

Sea catfishes, Family Ariidae



Gafftopsail catfish, *Bagre marinus* (Mitchill, 1815)

Hardhead catfish, *Ariopsis felis* (Linnaeus, 1758)

Two species of sea catfishes occur in Florida waters: the hardhead catfish, *Ariopsis felis*, and the gafftopsail catfish, *Bagre marinus*. Both species inhabit estuarine and nearshore waters throughout Florida. According to reports, the gafftopsail catfish also occurs in freshwater. Although not favored by anglers as sport or food fishes, anglers easily catch sea catfishes because the fish are broadly distributed and opportunistic feeders. Adult hardhead and gafftopsail catfish will move out of estuarine waters to nearshore coastal waters to avoid water temperatures below 25 °C. A length of about 4.7" standard length (SL) is apparently reached by age 1. Past studies have reported that hardhead catfish reach a maximum age of 5–8 years (Doermann *et al.* 1977), and females mature to spawn at about 2 years of age and 4.7"–7.9" SL. The smallest mature gafftopsail catfish reported in the literature was 10.4" SL. However, unvalidated evidence indicates that maximum age for both species may be as old as 25 years and maturity is not reached by either species until age 5 (Table 1, FWC-FWRI, unpublished data). Hardhead catfish spawn from May to August in back bays; gafftopsail catfish spawn during May–August over inshore mudflats. Males of both species exhibit oral gestation behavior, carrying the fertilized eggs, larvae, and small juveniles in their mouths (Muncy and Wingo 1983).

The similar diets of gafftopsail and hardhead catfish include algae, seagrasses, coelenterates, holothuroidians, gastropods, polychaetes, crustaceans, and fishes (Merriman 1940).

Table 1. Von Bertalanffy growth parameters for hardhead catfish and length-weight relations for hardhead and gafftopsail catfishes.

Inches FL = $L_{\infty} (1 - e^{-K(\text{age}-t_0)})$	K	L_{∞} (inches FL)	t_0 (years)	Source
Male	0.243	12.8	-1.462	FWC-FWRI Unpublished
Female	0.241	13.5	-1.383	FWC-FWRI Unpublished

Weight in lbs = $a (\text{inches FL})^b$	a	b	Source
Male hardhead catfish, gulf coast	0.000361	3.116	FWC-FWRI Unpublished
Female hardhead catfish, gulf coast	0.000448	3.053	FWC-FWRI Unpublished
Male gafftopsail catfish, gulf coast	0.000401	3.143	FWC-FWRI Unpublished
Female gafftopsail catfish, gulf coast	0.000585	3.007	FWC-FWRI Unpublished

During 2007, landings of sea catfishes in Florida totaled 727,997 pounds. The recreational fishery made 97% of the total landings. Landings were greater on the gulf coast, where about 77% of the statewide landings were made in 2007. In 2007, on the Atlantic coast, Brevard, St. Lucie, Martin, and Palm Beach Counties had the higher commercial landings for sea catfishes (Fig. 1a). Angler landings were greatest along the entire gulf coast except in Monroe

County, and along coastal counties of Indian River through Nassau on the Atlantic coast (Fig. 1b). The 2007 total landings were 77% higher than the average landings in the previous five years (2002–2006) and were 5% lower than the 1982–2007 historical average landings (Fig. 2). Estimated landings for anglers represents only a small portion of their total catch because most sea catfish are released, e.g., 82%–96% of the total catch was released during 1995 (Armstrong *et al.* 1996c). Overall, anglers appear to land and keep fewer hardhead catfish than gafftopsail catfish. Armstrong *et al.* (1996c) noted that gafftopsail catfish probably make up the majority of the commercial sea catfish landings on the Atlantic coast.

On the Atlantic coast, standardized commercial landings rates for sea catfishes declined since 1998 (Fig. 3a). On the gulf coast, the commercial landings rates showed erratic ups and downs since 1991 (Fig. 3b). Standardized recreational total catch rates for hardhead catfish (Figs. 3c-d) and gafftopsail catfish (Figs. 3e-f) appear relatively stable on both coasts of Florida since 1991.

