Recent Observations of the Whale Shark (*Rhincodon typus*) in the Northcentral Gulf of Mexico

Eric R. Hoffmayer  
*University of Southern Mississippi*

James S. Franks  
*University of Southern Mississippi*, jim.franks@usm.edu

John P. Shelley  
*University of Southern Mississippi*

Follow this and additional works at: https://aquila.usm.edu/gcr

Part of the Marine Biology Commons

**Recommended Citation**

Retrieved from https://aquila.usm.edu/gcr/vol17/iss1/11  
DOI: https://doi.org/10.18785/gcr.1701.11

This Short Communication is brought to you for free and open access by The Aquila Digital Community. It has been accepted for inclusion in Gulf and Caribbean Research by an authorized editor of The Aquila Digital Community. For more information, please contact aquilastaff@usm.edu.
RECENT OBSERVATIONS OF THE WHALE SHARK (*RHINCODON TYPUS*) IN THE NORTHCENTRAL GULF OF MEXICO

Eric R. Hoffmayer1, James S. Franks1, and John P. Shelley2

1Center for Fisheries Research and Development, Gulf Coast Research Laboratory, and the 2Department of Coastal Sciences, The University of Southern Mississippi, 703 East Beach Drive, Ocean Springs, Mississippi 39564 USA, E-mail eric.hoffmayer@usm.edu

INTRODUCTION

The whale shark (*Rhincodon typus* Smith, 1828) is the world’s largest fish, reaching 15 meters (m) and 18 metric tons (Colman 1997) and is found in all tropical and warm temperate seas (Compagno 2001). The whale shark is listed as ‘vulnerable’ by the International Union for the Conservation of Nature and Natural Resources (IUCN 2004) and is included in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES 2004). Little is known about whale sharks in the Gulf of Mexico (Gulf). Only reports on the occurrence of whale sharks off Texas (Baughman 1950, Baughman and Springer 1950, and Hoffman 1981) and accounts of the occurrence and feeding in the northcentral Gulf (Gudger 1939, Springer 1957) are available. Due to the lack of information on whale sharks in the Gulf, we developed a survey (http://www.usm.edu/gcrl/whale-shark_survey) to compile records of recent sightings and associated observations that are summarized here.

MATERIALS AND METHODS

Details of whale shark sightings were obtained from recreational fishers, charter fishing operators, and divers by personal interview or the internet survey. Information requested from individuals who sighted whale sharks included date, location (e.g., GPS coordinates, direction and distance from a coastal landmark, or identifier number of specific offshore petroleum platforms), estimated total length (TL, ft), number of individuals, behavior (e.g., swimming, feeding), and associated fishes. Sightings greater than two years old were not included in the database unless sufficient documentation (e.g., log entry) of their validity was provided.

RESULTS

Interviews provided information for 26 sightings involving 46 whale sharks between July 2002 and November 2004. Additionally, four large aggregations (30–100 individuals) of whale sharks were also reported; however, information reported for the aggregations was scant and not included in the data analysis. Nineteen sightings were of individual whale sharks, with seven sightings consisting of two to seven sharks. The seasonal distribution and the number of whale sharks are shown in Figure 1. Sightings occurred in waters with depths from 20 to 1,000 m. Most whale sharks (80%) were observed swimming horizontally near the surface of the water, while the others were observed in vertical profile, apparently suction-feeding on small prey.

DISCUSSION

The information reported here represents recent accounts of whale shark sightings in the northcentral Gulf. These data plus unpublished accounts (K. Mullins, NOAA Fisheries, Pascagoula Facility, per. comm.) suggest that whale sharks occur frequently in the northern Gulf during warmer months, entering the northcentral Gulf from the west or southwest in the late spring/early summer. They appear to move northeastward during the fall, and are perhaps absent during the winter. These apparent seasonal patterns are based only on surface observations. We assume there is no seasonal variability in vertical position of this species within the Gulf and thus no bias in these observations. Although whale sharks are considered to be
highly migratory throughout much of their range (Eckert and Stewart 2001), available data provide no insight into whether whale sharks in the northern Gulf are transient or comprise a resident population.

