

Gulf of Mexico Science

Volume 29
Number 1 *Number 1*

Article 6

2011

Recent Sightings of the North Atlantic Right Whale in the Gulf of Mexico

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DOI: 10.18785/goms.2901.06

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Recommended Citation

Ward-Geiger, L. I., A. R. Knowlton, A. F. Amos, T. D. Pitchford, B. Mase-Guthrie and B. J. Zoodsma. 2011. Recent Sightings of the North Atlantic Right Whale in the Gulf of Mexico. *Gulf of Mexico Science* 29 (1). Retrieved from <https://aquila.usm.edu/goms/vol29/iss1/6>

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SHORT PAPERS AND NOTES

Gulf of Mexico Science, 2011(1), pp. 74–78
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RECENT SIGHTINGS OF THE NORTH ATLANTIC RIGHT WHALE IN THE GULF OF MEXICO.—In the Gulf of Mexico, North Atlantic right whales (*Eubalaena glacialis*) were observed off the coast of northwestern Florida in March and April 2004; in and near Corpus Christi Bay, TX, in Jan. and Feb. 2006; and off the coast of west-central Florida in Feb. 2006 (Fig. 1). These sightings are the westernmost observations of this species, which is listed as endangered under the U.S. Endangered Species Act; they extend from March to mid-April the documented temporal range of previous Gulf sightings, which are rare; and they provide further insight into cow-calf pair movements.

Waters off the southeastern U.S. Atlantic coast are the principal calving area for the North Atlantic right whale, although there is some limited evidence of calving in northern waters (Patrician et al., 2009). Federally designated U.S. critical habitat (59 FR 28793, 3 June 1994) in the southeastern United States includes waters between 31°15'N and 30°15'N from the coast eastward 15 nautical miles (27.8 km), and between 30°15'N and 28°00'N from the coast eastward 5 nautical miles (9.3 km) (Fig. 1). Typically, a portion of the North Atlantic right whale population travels from summer-fall feeding grounds off the northeastern United States and Canada to the southeastern calving area arriving in Nov.–Dec. Historically, most documented sightings in the southeastern waters have been of adult females and cow-calf pairs (Kenney et al., 2001), and recently other animals have been notably observed. In March–April they leave the southeastern area to travel to northern feeding habitats.

Ship strikes are a major cause of nonnatural right whale mortality and serious injury. Measures taken in the southeastern United States to protect right whales in the calving area include intensive and systematic aerial surveys conducted during peak calving season (Dec.–March). Sightings from these “early warning system” (EWS) surveys and other observations are communicated to mariners through coordinated efforts by the National Oceanic and Atmospheric Administration (NOAA) Fisheries, the U.S. Navy, the U.S. Coast Guard, and other agencies. This EWS surveying and communication network provides mariners with near-real-time information on

locations of observed right whales with the goal of reducing the number of whales injured or killed by ship strikes.

There are few published records of right whale sightings in the Gulf of Mexico. In a review of whaling grounds, Clark (1887) reported that the winter distribution of right whales included the Gulf of Mexico and the Caribbean Sea, although it is doubtful that these regions were important in the whaling of the species (Würsig et al., 2000; Reeves, 2005). Reeves and Mitchell (1986) found no evidence of right whales being taken in these regions in a review of American pelagic whaling. In the 20th century, records of right whales in the Gulf of Mexico include the 10 March 1963 report of two apparent adults seen near Sarasota, FL (Moore and Clark, 1963) and the Jan. 1972 report of the carcass of a ship-struck calf in Freeport, TX (Schmidly et al., 1972; Knowlton and Kraus, 2001).

We present two recent cases of right whale sightings in the Gulf of Mexico. Interestingly, both cases were cows with their first documented calf. Researchers identified the individual right whales sighted in the Gulf of Mexico by comparing photographs taken at the time of the sighting to those in the right whale catalog maintained at the New England Aquarium in Boston, MA. All photographs taken of right whales in the North Atlantic are provided to the aquarium for analysis and possible inclusion in the catalog (Hamilton and Martin, 1999). Individual right whales can be distinguished by the unique callosity patterns on their heads (Kraus et al., 1986). In Case 1 we describe the 2004 sightings of a cow-calf pair reported by Kenney (2007) and supplement the account with additional details and sea-surface temperature (SST) at the locations where the whales were sighted. Case 2 includes sighting information of a cow-calf pair reported in 2006 and is the westernmost observation of North Atlantic right whales in the Gulf of Mexico.

