Black drum, *Pogonias cromis* (Linnaeus, 1766)

Black drum inhabit Florida estuaries as juveniles and occasionally move into near shelf waters as adults. The species occurs in nearshore waters from Nova Scotia south to Argentina. Gold and Richardson (1991) suggested that there was little differentiation into subpopulations in U.S. waters; although, Gold and Richardson (1998b) emphasized a significant degree of clinal variation among black drum *mt*DNA haplotypes along the U.S. Gulf of Mexico coast. Growth is fairly slow; 11”–14” at age 1, 15”–17” at age 2, and 19”–21” at age 3 (Table 1; Murphy and Taylor 1989; Murphy and Muller 1995; Jones and Wells 1998). Black drum, the largest members of the family Sciaenidae, can reach over 46” and 120 pounds. Long-lived fish, black drum can reach almost 60 years of age (Murphy *et al.* 1998; Jones and Wells 1998; Campana and Jones 1998). Black drum spawn during the winter–early spring. Females mature at age 4–6 years and are prodigious, multiple spawners. An average-sized female (13.4 pounds) may spawn 32-million eggs each year (Fitzhugh *et al.* 1993).

Table 1. Von Bertalanffy growth parameters and length-weight relations for black drum.

<table>
<thead>
<tr>
<th>Source</th>
<th>K</th>
<th>L∞ (inches FL)</th>
<th>t0 (years)</th>
<th>Weight in lbs = a (inches FL)^b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexes combined, Chesapeake Bay</td>
<td>0.105</td>
<td>46.2</td>
<td>-2.3</td>
<td>0.000404</td>
</tr>
<tr>
<td>Sexes combined, northeast FL (inches TL)</td>
<td>0.124</td>
<td>46.1 (inches TL)</td>
<td>-1.300</td>
<td>0.000483</td>
</tr>
<tr>
<td>Sexes combined, west-central Florida</td>
<td>0.171</td>
<td>40.2</td>
<td>-1.164</td>
<td>0.000406</td>
</tr>
<tr>
<td>Sexes combined, northern Gulf of Mexico</td>
<td>0.051</td>
<td>39.4</td>
<td>-13.07</td>
<td>0.000484</td>
</tr>
</tbody>
</table>

Black drum are primarily bottom feeders. Young black drum feed on small fish and invertebrates, such as copepods, annelids, and amphipods (Pearson 1929; Thomas 1971). Larger black drum in Texas estuaries eat mostly mollusks, crabs, and shrimps (Miles 1949). As juveniles, black drum are prey to a wide range of estuarine piscivores, e.g., spotted seatrout, crevalle jack. Larger drum are probably subject to predation by sharks (Murphy and Muller 1995).

Total landings of black drum in Florida during 2015 were 1,547,445 pounds. These landings were made mostly on the Atlantic coast (59% of statewide total) and mostly by recreational fishers (94% of statewide landings by weight). Anglers in Brevard and Duval counties on the Atlantic coast reported the highest commercial landings in 2015 (Fig. 1a). Recreational landings in Florida were greatest in the northeast region on the Atlantic coast and the central and southwest region on the gulf coast (Fig. 1b). The 2015 total landings were 52%
higher than the average landings in the previous five years (2010–2014) and were 56% higher than the 1982–2014 historical average landings (Fig. 2). Landings on the Atlantic coast slowly declined from 1984 to 1990, increased substantially in 1991 and decreasing again in 1997. Since then, landings on the Atlantic coast have fluctuated and reached historic highs (Fig. 2). Alternatively, landings on the gulf coast were highest from 1982 to 1989, a steep decline also occurred in 1990 and resembled landings on the Atlantic coast until 1998. Landings on the gulf remained low until 2012, after which landings increased on both coasts. Fishing regulations, implemented in 1990, were probably partly responsible for the sharp decline in 1990 (Fig. 2).

Commercial catch rates on the Atlantic coast varied without major trend from 1992-2014, and increased to record highs in 2014-2015 (Fig. 3a). Gulf coast commercial catch rates dropped between 1995 and 1998 and remained stable at about 20 pounds per trip until 2005. Rates then peaked in 2007 and 2010 before declining from 2010 to 2012, followed by an increase in the most recent years (Fig. 3b). The recreational standardized catch rates on the Atlantic coast declined considerably in 1995 before gradually increasing and peaking in 2000-2001. Catch rates then increased significantly in 2007-2008 and have been generally declining since that time. Catch rates on the gulf coast have generally increased since 1996 (Figs. 3c-d).

