



NOAA

Science for Coastal Communities

Center for Coastal Fisheries and Habitat Research
CCFHR

Early Detection and Rapid Response for Marine (Fish) Invaders in South Florida



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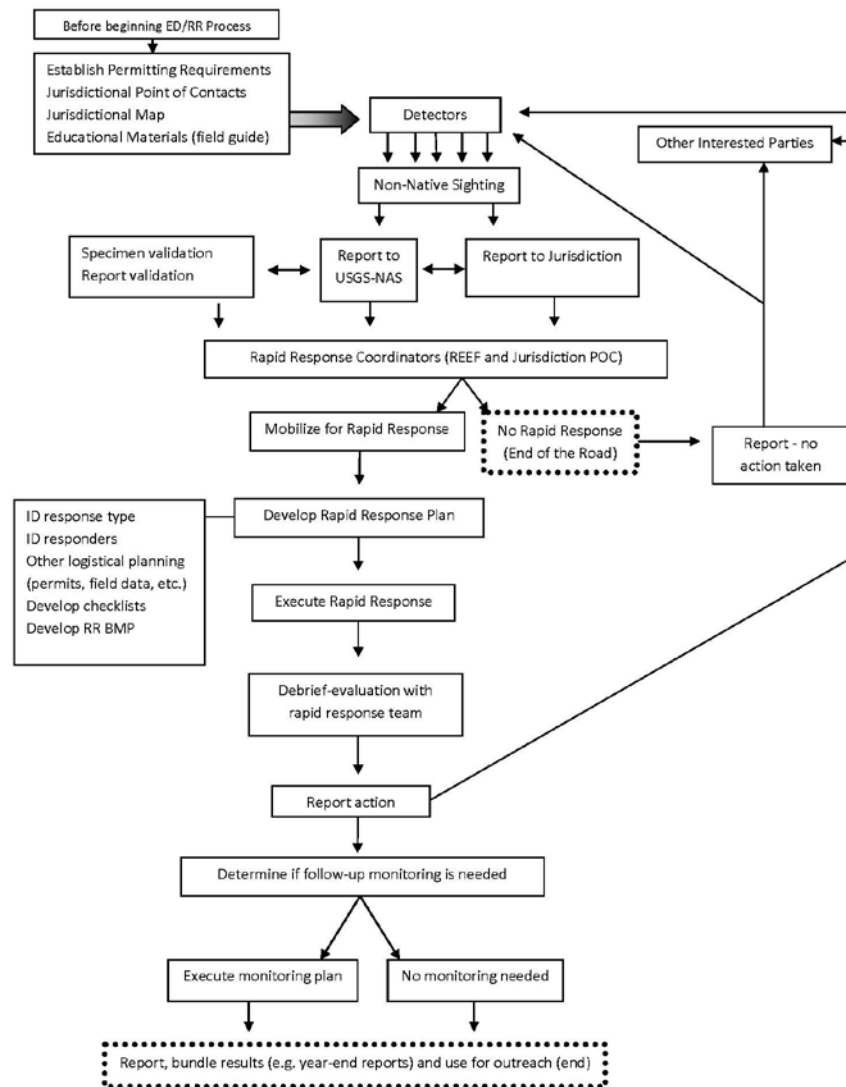
Timeline of events

- Developed GSARP working group at Miami panel meeting (Fall 2007)
- Funding from NOAA, USGS, non-profit sources for workshop and field guide
- Held workshop in Marathon, FL (June 18-19 2008)
- 31 participants from ~25 academic and local, state, and federal governments
- 5 presentations and breakout groups
 - Early warning and detection
 - Permitting and jurisdiction
 - Rapid response
- Developed a conceptual model for ED/RR



