



Menhaden, *Brevoortia* spp.

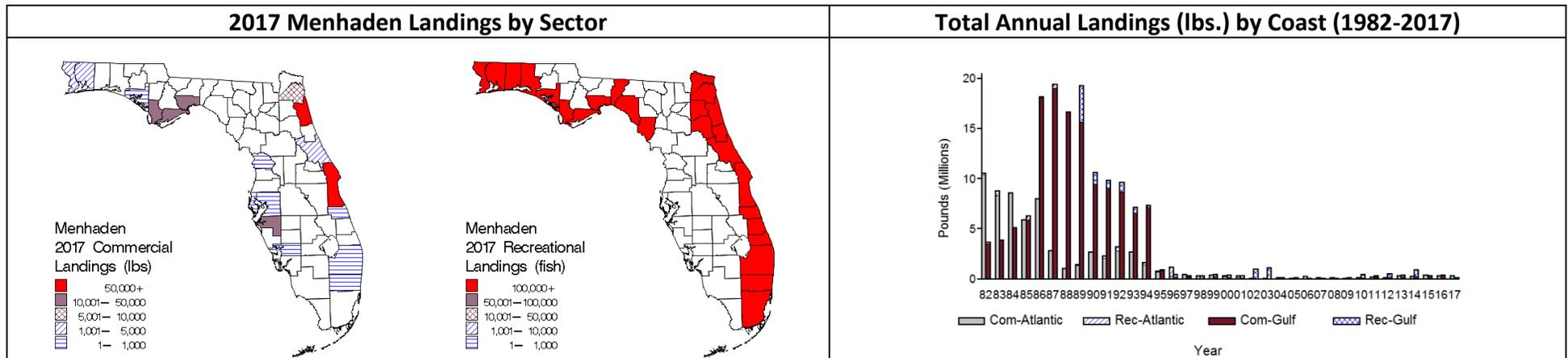


Gulf Menhaden, *Brevoortia patronus* (Goode, 1878)

Yellowfin Menhaden, *Brevoortia smithi* (Hildebrand, 1941)

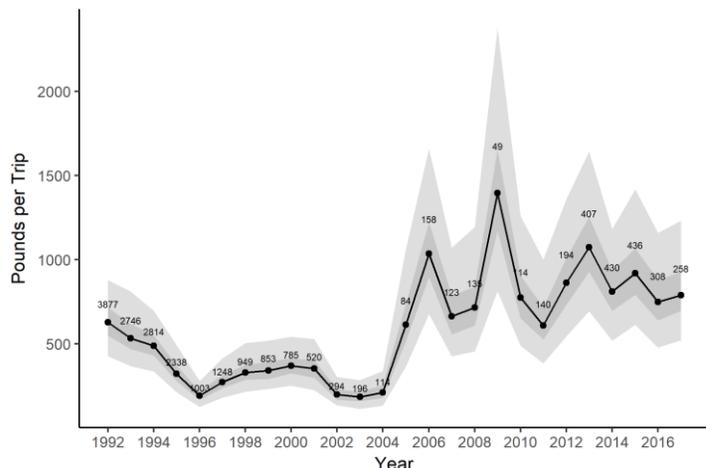
Life History

The menhaden genus (*Brevoortia*) belongs to the family Clupeidae. Three species occur in the Gulf of Mexico: Gulf Menhaden (*B. patronus*), Finescale Menhaden (*B. gunteri*) and Yellowfin Menhaden (*B. smithi*). Among menhaden species, *B. patronus* is the most abundant species on the Gulf coast, and *B. tyrannus* is the most abundant species on the Atlantic coast. Menhaden are estuarine-dependent species. Spawning occurs offshore and young move into estuarine nursery areas where they spend the early part of their lives. Maturing adults return to offshore waters to spawn (Lewis and Roithmayer 1981). The Gulf Menhaden form large surface schools, appearing in nearshore Gulf waters from about April to November. Tagging information shows that Gulf Menhaden do not undergo extensive coastwide migration. Spawning peaks during December and January in offshore waters (Lewis and Roithmayer 1981). Eggs hatch at sea, and currents carry larvae into estuaries where larvae develop into juveniles (Christmas and Gunter 1960). Juveniles migrate offshore during winter and move back to coastal waters the following spring as age-1 adults. Atlantic Menhaden spawn primarily from January to March in the South Atlantic Bight. Most females are sexually mature at age 3 (Judy and Lewis 1983). Eggs hatch in 36–48 hours. The larvae are passive drifters and are transported inshore by currents. During the following spring, they enter the fishery at age 1. They may ultimately reach a length of 14 inches FL at their maximum age of 8 or 9 years (Schaaf 1979). Atlantic Menhaden make extensive coastwide migrations. In mid-winter, nearly all menhaden are concentrated in offshore waters south of Cape Hatteras, North Carolina. They begin a slow inshore and northward movement in late February and March. By about mid-June they are stratified by age and size along the coast from northern Florida to the Gulf of Maine. In late summer, a southward movement begins (Schaaf 1979). Because of their high abundance and schooling behavior, menhaden are prey for a large number of piscivorous fish and birds (Overstreet and Heard 1982).

