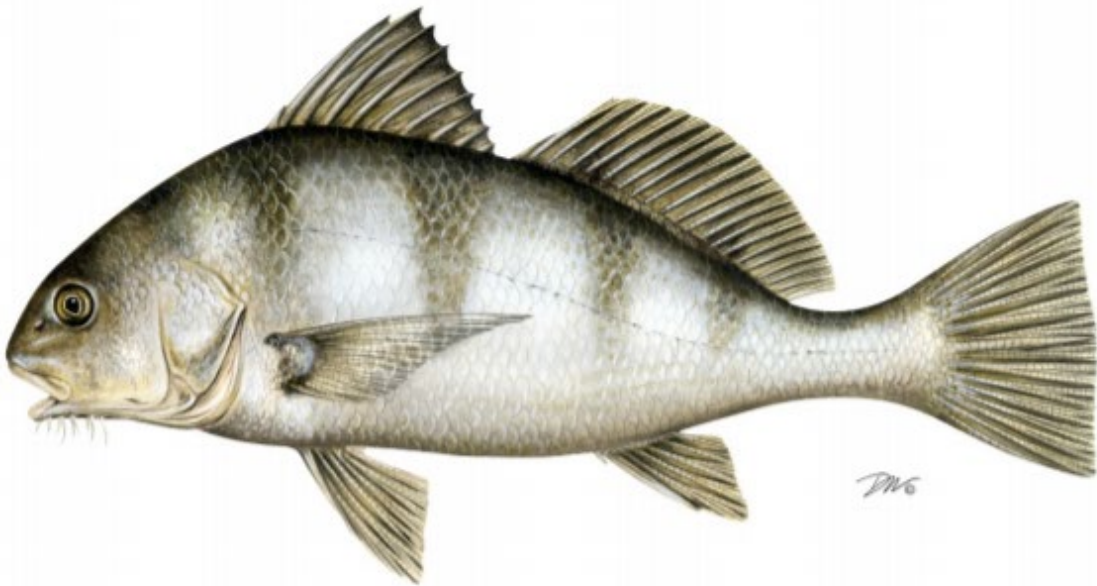


ATLANTIC STATES MARINE FISHERIES COMMISSION

REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN

FOR BLACK DRUM
(Pogonias cromis)

2018 FISHING YEAR



Prepared by the Plan Review Team

Approved by the South Atlantic Management Board
October 2019

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I. Status of the Fishery Management Plan

Date of FMP Approval: Original FMP – June 2013

Management Areas: The entire Atlantic coast distribution of the resource from New Jersey through the east coast of Florida

Active Boards/Committees: South Atlantic State/Federal Fisheries Management Board; Black Drum Technical Committee, Stock Assessment Subcommittee, Plan Review Team; South Atlantic Species Advisory Panel

The Atlantic States Marine Fisheries Commission (ASMFC) adopted an interstate Fishery Management Plan (FMP) for Black Drum in 2013. Prior to the FMP, management was state-specific, from no regulations in North Carolina to various combinations of size limits, possession limits, commercial trip limits, and/or annual commercial quotas from New Jersey to Florida. The Maryland portion of the Chesapeake Bay was closed to commercial fishing in 1998.

The FMP requires all states with a declared interest in the species to have established a maximum possession limit and minimum size limit of at least 12 inches by January 1, 2014, and to have increased the minimum size limit to at least 14 inches by January 1, 2016. The FMP also includes a management framework to adaptively respond to future concerns or changes in the fishery or population.

There are four plan objectives:

- Provide a flexible management system to address future changes in resource abundance, scientific information, and fishing patterns among user groups or area.
- Promote cooperative collection of biological, economic, and sociological data required to effectively monitor and assess the status of the black drum resource and evaluate management efforts.
- Manage the black drum fishery to protect both young individuals and established breeding stock.
- Develop research priorities that will further refine the black drum management program to maximize the biological, social, and economic benefits derived from the black drum population.

The management unit for black drum under the FMP is defined as the range of the species within U.S. waters of the northwest Atlantic Ocean, from the estuaries eastward to the offshore boundaries of the Exclusive Economic Zone (EEZ).