Case 1.—Kenney (2007) briefly chronicled this 2004 account of a cow-calf pair sighted off Miami, FL, and in the Gulf of Mexico. Through the EWS communication network a cow-calf pair was reported off Miami, FL, on 30 Jan. 2004 (approximately 150 nautical miles south of the designated critical habitat). The report was quickly acted upon by NOAA Fisheries Service personnel, who photographed the pair later that day (Table 1). This sighting was especially important because the

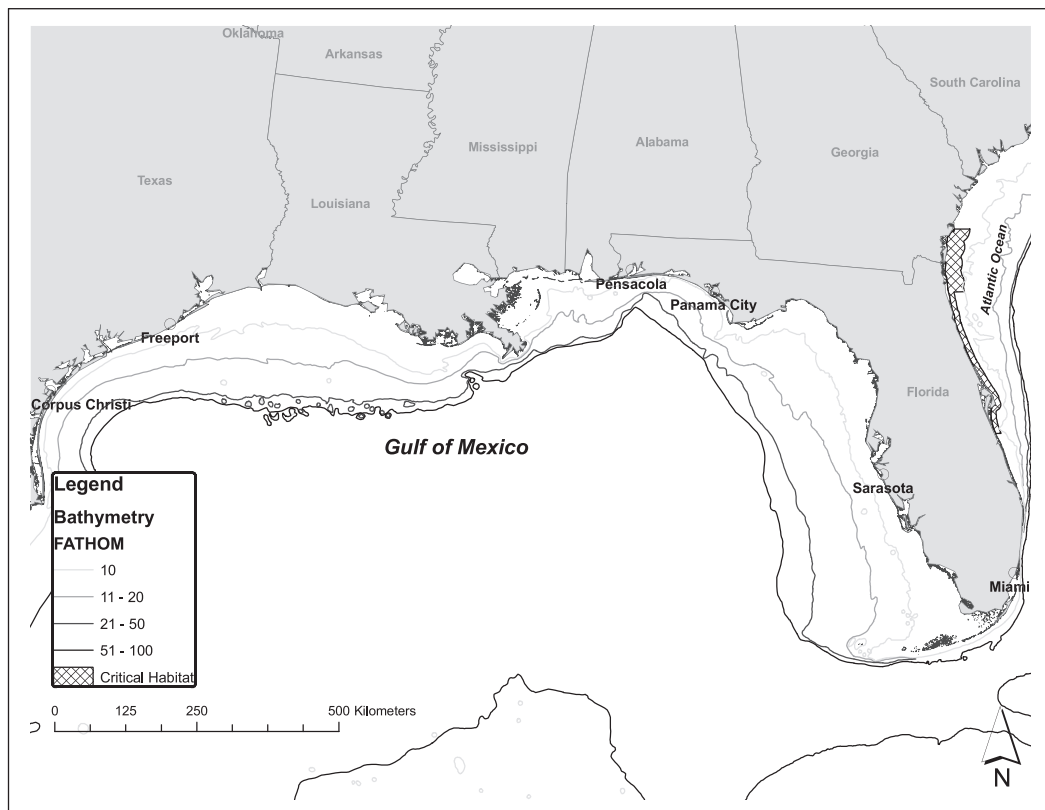


Fig. 1. Map of designated North Atlantic right whale critical habitat in the southeastern United States and city locations near coastal sightings of North Atlantic right whales within the Gulf of Mexico and off the coast of southern Florida.

whales were near a shipping channel that was south of the EWS survey area. The whales' location was broadcast to mariners. This sighting took on even greater significance when the same pair was seen in the Gulf of Mexico off northwestern Florida in March and April 2004. On 14 March 2004, a citizen photographed and reported the location of large whales off Panama City Beach, FL (Table 1). The photographs helped confirm the sighting as a North Atlantic right whale cow-calf pair. Sightings of large whales were also reported by citizens on 28 March 2004 and 1 April 2004, near Pensacola Bay, FL; however, the species was not identified in either instance. On 8 April 2004, a citizen photographed a right whale cow-calf pair between Pensacola and Panama City ($30^{\circ}18.3'N$, $86^{\circ}37.1'W$, Fig. 1). The photographs were confirmed to be of right whales, although only the calf was photographed at the water's surface. On 9 April 2004, a citizen photographed a right whale pair approximately 1.5 miles (2.4 km) off Panama City Beach. The New England Aquarium staff determined that all these photo-documented sightings were of the

same pair. The identity of this mother was confirmed as North Atlantic Right Whale (NARW) 2360, a female of unknown age first seen in 1993, and this was her first documented calf. On 31 May 2004, this cow-calf pair was photographed by the New England Aquarium in the Great South Channel off Cape Cod, MA, indicating that the pair had successfully migrated to northern feeding grounds.