Indices of abundance for young-of-the-year (YOY) hardhead catfish show no discernible trend over time but do indicate strong year classes in 2001, 2003 and 2005 on the Atlantic coast (Fig. 4a). On the gulf coast, there is little trend in recruitment with strong year classes in 1997, 1999, 2001 and 2003 (Fig. 4b). There were very few YOY gafftopsail catfish captured on the Atlantic coast. On the gulf coast there is no discernible trend in YOY gafftopsail catfish but strong year classes are evident in 1997, 1999, 2002, 2003, 2004 and 2006 (Fig. 5a). On both coasts abundances of post-YOY hardhead catfish increased from 1997 to 2001 and have been relatively stable since (Figs. 4c and 4d). Post-YOY gafftopsail catfish were most abundant in 1998 and 2007 on the Atlantic coast but no trends were apparent. On the gulf coast the index of abundance increased from 1997 to a peak in 2000, after which abundances decreased slightly and have remained fairly stable since (Figs. 5b and 5c).

Indices of gross external abnormalities in hardhead catfish varied without trend on the Atlantic coast, the highest levels of abnormalities occurred in 2005 (Fig. 6a). On the gulf coast occurrences of abnormalities are relatively low with the exception of 2000 and 2001 where the incidences were much higher (Fig. 6b). For gafftopsail catfish, gross external abnormalities were not reported on the Atlantic coast, but were most prevalent in 2000 on the gulf coast (Fig. 7b). Red/bloody areas and ulcers/lesions were the most common abnormality observed in hardhead catfish on the Atlantic coast, while red/bloody areas were the most common abnormality for hardhead catfish and gafftopsail catfish on the gulf coast (Figs. 6c, 6d and 7b). These symptoms appear to be indicative of viral infection (M. Bakenhaster, FWRI Aquatic Health, personal communication).

Stocks of hardhead catfish and gafftopsail catfish in Florida appeared to be in good condition in 1995 (Armstrong *et al.* 1996c). The available data showed that populations for both species consisted of many abundant age groups; such data are indicative of low mortality.

a. Commercial landings (pounds)

b. Recreational landings (numbers)

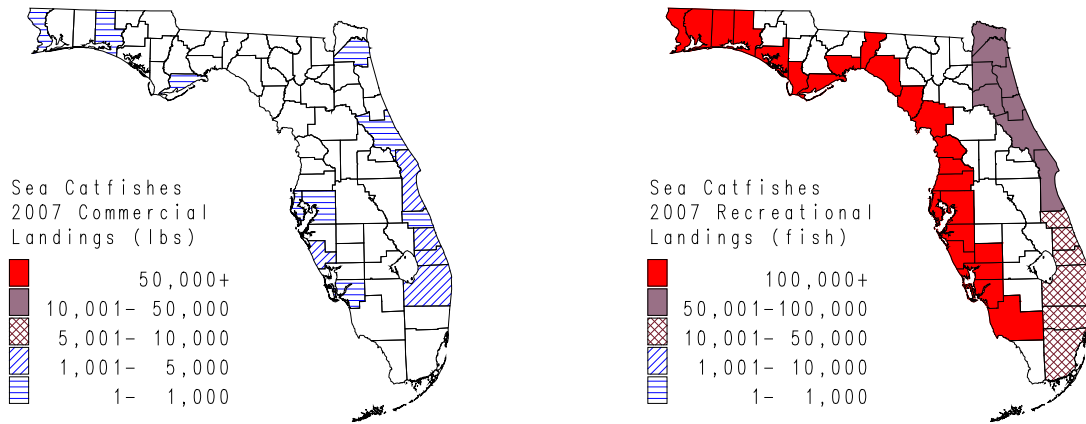


Figure 1 (a)-(b). Geographic distribution of sea catfishes landed during 2007. (a) Commercial landings (pounds) by county; (b) Recreational landings (numbers of fish) by region.