In 2018, Addendum I allowed Maryland to reopen their commercial fishery in the Chesapeake Bay, starting in the 2019 fishing year (ASMFC 2018). Prior to this addendum, a commercial moratorium was in place for these waters due to the FMP's requirement that states maintain measures in place at the time of the FMP's approval.

II. Status of the Stocks

In the 2015 Black Drum Benchmark Stock Assessment, the Stock Assessment Subcommittee (SAS) selected the Depletion-Based Stock Reduction Analysis (DB-SRA; Dick and McCall 2011) as the preferred method for estimating catch reference points. The SAS considered the Depletion-Corrected Average Catch (DCAC; McCall 2009) analysis, but ultimately rejected this method. DCAC did not incorporate removals into a population dynamics process, and uncertainty existed over how changes in the exploitation rate time series may impact the sustainable yield relative to the current stock condition.

Based on the DB-SRA results, black drum life history, indices of abundance, and history of exploitation, the black drum stock is not overfished and not experiencing overfishing (ASMFC 2015). Median biomass exhibited slow and steady decline from 135.2 million pounds in 1900 to 90.78 million pounds in 2012, though the median biomass estimate in 2012 is still well above the necessary level to produce maximum sustainable yield (B_{MSY} ; 47.26 million pounds) (Figure 1). The median maximum sustainable yield (MSY) estimate is 2.12 million pounds and provides an annual catch target that can be used to sustainably manage the fishery. The median overfishing limit (OFL) estimate is 4.12 million pounds and provides a catch threshold that indicates overfishing when exceeded. The OFL is the maximum exploitation rate at the current biomass that does not lead to overfishing.

NOTE: In 2018, the Marine Recreational Information Program transitioned from estimating effort using the Coastal Household Telephone Survey (CHTS) to the mail-based Fishing Effort Survey (FES). The 2015 stock assessment used CHTS data to estimate recreational harvest. However, as black drum is not managed by a quota and to accommodate the transition, recreational harvest estimates based on the FES data or calibration are shown in this report. Due to differing estimation methodologies, these harvest data should not be compared to reference points from the 2015 stock assessment. Harvest estimates based on either effort survey can be compared at: <https://www.st.nmfs.noaa.gov/st1/recreational/queries/>.

III. Status of the Fishery

Total black drum landings from New Jersey through the east coast of Florida are estimated at 5.3 million pounds in 2018, a 20% decrease from total harvest in 2017 (Tables 2 and 3, Figure 2). 2018 harvest is 23% below the previous ten-year (2008-2017) average. The commercial and recreational fisheries harvested 5% and 95% of the 2018 total, respectively.

Commercial landings of black drum in 2018 span from Rhode Island through Florida, although landings from outside the management unit (i.e. north of New Jersey) were less than 1% of the coastwide total. Coastwide commercial landings show no particular temporal trends, ranging from approximately 82,000 to 556,000 pounds annually since 1981 (Figure 2). Black drum commercial landings in 2018 were 239,124 pounds, a 17% decrease from those of 2017. North Carolina led commercial harvest with 46% of the landings, followed by Virginia with 32% (Table 2).

Recreational harvest of black drum peaked by weight in 2008 at 10.7 million pounds (Table 3) and by numbers of fish in 2003 at 2.9 million (Table 4). Since 2000, weight has fluctuated without trend between 3.3 and 10.7 million pounds, and numbers of fish have fluctuated between 890 thousand and 2.9 million fish (Figures 3 and 4).

Average weight (recreational harvest in pounds divided by recreational harvest in numbers) in 2018 was 3.6 pounds per fish, approximately the same as 2017. Years that have shown large increases in coastwide average weight (i.e. increases to recreational harvest in pounds without proportional increase to recreational harvest in numbers) have typically occurred during years when Mid-Atlantic states (Virginia-New Jersey) have caught increased percentages of the coastwide recreational harvest (Tables 3 and 4).