Case 2.—On 16 Jan. 2006, a cow-calf pair was photographed in Corpus Christi Bay, TX, by members of the Texas Marine Mammal Stranding Network following a report from a commercial mariner. The stranding personnel located the whales near the Port of Corpus Christi ($27^{\circ}48.7'N$, $97^{\circ}18.04'W$) at approximately 1112 hr Central Standard Time (CST). Dorsal wounds were observed on the calf. The U.S. Coast Guard was notified, and a broadcast notice to mariners was issued, as was a NOAA weather radio alert notifying mariners of the presence of the pair. The whales traveled approximately 7.5 miles (12 km) in 5.5 hours and were headed toward

TABLE 1. Sightings of North Atlantic right whales reported in the 2004 and 2006 winter/spring seasons off the coast of southern Florida and in the Gulf of Mexico. Satellite imagery was used to determine sea-surface temperature (SST) for each sighting. Location coordinates are included when known.

Date	Time	Source	Photo-documentation	SST (°C)	Sighting description
30 Jan. 2004	0930 EST ^a	FWC ^a received call from citizen	N	22.2	Cow and calf sighted ~1.24 miles (2 km) off Miami Beach heading SE
30 Jan. 2004	1320 EST ^a	NOAA ^a Fisheries Service	Y	22.2	Whales sighted ~2.5 miles (4.02 km) offshore, just south of Port of Miami
14 March 2004		Citizen report	Y	17.2	Shell Island, Panama City Beach, FL; individual identification not possible
28 March 2004		NOAA ^a received call	N	18.2	25-ft (7.62-m) whale near mouth of Choctawhatchee Bay, FL
1 April 2004		News report	N	18.6	Two large whales near bridge in Pensacola Bay, FL; Navy conducted overflight but could not verify sighting
2 April 2004		Citizen report to NOAA ^a	N	18.4	Two whales spotted 5 miles (8.05 km) off Panama City, FL
8 April 2004	~1400 EST ^a	Citizen report	Y	18.4	30°18.3'N, 86°37.1'W, off Fort Walton Beach, FL; calf clearly observed; second whale was beneath surface
9 April 2004		Citizen report	Y	19.8	1.5 miles (2.4 km) off Panama City Beach, FL
16 Jan. 2006	1112 CST ^a	Commercial mariner reports to Texas Marine Mammal Stranding Network	Y	18.2	27°48.7'N, 97°18.04'W, Corpus Christi, TX
4 Feb. 2006	1930 CST ^a	Captain of fishing boat	Y	17	Gulf, near entrance to Corpus Christi Bay, TX
27 Feb. 2006	1023 EST ^a	U.S. Coast Guard	Y	17.8	27°26.2'N, 82°43.3'W, Longboat Key/Sarasota, FL
27 Feb. 2006	1620 EST ^a	NOAA ^a Fisheries Service/FWC ^a	Y	18	27°14'N, 82°36.2'W, heading south

^a EST, Eastern Standard Time; FWC, Florida Fish and Wildlife Conservation Commission; NOAA, National Oceanic and Atmospheric Administration; CST, Central Standard Time.

the Aransas Pass Shipping Channel, the only ingress and egress to the bay, when last seen that day. The cow was identified as NARW 2503, an 11-yr-old female; this was her first documented calf.

On 4 Feb. 2006, at 1930 hr CST, a whale was observed from a recreational deep-sea-fishing boat returning to port in the Gulf of Mexico near the Aransas Pass Shipping Channel. Photographs and video were taken by passengers. The whale was determined to be NARW 2503's calf, based on examination by the Texas Marine Mammal Stranding Network of the video images.

