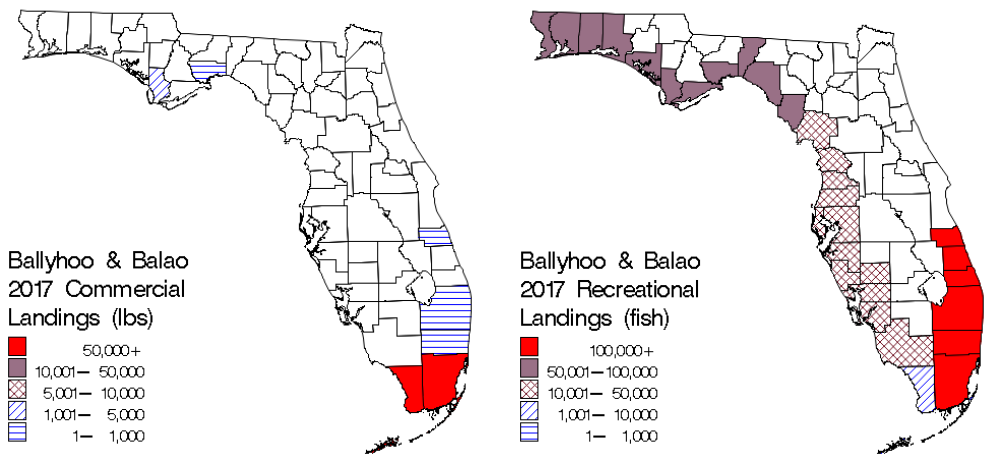
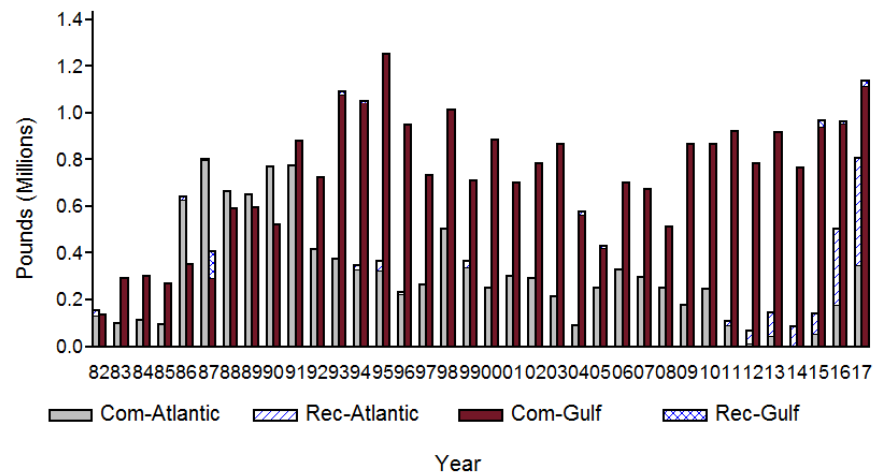
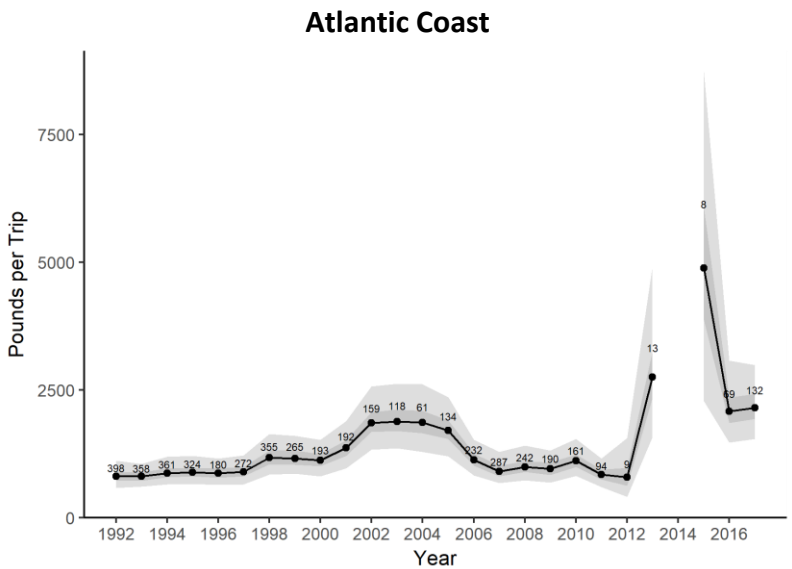
Ballyhoo, *Hemiramphus brasiliensis (Linnaeus, 1758)* and Balao, *H. balao* (Leseuer, 1821)