The 2018 recreational harvest (1.4 million fish or 5.1 million pounds) represents a 19% decrease in numbers and a 20% decrease in pounds from 2017. Florida anglers landed the largest share of the coastwide recreational harvest in numbers (65%), followed by South Carolina (13%). Since the beginning of the recreational time series (1981) anglers have released increasing percentages of caught fish, with percentages of recreational fish released exceeding 70% in each of the past 5 years. In 2018, 79% (5.2 million fish) of the recreational catch was released (Figure 3, Table 5). It is worth noting that release rates increased substantially after 2013, when the FMP established minimum sizes in every state and required that undersized drum be released for the first time. Recent high release rates can be attributed to these measures, as well as encouragement of catch and release practices.

IV. Status of Assessment Advice

Current stock status information comes from the 2015 benchmark stock assessment (ASMFC 2015) completed by the ASMFC Black Drum Stock Assessment Subcommittee and Technical Committee, peer reviewed by an independent panel of experts, and approved by the South Atlantic State-Federal Fisheries Management Board for use in management decisions.

The stock assessment could be improved by applying a more complex, data-rich assessment method such as a statistical catch-at-age model. Data limitations that need to be addressed to successfully make this transition are biological sampling (length and age) of recreational and commercial fisheries and a fishery-independent survey to track abundance and age structure of the mature stock. Additionally, information about commercial discards and movement of fish along coast and between water depths would improve the assessment.

V. Status of Research and Monitoring

There are no monitoring or research programs required annually of the states except for the submission of a compliance report. The following fishery-dependent (other than catch and effort data) and fishery-independent monitoring programs were reported in the 2018 reports.

Fishery Dependent Monitoring

- Delaware DFW – Black Drum were sampled from the commercial fishery (2018: 86 fish) and recreational fishery (2018: 42 fish) for total length, weight, sex, and age.
- Maryland DNR – Conducted commercial pound net survey from late spring through summer. (2018: 3 fish).
- Virginia MRC –
 - Conducted a biological monitoring program to sample commercial and recreational harvest (2018 – commercial: 164 samples for length, weight, sex, and age; recreational: 110 samples for length and age, 27 for weight, and 102 for sex).
 - Conducted Virginia Game Fish Tagging Program with volunteer anglers (2018: 113 fish tagged and 2 recaptured).
- North Carolina DMF – Conducted commercial sampling of black drum bycatch (2018: n=658; mean total length=17 in). Recreational sampling through MRIP (2018: n=128; mean total length=16 in).
- South Carolina DNR – Terminated the state finfish survey and took over MRIP intercept sampling in 2013 (information reported through MRIP). Recreational reporting also through South Carolina Charterboat Logbook Program. Charter boat catch and effort (both number of trips and number of anglers) have increased throughout the time series but declined from 2017 to 2018.
- Georgia CRD – Collected age, length, and sex data through the Marine Sportfish Carcass Recovery Project (2018: 91 black drum, mean length 403 mm centerline length).
- Florida FWC – Conducted Florida trip ticket program monitoring commercial catch and effort. Commercial pounds per trip in 2018 decreased from 2017. Recreational catch and effort are monitored through MRIP. Recreational catch per trip in 2018 increased from 2017, and was the highest recorded since 2004.
- NMFS – Collected recreational catch, harvest, release, and effort data, as well as length measurements via MRIP.

Fishery Independent Monitoring

- New Jersey DEP –
 - Ocean Trawl Survey: 31-year time series average is 0.16 (2018: 0.10).
 - Delaware Bay Trawl: 28-year time series average is 0.16 (2018: 0.08)
 - Delaware River Seine: 39-year time series average is 0.07 (2018: 0.003).
- Delaware DFW – Conducted two finfish trawl surveys (16ft for juveniles; 30ft for adults). Older than young-of-year (YOY) black drum are rarely captured, and no long term trend is evident. YOY abundance (0.26 black drum/tow) increased in 2018 and was above the time series median.
- Maryland DNR – Conducted the Coastal Bays Fisheries Seine Survey in Maryland’s coastal bay and generally catches juvenile fish. Annual mean catch per haul exhibits no trend and high variation. Annual mean catch per haul in 2018 was just above the time series mean and increased for the third year following a low 2015 value.

