

**Atlantic thread herring,  
*Opisthonema oglinum*  
(Lesueur, 1817)**



Atlantic thread herring are widely distributed in the western Atlantic from the Gulf of Maine to Bermuda and throughout the Gulf of Mexico and West Indies southward to Brazil (Berry and Barrett 1963). In the northeastern Gulf of Mexico, they are found at depths less than 120 feet (Klima 1971). Schools of thread herring generally prefer shallow coastal waters and occur most frequently in the upper 3 meters of the water column. Adults generally follow an inshore-offshore, north-south movement pattern in response to water temperature (Fuss *et al.* 1969). Fork length (FL) of thread herring, taken from trawl surveys conducted between 1994 and 2001 along west central Florida, ranged from 4.1 inches to 7.9 inches. According to Reintjes (1979), they reach mean sizes of 5.6 inches at age 1, 5.7 inches at age 2, and 5.8 inches at age 3. Atlantic thread herring mature at 4.7–5.7 inches FL when age 1 or 2 (Berkeley and Houde 1984). Spawning occurs in nearshore shelf waters (to depth of about 100 feet) during March–July (Prest 1971).

Table 1. Von Bertalanffy growth parameters and length-weight relations for the Atlantic thread herring

Inches FL = $L_{\infty} (1 - e^{-K(\text{age}-t_0)})$	K	$L_{\infty}$ (inches FL)	$t_0$ (years)	Source
Sex combined, gulf coast of Florida	0.38	8.46	-0.98	Houde <i>et al.</i> (1983)
Weight in lbs = $a (\text{inches FL})^b$	a	b	Source	
Males, gulf coast of Florida	0.000471	3.15	Berkeley and Houde (1984)	
Females, gulf coast of Florida	0.000457	3.15	Berkeley and Houde (1984)	

Adult thread herring feed on a variety of phytoplankton and zooplankton, which the herring strain from water through their numerous gill rakers. Dominant food organisms from fish collected off Fort Myers, Florida, included copepods, pelecypods, gastropods, larval barnacles, plant detritus, fish scales, and sediments (Fuss and Kelly 1968). The Atlantic thread herring is an important prey species eaten by many piscivorous fish, sea birds, and marine mammals (Reintjes 1979). Mackerel, bluefish, and crevalle jack have shown a preference for eating schooling fish such as herrings. Beaumariage (1973) found that 59% of the food eaten by king mackerel in Florida waters consisted of Atlantic thread herring and scaled sardine. Thread herring were a prey item eaten by bluefish off southeast Florida, south Florida, and northwest Florida (Naughton and Saloman 1984).

Statewide landings of Atlantic thread herring were 1,351,125 pounds during 2009. The commercial fishery accounted for over 64% of the total Atlantic thread herring landings in Florida. Over 97 percent of the total statewide landings are made on the gulf coast. The distribution of commercial landings reflects the distribution of the baitfish purse-seine fishery in the state: located just west of Cape San Blas, off Tampa Bay, and off Charlotte Harbor (Fig. 1a). Recreational landings of Atlantic thread herring were made primarily in the northwest and southwest regions on the gulf coast and throughout all region of the Atlantic coast (Fig. 1b).

The 2009 total landings of Atlantic thread herring were 45% lower than the average landings in the previous five years (2004-2008) and were 54% lower than the 1982–2009 historical average landings (Fig. 2). On the gulf coast, total annual landings increased from 300,000 pounds in 1982 to about 5.0 million pounds in 1994, an increase that reflected the market demand and the expansion of this fishery in the early 1990s. Following the passage of Amendment 3 (which imposed significant limitations on marine net fishing) in 1995, landings declined; currently, annual landings fluctuate within the range of 1 to 4 million pounds (Fig. 2). Total annual landings of Atlantic thread herring on the Atlantic coast, which averaged about 760,000 pounds during 1997-1999, have dropped to only about 128,000 pounds in 2005 and decreased through 2009 (Fig. 2).

Commercial purse seine landings rates are variable on the Atlantic coast, with higher but less precise estimates from 2002-2009 (Fig. 3a). On the gulf coast, commercial landings rates have generally increased throughout the time series and distinctly higher rates were reported during 2004-2006 (Fig. 3b). Since hold capacity of the purse seine boats (30,000–40,000 pounds) is occasionally met, commercial catch rates may not reflect the abundance or availability of Atlantic thread herring (B. Mahmoudi, FWC-FWRI, pers. comm.). Recreational total catch rate estimates may not accurately reflect the use of thread herring as bait by recreational anglers because bait fish catches may not be accurately recalled, reported, or identified by anglers after the end of their fishing trips and may be released (i.e., not landed) and not available for inspection during recreational surveys (Figs. 3c-b).

