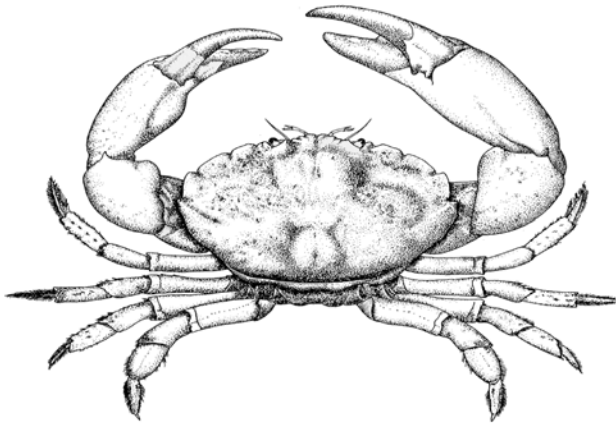


Florida stone crab, *Menippe mercenaria*, and gulf stone crab, *M. adina*



Stone crabs are found from North Carolina south around peninsular Florida to the Yucatan Peninsula and Belize and throughout the Bahamas and Greater Antilles. Adults are benthic and live in burrows that can be found from the shoreline out to depths of 200'. In the northern and western Gulf of Mexico (northwest Florida to Tamaulipas, Mexico), gulf stone crabs replace Florida stone crabs. In addition, there are zones of secondary contact and hybridization between species in the gulf between Cedar Key and Cape San Blas and in the Atlantic between Cape Canaveral and Charleston, South Carolina (Bert and Harrison 1988). Differences in the ecology and life history among hybrids, gulf stone crabs, and Florida stone crabs suggest the need for different management regimes for each fishery (Bert 1992). Florida stone crab growth is highly variable but growth to 0.4" carapace width can occur in as little as 6 months to as long as one year (Tweedale *et al.* 1993). Most female Florida stone crabs spawn when they reach 2.25"–2.75" carapace width or approximately age 2. Although some spawning occurs all year, Florida stone crabs spawn principally from April through September.

The stone crab fishery is unusual in that only the claws are harvested; the crab is returned to the water alive, ostensibly to generate new claws. Approximately 20% of the claws measured in fish houses were regenerated, providing evidence that crabs survive the de-clawing process.

The operating season of the stone crab fishery is from October 15 through May 15. Since the operating season spans two calendar years, stone crab landings are reported by the calendar year in which the season begins. In calendar year 2006, commercial stone crab landings were 2,418,951 million pounds of claws. There are no estimates for the size of the recreational fishery. Landings were taken almost exclusively (99% by weight) in gulf coast counties. The highest landings were reported in Monroe, Collier, Lee, Manatee, Pinellas, Hernando, Citrus, Dixie, and Wakulla Counties on the gulf coast and in Miami-Dade County on the Atlantic coast of Florida in 2006 (Fig. 1). Overall, landings of stone crab increased between 1986 and 1992 stabilized at about 2.6–3.5 million pounds each year through 2004, and declined to about 2.3 million pounds in 2005 and 2006 (Fig. 2). The 2006 total landings of stone crab were 17% lower than the average landings in the previous five years (2001–2005) and were 15% lower than the 1982–2006 historical average landings (Fig. 2).

The stone crab fishery is managed in the federal Exclusive Economic Zone under a fishery management plan developed by the Gulf of Mexico Fishery Management Council (Costello *et al.* 1979). Analysis of the fishery between 1981 and 1985 indicated that the resource was fully used at that time and had begun to show a decline in catch per unit effort and landings

(Phares 1992). Commercial catch per trip on the Atlantic coast increased linearly from 1993-1997, after which catch rates stabilized at around 40 pounds per trip (Fig. 3). Catch rates on the gulf coast increased steadily through 2001, declined in 2002 and 2003, then held steady at about 70 pound per trip during 2003-2006. (Fig 4).

The carapace width that was used to separate young-of-the-year (YOY) stone crabs was 25 mm. Insufficient stone crabs were collected in Atlantic coast fishery-independent surveys to examine trends in relative abundance. The gulf coast relative abundance of young-of-the-year crabs increased until 2000 and then decreased sharply in 2001, and increased dramatically in 2002. After the slow decline in proportion-positive sets seen during 2003-2005, the rate increased dramatically in 2006 (Fig. 5). Post-YOY relative abundance varied without trend from 1996-2006 (Fig. 6). No stone crabs were observed with gross external abnormalities.