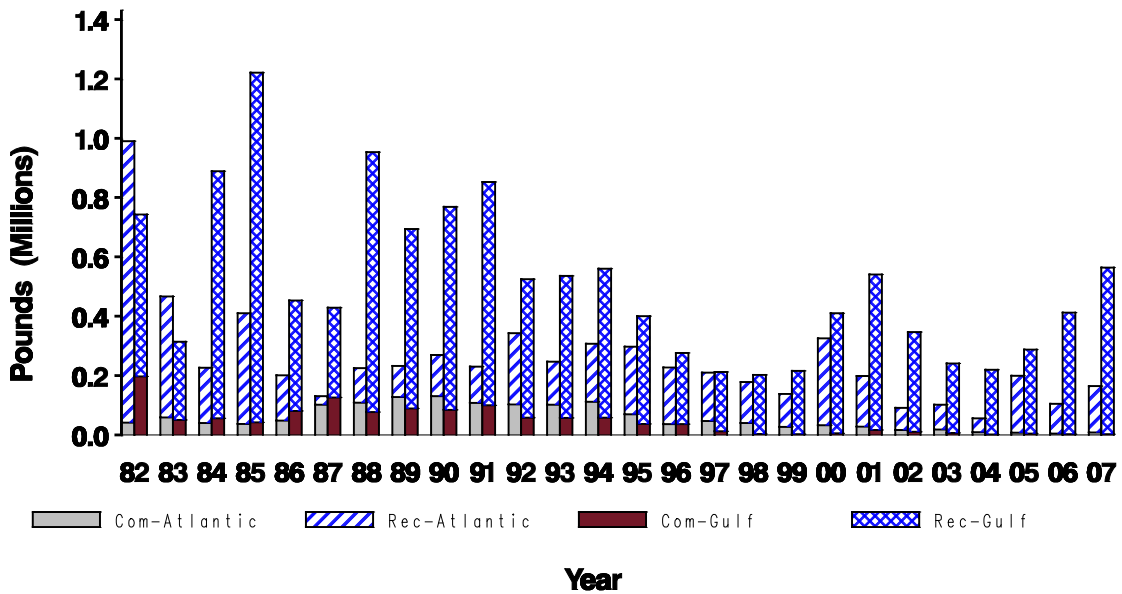


Figure 2. Total annual landings (pounds) of sea catfishes on the Atlantic and Gulf coasts of Florida, 1982–2007.