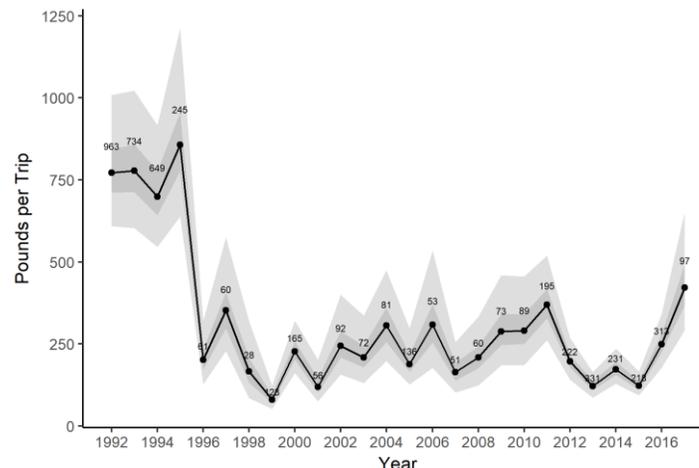


Fishers landed 361,337 pounds in 2017 which were 49.9% lower than the previous 5-year average (2012-2016). Coastwide, 74% of these were from the Atlantic and 26% were from the Gulf. Commercial landings constituted 100% of the total landings.

Atlantic Coast



Gulf Coast

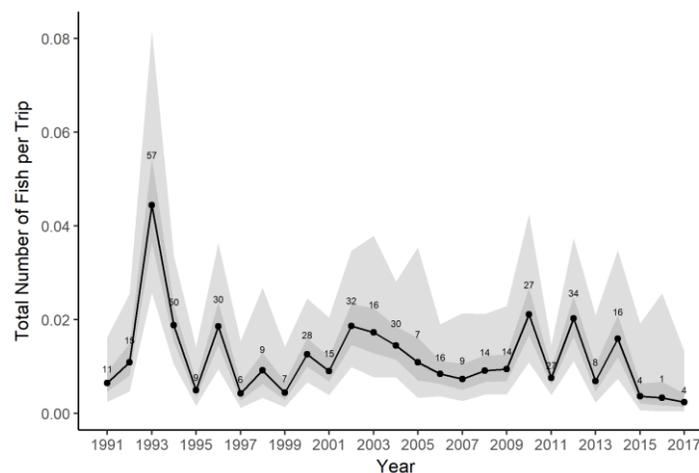


Standardized Commercial Catch Rates: Landings rates for the commercial fisheries on the Atlantic coast decreased between 1992 and 1996, remained stable through 2004 following the 1995 net limitations, then increased to variably high levels of catch through 2017. Commercial landings rates on the Gulf coast decreased after the 1995 net limitations, fluctuated without trend through 2007, increased steadily through 2011, declined again through 2015, and have begun to increase again through 2017. Dark grey figure lines represent first and third quartiles while the light grey lines represent the 2.5% – 97.5% quantiles.

