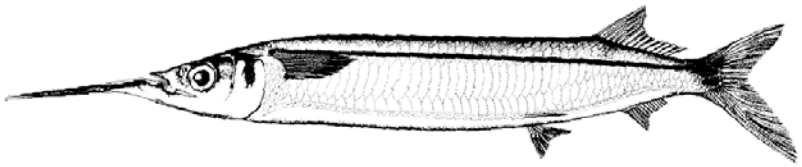
Ballyhoo, *Hemiramphus brasiliensis*
and balao, *H. balao*



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 (Table 1) 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.

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

Inches FL = $L_\infty (1-e^{-K(age-t_0)})$	K	L_∞ (inches FL)	t_0 (years)	Source
Sexes Combined	0.587	12.8		Berkeley and Houde (1978)

Weight in lbs = a (inches FL)^b	a	b	Source
Female	0.000215	3.132	Berkeley and Houde (1978)
Male	0.000171	3.249	Berkeley and Houde (1978)

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). In 2005, the statewide landings totaled 727,974 pounds, most of which were made by the commercial fishery (92% by weight) and on the gulf coast (59% of statewide total). Commercial landings were greatest in Dade, Broward, and Monroe counties (Fig. 1). Most recreational landings were made in southeast Florida during 2005; most of these were probably caught for use as bait (Fig. 2). The coast-specific landings trends reflect, in part, changes in the location of the fishery, which moved from southeast Florida (Atlantic) to Monroe county in southwest Florida (gulf) beginning in the early 1990s (McBride *et al.* 1996). The 2005 total landings were 30% lower than the average landings in the previous five years (2000–2004) and were 31% lower than the historical average landings (1982–2005)

(Fig3). Statewide commercial landings were reported to be about 360,000 pounds during 1976—1981, when commercial landings statistics in Florida were collected primarily from seafood dealers handling food fish (McBride *et al.* 1996). We attribute the 1985–1986 increase observed in Atlantic landings (Fig. 3) to a more thorough census of commercial landings after Florida's implementation of the commercial landings reporting system (Marine Resources Information System). Annual commercial landings increased slowly from a 1986 statewide total of about 842,000 pounds to an average of about 1.23 million pounds during 1991–1995.

Commercial catch rates show a significant increasing trend on the Atlantic coast after 1997, with the mean catch rate for 2003 being higher than those of any other years since 1992 (Fig. 4). Standardized commercial catch rates are much less on the gulf coast than on the Atlantic coast (Fig. 5), probably as a result of differences in the numbers of trips in which fishers targeting other species caught ballyhoo as by-catch. Estimates of recreational total-catch rates are considered too imprecise to be used as indices of abundance.

Based on the most recent 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 this fishery is 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) conclude 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 lampera-net endorsements.

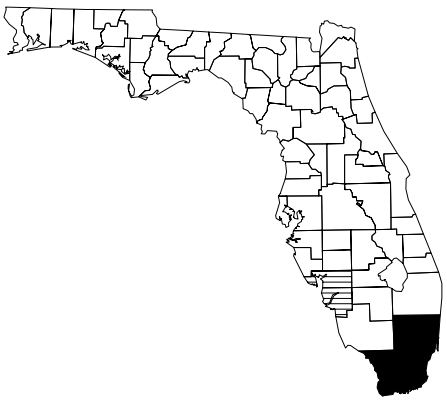


Figure 1. Geographic distribution of commercial landings of ballyhoo during 2005

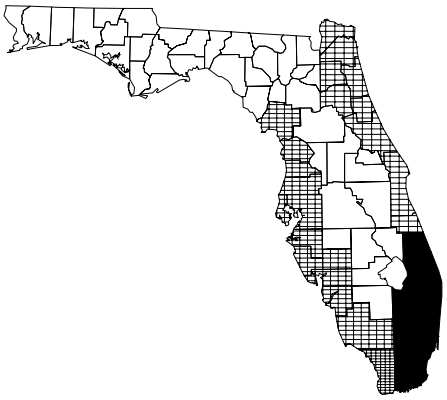


Figure 2. Geographic distribution of recreational landings of ballyhoo during 2005