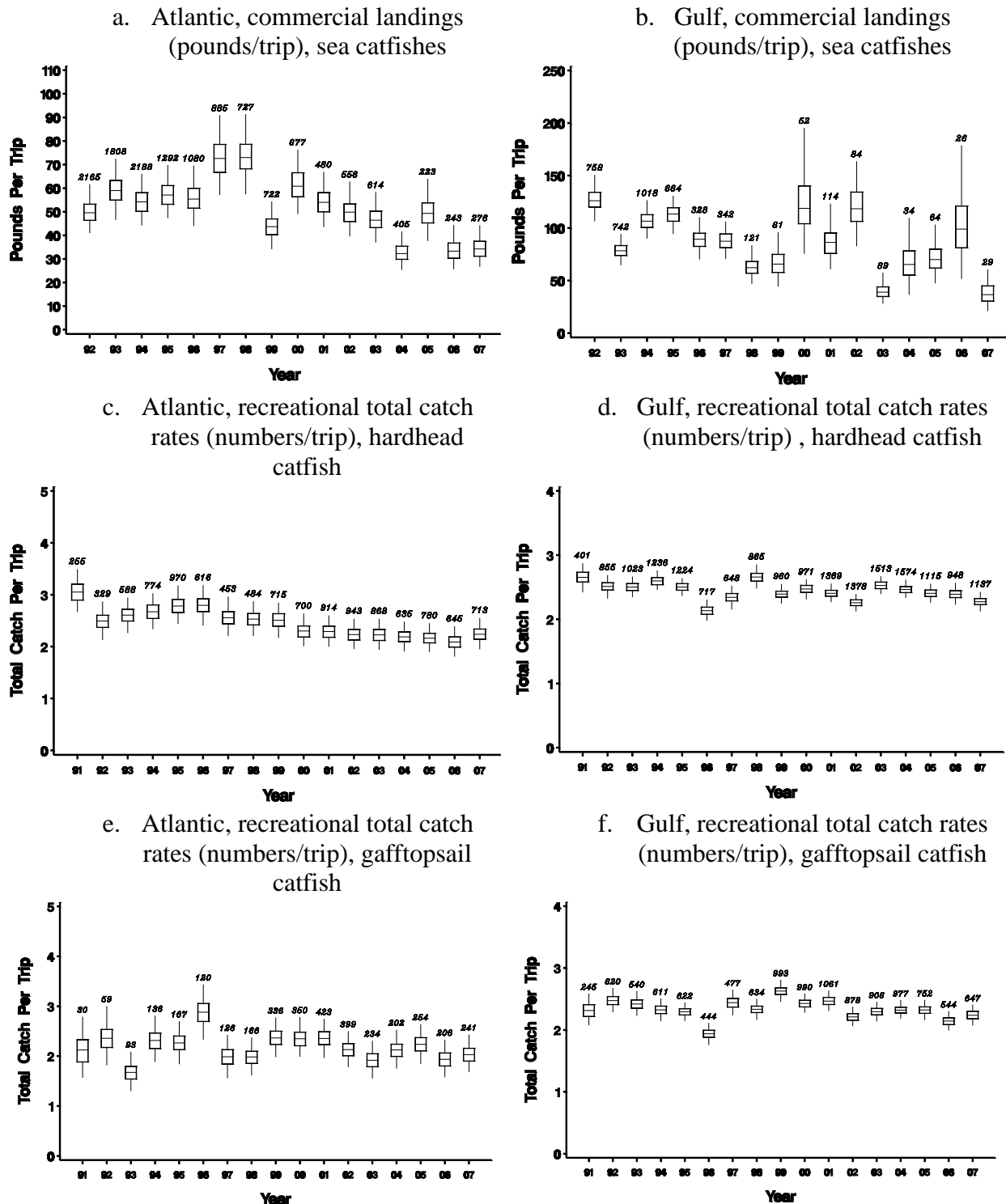


Figure 3 (a)-(f). Annual standardized catch rates for sea catfishes in Florida. Commercial landings rates (lbs/trip) of sea catfishes, 1992-2007: (a) Atlantic; (b) Gulf. . Recreational total catch rates of hardhead catfish, 1991-2007: (c) Atlantic ; (d) Gulf. Recreational total catch rates of gafftopsail catfish, 1991-2007: (e) Atlantic; (f) Gulf.