Aggregations of whale sharks (up to 30 individuals) were previously reported in the northern Gulf (Gudger 1939; W. Driggers, NOAA Fisheries, Pascagoula Facility, per. comm.). The significance of whale shark aggregations is unknown, but Colman (1997) reported that aggregations may occur in areas with dense prey. The four large aggregations as well as the majority of other sightings reported here occurred at or near petroleum platforms, which function as fish aggregating devices (Franks 2000). However, the predominance of sightings at petroleum platforms is likely attributable to the use of platforms as preferred recreational fishing destinations. Whale sharks themselves attract other fishes (Gudger 1941, Baughman and Springer 1950, Hoffman et al. 1981, Clark and Nelson 1997), and we report the highest diversity of pelagic fishes documented in association with whale sharks.

Although most whale sharks in this study were observed swimming horizontally, it was not always evident that they were feeding. However, 20% of the whale sharks were observed suction-feeding while in vertical profile, similar to reports by Gudger (1941), Springer (1957) and Hoffman et al. (1981). Springer (1957) reported five whale sharks feeding vertically on small fishes in a school of blackfin tuna in the northcentral Gulf. Running-ripe male and female blackfin tunas caught during the author’s 2002 whale shark encounter regurgitated small clupeids on deck. However, we could not determine if the whale sharks were feeding on clupeids or the spawn of the tuna. Colman (1997) suggested that whale sharks and associated fishes may feed on the same prey, and Heyman et al. (2001) reported whale sharks feeding on snapper spawn, suggesting that this feeding behavior may also be occurring here.

Seasonal distribution of whale sharks in the northcentral Gulf may be influenced by hydrologic/oceanographic features (e.g., Loop Current, Mississippi River plume, convergent zones, upwellings, temperature discontinuities).
Such features provide optimal conditions for the production of plankton (Govoni et al. 1989, Richards et al. 1993), a food source of whale sharks (Colman 1997). These features also aggregate primary consumers such as crustaceans, small fishes, and jellyfish which are also known prey of whale sharks (Gudger 1941, Colman 1997, Heyman et al. 2001), thereby creating spatially discrete feeding areas. Finally, Wilson et al. (2001) noted that whale sharks may time their seasonal movements to coincide with localized productivity events or behavioral changes in their prey.

The individuals reported here ranged from 3.7 to 10.7 m TL and 56% appear to be immature as Joung et al. (1996), Beckley et al. (1997) and Wintner (2000) reported that maturity occurs at 9.0 m TL and 10.5 m TL for males and females, respectively. These data, along with Baughman’s (1955) reported collection of an aborted whale shark egg case off Texas, imply that the Gulf may be a whale shark nursery area, as was suggested by Gudger (1939).

Limited data are available on life history, movement, and habitat requirements of whale sharks in the northcentral Gulf. Furthermore, their designation as “vulnerable” by IUCN and their listing by CITES demonstrate the need for greater understanding of this species throughout its range. Hoffmayer et al. (in press) proposed a plan of research, which includes population surveys, biological assessments, and habitat use evaluation to advance the scientific understanding of whale sharks in the Gulf for the development of future management plans and protection measures for the species.

ACKNOWLEDGMENTS

We extend our appreciation to numerous recreational fishers for their reports of whale shark sightings. Keith Mullen and W. Diggers (NOAA Fisheries, Mississippi Laboratories, Pascagoula Facility) and S. Schindler shared information on whale shark sightings in the Gulf. Kelly Lucas, A. Criss, K. Shultz, and M. Partyka assisted with development of the distribution map and T. Flowers provided the image of the whale shark in Figure 3. We acknowledge our colleagues with the offshore Sargassum Project and the crew of the RV Tommy Monroe. This work was supported in part by the Mississippi Department of Marine Resources, Mississippi Gulf Coast Billfish Classic, and Release Marine.


**LITERATURE CITED**