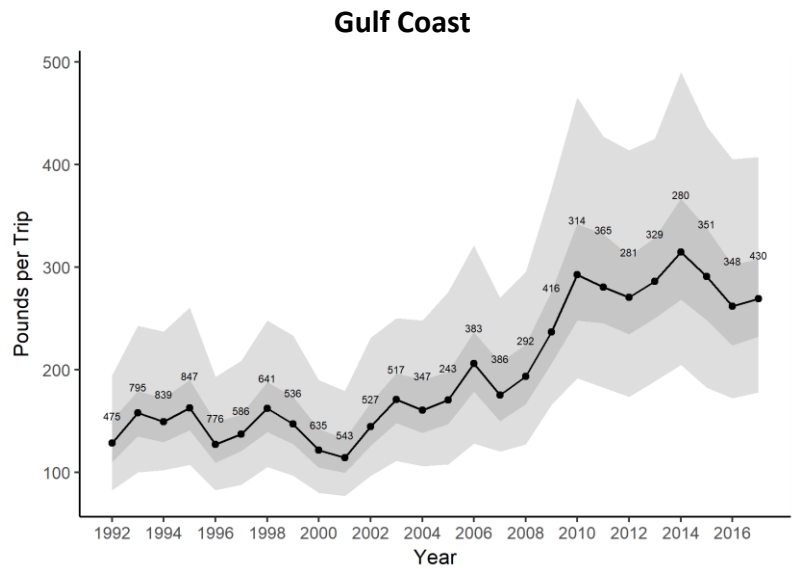
Life History

Ballyhoo and Balao occur in the western Atlantic from at least New York south to southeastern Brazil, but the only significant fishery for either species operates in southeastern Florida waters (McBride 2001). Both species mature during their first year at about 6.9–7.9" fork length (FL) (Berkeley and Houde 1978). Spawning occurs between March and April and July off south Florida. Batch fecundity of both species is quite low, averaging about 1,500 eggs for Ballyhoo and 5,000 eggs for Balao. Eggs of Ballyhoo and, presumably, Balao attach to floating blades of seagrasses. Larvae also develop in proximity to floating seagrasses. Both species grow rapidly, and females grow more quickly than males. Mean fork lengths for combined-sex samples were 8.5–9.0" at age 1 for Ballyhoo and 8.3" at age 1 for Balao (Berkeley and Houde 1978). Maximum age appeared to be 2–3 years for Ballyhoo and 1–2 years for Balao. Ballyhoo primarily consume copepods, siphonophores, sea grass, and decapods; Balao consume mostly polychaetes, decapods, copepods, and siphonophores (Berkeley *et al.* 1975). Key predators reported for Ballyhoo are sea birds (*Anous stolidus* and *Sterna fuscata*) (Hensley and Hensley 1995) and large coastal pelagic species (e.g., *Scombridae*; Randall 1967). Lampara-net fishers in south Florida target Ballyhoo and Balao. They are sold together as bait, marketed only as Ballyhoo (McBride 2001).

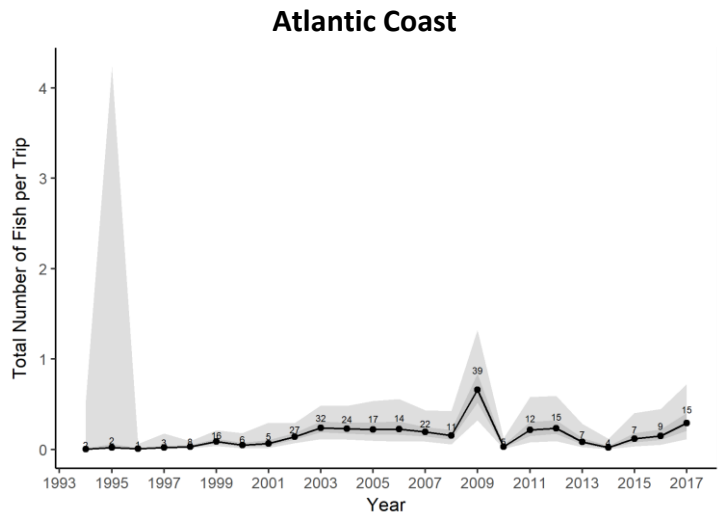
2017 Ballyhoo and Balao Landings by Sector	Total Annual Landings (lbs.) by Coast (1982-2017)
	