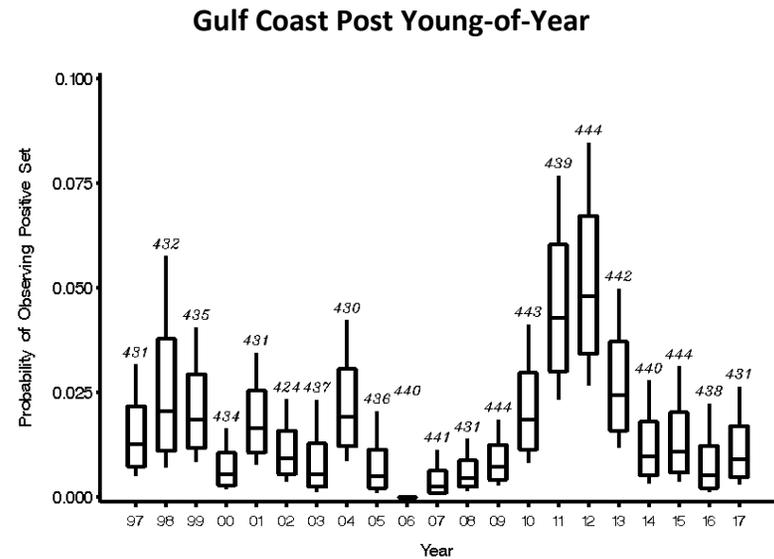
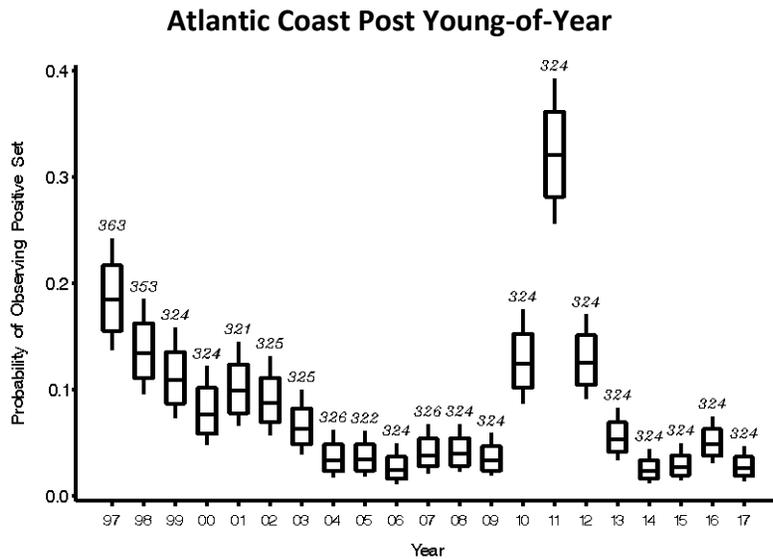
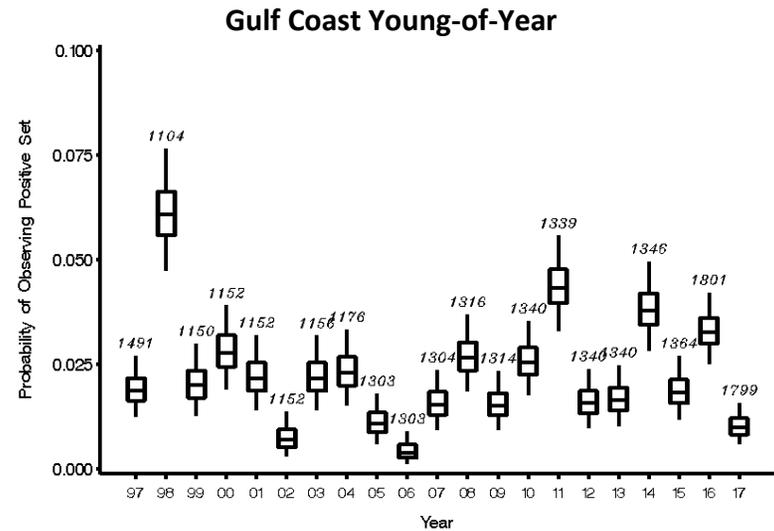
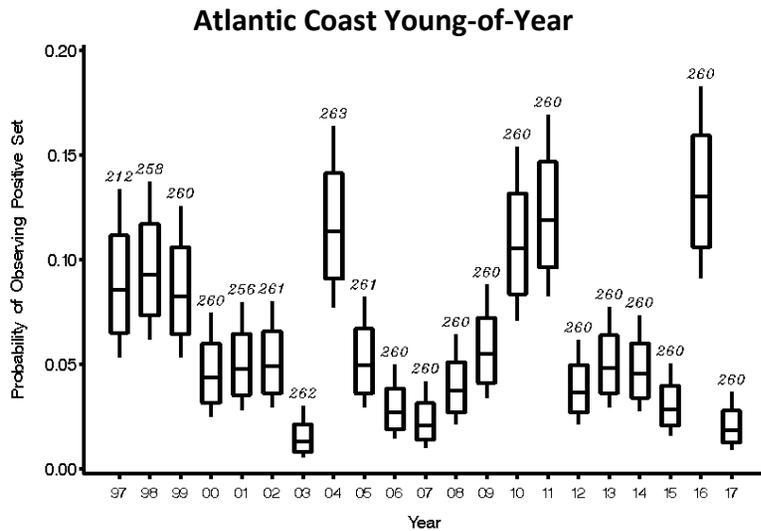
Atlantic Menhaden on the Atlantic Coast