- North Carolina DMF – Conducted a gill net survey in Pamlico Sound to characterize size and age distribution, and to produce an abundance index (2018: CPUE=0.42, below the time series average of 0.98).
- South Carolina DNR – Conducted an estuarine trammel net survey for subadult abundance (2018: CPUE=0.204, increase from 2017).
- Georgia CRD –
 - Conducted an estuarine trammel net survey for subadult biological data and abundance index (2017 – Altamaha River: n=22, CPUE=0.17; Wassaw estuary: n=10, CPUE=0.08).
 - Conducted an estuarine gill net survey for YOY biological data and abundance index (2018 – Altamaha River: n=3, CPUE=0.02; Wassaw estuary: n=0, CPUE=0).
 - Conducted Ecological Monitoring Trawl Survey (2018: n=1)
- Florida FWC-FWRI – Conducted two seine surveys monthly in northeast and central southeast Florida to develop annual estimates of adult and juvenile relative abundance. Standardized catch rates indicate a variable but non-directional trend for juveniles and an increasing trend for adults.

VI. Status of Management Measures and Issues

Fishery Management Plan

The Black Drum FMP requires all states with a declared interest in the species to have established a maximum possession limit and minimum size limit of at least 12 inches by January 1, 2014, and to have increased the minimum size limit to no less than 14 inches by January 1, 2016.

De Minimis

The black drum FMP allows states to request *de minimis* status if, for the preceding three years for which data are available, their average combined commercial and recreational landings (by weight) constitute less than 1% of the average coastwide commercial and recreational landings for the same three-year period. A state that qualifies for *de minimis* will qualify for exemption in both their commercial and recreational fisheries.

De Minimis Requests

No state requested *de minimis* status through the annual reporting process.

Recent Changes to State Management

Maryland – Maryland made a regulation change on February 25, 2019 to reopen a commercial fishery within Maryland’s portion of Chesapeake Bay, as allowed by Addendum I to the Interstate Fisheries Management Plan for Black Drum. The new regulations allow commercial fishermen in Chesapeake Bay a ten fish per vessel per day limit, with a minimum size limit of 28 inches total length. All other regulations remain unchanged.

Georgia - In 2017, the Georgia General Assembly approved the addition of species endorsements to commercial fishing licenses to replace Letters of Authorization, which was followed by the Board

of Natural Resources implementation in December 2017. Species endorsements, including one for finfish, were issued starting with the 2018-2019 fishing season.

A new seafood dealer license was also implemented April 1, 2018. Seafood dealers are defined as “any person or entity, other than the end-consumer, who purchases seafood products from a harvester unless the harvester is a licensed seafood dealer.” Commercial harvesters fishing in Georgia waters and/or unloading seafood products must possess a commercial fishing license and the appropriate species endorsements. A harvester is required to have a dealer’s license if they are selling their catch to end consumers.

VII. Implementation of FMP Compliance Requirements for 2018

The PRT finds that all states have implemented the requirements of the Fishery Management Plan.

VIII. Recommendations of the Plan Review Team

Management and Regulatory Recommendations (H) =High, (M) =Medium, (L) =Low

- Supporting the Black Drum Technical Committee’s recommendation, postpone scheduling the next stock assessment for three years. When the next assessment is conducted, it should be a benchmark assessment that attempts to modify the DBSRA model and incorporates new information. (H)
- Develop management mechanism (e.g., traffic light analysis) to evaluate annual fishery independent and dependent indices to assess stock status and recommend management action if needed. (H)

Prioritized Research and Monitoring Recommendations (H) =High, (M) =Medium, (L) =Low

Stock Assessment and Population Dynamics

- Update the 2015 stock assessment or conduct a new benchmark stock assessment that includes the recalibrated MRIP recreational harvest estimates based on the new, mail-based FES. (H)
- Age otoliths that have been collected and archived. (H)
- Collect information to characterize the size composition of fish discarded in recreational fisheries. (H)
- Collect information on the magnitude and sizes of commercial discards. Obtain better estimates of black drum bycatch in other fisheries, especially juvenile fish in south Atlantic states. (H)
- Increase biological sampling in commercial fisheries to better characterize the size and age composition of commercial fisheries by state and gear. (H)
- Increase biological sampling in recreational fisheries to better characterize the size and age composition by state and wave. (H)
- Obtain estimates of selectivity-at-age for commercial fisheries by gear, recreational harvest, and recreational discards. (H)