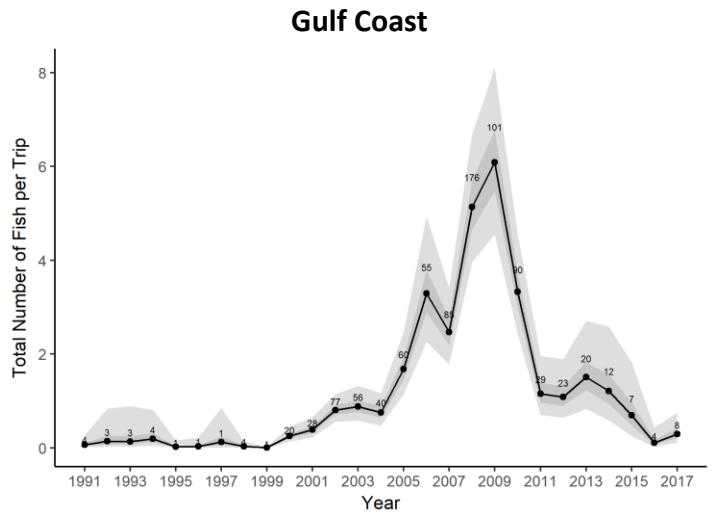
Fishers landed 1,940,703 pounds in 2017 which were 82% higher than the previous 5-year average (2012-2016). Coastwide, 58.6% of these were from the Gulf and 41.4% were from the Atlantic. Commercial landings constituted 75.1% of the total landings and were primarily made in Monroe and Miami-Dade counties.



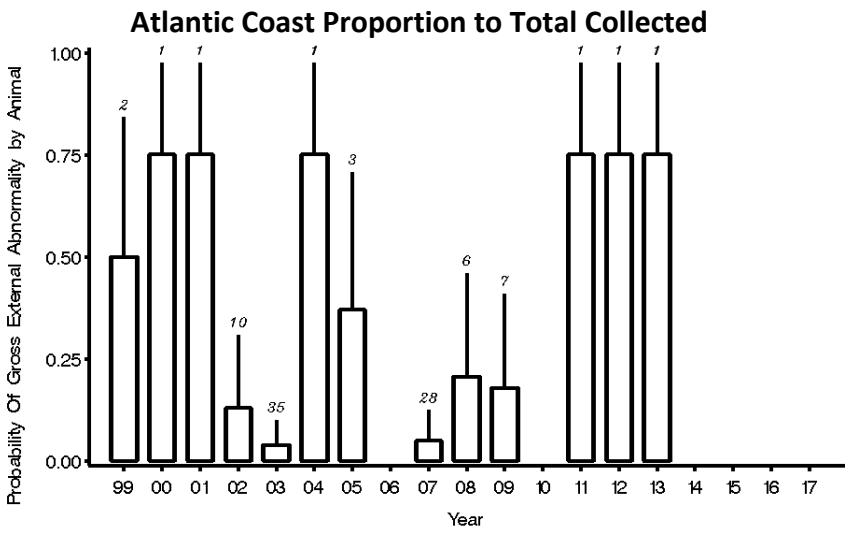


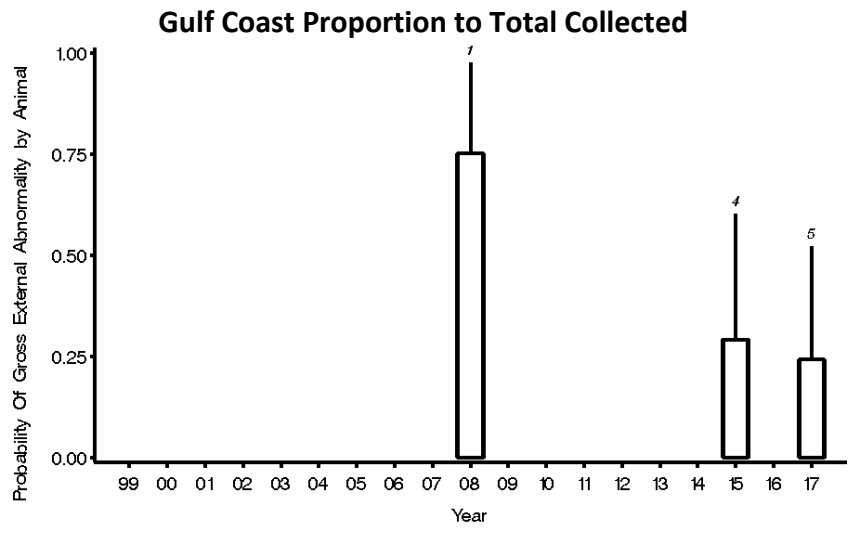
Standardized Commercial Catch Rates: Atlantic coast commercial catch rates have been stable with recent large increases in 2013 and 2015. Gulf coast commercial catch rates have steadily increased, rising to new elevated levels between 2010 - 2017. Dark grey figure lines represent first and third quartiles while the light grey lines represent the 2.5% – 97.5% quantiles.