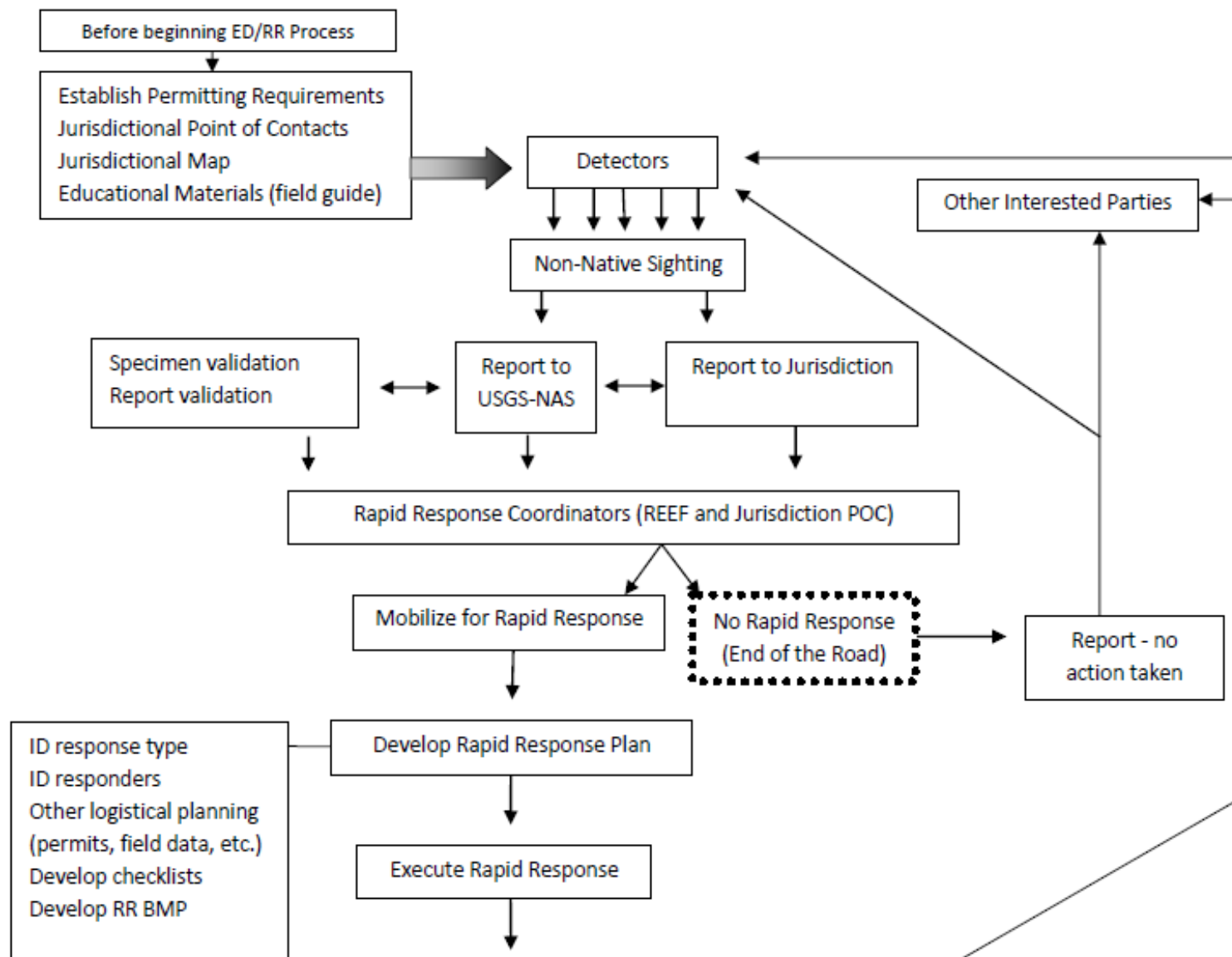


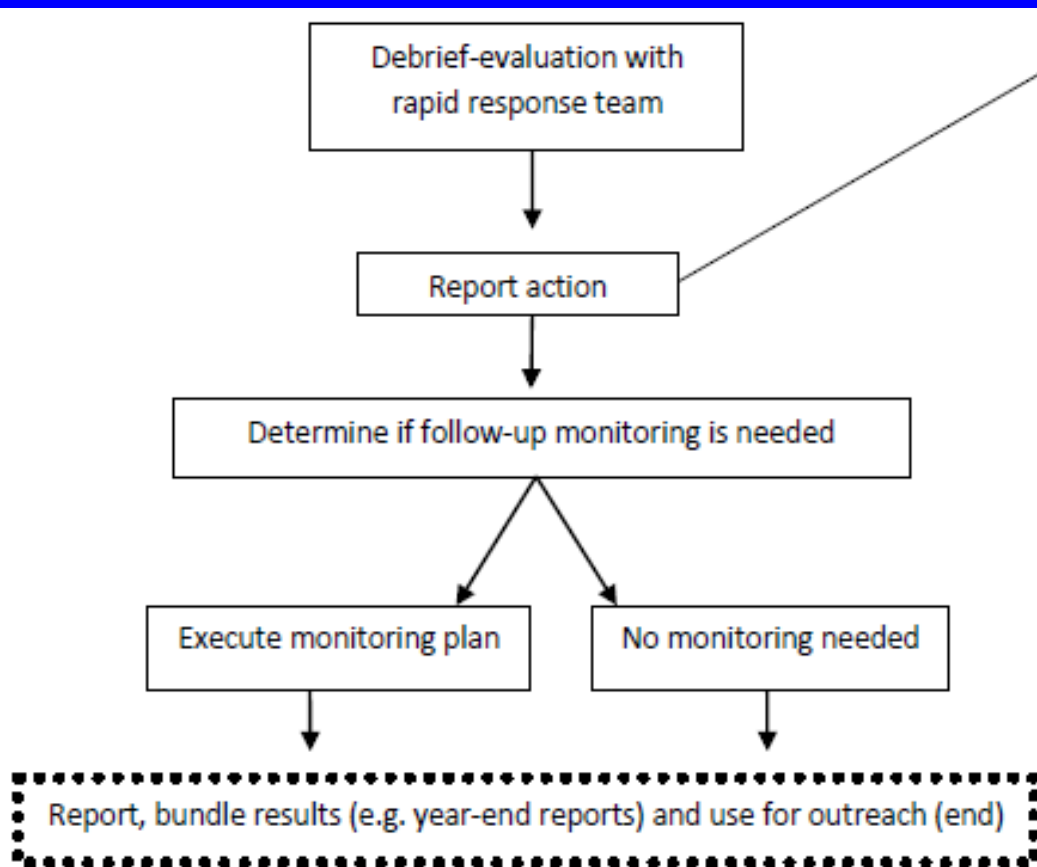
Non-native Marine Fish of South Florida Early Detection/Rapid Response Conceptual Model





Non-native Marine Fish of South Florida Early Detection/Rapid Response Conceptual Model







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Field Guide to the Non-native Marine Fishes of Florida

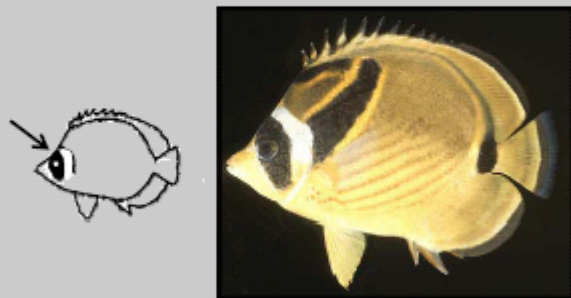


Schofield, P. J., J. Morris, Jr. and L. Akins



Chaetodon lunula (Lacepède 1802)