- Continue all current fishery-independent surveys and collect biological samples for black drum on all surveys. (H)
- Develop fishery-independent adult surveys. Consider long line and purse seine surveys. (H)
- Collect age samples, especially in states where maximum size regulations preclude the collection of adequate adult ages. (H)
- Conduct a high reward tagging program to obtain improved return rate estimates. Continue and expand current tagging programs to obtain mortality and growth information and movement at size data. (H)
- Conduct tagging studies using implanted radio tracking tags that are compatible with coastal tracking arrays along the Atlantic coast in order to track movement and migration of adults. (H)
- Conduct studies to estimate catch and release mortality rates in recreational fisheries. (H)
- Conduct reproductive studies, including: age and size-specific fecundity, spawning frequency, spawning behaviors by region, and movement and site fidelity of spawning adults. (H)
- Improve sampling of night time fisheries. (M)
- Collect genetic material (i.e., create “genetic tags”) over a long time span to obtain information on movement and population structure, and potentially estimate population size. (M)
- Obtain better estimates of harvest from the black drum recreational fishery, especially in states with short seasons. (M)

IX. References

ASMFC. 2013. Interstate Fishery Management Plan for Black Drum. Arlington, VA.

ASMFC. 2015. Black Drum Stock Assessment for Peer Review. Atlantic States Marine Fisheries Commission, Stock Assessment Report. 352 p.

ASMFC. 2018. Addendum I to the Black Drum Interstate Fishery Management Plan. Arlington, VA.

Dick, E.J. and MacCall, A.D. 2011. Depletion-Based Stock Reduction Analysis: A catch-based method for determining sustainable yields for data-poor fish stocks. *Fisheries Research*, 110: 331-341

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X. Figures

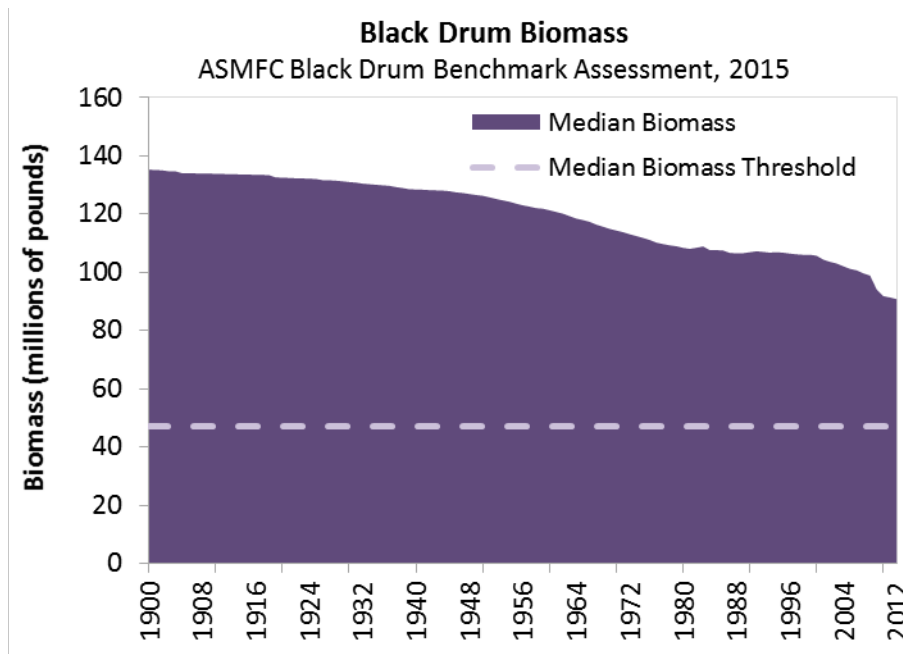


Figure 1. DB-SRA estimates of Median biomass and threshold 1900-2012 (Source: ASMFC 2015).