Despite the three-fold increase in the number of traps used in the fishery since 1989-90 the level of landings has remained fairly stable over time. Muller *et al.* (2006) found that the recent (through 2004-2005) landings levels are probably all that can be harvested under current environmental conditions, regulations, and fishery practices. Overfishing was clearly occurring because of the excessive number of traps used in the fishery. Recruitment does not show any decline over the time series (1986/87 through 2004/05). Muller *et al.* (2006) suggested that stone crabs were resilient to continued overfishing because most female stone crabs spawn one or more times before their claws reach legal size, because some crabs survive declawing, and because the fishing season is closed during the principal spawning season. The fishery continues to have too many traps in the water as evidenced by the low catch-per-trap level over a very wide range of recent numbers of deployed traps.

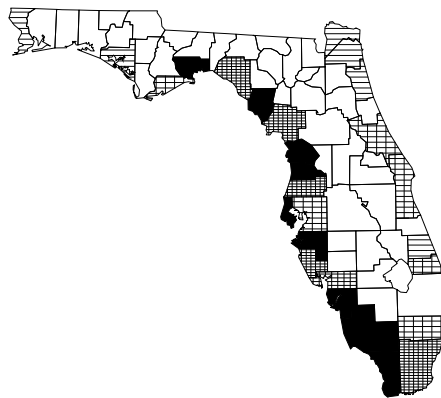


Figure 1. Geographic distribution of commercial landings of stone crab during 2006. Key: black - 50,000 lb and more, dense crosshatching -- 10,000-49,999 lb, open crosshatching -- 5,000 - 9,999 lb, horizontal lines -- 1,000-4,999 lb, and blank -- less than 1,000 lbs.

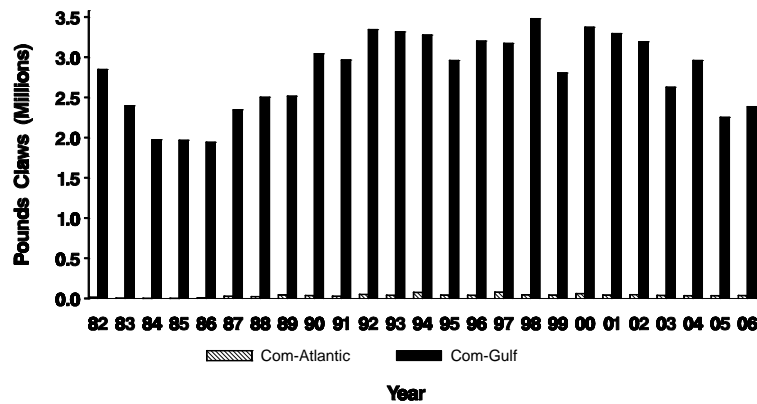


Figure 2. Total annual commercial landings of stone crabs on the Atlantic and gulf coasts of Florida, 1982–2006

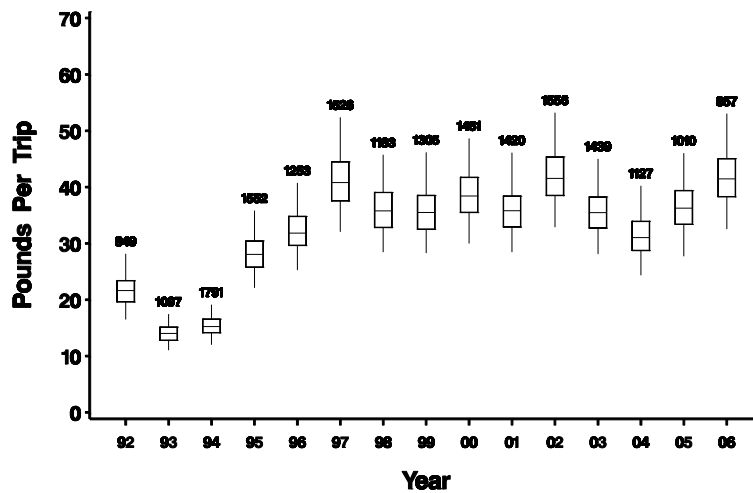


Figure 3. Annual standardized commercial catch rates (pounds) for stone crabs on the Atlantic coast of Florida, 1992–2006. Numbers above the figures are the number of trips that included the number of traps used on the trip.