No Data Available

Gulf Menhaden on the Gulf Coast

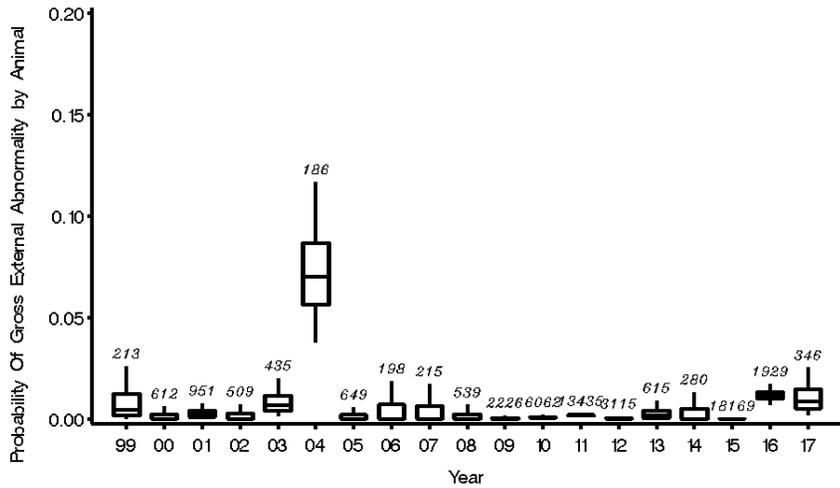


Standardized Recreational Total Catch Rates: Total catch rates for recreational anglers are based upon only a few samples and are too imprecise for examining trends. Extremely low reported catch rates for Atlantic Menhaden on the Atlantic coast prevented model convergence. Dark grey figure lines represent first and third quartiles while the light grey lines represent the 2.5% – 97.5% quantiles.

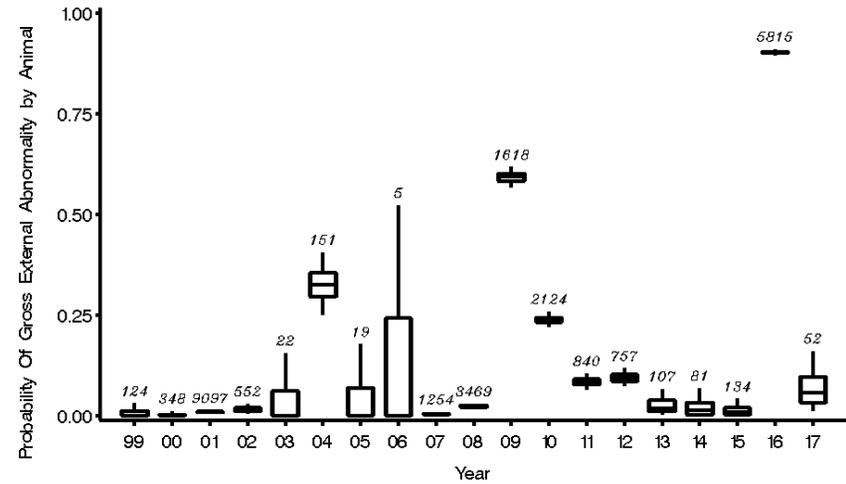


Fishery-Independent Monitoring: The index of abundance for young-of-the-year (YOY) menhaden on the Atlantic coast appear cyclic with stronger classes in 1997-1999, 2004, 2010-2011, and 2016. Gulf coast YOY abundance trends have varied without trend with strong year classes in 1998, 2011, 2014, and 2016 with lows in 2002, 2006, and 2017. Post-YOY abundances on the Atlantic coast declined through 2004, remained stable through 2009, then increased greatly in 2010-2012 before returning to low but stable abundances. The Gulf coast post-YOY index is similar to Atlantic coast trends with peaks in 2011-2012.