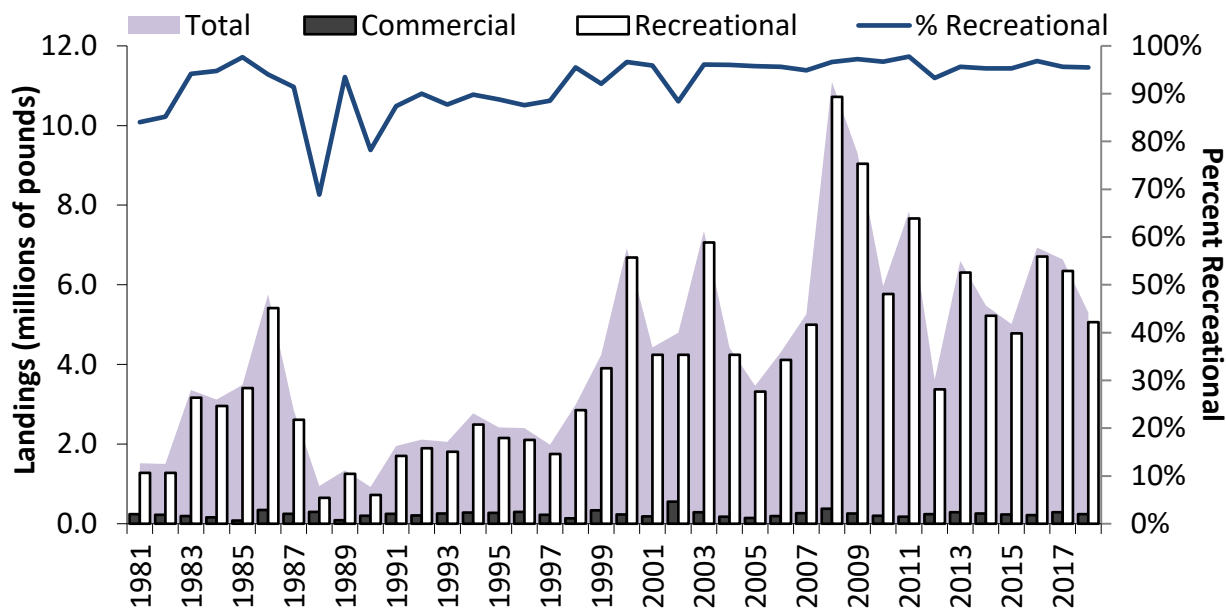


Figure 2. Commercial and recreational landings (pounds) of black drum. See Tables 2 and 3 for values and data sources.