Raccoon butterflyfish



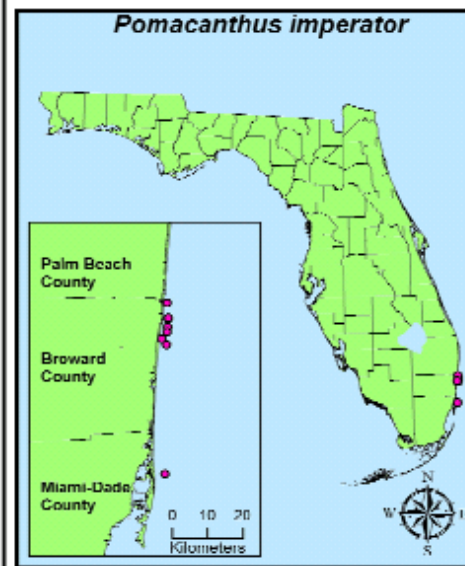
IDENTIFICATION: Dorsal fin XI-XII, 22-25; anal fin III, 17-19. The pectoral fins are rounded, not elongated. The snout is only slightly pronounced and the head profile is steep. Most butterflyfishes are identified by their distinctive colour patterns. The body is primarily yellow with some brownish markings. **There is a broad black bar on the head through the eye, followed by an equally broad white bar. These two bars together give the appearance of a raccoon's mask.** There is a black blotch at the caudal peduncle. The dorsal, caudal and anal fins are edged in black. Juveniles have a black blotch at the posterior base of the caudal fin. From Pyle (2001) and Randall (2005).

NATIVE RANGE: The species is native to most of the Indo-Pacific, including East and South Africa, Hawaii, southern Japan, Western Australia and throughout Micronesia. It also occurs around the Cape of Good Hope reaching narrowly into the South-eastern Atlantic along the South African coast. It is absent from the Red Sea, Gulf of Aden, Persian Gulf and Arabian Sea. In the eastern Pacific, single individuals have been seen at Cocos Island and the Galápagos Islands. From Pyle (2001), Robertson et al. (2004) and Randall (2005).

ECOLOGY: In the native range, the species typically inhabits coral reefs from one to 60 m in depth where it may occur as single individuals, pairs or small groups (Pyle 2001).

The raccoon butterflyfish is an omnivore, feeding on a variety of benthic prey, including polychaetes, scleractinians (hard corals), hydroids, gastropods and mollusc eggs (Harmelin-Vivien 1989; Hourigan 1989; Pratchett 2005).

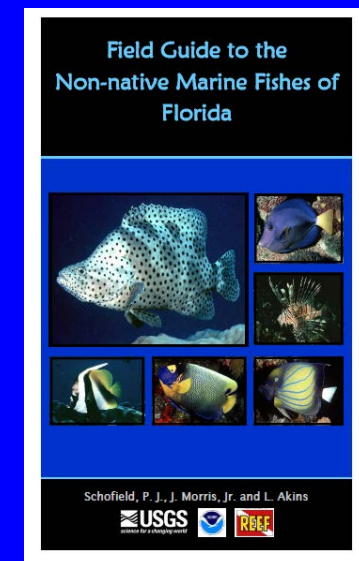
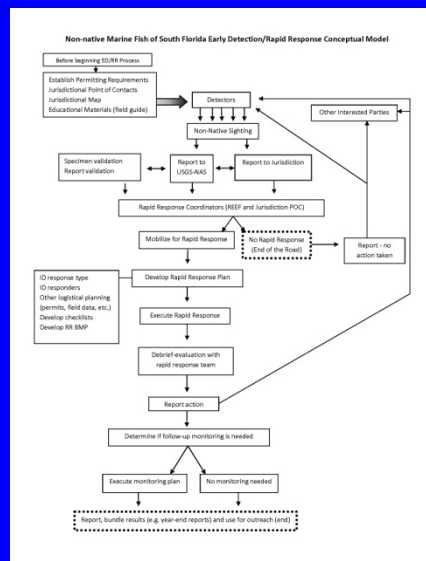
NONINDIGENOUS OCCURRENCES: Raccoon butterflyfishes have been observed on reefs off Boca Raton (2000-2002) and Deerfield Beach (2004).