Annual standardized young-of-the-year (YOY) abundance indices for Atlantic thread herring vary without trend during the period from 1996-2009; however, strong year classes were detected in 2004 and 2007 (Fig. 4a). On the gulf coast, YOY abundance indices again vary without trend from 1996 through 2005. Strong year classes of Atlantic thread herring were observed in 2006 and 2007 (Fig. 4b), followed by a decreasing trend through 2009. Post-YOY abundance indices of Atlantic thread herring have fluctuated without trend and have remained fairly stable on the Atlantic coast from 1997 to 2009 (Fig. 4c). On the gulf coast, post-YOY abundance indices remained stable from 1996-1999, declined sharply in 2000, increased steadily through 2006 then declined again in 2007 (Fig. 4d). On the Atlantic coast the highest occurrence of gross external abnormalities occurred in 2004 while on the gulf coast occurrences were highest in 1999 and 2001 (Figs. 5a and 5b). Ulcers/lesions were the only abnormalities observed on Atlantic thread herring on the Atlantic coast while parasites were the most common abnormality followed by fin rot and ulcers/lesions on the gulf coast (Figs. 5c and 5d).

No formal stock assessment of Atlantic thread herring is available at this time. Despite significant reductions in Florida's west coast commercial landings since 1995, the analysis of fishery-independent trawl-acoustic surveys (1994–2003) indicated no increase in the abundance of important baitfish species (i.e., Spanish sardine, round scad, and Atlantic thread herring) in recent years (Mahmoudi *et al.* 2002, B. Mahmoudi FWC-FWRI, pers. comm.). Mean trawl catch rates for Atlantic thread herring catch rates varied without trend. Catch rates were lowest in 2001. These findings suggest that factors other than fishing may have caused changes in population abundance of Atlantic thread herring in the survey area. A multivariate ANOVA model, relating acoustic baitfish density and environmental variables, indicated that the baitfish density significantly increased in waters with lower salinities and lower temperatures. These relationships may explain reasons for low baitfish trawl catch rates in 1997, 2001, and 2002 when the salinity was at its maximum range (Mahmoudi *et al.* 1999).

a. Commercial landings (pounds)

b. Recreational landings (numbers)

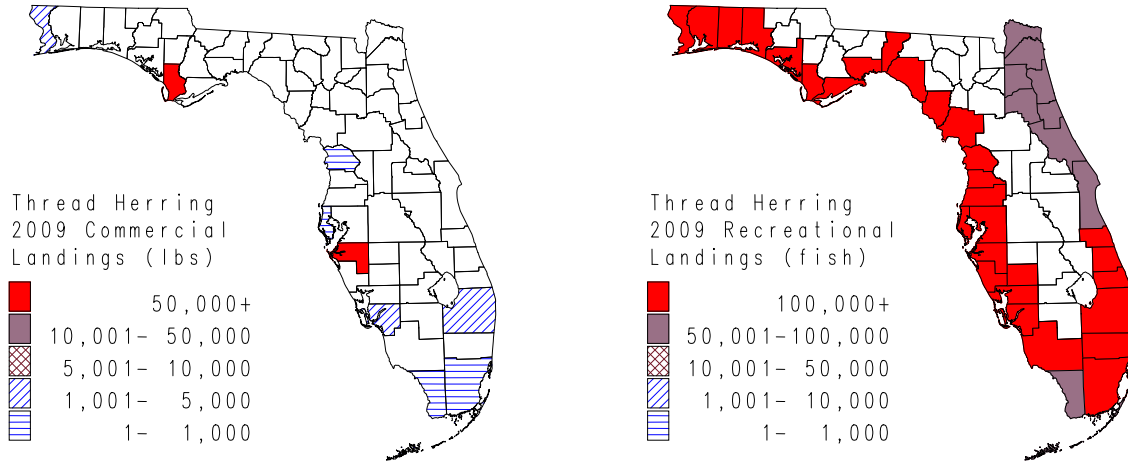


Figure 1 (a)-(b). Geographic distribution of Atlantic thread herring landed during 2009. (a) Commercial landings (pounds) by county; (b) Recreational landings (numbers of fish) by region.