On 27 Feb. 2006, the NOAA Fisheries Service received a report from the U.S. Coast Guard of two whales approximately 4 miles (6.5 km) from

Longboat Key, near Sarasota, FL (27°26.2'N, 82°43.3'W). The NOAA Fisheries Service and the Florida Fish and Wildlife Conservation Commission responded to the report and photographed a right whale cow-calf pair. The whales were traveling within a few meters of each other and moving southward at approximately 2 knots (3.7 km/h). This pair was confirmed to be NARW 2503 and her calf. The calf's dorsal wounds appeared to be healing. NARW 2503 and her calf (eventually assigned NARW 3620) were next observed in the Bay of Fundy, a known summer feeding ground, on 7 Sept. 2006, and the calf's injuries had healed (New England Aquarium, unpubl. data).

Sea-surface temperatures at right whale locations.—Advanced very high resolution radiometer imagery was used to determine the SST at the locations where the whales were sighted (Table 1). Whales sighted in the Gulf of Mexico were in waters ranging in temperature from 17°C to 19.8°C; whales sighted off Miami were in waters of 22.2°C.

Discussion.—Rare sightings of North Pacific and North Atlantic right whales have been documented (Rowntree et al., 1980; Knowlton et al., 1992; Salden and Mickelsen, 1999; Jacobsen et al., 2004; Patrician et al., 2009) and are of interest because they represent individuals of species that are in significant danger of extinction (Fujiwara and Caswell, 2001; Wade et al., 2011). The Gulf sightings may represent movements of a few stragglers (Rowntree et al., 1980), suggesting the occasional wandering of an individual; it also could be a relict behavior, perhaps indicative of a historic range.

Given the infrequency of right whale sightings in the Gulf, it is of interest that within a 2-yr period two cow-calf pairs were observed there. It is also noteworthy that this was each cow's first known calf. The unprecedented spatial and temporal extent of these Gulf sightings was perhaps due to increased awareness resulting from the monitoring program and the extensive communication network in the southeastern United States. In proximity to shore and associated SSTs, the locations of these sightings are comparable to winter calving habitat in the Atlantic. Keller et al. (2006) found that right whales in their calving area off Georgia and northeastern Florida were sighted within a range of SST values from 8°C to 22°C (mean = 14.3°C). Within the southernmost Florida survey zone reported by Keller et al. (2006), the mean whale-sighting SST plus two standard deviations was approximately 20°C. Keller et al. (2006) hypothesized that the warm Gulf Stream waters, which on the Florida east coast come closest near Miami, represent a thermal limit for right whales. Of the SST values we report for the recent sightings, SST was greatest for the sightings off Miami (22.2°C) and was cooler for the Gulf sightings (range: 17°C–19.8°C).

Detailed travel paths of right whales into and among regions of the Gulf have not been documented. The eastern Gulf is largely dominated by the Loop Current, flowing clockwise and exiting the Gulf via the Straits of Florida (Nowlin, 1972), where it becomes the Gulf Stream as it enters the South Atlantic Bight (Fiechter and Mooers, 2003). The continental shelf is wide in the northern Gulf, and surface temperatures are

lower than those of the warm water from the Caribbean in the southeast Gulf (Nowlin, 1972). The passing of fronts across the continent and significant river discharges into the northern Gulf, which are at their maximum in the spring, influence the cooling of these shelf waters in winter. The observed right whales may have traveled through the warm waters near the Straits of Florida until they entered waters with relatively cooler temperatures compared with the Gulf Stream and Loop Current. Additional environmental signatures along the continental shelf, such as bathymetry, may help maintain proximity between a cow and her calf (Taber and Thomas, 1982) or be of other ecological importance (Fonnesbeck et al., 2008). Feeding behavior has rarely, if ever, been observed in the calving grounds (Kenney et al., 1986) and was not observed in these recent Gulf of Mexico sightings.

Rare detections provide insights into the range and behavior of the species and may have implications for management strategies in regions lacking mitigation of threats to right whales. Passive acoustic detection (Moore et al., 2006; Wade et al., 2011) could improve understanding of the extent of right whale occurrence south of their traditional calving area off Florida's Atlantic coast and in the coastal Gulf of Mexico. However, until the rate of mother-calf vocalizations in the calving ground is better understood, it will not be possible to predict the value passive acoustics might have in monitoring the occurrence of right whales. Yet such a technique would be useful for managers who must decide whether to expand into the Gulf right whale protection efforts aimed at improving mariner awareness (NMFS, 2005; Ward-Geiger et al., 2005).

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