Charter captains on the AP generally agreed that customers don't normally request to catch red porgy; however, they catch their bag limit and are happy to keep them.

Observations on Community Dependence
While no one community may be dependent on a single species, people still depend on many species to make ends meet. Any time a species is taken out of the catch, the trip becomes less profitable for both commercial and charter vessels. Red porgy are "part of the puzzle, and they're an important part of the puzzle".

Asked how fishermen and communities have adapted to changes in the red porgy fishery, a commercial dealer from South Carolina recounted a time when tight regulations were first implemented (2012-2013) and commercial fishermen had to make changes to adjust to the changing regulatory climate.

Some AP members reiterated that businesses and consumers suffer when access to the species is closed for them. There really isn't any way to adapt to that.

Observations on Management Measures
AP members generally agreed that the 14-inch commercial and recreational minimum size limit is still appropriate. The current minimum size limit produces a nice fillet and is above the size at maturity (50% are mature around 8 inches), so fish get a chance to spawn before entering the fishery.

Reducing the recreational minimum size limit to 12 inches may be beneficial to for-hire businesses in South Carolina as fishermen would not have to go out as far to find fish large enough to keep.

AP members were supportive of the Council's proposed management changes for the commercial sector (split season and trip limit modifications). Commercial fishermen would like access to red porgy year-round.

Environmental Observations
After Hurricane Matthew, fishermen off Georgia were reportedly catching mutton snapper, and red porgy were closer to shore than usual.

Off Florida, thermocline conditions develop in the area off St. Augustine almost every year. During those times of cold water, no fish will bite. The fish simply leave. This is also the case with red porgy. Cold water conditions are a common occurrence now north of Cape Canaveral to northeast Florida. It doesn't seem to happen further south along the Florida coast.

AP members discussed the potential ecological impacts of the lionfish invasion in the South Atlantic region and voiced concern over potential impacts to juvenile red porgy. An AP member recounted starting to see lionfish offshore from 2005 to 2008. Since then, the lionfish population seems to be about five-times what it used to be, and larger individuals are more abundant.

Research has shown that lionfish may have an impact on tomtate but dietary analyses are limited to draw conclusions on effects of lionfish predation on other species. Research is ongoing at a regional level on this topic, and while there are few discernible changes in regional reef fish communities over the period in which lionfish were becoming well established in the region, there is a lot of information in the literature showing species-specific and community-level impacts in more tropical communities.

Asked about observations on red porgy recruitment, fishermen stated that places off northeast Florida that harbor smaller red porgies in about 21 fathoms (126 feet). The bigger ones are in deeper water. Although this may be evidence of recruitment, no one on the AP spoke of seeing juvenile fish. One member recounted having sampled with Z-traps in as shallow as 100 feet and encountering young red porgy; however, the fish were probably older than young-of-the-year.

Asked for observations concerning the timing and length of the red porgy spawning season, an AP member offered that the existing spawning season closure is unnecessary, and the Council should consider allowing harvest during that time (January through April).

Other Observations

AP members reiterated the importance of the red porgy fishery for all sectors in the South Atlantic region.

Some AP members maintain that the fishery-independent survey is not showing similar increases in abundance than what hook-and-line fishermen are seeing on the water. They maintain the traps used in sampling (chevron traps) may not be sampling the populations adequately. The AP recommended conducting more cooperative hook-and-line sampling with fishermen (all sectors) and more port samplers. In addition, more research is needed on early life history and development of a juvenile index.

Appendix A. Red Porgy Information Document

April 2018

Biology

Red porgy, *Pagrus pagrus*, are distributed throughout the Atlantic Ocean at depths of 18 to 280 meters (Manooch and Hassler 1978). In the South Atlantic region, red porgy are commonly associated with "live bottom" habitat with rocky outcrops and rocky ledges (Manooch and Hassler 1978, Grimes et al. 1982). Red porgy are protogynous, meaning they begin life as female and change to male later on. Therefore, most of the smaller fish are females, but males occur in all age groups (SEDAR 1 2002). In the Northeast Gulf of Mexico, red porgy appear to be pair spawners (do not form aggregations), and change sex over a wide range of sizes and ages (DeVries 2006). Peak spawning occurs in March and April (Manooch 1976). Red porgy grow slowly and live relatively long (an 18-year-old specimen is the oldest on record), but maturity occurs at younger ages. Roumillat and Waltz (1993) collected red porgy along the continental shelf between Cape Fear, NC, and Cape Canaveral, FL. The study determined the vast majority of females were mature by age 2.

Stock Status

An update to the red porgy assessment was conducted in 2012 with data through 2011 (SEDAR 1 Update 2012). The update included seven additional years of data since the last update in 2006 (SEDAR 1 Update 2006). In addition, changes were made in model configuration to address new information, management actions, and improvements in the estimation of assessment uncertainty. A suite of sensitivity runs was performed to explore the model's sensitivity to the differences between this update and the previous 2006 update.