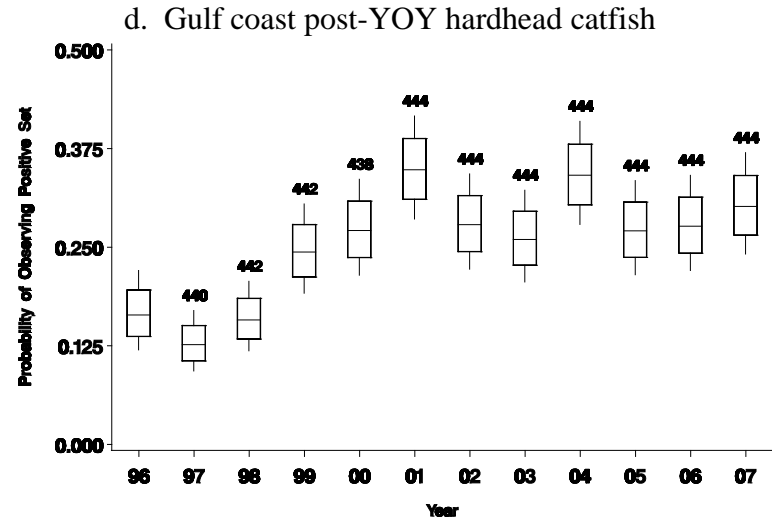
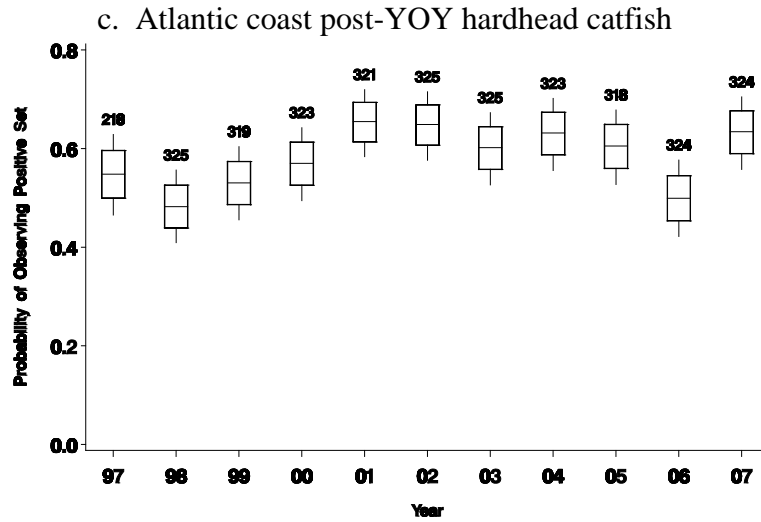
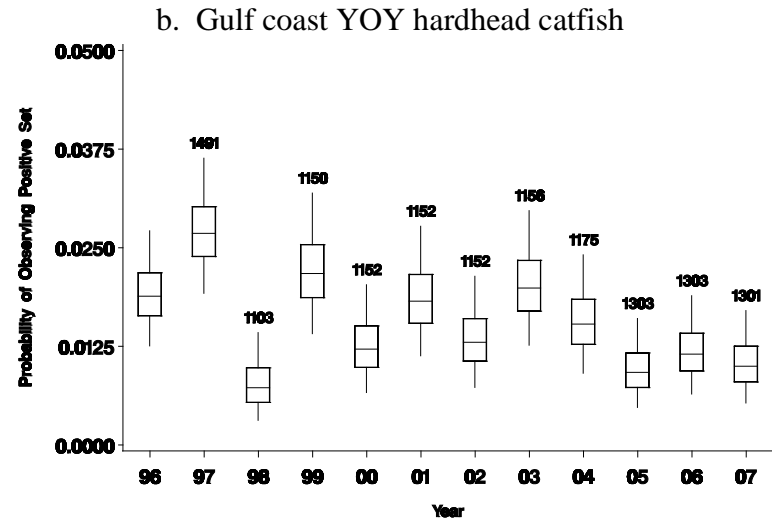
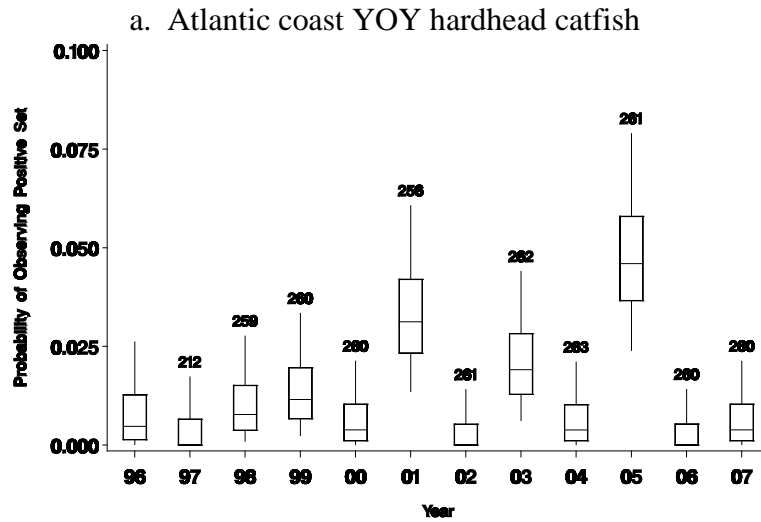
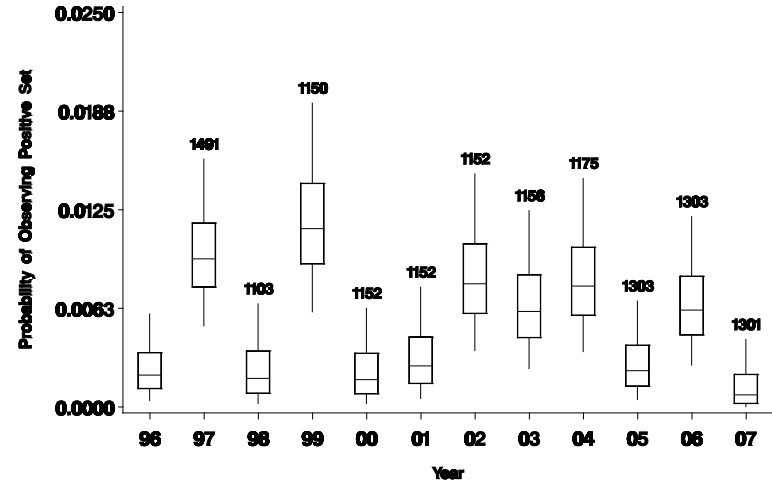


