

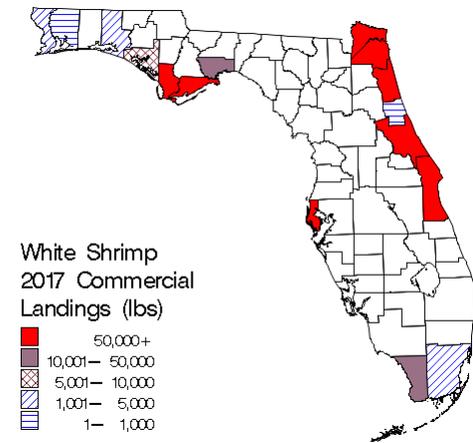
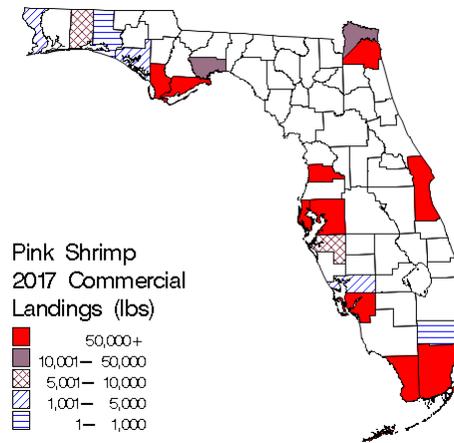
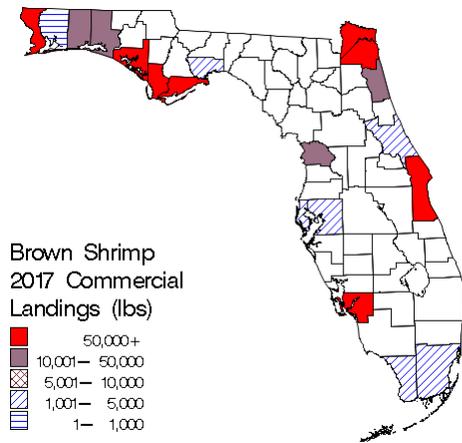
**Brown Shrimp, *Farfantepenaeus aztecus* (Ives, 1891)**      **Pink Shrimp, *Farfantepenaeus duorarum* (Burkenroad, 1939)**      **White Shrimp, *Litopenaeus setiferus* (Linnaeus, 1767)**

### Life History

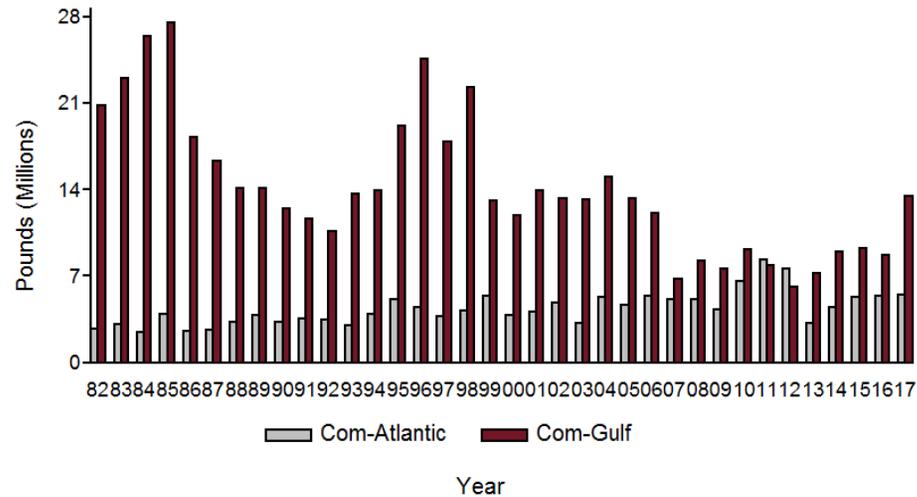
Three commercially important species of penaeoid shrimp occur on both coasts of Florida. The distribution of White Shrimp, *Litopenaeus setiferus*, and Brown Shrimp, *Farfantepenaeus aztecus*, is intermittent in Florida waters. White Shrimp do not occur from about St. Lucie Inlet on the Atlantic coast around the southern tip of Florida north to about the mouth of the Ochlockonee River. Brown Shrimp do not occur on the Gulf coast between Sanibel Island and Apalachicola Bay. All three shrimp species occur in nearshore waters and estuaries and use the estuaries as nursery areas. At various juvenile stages, penaeoid shrimp usually inhabit seagrass beds and algal mats within estuaries. Stable isotope studies show young Pink Shrimp that recruited to the southeastern Gulf of Mexico offshore fisheries are mostly migrants from seagrass meadows (Fry *et al.* 1999). Adult Pink Shrimp, *F. duorarum*, are most abundant at depths between 35' and 120'. White Shrimp are most abundant in waters shallower than 90', and Brown Shrimp are most abundant in waters less than 180'. White Shrimp are typically distributed in areas of low salinity over organic-rich, mud bottoms. Brown Shrimp are found on similar bottoms but in higher salinities. Pink Shrimp occur on more coarse sediments and in a wide variety of salinities (Steele unpublished ms.). White Shrimp grow rapidly until about 6.3 inches total length (TL). Peak growth rates are 0.8 inches/month during summer. Brown Shrimp can grow at peak rates of 1.8 inches/month during spring; Pink Shrimp peak growth rates have been reported to exceed 2.0 inches/month.

