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Our mission is to manage the State's marine fishery resources through research, enforcement, and education for the maximum benefit of the resources and the citizens of Alabama.

GULF & SOUTH ATLANTIC REGIONAL PANEL ON AQUATIC INVASIVE SPECIES

Alabama Marine Invasive Report

October 2019

Several invasive species have been documented in Alabama coastal waters. The Bocourt swimming crab (*Callinectes bocourti*), tessellated blenny (*Hypsoblennius invemar*), Australian spotted jellyfish (*Phyllorhiza punctata*), Asian green mussel (*Perna viridis*), Asian tiger shrimp (Penaeus monodon), and red lionfish (Pterois volitans/miles) have been documented although non-validated or undocumented reports of additional invasive species likely exist. Unfortunately, the ecological effects of these invasive species are poorly understood in Alabama's estuaries and Gulf of Mexico waters. However, interactions between indigenous species and invasive species typically results in negative impacts to the native species. Prey of Australian spotted jellyfish include early life history stages of many commercially and recreationally important finfish, and the temporal/spatial distribution of Australian spotted jellyfish could drastically increase finfish larvae/egg mortality rates if spawning events coincide with swarm activities. Similarly, the Bocourt swimming crab could compete for resources of the native blue crab. The current status of the Australian spotted jellyfish and the Bocourt swimming crab, however, does not indicate that these two invasive species pose an immanent concern. Similarly, *H. invemar* and *P. viridis* do not appear to pose an immediate threat, but their distribution and abundance should be monitored to ensure early detection of proliferation. However, the Asian tiger shrimp, *Penaeus monodon*, and red lionfish, *Pterois volitans/miles* continue to be invasives of heightened concern, and their broadened distribution, increased abundance, and/or documented negative effects on native species warrants concern.

The latest invasive observed in Alabama's marine waters was an Amazon Red Tail Catfish in July 2016. The specimen was collected in a recreational crab trap at a private dock on the Bon Secour River. Additionally, a single Bocourt Swimming Crab was collected in a commercial crab trap during a November 2016 ADCNR/MRD onboard fisheries observation trip. The exact location where the 101mm carapace width, male Bocourt Swimming Crab was caught is unknown, but the general location of capture is south of Lillian Bridge and north of Ross Point in Perdido Bay. No observations of the Bocourt Swimming Crab have been made since the first observation in 2007 until the 2016 observation.

The Asian tiger shrimp (*Penaeus monodon*) has been a species of concern since 2006 when it was first observed in Alabama's inshore waters (Mississippi Sound). After the first individual

was documented, captures of *P. monodon* have incrementally increased. A confirmed report of a single specimen caught near Middle Bay Light occurred in 2008, followed by five confirmed reports in 2009. From 2006 to 2009, the distribution of *P. monodon* was primarily restricted to Alabama's southern inshore waters. However, its distribution extended to northern Mobile Bay and into Perdido and Wolf Bays in 2011. The forty-three confirmed reports during 2011 indicate the Asian tiger shrimp occurs within all of Alabama's primary estuary basins. However, the concern for *P. monodon* has decreased within the commercial shrimping community which has resulted in fewer validated reports. Alabama Marine Resources Division received fewer validated reports in recent years than in previous years, but personnel communications between AMRD and commercial shrimpers indicate a significant abundance of *P. monodon* occur within Alabama waters despite the reduction in validated reports. Based upon the temporal and spatial abundance of *P. monodon* encounters and reported sightings (despite lower perceived importance of Asian tiger shrimp since 2013), evidence suggests the Asian tiger shrimp has become established in Alabama's waters.