The 2012 update showed that red porgy are **currently overfished, but overfishing is not occurring**. In 2011, the stock was well below the biomass at maximum sustainable yield (B_{MSY}) ($B_{2011}/B_{MSY} = 0.474$). The spawning stock biomass (SSB) was also below the spawning stock biomass at maximum sustainable yield (SSB_{MSY}) ($SSB_{2011}/SSB_{MSY} = 0.471$) and the minimum stock size threshold (MSST, the level below which a stock is considered overfished) ($SSB_{2011}/MSST = 0.608$). In terms of fishing mortality (F), the 2012 update showed that the fishing mortality in 2011 was below the fishing mortality that would produce maximum sustainable yield (F_{MSY}) ($Fcurrent/F_{MSY} = 0.647$). Landings of red porgy have been well below the maximum sustainable yield since the first size limit was implemented in 1992 but recruitment has been below R_{MSY} (recruitment when the population is at B_{MSY}) since the early 1990s. This lack of recruitment explains why recovery has been slow. The SSC found the 2012 update to be best available science and suitable for management. The SSC recommended a benchmark be conducted the next time red porgy is assessed. Due to the fact that projections indicated red porgy would likely not rebuild within the allotted rebuilding time, even when fishing mortality was set to 0, the SSC recommended using a provision of the NMFS National Standard 1 (NS1) that states "if the stock or stock complex has not rebuilt by T_{MAX}, then the fishing mortality rate should be maintained at $F_{REBUILD}$ or 75% of the maximum fishing mortality threshold (MFMT), whichever is less." Since F at 75% of F_{MSY} estimated in the model is very close to the level associated with red porgy bycatch harvest, the SSC recommended using this value in setting the acceptable biological catch (ABC).

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 established a 10-year rebuilding program for red porgy beginning in 1991 and 12-inch total length minimum size limit for red porgy. The amendment also prohibited fish traps, entanglement nets, and longline gear within 50 fathoms.

In 2000, Amendment 12 (SAFMC 2000) to the Snapper Grouper FMP put in place an 18-year rebuilding schedule (year 1 = 1999), prohibited sale and purchase of red porgy annually from January through April, specified a 1-fish bag limit, and established a 50-pound bycatch commercial limit from May through December.

In 2006, the Council made further management changes in response to the stock assessment update (SEDAR 01 2006 Update) through Amendment 13C (SAFMC 2006). The amendment specified the following for red porgy:

- Commercial and recreational minimum size limit of 14 inches total length;
- Commercial quota of 127,000 pounds gutted weight;
- Prohibit sale/purchase and prohibit harvest and/or possession beyond the bag limit when quota is taken and/or during January through April;
- Commercial trip limit to 120 fish (210 pounds gutted weight) from May through December each year; and
- Recreational bag limit of three red porgy per person per day or per trip, whichever is more restrictive.

Amendment 15B (SAFMC 2008), established commercial and recreational allocations for red porgy (50% commercial and 50% recreational). In addition, the amendment specified a commercial quota of 190,050 pounds gutted weight (197,652 pounds whole weight) and a recreational quota of 190,050 pounds gutted weight. This amendment also prohibited the sale of snapper grouper species harvested 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).

The use of non-stainless-steel circle hooks when fishing for snapper grouper species north of 28 degrees North Latitude with natural baits was implemented through Amendment 17A (SAFMC 2010).

In response to another stock assessment update (SEDAR 1 Update 2012) The Council revised the acceptable biological catch and annual catch limits (ACLs) for red porgy as follows through Regulatory Amendment 18 (SAFMC 2013):

- Acceptable Biological Catch:
  - 2013=306,000 pounds whole weight
  - 2014=309,000 pounds whole weight
  - 2015 and subsequent years=328,000 pounds whole weight;
- Commercial/recreational ACLs:
  - 2013=147,115 pounds gutted weight (153,000 pounds whole weight)
  - 2014=148,558 pounds gutted weight (154,500 pounds whole weight)
  - 2015 and subsequent years=157,692 pounds gutted weight (164,000 pounds whole weight)

Fishery-independent Trends

Abundance of red porgy 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 red porgy 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 red porgy has generally declined over the past ten years (**Figure 1**).