All three species mature during their first year. Sizes at maturity are about 5.5 inches TL for White and Brown Shrimp and about 3.3 inches TL for Pink Shrimp. Spawning occurs in relatively deep water for Brown Shrimp (49'–360') and Pink Shrimp (13'–160'), and in nearshore waters (20'–80') for White Shrimp. White Shrimp spawn during April–October. Pink and Brown Shrimp can spawn year-round, especially in deeper or more southern waters. Peak spawning occurs during February and March for Brown Shrimp and during spring, summer, and fall for Pink Shrimp.

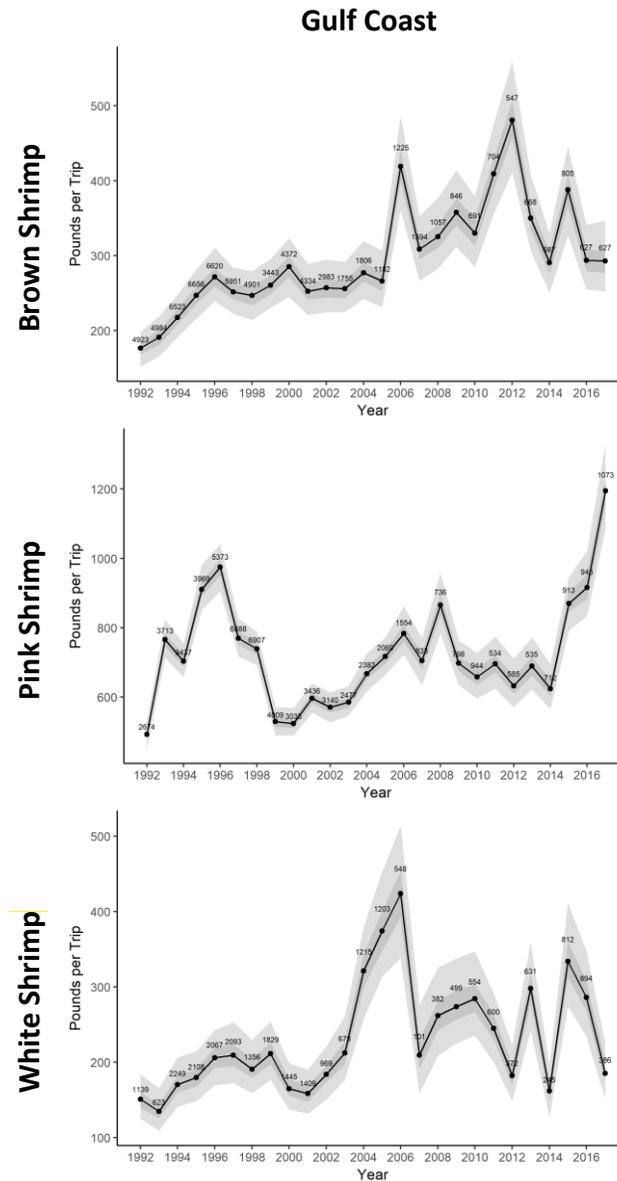
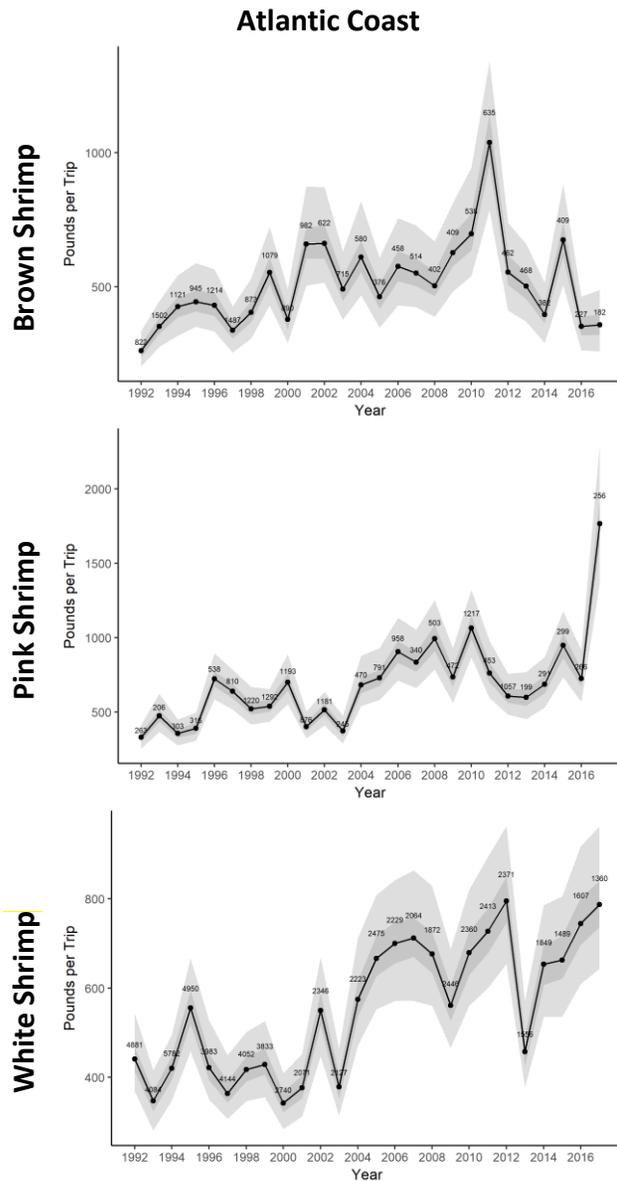
### 2017 Shrimp Landings by Sector