Standardized Recreational Total Catch Rates: Total catch rates for recreational anglers on the Atlantic coast have remained steady, with a moderate increase in 2009. On the Gulf coast, total catch rates increased markedly between 2005-2010, peaking in 2009. Dark grey figure lines represent first and third quartiles while the light grey lines represent the 2.5% – 97.5% quantiles.





Atlantic Coast Percentage of Abnormality Types

No Data Available

Gulf Coast Percentage of Abnormality Types

No Data Available

<u>Fish Health</u>: The proportion of Ballyhoo captured on the Atlantic coast with gross external abnormalities has been relatively low and variable. Very few ballyhoo with external abnormalities were captured by fishery-independent-monitoring nets on the Gulf Coast.

Stock Status

Current Condition: Not overfished nor undergoing overfishing

Management History: Within the 2002 stock assessment (Mahmoudi and McBride 2002), the fishing mortality estimates (0.8–1.2 per year), generated using a DeLury model, were in the range of the estimated natural mortality rates (0.75–1.15 per year), indicating that the fishery was operating at or above the MSY level (fully exploited). In addition, the results from the surplus production model showed that the total *F* has generally been at or above the F_{MSY} through most of the 1990s, and this may have kept the biomass below the B_{MSY} level in recent years. Mahmoudi and McBride (2002) concluded that given the extent of the recruitment variability and the market demand for halfbeaks, the fishing mortality during 2002 could have been even higher than the 2000/01 estimate, exceeding the F_{MSY} level even further and reducing the population biomass to lower levels. To control fishing effort in the ballyhoo fishery, the Fish and Wildlife Conservation Commission adopted several management regulations in 2003 limiting daily commercial catch, closing the commercial fishery during the month of August, and enacting a five-year moratorium on lampara-net endorsements.

Within the most recent stock assessment (Mahmoudi and Addis 2013), the mean fishing mortality estimates were found to be 0.56 per year from 2004-2013 using the DeLury model, 0.41 from 2004-2013 using the DBSRA model, and were found below the fishing mortality rate at MSY (F_{MSY}) and above the biomass at MSY (B_{MSY}) since the early 2000's using the ASPIC model. Under assumed moderate/good stock conditions for the DBSRA model, the annual exploitation rate estimates were below the exploitation rate at MSY (U_{MSY}) since 2003. The DBSRA trajectories of stock biomass show increasing trends under moderate/good stock conditions and a stable trend under the assumption of poor stock condition. Model results suggest that the south Florida halfbeak stock is not currently overfished and not experiencing overfishing.

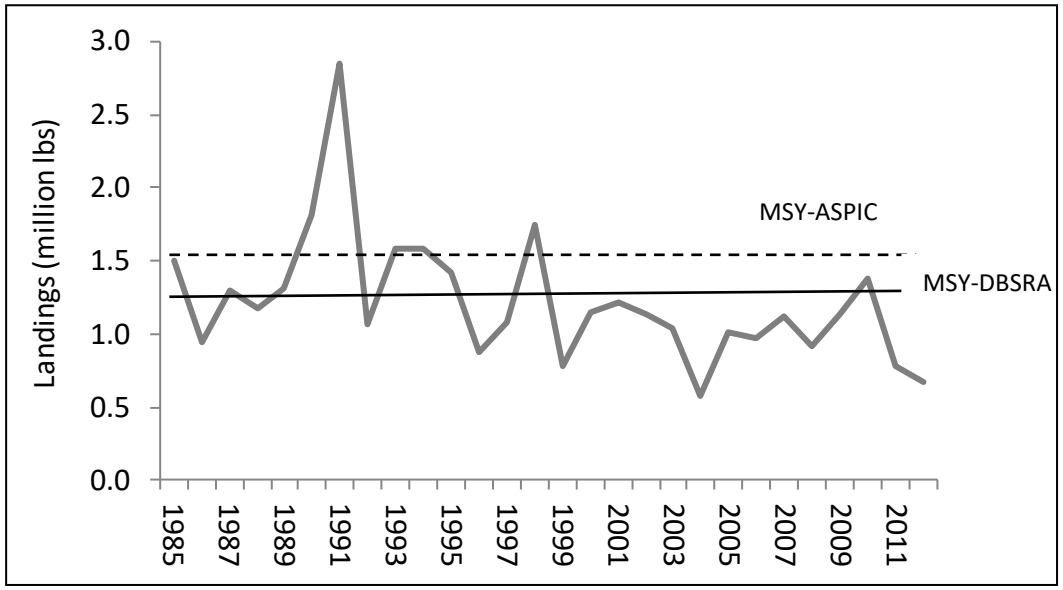


Figure 1. Comparison of the total annual halfbeak landings (1985/85-2012/13) to the maximum sustainable yield (MSY), estimated from the ASPIC (dashed line) and DBSRA (solid line) models (Mahmoudi and Addis 2013).