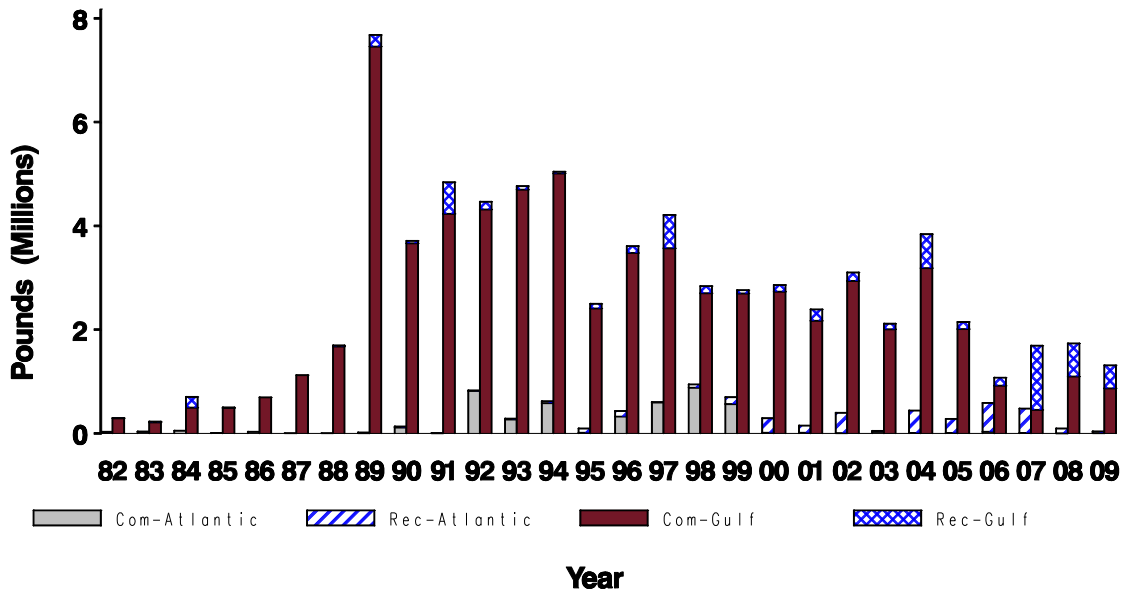


Figure 2. Total annual landings (pounds) of Atlantic thread herring on the Atlantic and gulf coasts of Florida, 1982–2009.