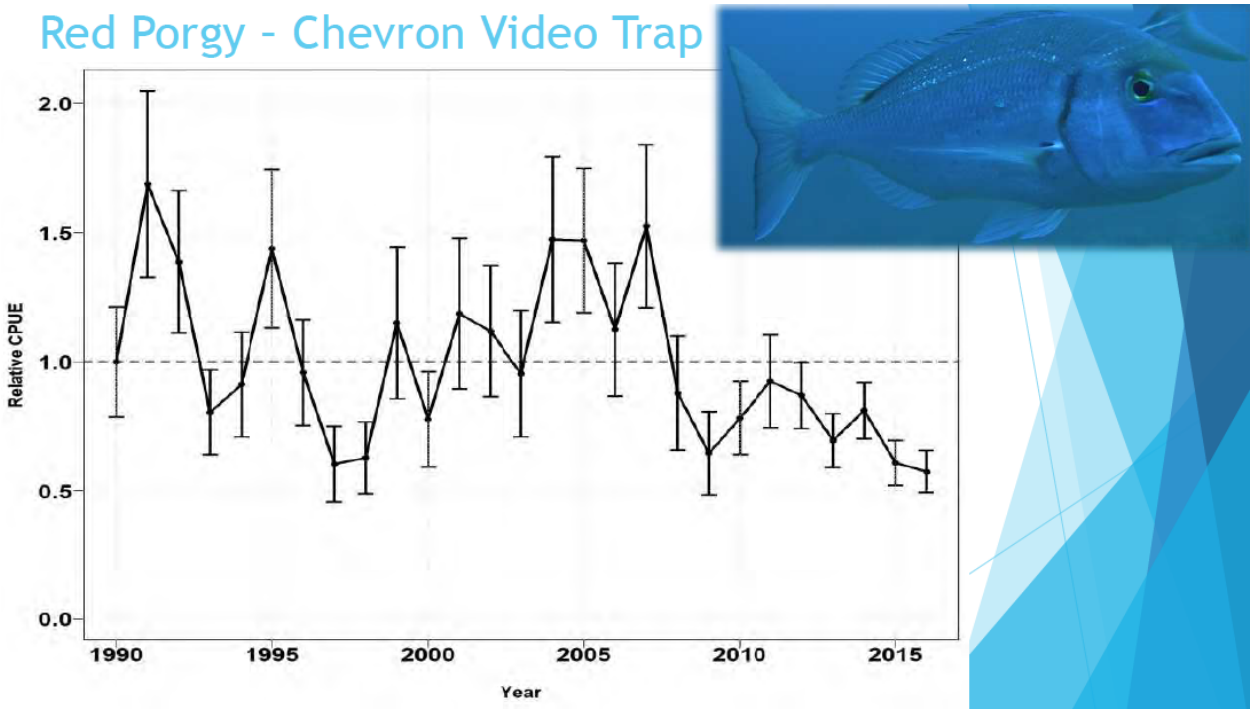

Figure 1. Relative catch per unit effort of red porgy in fishery-independent surveys in the South Atlantic region, 1990-2016.

Fishery Performance

The following summary of red porgy 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.

Commercial Landings

Commercial landings of red porgy in pounds whole weight from 2000 through 2016 by state are presented in **Table 1**. Landings by state are presented graphically in **Figure 2** and total landings relative to ACLs are shown in **Figure 3**. Georgia landings were combined with South Carolina landings to maintain confidentiality.

Table 1. South Atlantic red porgy 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.

South Atlantic Red Porgy Commercial Landings (pounds whole weight)					
Year	**NC**	**SC + GA**	**FL**	**Total**	**Comm Quota/ACL**
2000	9,598	6,914	1,361	17,873	
2001	37,378	16,857	4,434	58,669	
2002	35,251	12,962	6,696	54,909	
2003	29,659	14,483	4,429	48,571	
2004	26,700	18,004	5,021	49,725	
2005	29,939	14,771	3,957	48,667	
2006	40,590	33,377	9,877	83,844	
2007	76,166	47,785	20,335	144,286	132,000
2008	92,568	54,591	24,821	171,980	132,000
2009	81,896	56,515	26,137	164,548	132,000
2010	71,743	54,713	32,397	158,853	197,652
2011	80,350	68,808	53,866	203,024	197,652
2012	72,284	58,123	31,705	162,112	197,652
2013	64,318	57,278	48,274	169,870	153,000
2014	55,744	48,640	51,162	155,546	154,500
2015	47,401	44,402	54,338	146,141	164,000
2016	39,468	42,229	38,407	120,104	164,000

Source: ALS

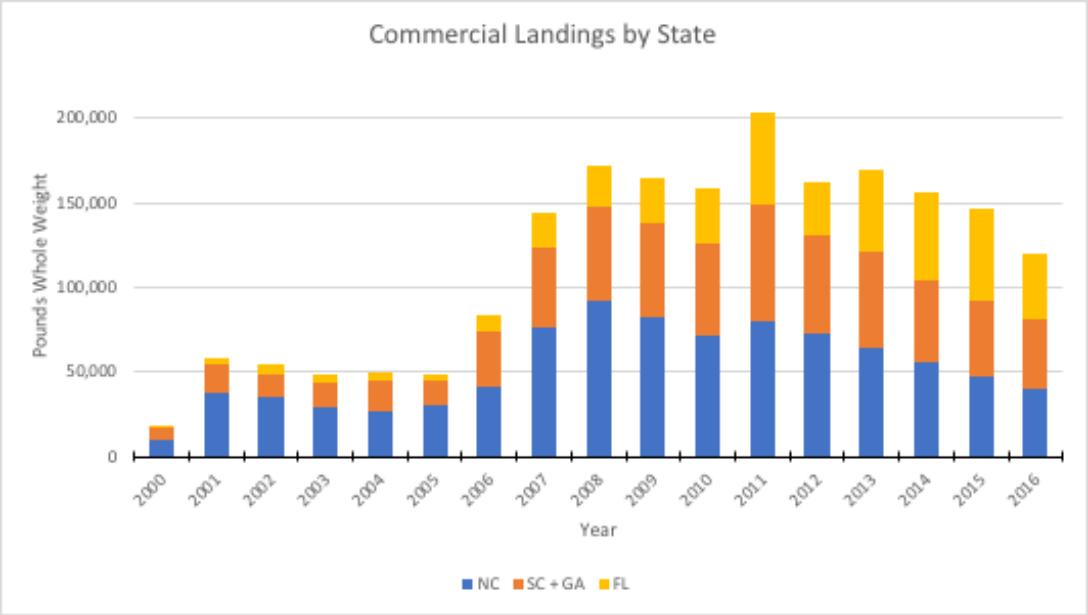

Figure 2. Commercial landings (pounds whole weight) of red porgy in the South Atlantic region from 2000 through 2016 by state. Data for Georgia and South Carolina were aggregated to maintain confidentiality. Source: ALS