Figure 4(a)-(d). Proportion of fishery-independent-monitoring sets that captured hardhead catfish from 1996-2007. Young-of-the-year (YOY): (a) Atlantic coast; (b) Gulf coast. Post-YOY: (c) Atlantic Coast; (d) Gulf coast.

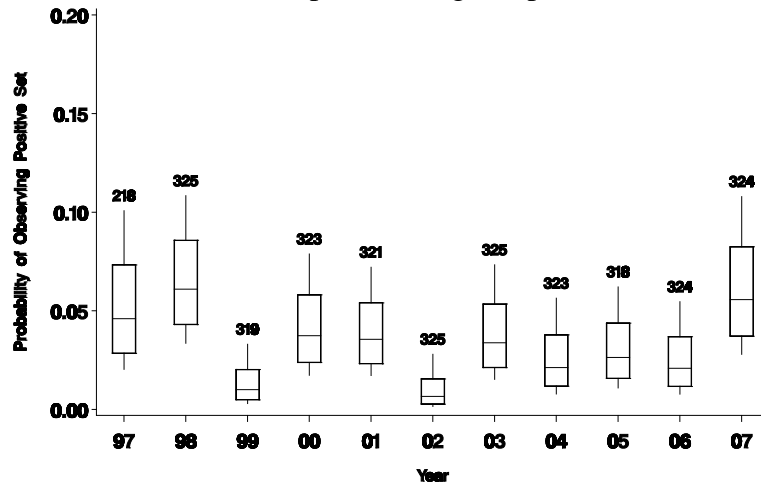
a. Atlantic coast YOY gafftopsail catfish