Map 11

Future efforts:

- 1) Distribute field guide
- 2) Hold future workshops to provide ED/RR to Caribbean Islands
- 3) Work to develop better regional collaboration on invasives
- 4) Provide ED/RR model for implementation



ED/RR Events Since Workshop (June 2008)

Date	Species	Location
JUN 15	Orbicular batfish	Key Biscayne, FL
JUL 6	Sailfin tang	Dania Beach, FL
AUG 8	Sweetlips	Palm Beach, FL
OCT 22	Pacu	Indian River Lagoon, FL
NOV 23	Raccoon butterfly	Palm Beach, FL
DEC 6	Sailfin tang	Palm Beach, FL

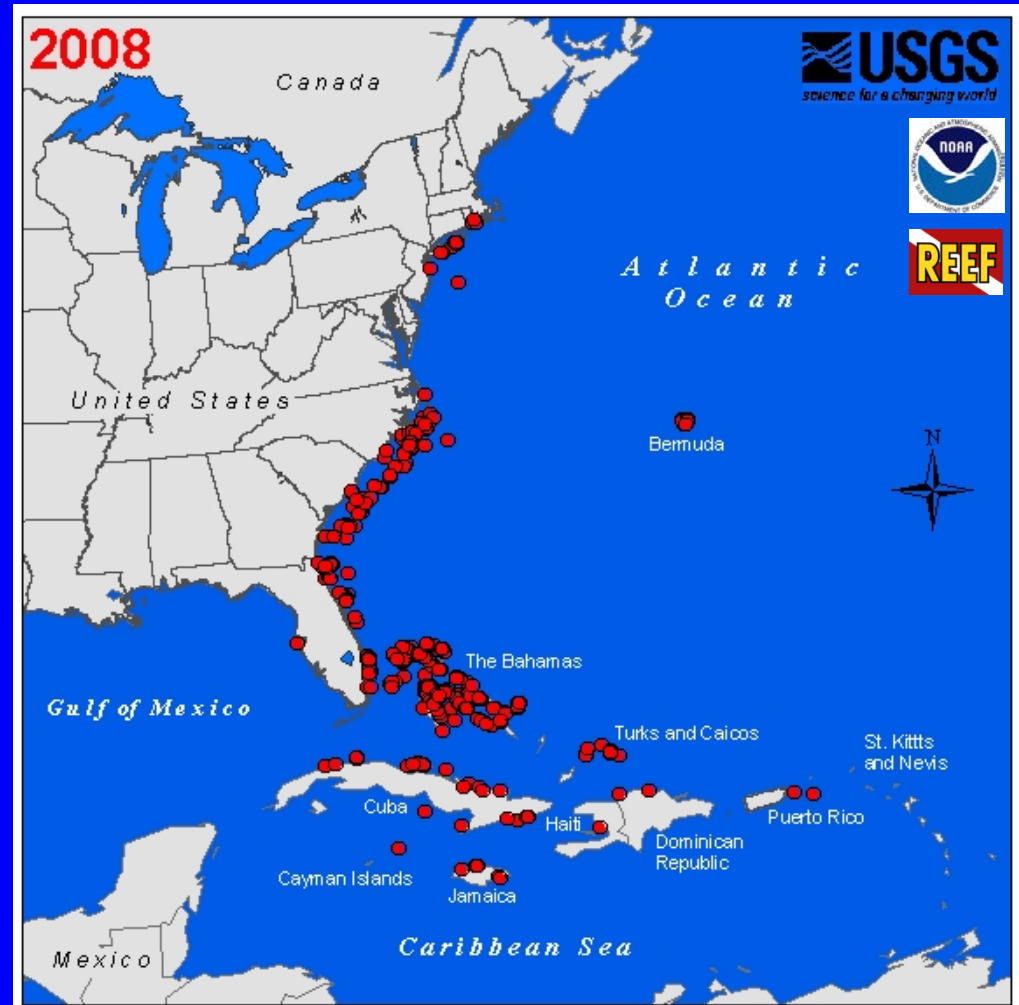


2 erroneous lionfish reports (sea lion, lizard fish)

One-minute Lionfish Update



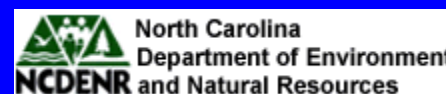
- >15 research projects underway
- >20 organizations involved
- Bio/eco research is maturing
- Large amount of outreach
- Impacts are being realized
- Magnitude of impacts TBD



Status of Asian Tiger Shrimp (*Penaeus monodon*)