### Total Annual Landings (lbs.) by Coast (1982-2017)

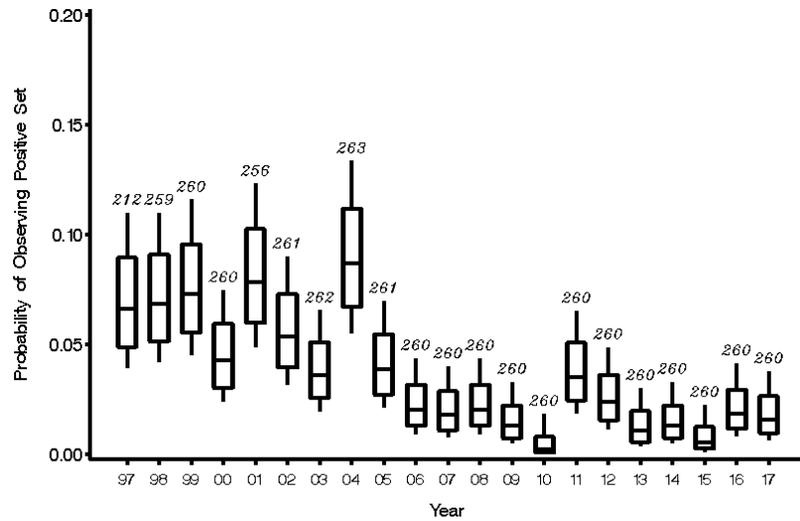


Commercial fishers landed 1,000,196 pounds of Brown Shrimp in 2017 primarily from the Gulf coast (66.9%) which were 46.1% lower than the previous 5-year average (2012-2016). Pink Shrimp landings were the highest of the Penaeids (13,092,601 pounds), were 94.1% higher than the previous 5-year average, and came primarily from the Gulf coast. White Shrimp landings were 4,851,591 pounds, coming primarily from the Atlantic coast (93.6%), and were 4.5% higher than the previous 5-year average.