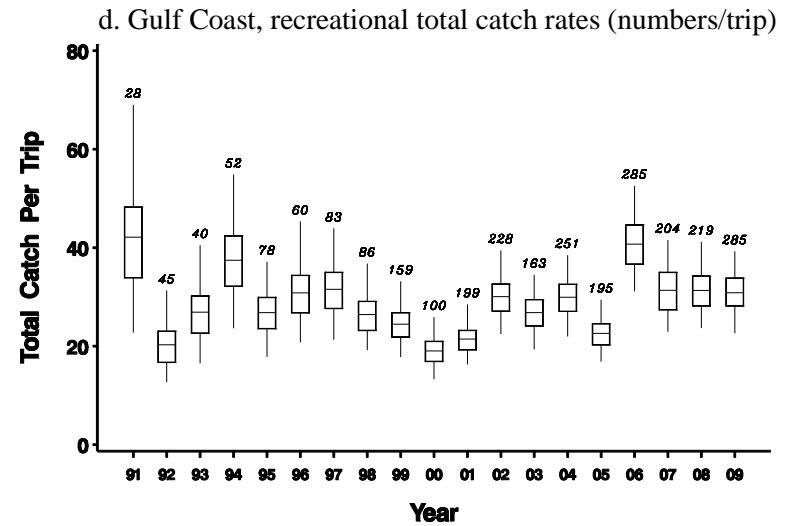
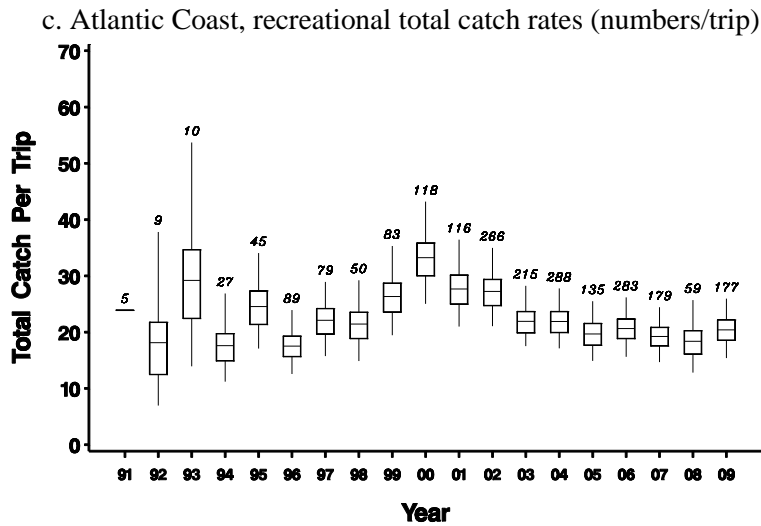
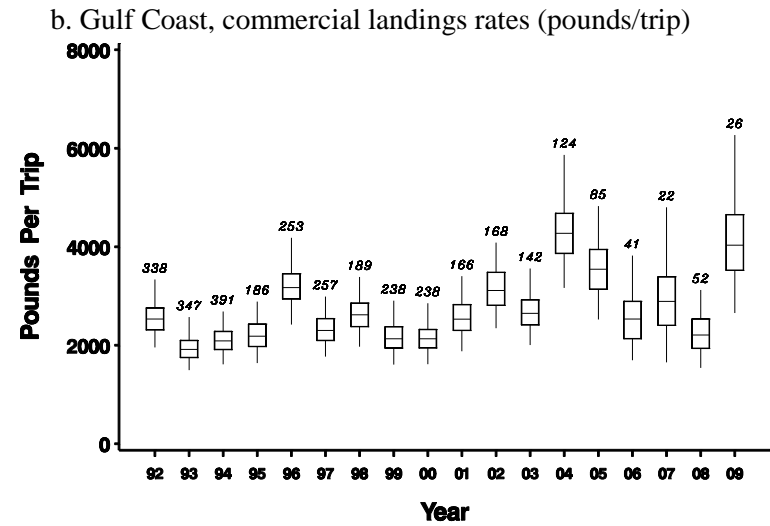
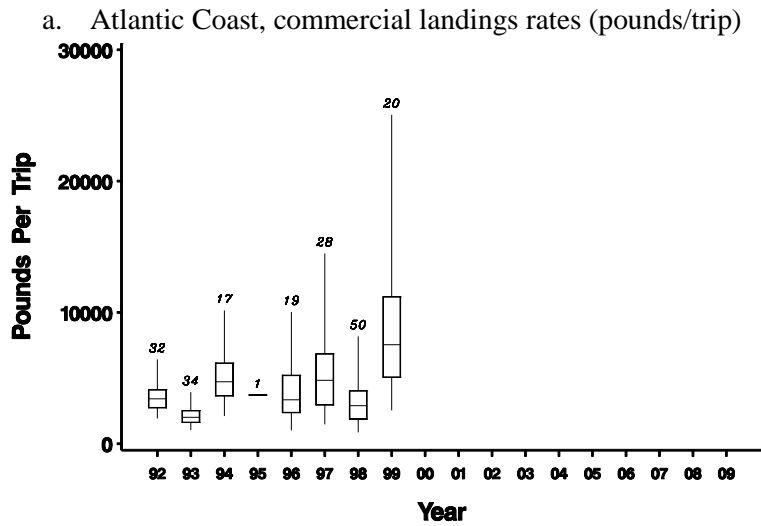


Figure 3 (a)-(d). Annual standardized catch rates for Atlantic thread herring in Florida. Commercial landings rates (pounds/trip), 1992-2009: (a) Atlantic Coast; (b) Gulf Coast. Recreational total catch rates (numbers/trip), 1991-2009: (c) Atlantic Coast; (d) Gulf Coast.