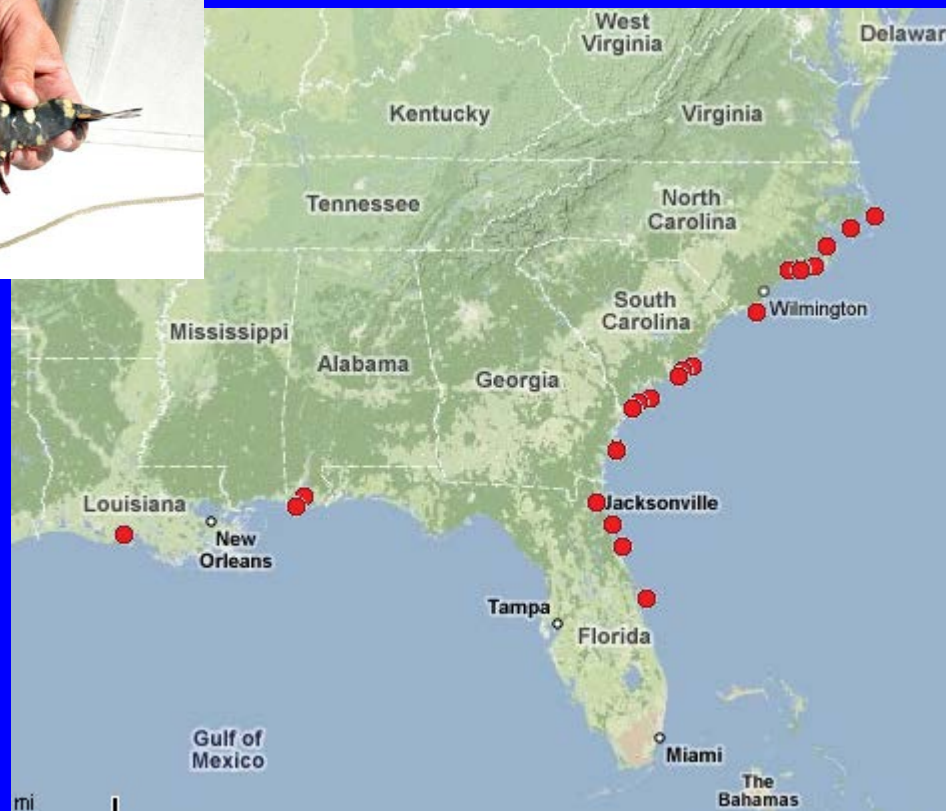


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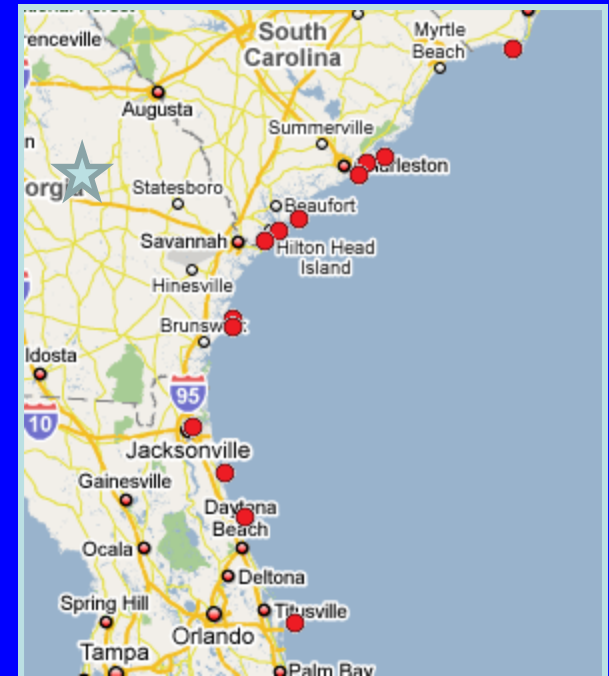


Reports to Date



History

- Releases from SC back in 1988
- Collected from SC to FL for several years
- Then disappeared