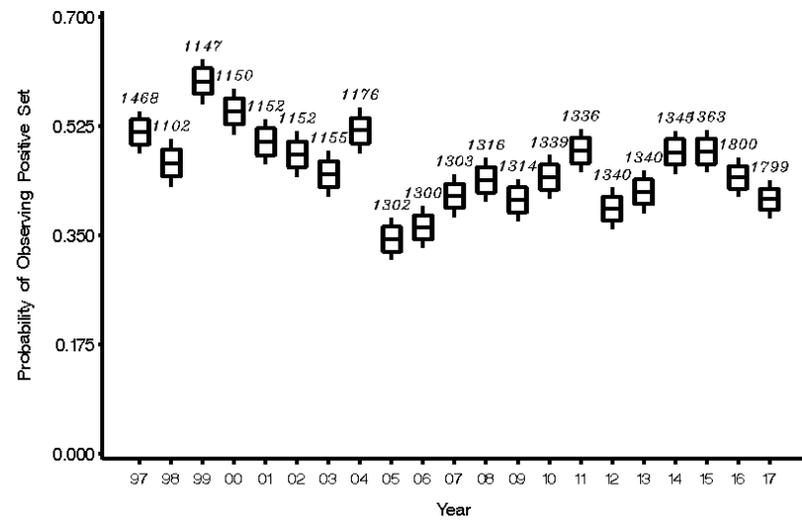


**Standardized Commercial Catch Rates:** Standardized annual landings rates for all three species generally increased from 1992 to 2010-2012 on the Atlantic coast after which was a general decline through 2013-2014 and recent increases. Gulf Brown Shrimp landings show a similar trend. Gulf Pink Shrimp landings were dome-shaped through 2000 then began increasing and peaking in 2017. Gulf White Shrimp landings increased through 2006, decreased sharply in 2007, then fluctuated through 2017. Dark grey figure lines represent first and third quartiles while the light grey lines represent the 2.5% – 97.5% quantiles.

**Atlantic Coast Pink Shrimp**



**Gulf Coast Pink Shrimp**



**Fishery-Independent Monitoring:** The index of relative abundance of young-of-the-year (YOY) Pink Shrimp fluctuated without trend on the Atlantic coast from 1997 through 2004 after which abundances declined through 2010, increased in 2011 with declines through 2017. Recruitment of Gulf coast YOY Pink Shrimp shows a discrete declining trend since from 1999 to 2005, followed by a rebounding increasing trend through 2017.

## **Stock Status**

**Current Condition:** not overfished nor undergoing overfishing.

**Management History:** An assessment of the condition of U.S. Gulf and South Atlantic penaeid shrimp stocks suggests that they are all harvested at or slightly in excess of the fishing mortality rates associated with maximum yield-per-recruit (Steele unpublished data). Increasing the size-at-entry to the fishery could increase the yield and value of the landings for all three shrimp species. Available data do not suggest a strong link between parent stock abundance and subsequent abundance of their progeny. Regardless, estimated spawning potential ratios were estimated to be 4%–12% for Brown Shrimp and 13%–39% for White Shrimp during 1970–1987 (Nance *et al.* 1989).

Nance (1999) found that the parent stock levels for Brown Shrimp in the Gulf of Mexico were up in 1998 at over 300 million age-7<sup>+</sup>-month-old shrimp for November through February, well above the 125 million overfishing threshold and the highest level since 1994. For White Shrimp, the parent stock number had been highly variable since the mid 1980s and the number dropped slightly in 1998 to around 800-million individuals age-7<sup>+</sup> months for May through August. However, this level is still well above the 330 million individuals overfishing threshold. Pink Shrimp parent stock numbers were up in 1999 following a slight decline in 1998 to nearly 250-million age-5<sup>+</sup> -month-old individuals for July through June and were well above the 100 million overfishing threshold.

The recent stock assessments of Brown, Pink, and White Shrimp in the Gulf of Mexico incorporated a stock synthesis model that provided outputs for new overfished and overfishing definitions for the fisheries. The stocks have been showing increasing trends in spawning biomass and recruitment and decreasing trends in fishing mortality. Both fisheries have no indication of overfishing or being in overfished states (Hart 2012a, Hart 2012b, Hart 2012c). Both regional federal councils, the South Atlantic Fishery Management Council and the Gulf of Mexico Fishery Management Council, have established fishery management plans for shrimp (GMFMC 1981; SAFMC 1993). The main objectives of these plans were to delay harvest of shrimps through season and area closures, reduce bycatch, and minimize gear conflicts. The SAMFC's shrimp fishery management plan was instituted to protect the White Shrimp stock from over-harvest after severe winter cold-kills. This plan allows for the closure of the Exclusive Economic Zone after severe winter kills and requires permits as a first step toward possible limited entry.