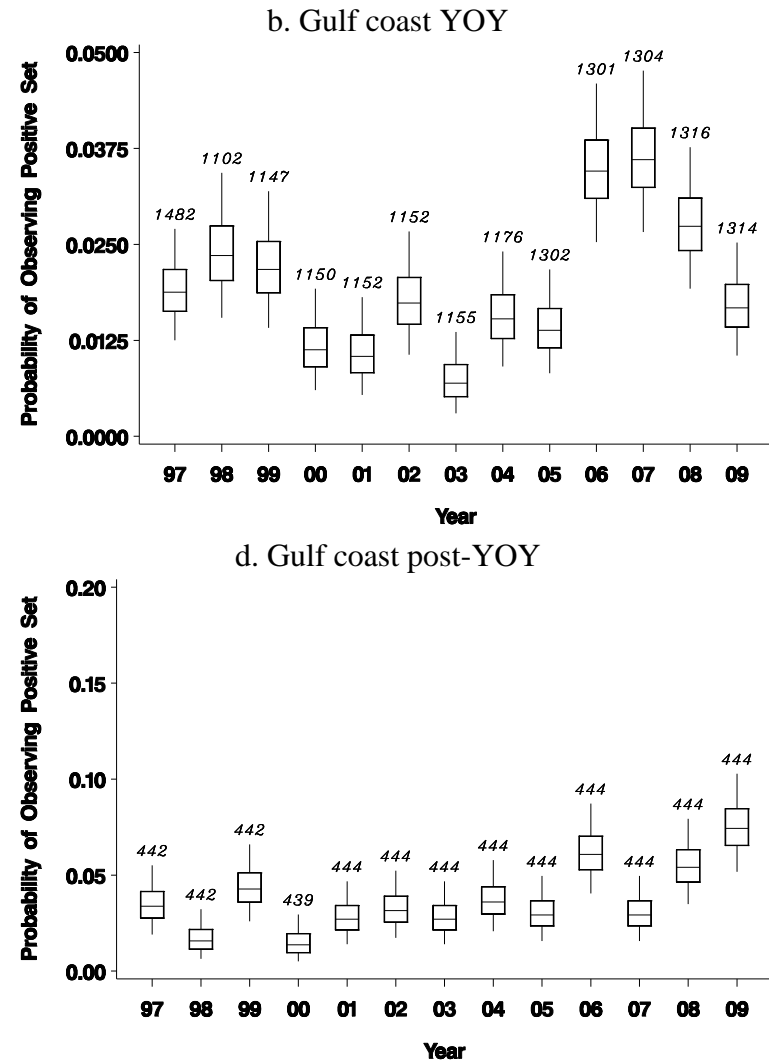
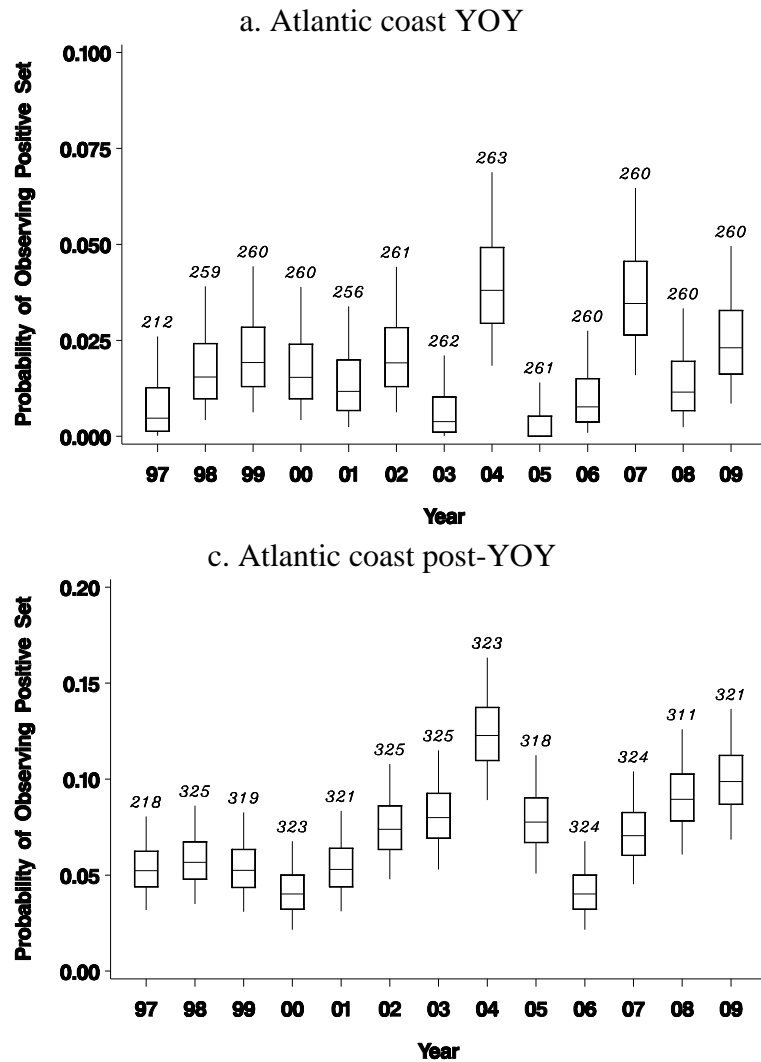
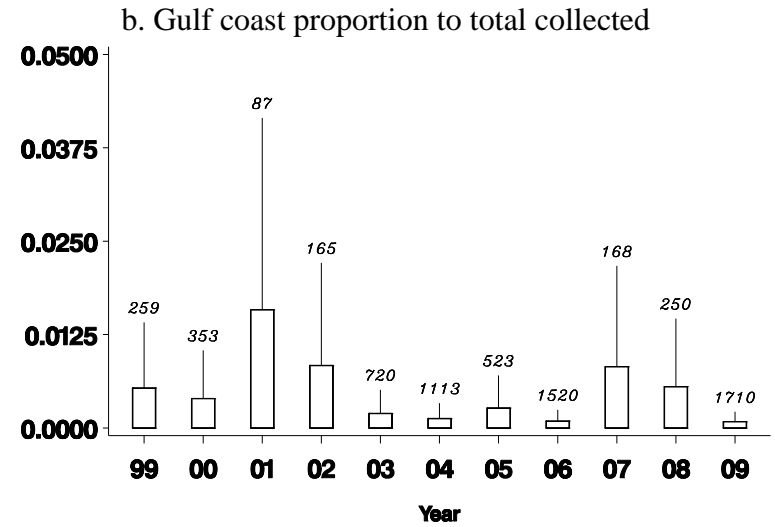
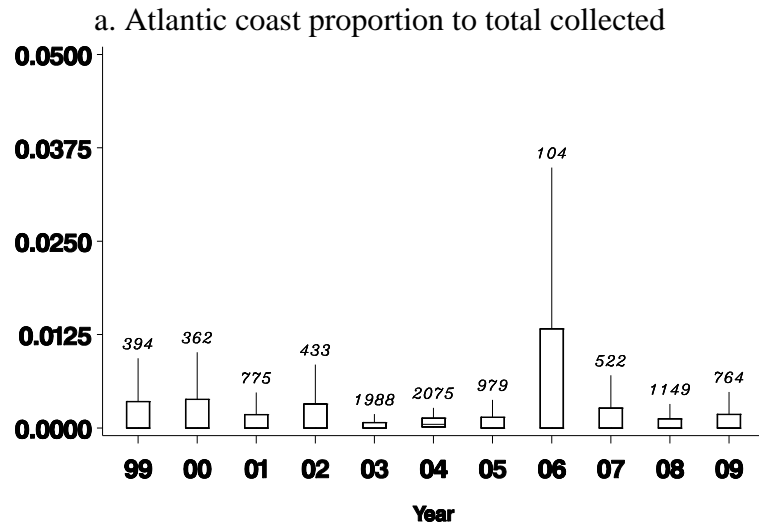
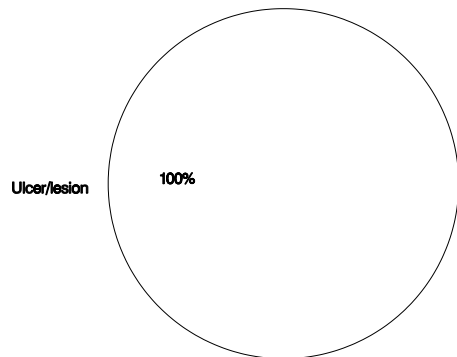


Figure 5(a)-(d). Proportion of fishery-independent-monitoring sets that captured Atlantic thread herring from 1997-2009. Young-of-the-year (YOY): (a) Atlantic coast; (b) Gulf coast. Post-YOY: (c) Atlantic Coast; (d) Gulf coast.



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



d. Gulf coast percentage of abnormality types

none

Figure 6(a)-(d). Gross external abnormalities of Atlantic thread herring  $\geq 75$ mm SL collected in fishery-independent-monitoring sets, 1999-2009. Breakdown of gross external abnormalities by coast: (a) Atlantic coast; (b) Gulf coast. Percentage of abnormalities

observed by type: (c) Atlantic Coast; (d) Gulf coast.