The index of abundance for young-of-the-year (YOY) black drum on the Atlantic coast declined steadily from 1997 through 2002, after which the abundance increased in 2006, declined through 2011, and steeply increased in 2012 (Fig. 4a). Indices of abundance for YOY on the gulf coast have been lower and more variable than those on the Atlantic coast. Peaks were observed in 1998, 2005, 2008, and a gradual incline occurred from 2009 to 2012 (Fig. 4b). Fishery-independent indices of abundance for post-YOY black drum on the Atlantic coast exhibited two opposite V-shaped trends during 1997-2008, with lows in 2000 and 2006 and peaks in 2003, 2007-2008, and 2013-2015 (Fig. 4c). On the gulf coast, abundance of post-YOY black drum showed a long-term trend that was inverse to the Atlantic trends from 1997-2007, with peaks in 1999-2000 and a general increasing trend from 2003-2013, followed by a decline in 2014 and 2015 (Fig. 4d).

Gross external abnormalities in black drum were most prevalent in 2001-2002, 2004, 2011, and 2014-2015 on the Atlantic coast (Fig. 5a). On the gulf coast, they were most prevalent in 2001 and 2014, but were generally lower than on the Atlantic coast and varied without trend (Fig. 5b). Parasites were the most common affliction observed in black drum on the Atlantic coast (Figs. 5c).

An assessment of black drum in Florida indicated that under fishing mortalities estimated for the mid to late 1980s, their static spawning potential ratio was at least 26%–36% (Murphy and Muller 1995). Murphy and Muller (1995) concluded that the black drum stock in Florida could sustain the level of fishing occurring during the early 1990s. The Gulf States Marine Fisheries Commission developed a fishery management plan for black drum that recommended that states set size limits on the commercial fishery and bag limits on the recreational fishery (Leard et al. 1993). The plan did not recommend a gulf-wide size limit because of low interest in the fishery at that time. A 14-inch minimum size limit, a 24-inch maximum size limit, and 500 pound commercial trip limit was enacted to regulate Florida’s black drum fishery in 1989, with the goal of preventing the development of a high-volume purse-seine fishery.

For the most recent coastwide black drum assessment (ASMFC 2014), the Stock Assessment Subcommittee (SASC) evaluated over 70 fishery dependent and independent data sources across temporal, regional, and different life stages to describe the black drum Atlantic
Three catch-based methods were used: Catch-MSY, Depletion-Based Stock Reduction Analysis (DB-SRA; Dick and MacCall, 2011), and Depletion-Corrected Average Catch (DCAC; MacCall, 2009). The DB-SRA method was selected as the preferred method for estimating catch reference points. However, the confidence in abundance data reflective of the entire black drum stock was diminished following the analyses and highlighted the need for comprehensive abundance data. No stock status determination was made for the black drum stock, however, the SASC assumed the black drum stock was not overfished in 2012 (i.e., \( B_{2012} > B_{MSY} \)) due to light exploitation and minor decreases in indices. Due to uncertain inputs and the nature of data poor methods, the SASC recommends the more precautionary MSY estimate as a catch reference point for black drum (ASMFC 2014).

a. Commercial landings (pounds)  
b. Recreational landings (numbers)

Figure 1 (a)-(b). Geographic distribution of black drum landed during 2015. (a) Commercial landings (pounds) by county; (b) Recreational landings (numbers of fish) by region.
Figure 2. Total annual landings (pounds) of black drum on the Atlantic and gulf coasts of Florida, 1982–2015.
a. Atlantic Coast, commercial landings rates (pounds/trip)

b. Gulf Coast, commercial landings rates (pounds/trip)

c. Atlantic Coast, recreational landings rates (numbers/trip)

d. Gulf Coast, recreational landings rates (numbers/trip)
Figure 3 (a)-(d). Annual standardized catch rates for black drum in Florida. Commercial landings rates (pounds/trip), 1992-2015: (a) Atlantic Coast; (b) Gulf Coast. Recreational total catch rates (numbers/trip), 1991-2015: (c) Atlantic Coast, (d) Gulf Coast.
Figure 4(a)-(d). Proportion of fishery-independent-monitoring sets that captured black drum from 1997-2015. Young-of-the-year (YOY): (a) Atlantic coast; (b) Gulf coast. Post-YOY: (c) Atlantic Coast; (d) Gulf coast.
Figure 5(a)-(d). Gross external abnormalities of black drum ≥ 75mm collected in fishery-independent-monitoring sets, 1999-2015. Breakdown of gross external abnormalities by coast: (a) Atlantic coast; (b) Gulf coast. Percentage of abnormalities by type: (c) Atlantic Coast; (d) Gulf coast.