<no data>

b. Gulf coast YOY gafftopsail catfish



c. Atlantic coast post-YOY gafftopsail catfish



d. Gulf coast post-YOY gafftopsail catfish

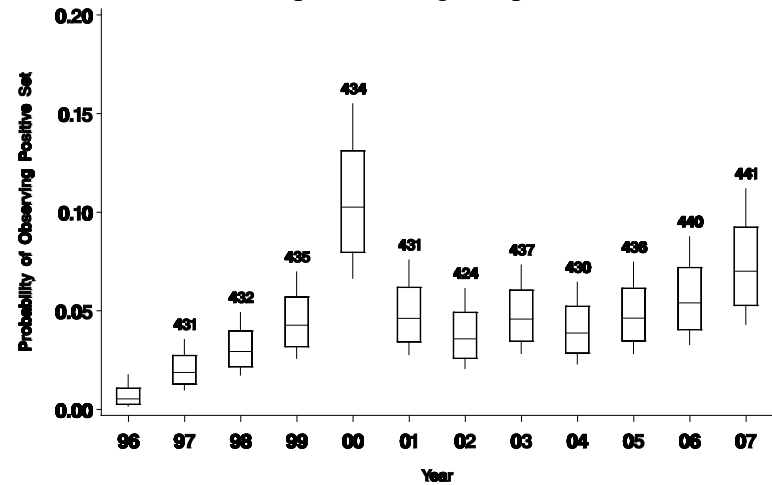
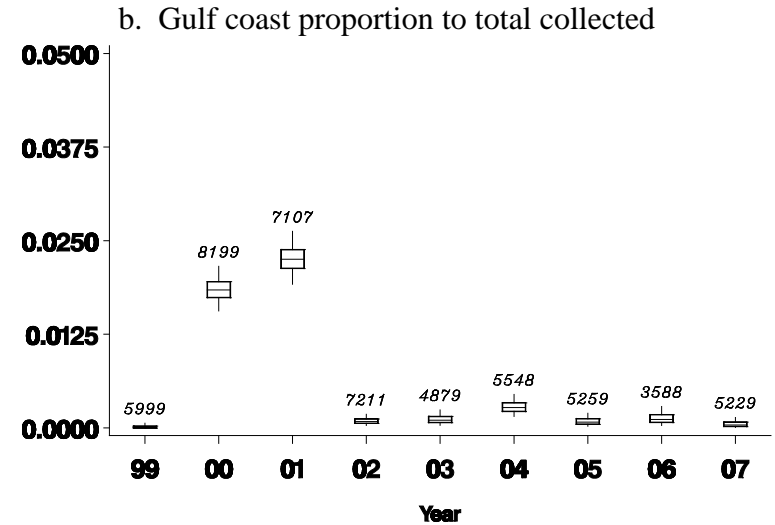
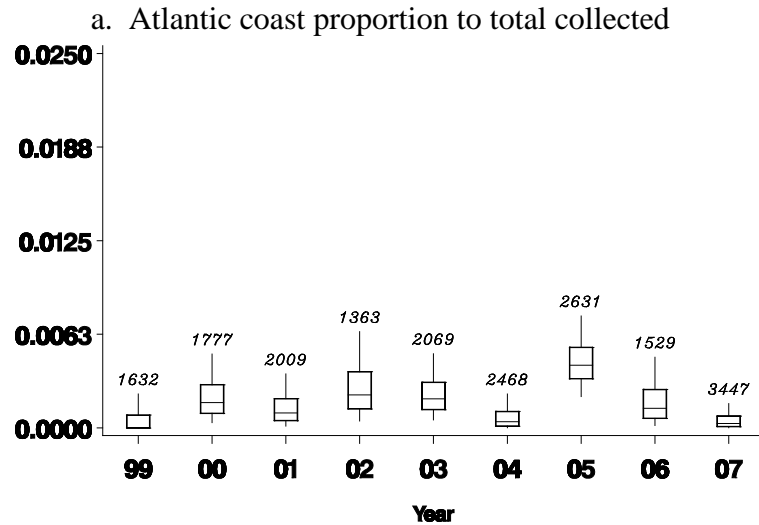
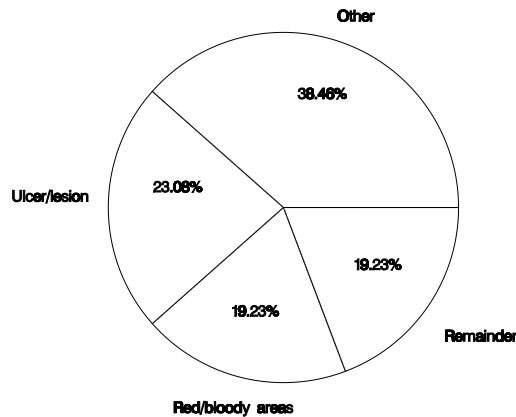


