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SHORT COMMUNICATION

FIRST RECORD OF A NURSE SHARK, *GINGLYMOSTOMA CIRRATUM*, WITHIN THE MISSISSIPPI SOUND

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INTRODUCTION

Among habitats within the northern Gulf of Mexico (GOM), the Mississippi Sound (hereafter Sound) is considered one of the most dynamic and biologically productive due to tidal forces and riverine inputs (Gunter 1963, Kjerfve 1986). As such, a diverse assemblage of organisms is known to inhabit the region, including 13 shark species (Christmas et al. 1973, Parsons and Hoffmayer 2007). The predominant species, Atlantic sharpnose (*Rhizoprionodon terraenovae*), blacktip (*Carcharhinus limbatus*) and finetooth (*C. isodon*) sharks, are known to occur in waters with widely ranging abiotic characteristics (Parsons and Hoffmayer 2007). Other species, including the blacknose (*C. acronotus*), tiger (*Galeocerdo cuvier*) and great hammerhead (*Sphyrna mokarran*) sharks, are associated with times of reduced riverine input and/or increased intrusion of marine water into the Sound, often associated with an incoming tide (J. Hendon, unpublished data).

Of all the coastal shark species in the northern GOM, the nurse shark, *Ginglymostoma cirratum*, is one of the few species not documented in the Sound. Unlike most coastal sharks, nurse shark distribution is confined to a relatively specific suite of abiotic characteristics. Hannan et al. (2012) demonstrated that the distribution of nurse sharks in the northern GOM is primarily limited to hard bottom habitats with relatively high temperature, salinity, dissolved oxygen, and water clarity. Herein, we provide support for the findings of Hannan et al. (2012) and report the first documented occurrence of a nurse shark in the Sound.

MATERIALS AND METHODS

Gillnet, handline, and bottom longline surveys were conducted monthly from March through October in the coastal waters of Alabama, Mississippi, and Louisiana from 1998–2012, 2004–2012 and 2007–2012, respectively (for gear configuration and deployment see: Parsons and Hoffmayer 2007 for gillnet, Ulrich et al. 2007 for handline, and Driggers et al. 2008 for longline). A bottom water sample was collected at each station, using a Van Dorn water sampler (Wildlife Supply Company) and abiotic conditions (temperature (°C), salinity, and dissolved oxygen (mg/L)) were measured using a YSI–85 (Yellow Springs Instruments Inc.) meter. Additionally, water clarity (m) was determined using a Secchi disk. Upon capture, the species and sex of each shark was determined prior to obtaining a precaudal (PCL) and stretch total length (STL) measurement to the nearest mm. Sharks were externally tagged and released at the capture site.

RESULTS AND DISCUSSION

Over the course of the survey, 345 gillnet, 396 handline, and 349 bottom longline stations were sampled within the Sound and adjacent waters (Figure 1). During these surveys, 54,700 hooks were set and 63,135 m of gillnet were deployed, resulting in the capture of 12,447 sharks. Of the sharks captured, all were species of the families Carcharhinidae and Sphyrnidae, with one exception. On 9 July 2009, a female nurse shark was caught by bottom longline in the Sound, northwest of Horn Island, Mississippi at 30°16.08'N, 88°49.20'W (Figure 1). The shark was in excellent condition and measured 1555 mm PCL and 2227 mm STL. Based on the minimum size at maturity of 2220 mm STL for female nurse sharks reported by Castro (2000), this specimen was mature or in late stages of puberty; however, no internal examination was conducted. After length measurements were obtained, the shark was externally tagged and released at the location of capture.

Water temperature, salinity, dissolved oxygen, and clarity at the capture location was 24.2°C, 36.2, 6.4 mg/L, and 3.4 m, respectively. These values were similar to what Hannan et al. (2012) found characteristic of nurse shark habitat; however, the salinity and water clarity values were atypical for the Sound and were the highest values recorded for this