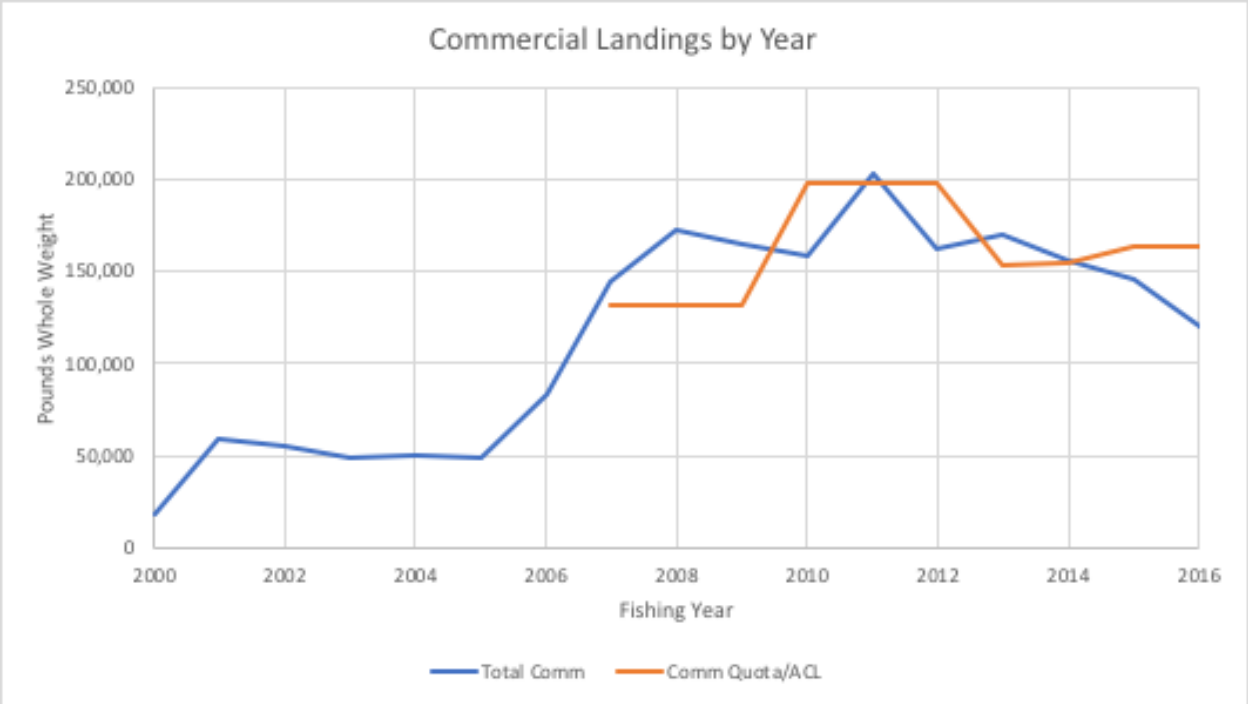

Figure 3. Commercial landings (pounds whole weight) of red porgy in the South Atlantic region from 2006 through 2015 (blue line). Quotas/commercial ACLs (orange line) are shown since 2007. Source: ALS

Red porgy commercial landings since 2000 have ranged between about 18,000 to 200,000 pounds whole weight. On average, most of the red porgy landed commercially in the South Atlantic are landed in North Carolina, followed by South Carolina and Georgia. Overall, landings began increasing in 2006 to a peak in 2011 (**Figures 2 & 3**). Landings exceeded the commercial quota from about 2007 through 2009 and the ACL in 2013 (in-season closure 12/2/13). Since then, commercial landings have been below the ACL (**Figure 3**). In 2015 and

2016, commercial landings reached 89% and 73% of the commercial ACL, respectively (SERO commercial landings monitoring webpage)[1].

Figure 4-6 show the seasonality of commercial landings. **Figure 4** displays the average monthly commercial landings in the South Atlantic region for three time periods: the entire time series (2000 through 2016), and prior to and after 2006 when Amendment 13C implemented several significant management changes for red porgy. **Figure 5** displays average monthly commercial landings of red porgy by state prior to 2006 and **Figure 6** shows data from 2007 though 2016.