Atlantic Coast Proportion to Total Collected

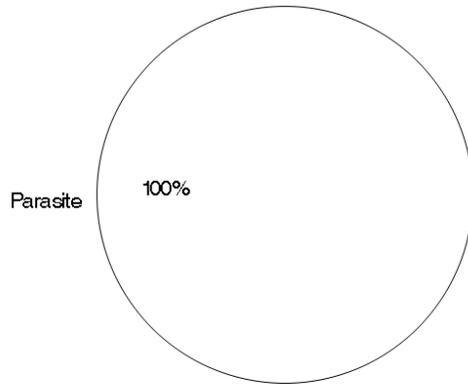


Gulf Coast Proportion to Total Collected



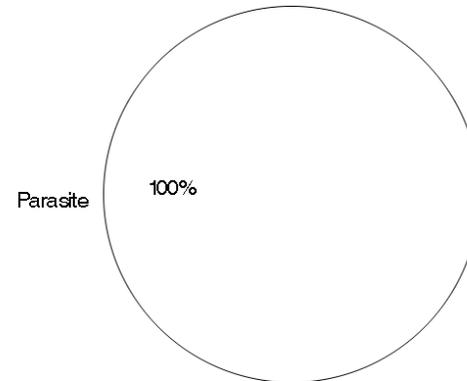
Atlantic Coast Percentage of Abnormality Types

Percentage of gross external abnormalities



Gulf Coast Percentage of Abnormality Types

Percentage of gross external abnormalities



Fish Health: Occurrence of gross external abnormalities in Menhaden on both coasts has varied without trend with the highest levels in 2004 and 2016-2017 on the Atlantic coast and in 2004, 2008-2012, and 2017 on the Gulf coast. On both coasts in 2017, Menhaden collected exhibited parasitic gross external abnormalities.

Stock Status

Current Condition: Atlantic Menhaden – not overfished nor undergoing overfishing; Gulf Menhaden - not overfished nor undergoing overfishing

Management History: Atlantic Menhaden are currently managed by ASMFC under Amendment 3 to the Interstate Fishery Management Plan (FMP) for Atlantic Menhaden which maintains the current single-species biological reference points until the review and adoption of menhaden-specific ecological reference points, as part of the 2019 benchmark stock assessment process. It also addresses a suite of commercial management measures including allocation, quota transfers, quota rollovers, incidental catch, the episodic events set aside program, and the Chesapeake Bay reduction fishery cap. Amendment 3 also changes fishery allocations in order to strike an improved balance between gear types and jurisdictions. The Amendment allocates a baseline quota of 0.5% to each jurisdiction, and then allocates the rest of the TAC based on historic landings between 2009 and 2011. Florida's current allocation of Atlantic Menhaden is 0.52%. The current benchmarks for Atlantic Menhaden are F36%, F21%, FEC36%, and FEC21%, which were calculated using the methods from the 2015 benchmark stock assessment. The benchmarks are calculated through spawner-per-recruit analysis using the mean values of any time-varying components (i.e., growth, maturity). Based on the current adopted benchmarks, the Atlantic Menhaden stock status is not overfished and overfishing is not occurring. In addition, the stock is currently below the current fishing mortality target and below the current FEC target (ASMFC 2017).

The Gulf of Mexico Gulf Menhaden stock assessment in 2013 developed several modeling approaches from which the BAM (Beaufort Assessment Model) model was selected as the base model (SEDAR 32A 2013). General stock status declarations were made based on a suite of benchmark options and the results suggest largely that the current stock status is not overfished and overfishing is not occurring. Moreover, most of the sensitivity runs and the MCB uncertainty analysis runs resulted in a current stock status of not overfished and overfishing not occurring. The Gulf's agency managers are working to define the goals for the fishery and to specify objectives for the fishery and once that has been completed, appropriate benchmarks can be discussed and formally adopted. In addition, the assessment panel discussed factors necessary to adequately account for the ecosystem value of Gulf Menhaden in defining fishery reference points and concluded that data and techniques are insufficient at present to incorporate them into the assessment; data specifically addressing the value of menhaden in the ecosystem as prey biomass for other stocks (e.g., piscivorous, avian, and mammalian predators) are lacking (SEDAR 32A 2013).