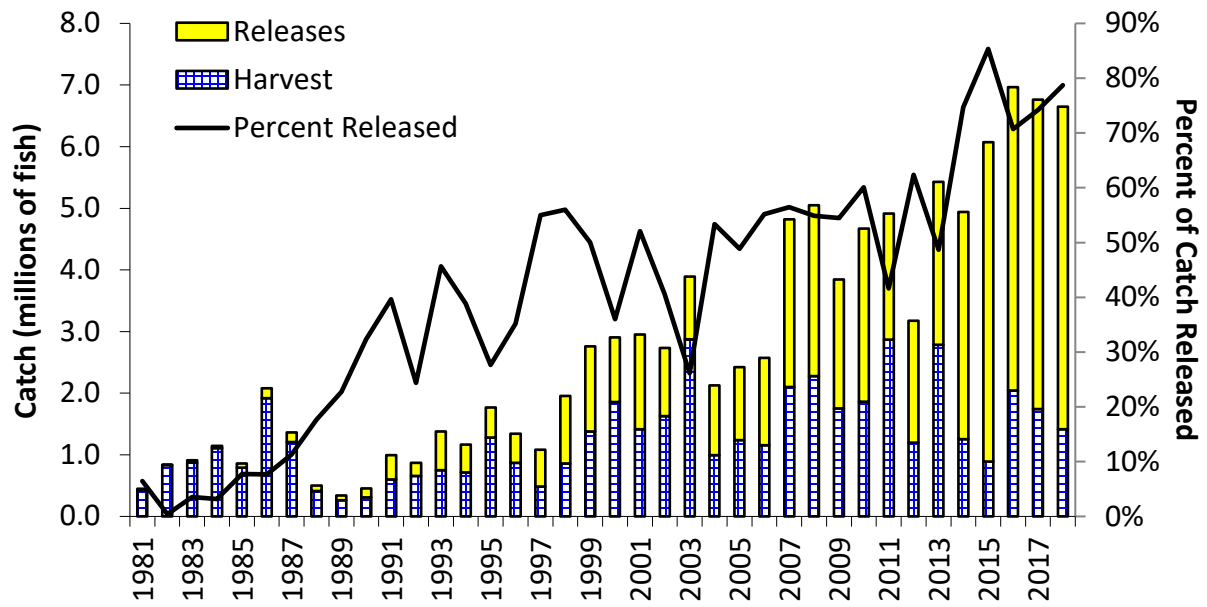


Figure 3. Recreational catch (harvest and alive releases) of black drum (numbers) and the proportion of catch that is released. See Tables 4 and 5 for values and data sources.

XI. Tables

Table 1. Black drum regulations for 2018. The states of New Jersey through Florida are required to meet the requirements in the FMP. All size limits are total length.

State	Recreational		Commercial			Notes
	Size limit	Bag limit	Size limit	Trip Limit	Annual Quota	
ME - NY	-	-	-	-	-	
NJ	16" min	3/person/day	16" min	10,000 lbs	65,000 lbs	
DE	16" min	3/person/day	16" min	10,000 lbs	65,000 lbs	
MD	16" min	1/person/day 6/vessel (Bay)	16" min		1,500 lbs Atlantic Coast	Chesapeake Bay closed to commercial harvest. Reopened on Feb. 25, 2019, details in Sec. VI.
VA	16" min	1/person/day	16" min	1/person/day*	120,000 lbs	*without Black Drum Harvesting and Selling Permit
NC	14" min - 25" max; 1 fish > 25" may be retained	10/person/day	14" min - 25" max	500 lbs		
SC	14" min - 27" max	5/person/day	14" min - 27" max	5/person/day		Commercial fishery primarily bycatch
GA	14" min	15/person/day	14" min	15/person/day		
FL	14" min - 24" max; 1 fish >24" may be retained	5/person/day	14" min - 24" max	500 lbs/day		

Table 2. Commercial landings (pounds) of black drum by state, 2009-2018. (Totals include coastwide landings outside of the management area, NJ-FL. Sources: 2019 state compliance reports for 2018 fishing year; for years prior to 2018, personal communication with ACCSP, Arlington, VA)

Year	NJ	DE	MD	PRFC	VA
2009	6,408	30,563	158	40	57,249
2010	3,079	49,744	C		58,150
2011	3,130	C	C		44,620
2012	19,017	10,943	571	3	104,234
2013	16,251	24,640	2,145		87,235
2014	9,270	C	C		88,402
2015	6,478	39,282	C		87,011
2016	2,210	49,109	C		49,832
2017	21,248	699	423		42,695
2018	C	32,375	734		76,337
	NC	SC	GA	FL	Total
2009	148,994		C	15,710	259,237*
2010	69,194		C	15,684	196,323
2011	56,083		C	22,295	175,848
2012	94,352	C		14,302	243,527*
2013	127,170	C	C	28,460	286,413
2014	51,217			91,587	259,650
2015	51,073			50,477	234,727*
2016	90,715	C		26,978	219,350
2017	182,882	C		41,280	289,431
2018	109,757			19,465	239,124*

C: Confidential landings

*: Total excludes some state landings due to confidentiality

Table 3. Recreational harvest (pounds) of black drum by state and coastwide average weight, 2009-2018. (Sources: 2019 state compliance reports for 2018 fishing year; for years prior to 2018, personal communication with NOAA Fisheries, Fisheries Statistics Division)