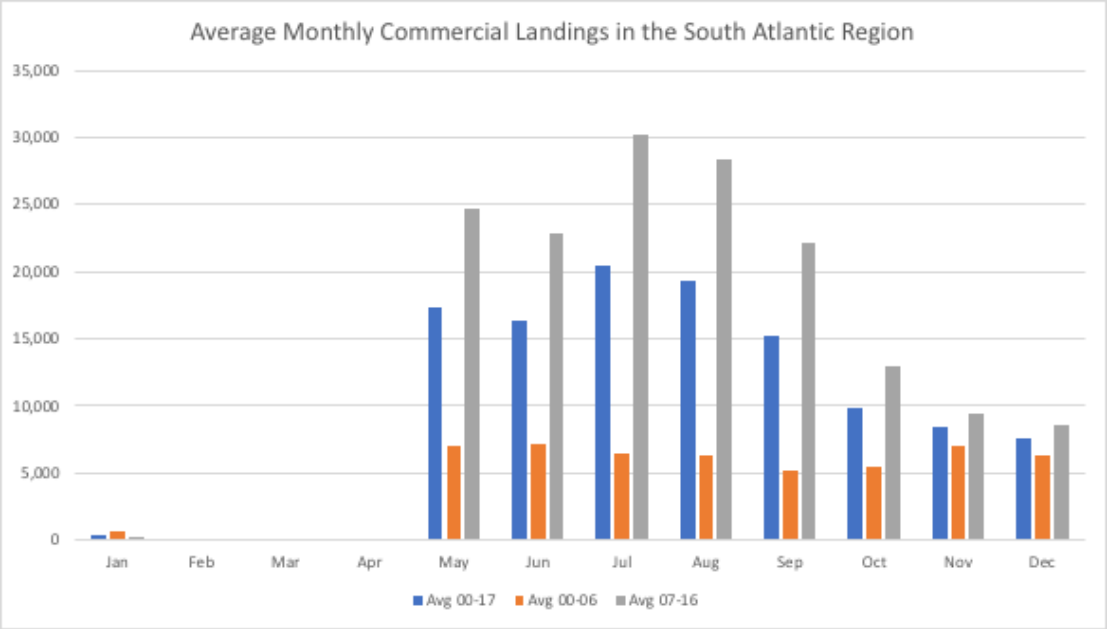

Figure 4. Average monthly commercial landings (pounds whole weight) of red porgy in the South Atlantic region for the entire time series examined (2000-2016, blue bars), prior to 2006 (orange bars) and after 2006 (gray bars). Source: ALS.

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

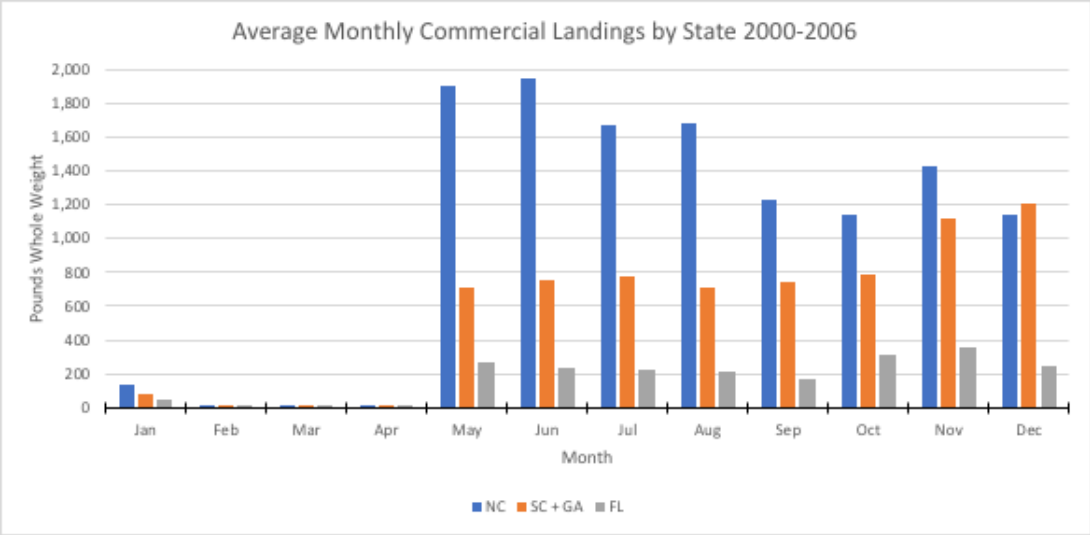

Figure 5. Average monthly commercial landings (pounds whole weight) of red porgy by state from 2000 through 2006. Data for Georgia and South Carolina were aggregated to maintain confidentiality. Source: ALS.