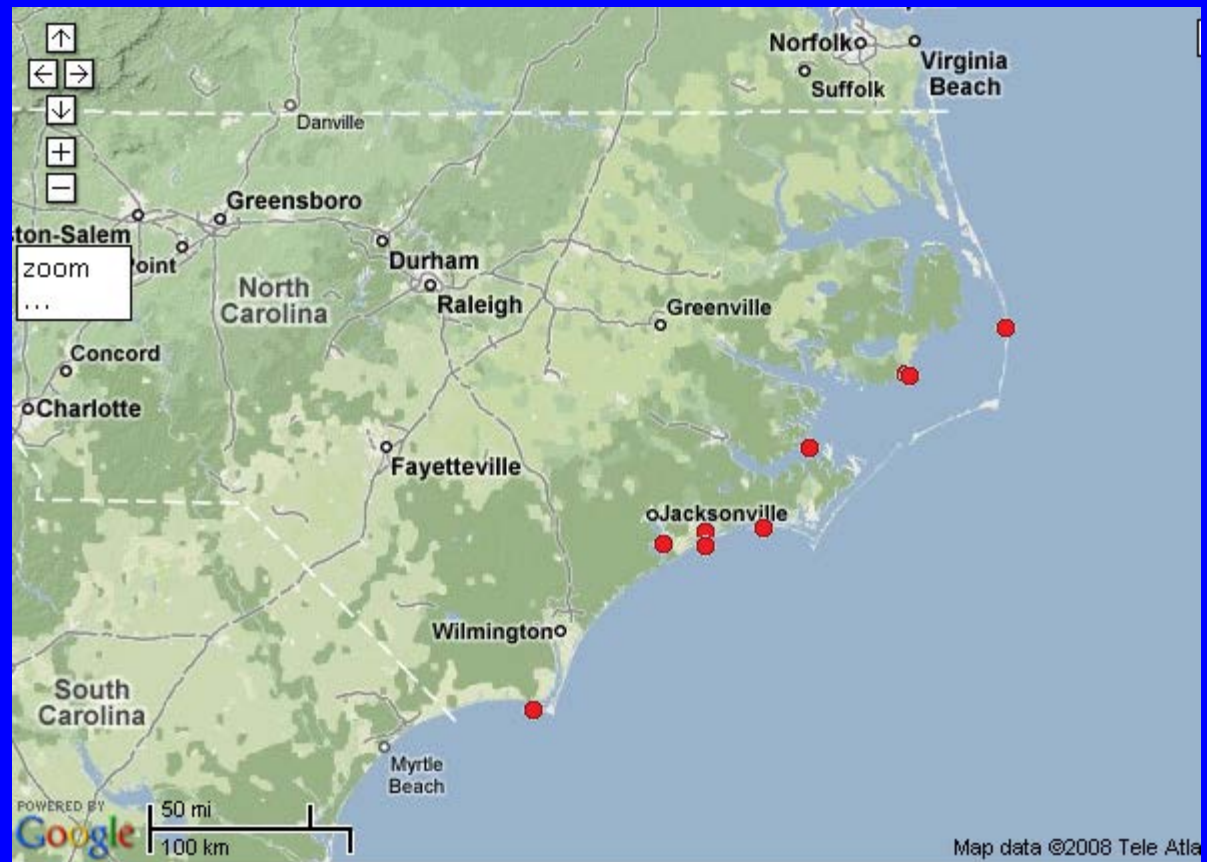
They're Back...

- 2006
 - Pamlico Sound, NC (1)
 - Mississippi Sound, Dauphin Island, AL (1)
- 2007
 - Pamlico Sound, NC (1)
 - Vermilion Bay, LA (1)
 - Fripp Island, SC (1)



2008

- AL – 1
- FL – 1
- SC – 4
- NC – 8



All specimens were found in September, October, November of this year

Source?

- United States?
 - Accidental release in SC
 - There was an escaped from a mariculture facility in Bluffton, South Carolina in 1988. Approximately 1,000 adults were later recaptured as far south as Cape Canaveral, Florida (McCann et al. 1996).
 - Not permitted in most states
- Caribbean?
 - Large amount of anecdotal evidence of shrimp farms

Questions?