Figure 5(a)-(c). Proportion of fishery-independent-monitoring sets that captured gafftopsail catfish from 1996-2007. Young-of-the-year (YOY): (a) Atlantic coast; (b) Gulf coast. Post-YOY: (a) Atlantic Coast; (d) Gulf coast.



c. Atlantic coast percentage of abnormality types
Percentage of gross external abnormalities



d. Gulf coast percentage of abnormality types
Percentage of gross external abnormalities

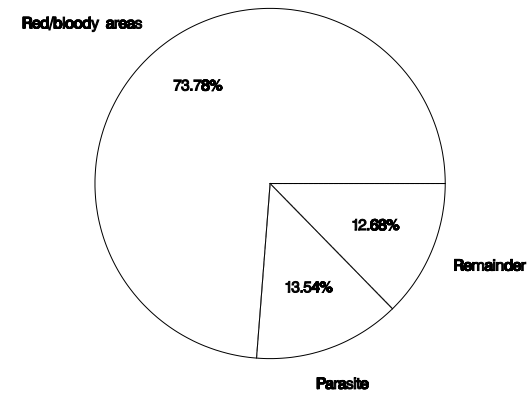
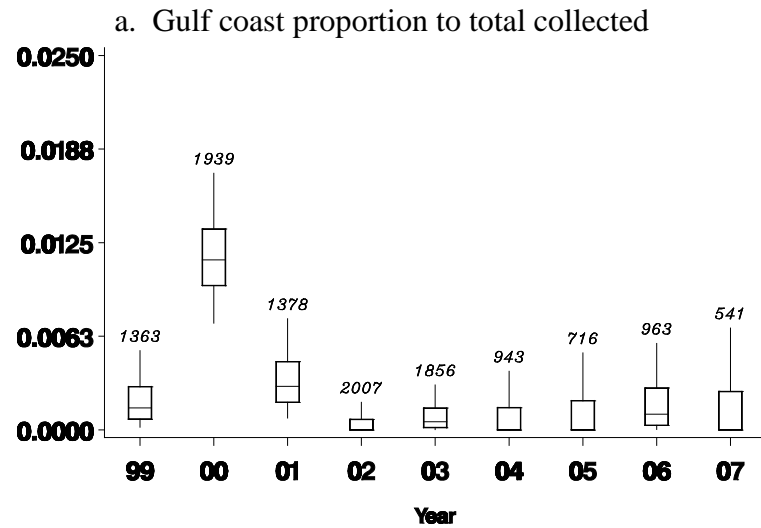


Figure 6(a)-(d). Gross external abnormalities of hardhead catfish ≥ 75 mm collected in fishery-independent-monitoring sets, 1999-2007. Proportion of animals with gross external abnormalities to total animals collected: (a) Atlantic coast; (b) Gulf coast. Percentage of abnormalities observed by type: (c) Atlantic Coast; (d) Gulf coast.



b. Gulf coast percentage of abnormality types
Percentage of gross external abnormalities

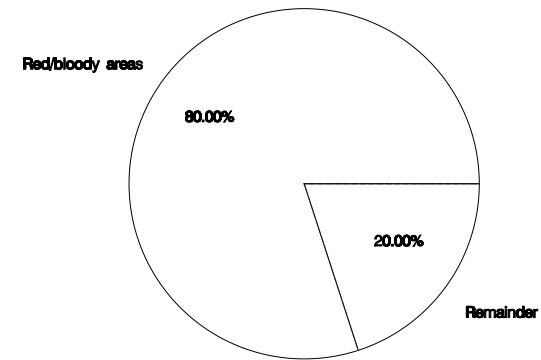


Figure 7(a)-(b). Gross external abnormalities of gafftopsail catfish ≥ 75 mm collected in fishery-independent-monitoring sets, 1999-2007. Gulf Coast: (a) Proportion of animals with gross external abnormalities to total animals collected; (b) Percentage of abnormalities observed by type.