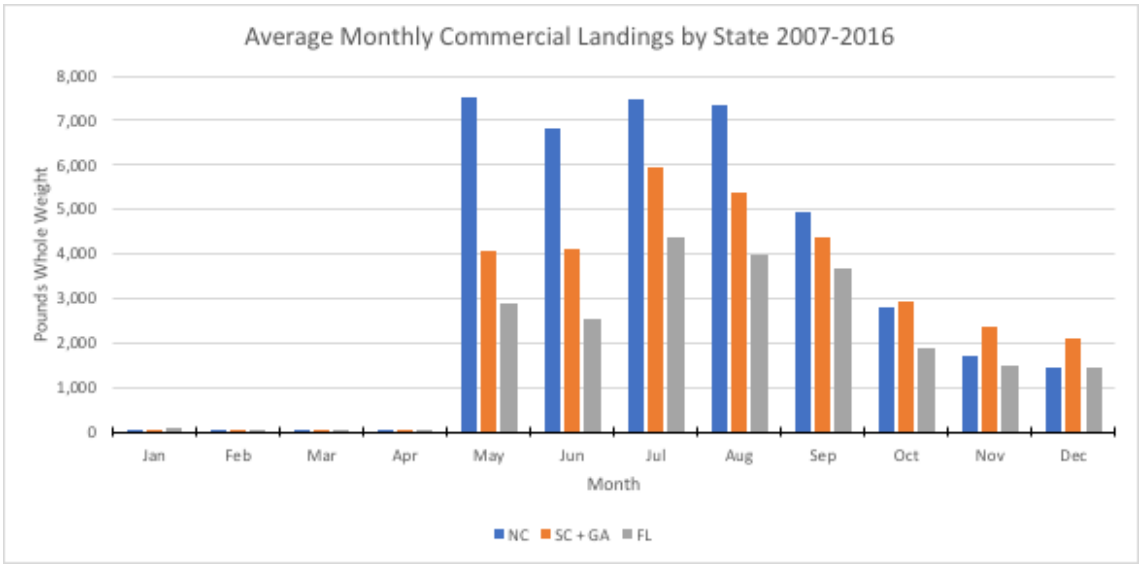

Figure 6. Average monthly commercial landings (pounds whole weight) of red porgy by state from 2007 through 2016. Data for Georgia and South Carolina were aggregated to maintain confidentiality. Source: ALS.

Average landings increased substantially after management changes took place in 2006 when a 120-fish commercial trip limit replaced the 50-pound bycatch allowance (**Figure 4**). In general, commercial landings of red porgy have been higher from May through August in North Carolina (**Figures 5 & 6**).

Recreational Landings

Recreational landings in pounds whole weight from 2000 through 2016 by state are presented in **Table 2**. Landings by state are presented graphically in **Figure 7** and total landings relative to ACLs are shown in **Figure 8**. Total recreational landings have ranged from just over 28,000 pounds to just under 191,000 in 2013 (**Table 2**). In terms of geographical distribution, no one state has dominated recreational landings over the time period examined. However, South Carolina figured prominently in 2007 and 2015 whereas Florida recreational landings in 2016 where the highest for that state over the time period examined (**Table 2** and **Figure 7**). Recreational landings of red porgy have been consistently below the quota/ACL since 2010 (**Figure 8**).

Table 2. South Atlantic red porgy total recreational landings (pounds whole weight) and quota/ACL (where applicable) from 2000 through 2016, by state.

South Atlantic Red Porgy Recreational Landings (pounds whole weight)						
Year	**NC**	**SC**	**GA**	**FL**	**Total**	**Rec ACL**
2000	16,888	10,287	132	883	28,189	
2001	50,328	28,819	252	13,277	92,676	
2002	60,429	23,118	799	6,306	90,652	
2003	45,299	21,131	9,336	27,131	102,897	
2004	73,436	50,648	5,294	12,009	141,388	
2005	47,485	21,085	1,395	32,461	102,426	
2006	35,722	50,118	1,982	25,553	113,374	
2007	74,554	93,395	7,715	8,091	183,755	
2008	103,724	78,623	878	7,693	190,918	
2009	76,027	19,365	1,277	1,924	98,592	
2010	49,291	18,235	625	14,342	82,493	
2011	30,744	24,592	935	11,204	67,476	
2012	44,360	24,096	4,350	27,893	100,699	197,652
2013	27,692	29,757	2,220	14,509	74,178	153,000
2014	25,815	31,584	1,557	1,811	60,767	154,500
2015	18,316	63,894	304	14,989	97,503	164,000
2016	16,602	18,336	587	106,694	145,173	164,000

Source: SEFSC

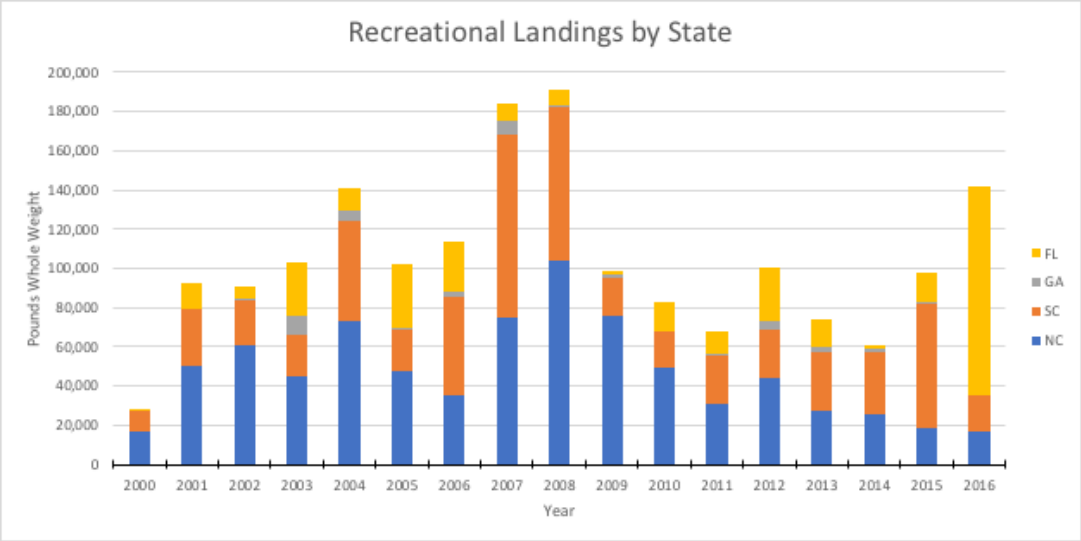

Figure 7. Recreational landings (pounds whole weight) of red porgy by state from 2000 through 2016. Source: SEFSC.