Year	NJ	DE	MD	VA	NC
2009	2,950,869	39,864		1,704,514	421,788
2010	350,673	172,861	105,096	49,732	812,699
2011	373,639	38,043	0	1,243,692	823,423
2012	37,076	2,844	0	36,195	879,401
2013	94,636	15,668	0	112,139	2,709,269
2014	11,476	22,070	18,684	97,043	230,834
2015	443,907	16,992	16,575	25,216	780,876
2016	159,589	2,180	8,924	77,672	1,322,547
2017	406,068	22,998	3,001	81,275	856,081
2018	814,965	179,071	53,599	29,120	428,273
	SC	GA	FL	Total	Avg Wt
2009	103,384	83,749	3,739,378	9,043,546	5.17
2010	203,796	364,352	3,712,810	5,772,019	3.10
2011	89,482	56,361	5,043,573	7,668,213	2.67
2012	321,734	211,618	1,885,164	3,374,032	2.82
2013	413,455	149,094	2,813,673	6,307,934	2.27
2014	238,616	249,118	4,353,686	5,221,527	4.17
2015	82,484	88,698	3,325,410	4,780,158	5.37
2016	623,449	226,558	4,292,398	6,713,317	3.29
2017	681,976	187,698	4,105,686	6,344,783	3.64
2018	652,179	392,380	2,511,235	5,060,822	3.58

Table 4. Recreational harvest (numbers) of black drum by state, 2009-2018. (Sources: 2019 state compliance reports for 2018 fishing year; for years prior to 2018, personal communication with NOAA Fisheries, Fisheries Statistics Division)

Year	NJ	DE	MD	VA	NC
2009	69,140	1,112		41,986	449,901
2010	13,421	3,609	6,556	4,846	650,010
2011	22,882	1,196	0	126,964	1,259,216
2012	1,368	110	0	7,555	556,482
2013	11,083	1,851	0	6,170	1,511,995
2014	482	1,052	1,690	10,676	109,307
2015	10,793	462	1,091	1,600	276,126
2016	6,008	138	250	5,807	459,078
2017	18,435	1,214	828	16,700	355,544
2018	40,153	9,211	1,262	3,721	134,624
	SC	GA	FL		Total
2009	45,752	41,853	1,100,618		1,750,362
2010	85,152	138,328	961,627		1,863,549
2011	29,909	25,803	1,401,636		2,867,606
2012	91,318	42,826	496,537		1,196,196
2013	143,662	64,533	1,044,490		2,783,784
2014	96,967	47,807	983,582		1,251,563
2015	37,186	48,229	514,606		890,093
2016	256,158	96,351	1,217,913		2,041,703
2017	241,832	64,240	1,044,752		1,743,545
2018	185,648	114,263	925,794		1,414,676

Table 5. Recreational alive releases (numbers) of black drum by state, 2009-2018. (Sources: 2019 state compliance reports for 2018 fishing year; for years prior to 2018, personal communication with NOAA Fisheries, Fisheries Statistics Division)

Year	NJ	DE	MD	VA	NC
2009	316,471	2,310		41,215	411,358
2010	47,508	4,251	9,613	64,320	427,577
2011	4,799	4	9,595	319,622	711,755
2012	17,092	1,653	89,193	22,236	397,155
2013	0	57,091	15,868	52,417	497,334
2014	37,364	11,243	0	269,648	1,964,749
2015	545,613	17,109	25,115	164,322	1,791,758
2016	9,399	361	114	46,494	2,530,596
2017	111,739	3,689	2,809	137,987	2,336,352
2018	51,148	15,249	27,849	169,204	1,450,855
	SC	GA	FL		Total
2009	81,423	60,290	1,180,223		2,093,290
2010	66,635	72,870	2,113,308		2,806,082
2011	66,748	20,355	913,567		2,046,445
2012	153,799	52,722	1,246,585		1,980,435
2013	330,528	35,034	1,654,129		2,642,401
2014	335,600	21,581	1,047,833		3,688,018
2015	1,483,956	55,773	1,096,185		5,179,831
2016	1,268,667	54,266	1,012,670		4,922,567
2017	692,616	85,365	1,648,030		5,018,587
2018	1,087,536	167,974	2,265,550		5,235,365