Red lionfish have successfully colonized the Gulf of Mexico waters offshore of Alabama. The first report, which was unvalidated, was from a 2009 observation made by a recreational SCUBA diver at an area of natural hard-bottom about 20 nautical miles south-southeast of Orange Beach named Trysler Grounds. The first confirmed report was documented in June 2011 by a spear fisherman who collected an individual from an oil/gas platform approximately 43 miles south of Dauphin Island. Numerous unconfirmed reports of lionfish have been made to various government agencies that indicate lionfish were rather abundant on the Trysler Grounds in 2011. SCUBA divers reported observing up to 30 individuals during single dives in this area during the 2011 dive season. However, unconfirmed reports from SCUBA divers from 2012-2013 indicate lionfish abundance had increased from previous levels. A recreational diver reported observing upwards of 60 individual lionfish during a dive at Trysler during the 2012 dive season, although the observer did not know when he made the observation or even an approximate location within the Trysler Grounds reef complex. Similarly, a SCUBA diver reported observing up to 100 individual lionfish during a dive at an artificial pyramid reef during June 2012. Unfortunately, the diver would not disclose any information indicating a more precise location the observation was made other than "offshore of Alabama". Additionally, 26 lionfish were donated to AMRD after a lionfish rodeo in June and July 2012 by a local dive shop, but the rodeo coordinator did not attempt to obtain collection information about the lionfish

Alabama Marine Resources Division received a grant from Gulf States Marine Fisheries Commission (GSMFC) in December 2012 to monitor reef communities in the Gulf of Mexico, dispatch red lionfish when encountered during SCUBA surveys, increase public awareness of the lionfish invasion, and streamline the general coordination between State agencies, Federal agencies, and the public. Eighteen dive surveys were completed by AMRD personnel during 2013 and t-shirts were distributed to members of the SCUBA community that were active in submitting reports, samples, and increasing public awareness.

Additional funding was secured from GSMFC to continue the monitoring in 2014 and continue increasing public awareness. AMRD personnel conducted SCUBA surveys at 18 reef sites in 2014 and created an Adopt-a-Reef program that emphasizes the reporting and capturing of lionfish. The Adopt-a-Reef program features a web-based application that allows for the submission and viewing of reports collected by Adopt-a-Reef participants. To date, 50 members of the public are enrolled in the Adopt-a-Reef program and 57 reports have been submitted by the Program's members.

Fishery-independent monitoring of reefs offshore of Alabama report a similar pattern in the lionfish invasion. Remotely Operated Vehicle (ROV) surveys within the Alabama Offshore General Permit Reef Zone from 2011 through 2015 indicate a widespread distribution of lionfish

between 10 nm and 50 nm offshore of Alabama. No red lionfish were observed during 2011 ROV surveys, but frequency of occurrence was 100% during 2015 ROV surveys. However, lionfish were more abundant on reef sites that were a greater distance from Mobile Bay.

Beginning in 2016, spearfishing tournaments were held to specifically target red lionfish. A weekend long tournament, "Lions on the Line", was held at FloraBama during 2016 when 1,662 lionfish were harvested. A summer-long tournament, Alabama Lionfish Challenge, was held from May 26, 2018 through September 3, 2018 when the recreational division of the Alabama Lionfish Challenge harvested 540 lionfish and the commercial division harvested 278 lbs of lionfish. Tournaments were also held on in April 2019 and September 2019 when a total 2,140.9 lbs and 1,296.4 lbs, respectively, were harvested during the tournaments.

The spatial distribution of Red Lionfish has not changed after becoming established. However, the rate of population growth has changed over time. During the first several years of the invasion, population growth of Red Lionfish increased substantially from year to year. However, the rate of population growth during the previous few years has reduced such that it seems the population has plateaued to a stable state.

In conclusion, the validity of a portion of lionfish reports from the diving community have historically been questionable, and the ratio of giant tiger prawn that are rumored to have been caught to the amount of reports received by State agencies is relatively high. For example, native finfish with an intriguing appearance often seem to be confused with lionfish. Similarly, unsubstantiated rumors of shrimpers routinely catching giant tiger prawn throughout Mobile and Baldwin County exist yet relatively few are reported. Therefore, educating the public is paramount to obtaining quality information. The DCNR/MRD continues their efforts to enhance public awareness of these two invasives and waters will continue to be monitored for additional Bocourt Swimming Crabs.

Amazon red tail catfish collected in Bon Secour River in July 2016.

Bocourt Swimming Crab caught in Perdido Bay in November 2016.