Figure 8. Total recreational landings (pounds whole weight) of red porgy in the South Atlantic region from 2000 through 2016 (blue line). Quotas/recreational ACLs are shown since 2010, when first implemented (orange line).

Average recreational landings of red porgy by state and by 2-month wave (as reported through the Marine Recreational Information Program) are shown in **Figure 9**. The majority of red porgy recreational landings occur in waves 3 and 4 (May through August) and primarily in the Carolinas (**Figure 9**). Directed (target or harvest) red porgy recreational trips for the South Atlantic region are summarized in **Figure 10**. In general, the number of directed trips on red porgy have increased in recent years from 2013, the lowest point over the time period examined (**Figure 10**).

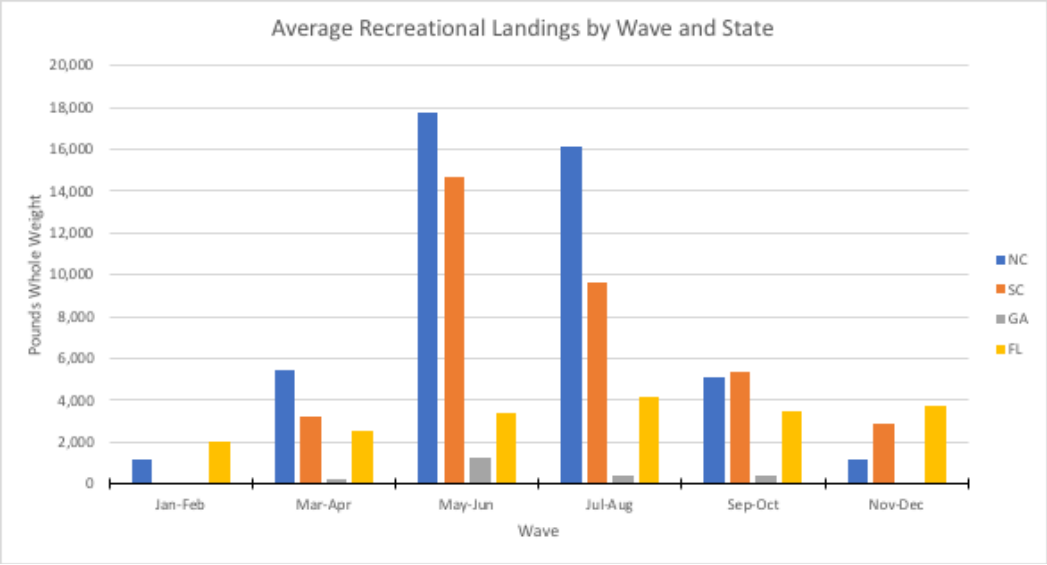

Figure 9. Average recreational landings of red porgy in the South Atlantic region by wave and by state from 2000 through 2016. Source: SEFSC.

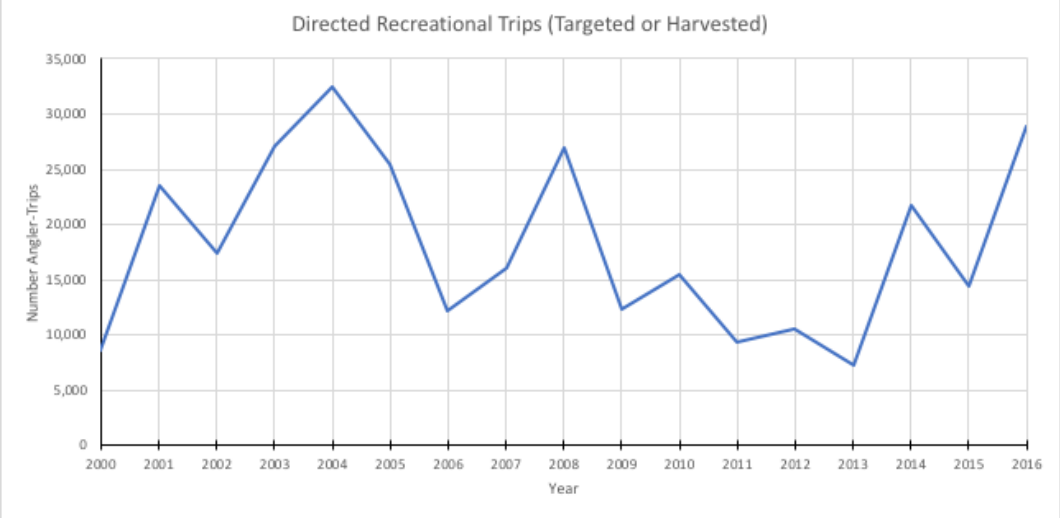

Figure 10. Directed red porgy recreational trips (targeted or harvest) in the South Atlantic region from 2000 through 2016. Source: SEFSC.