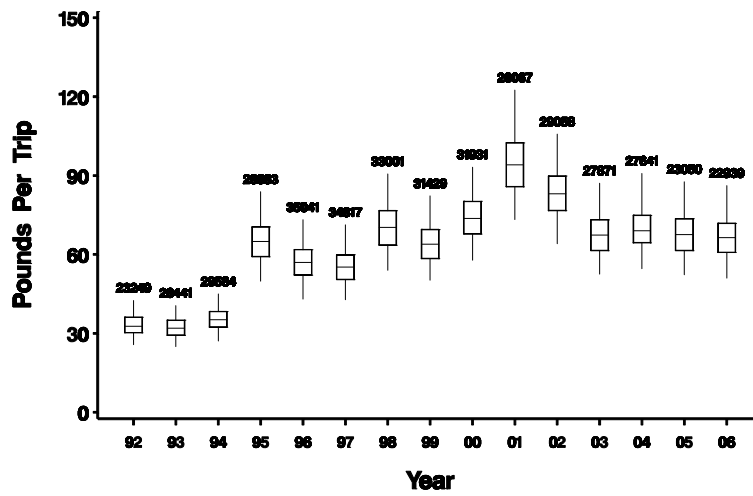


Figure 4. Annual standardized commercial catch rates (pounds) for stone crabs on the gulf coast of Florida, 1992–2006. Numbers above the figures are the number of trips that included the number of traps used on the trip.

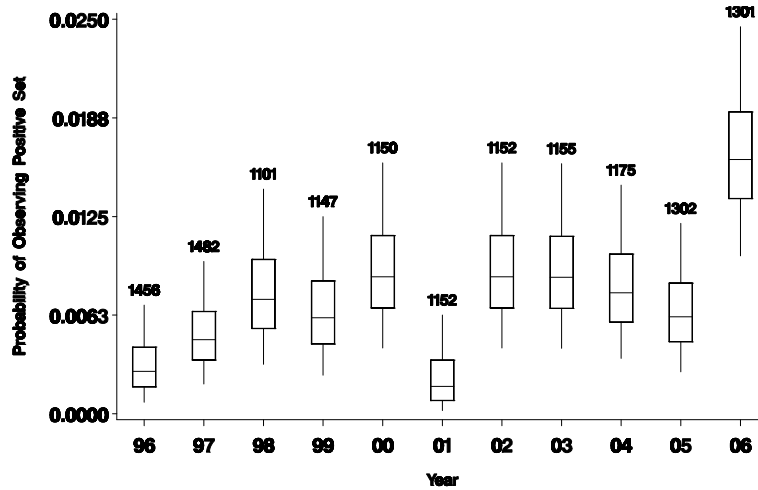


Figure 5. Percentage of Fisheries-Independent Monitoring trawl sets on the gulf coast that captured young-of-the-year stone crab, 1996-2006. Numbers above the figures are the number of trips.

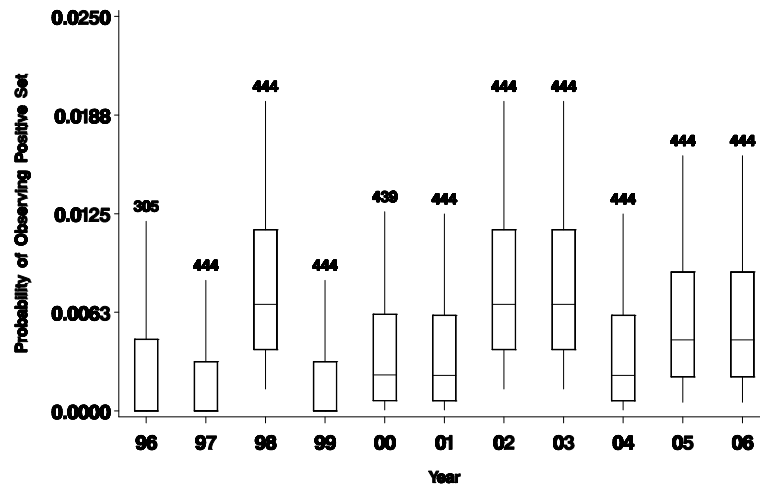


Figure 6. Percentage of Fisheries-Independent Monitoring trawls sets on the gulf coast that captured post-young-of-the-year stone crab, 1996-2006. Numbers above the figures are the number of trips.