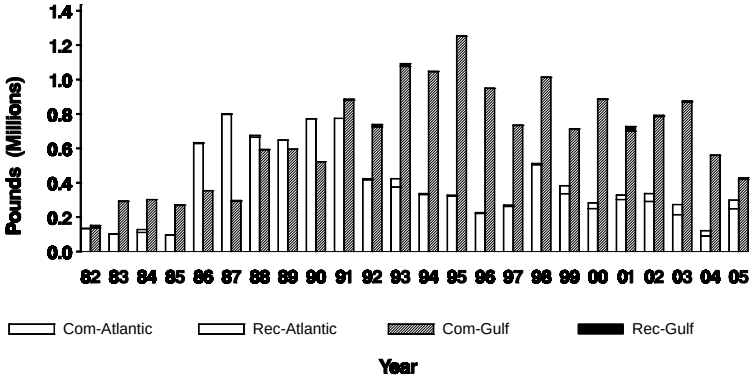


Figure 3. Total annual landings of ballyhoo on the Atlantic and gulf coasts, 1982–2005

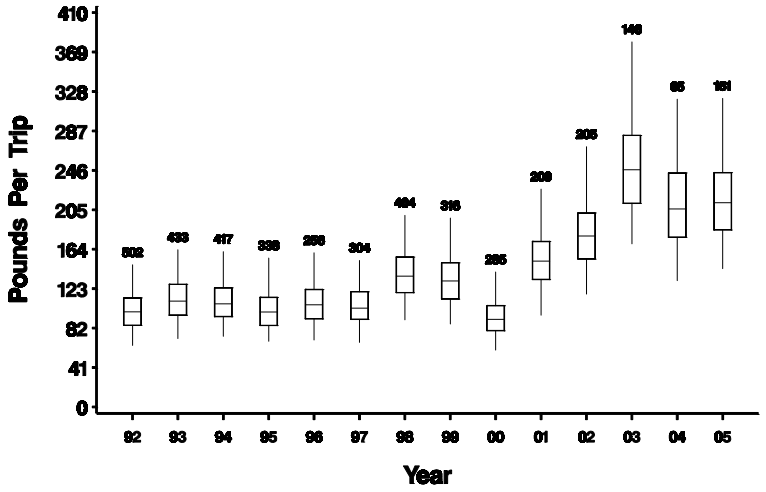


Figure 4. Annual standardized commercial catch rates (pounds) for ballyhoo on the Atlantic coast of Florida, 1992–2005

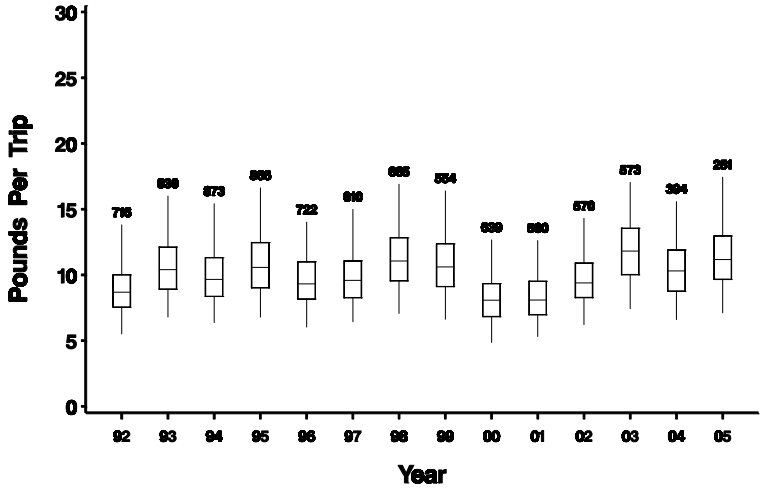


Figure 5. Annual standardized commercial catch rates (pounds) for ballyhoo on the gulf coast of Florida, 1992–2005