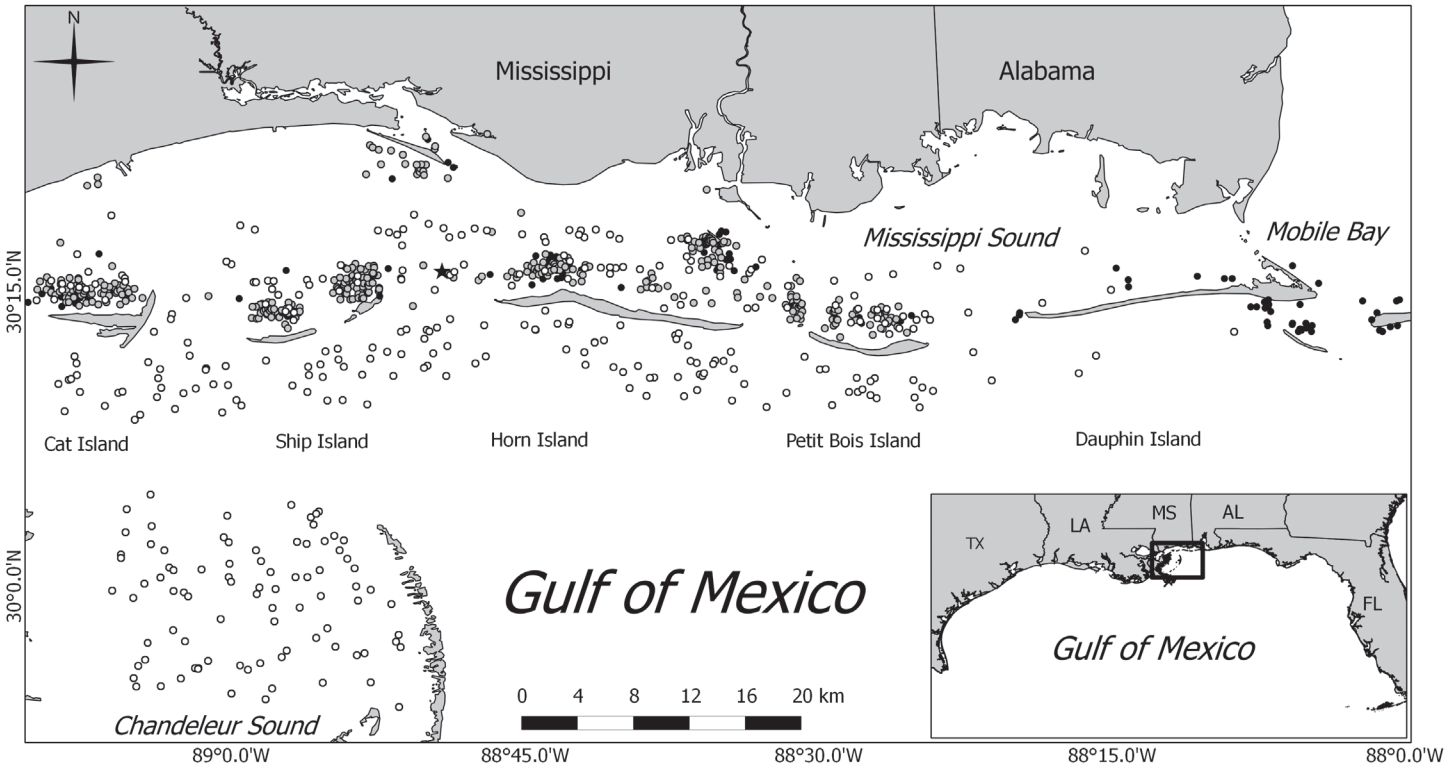

Figure 1. *Map of the shark sampling sites from 1998-2012. Gillnet (black circles, 345 sets from 1998-2012), handline (gray circles, 396 sets from 2004-2012), and bottom longline (white circles, 349 sets from 2007-2012) gear was used to capture sharks in the Mississippi Sound and adjacent waters. Handline and gillnet sets were often conducted at the same station resulting in the overlap of many symbols. Black star denotes the location where the nurse shark,* Ginglymostoma cirratum*, was captured by bottom longline.*

region throughout all survey years. During the 48 other gear deployments conducted in close proximity to the nurse shark catch site, the mean (± se) bottom salinity was 27.2 ± 0.5 (range: 16.9 – 32.9) and water clarity was 1.4 ± 0.1 m (range: 0.07 – 2.4 m). As the capture location was just north of the pass between Horn and East Ship Islands, the atypical abiotic conditions were most likely related to an offshore water mass entering the Sound.

Hannan et al. (2012) reported that the majority of nurse sharks in the northern GOM occur east of Mobile Bay, Alabama (~88° west longitude) and suggested that the low occurrence to the west results from the relatively limited amount of hard bottom habitat such as gravel, rock and sand. In the Sound, mud is the dominant sediment type; however, water entering and leaving the Sound must move between the barrier islands which accentuates tidal velocities and leaves sand as the predominant substrate in these passes (Otvos 1973). The atypical water mass and the patch of sand bottom most likely attracted the nurse shark to enter the Sound. Thus, it is possible that nurse sharks occur more frequently in association with other patchy hard bottom habitats off the coasts of Alabama, Louisiana and Mississippi than is currently known.

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