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 (**Table 2**) or effort (**Figure 10**) as a proxy for the economic performance of the fishery, it is clear that the economic performance of the recreational red porgy fishery has fluctuated over time with peaks in the mid and late 2000s as well as recent years. Since approximately 2014/2015, recreational harvest and effort have generally increased in the recreational red porgy fishery, with the economic value and impacts

of the fishery likely increasing as well; however, effort and harvest are below historic highs.

Changing focus to the commercial sector, **Figure 11** shows the average inflation adjusted price per pound for red porgy regionally and by state (in 2016 dollars) from 2000 through 2016. Total ex-vessel value for red porgy in the South Atlantic Region is presented in **Figure 12** in inflation adjusted figures (2016 dollars). The ex-vessel price per pound for red porgy was fairly flat through the time series. The overall ex-vessel value peaked in 2012 at approximately $820,000 (2016 dollars). Landings and ex-vessel value have generally decreased since that peak, with an ex-vessel value of approximately $466,000 in 2016.

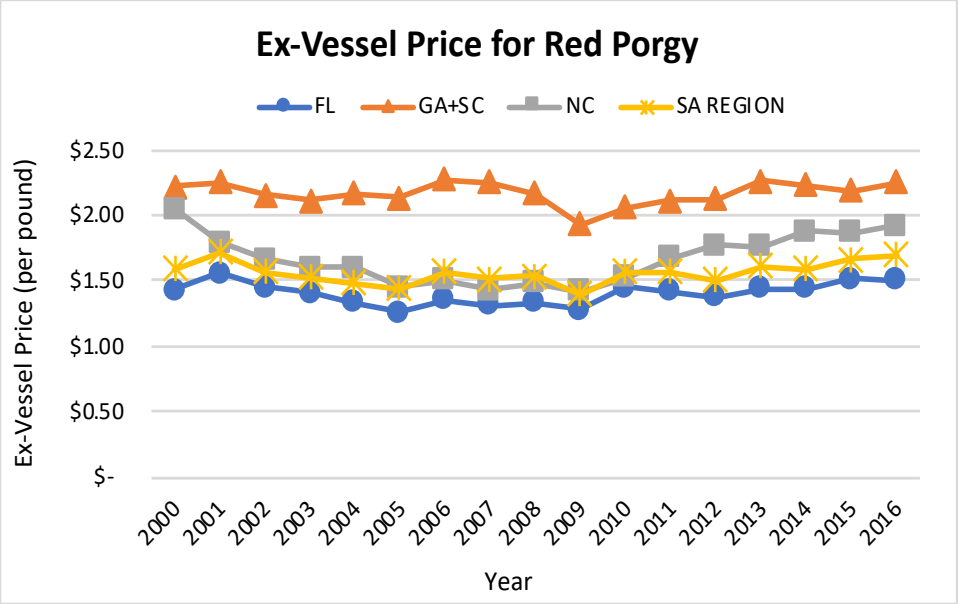

Figure 11. Average ex-vessel price per pound (2016 dollars) by state for commercial red porgy landings from 2000 through 2016. Data for Georgia and South Carolina were aggregated to maintain confidentiality. Inflation adjustments use the U.S. GDP deflator. Sources: U.S. Bureau of Economic Analysis and ACCSP.

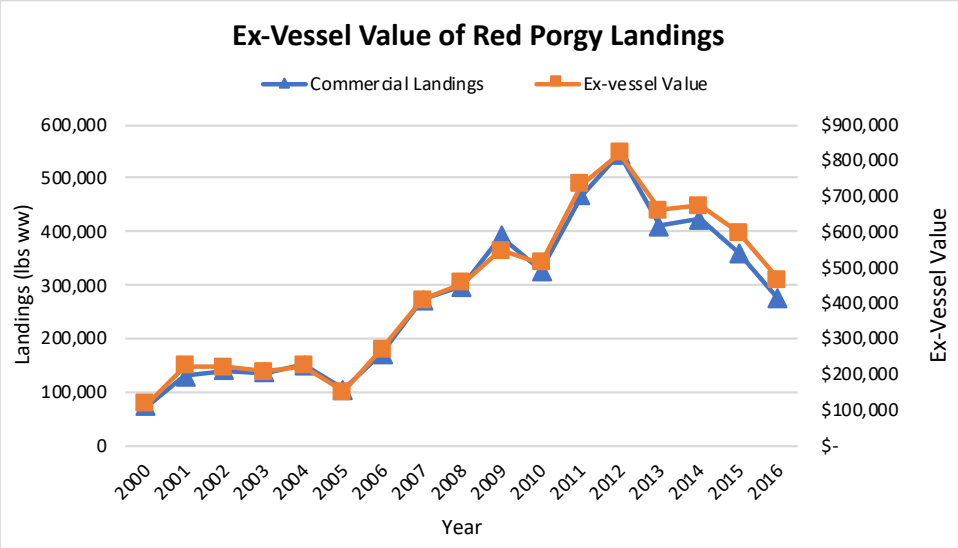

Figure 12. Nominal and inflation adjusted (2016 dollars) ex-vessel value of commercial red porgy landings from 2000 through 2016. Inflation adjustments use the U.S. GDP deflator. Sources: U.S. Bureau of Economic Analysis and ACCSP.

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