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## SIGHTINGS OF THE CLYMENE DOLPHIN (*STENELLA CLYMENE*) IN THE GULF OF MEXICO

Although described by Gray in 1846, the Clymene dolphin (*Stenella clymene*) has been widely recognized as a valid species only since 1981 (Perrin *et al.* 1981). It is endemic to the tropical and warm-temperate Atlantic Ocean. Records extend from the eastern United States (including the Gulf of Mexico), south to Brazil, and across the Atlantic to West Africa (Perrin *et al.* 1981, Perrin and Mead 1994). Observations and descriptions of oceanic tropical dolphins of the genera *Stenella* and *Delphinus* in this region prior to 1981 (*e.g.*, Caldwell 1955, Lowery 1974, Fritts and Reynolds 1981) may be unreliable because the lack of recognized species status for *S. clymene* may have led to misidentifications. Because of its limited distribution, mostly in regions that have not been extensively surveyed, and the confusion over its identity, reports of Clymene dolphin sightings are still rare. We present here data from Clymene dolphin sightings during ship surveys for cetaceans in the northern Gulf of Mexico, including information on location, water depth, surface temperature, herd size, sound production, and behavior. These are the first records of Clymene dolphin sightings from the Gulf of Mexico. Previous records from the Gulf of Mexico consisted of 16 stranding events in Florida, Louisiana, and Texas (Caldwell and Caldwell 1975, Schmidly *et al.* 1972, Perrin *et al.* 1981, Harris 1986, Jefferson and Odell 1993). Clymene dolphins were found to represent a significant component of the cetacean fauna of the northern Gulf of Mexico.

The first cetacean ship surveys of the oceanic Gulf of Mexico were conducted by the Southeast Fisheries Science Center (SEFSC) and Texas A&M University (TAMU) between 1990 and 1993. Surveys were conducted from the NOAA Ship *Oregon II* during May 1990, April–May 1991, April–June 1992, January–February 1993, and May–June 1993 and averaged 30 days each; and from the R/V *Longhorn* and the R/V *Pelican* during April, August, and November 1992; February, May–June, and August–September 1993 and averaged 12 days each. The 1992 and 1993 surveys were part of a joint effort by the SEFSC

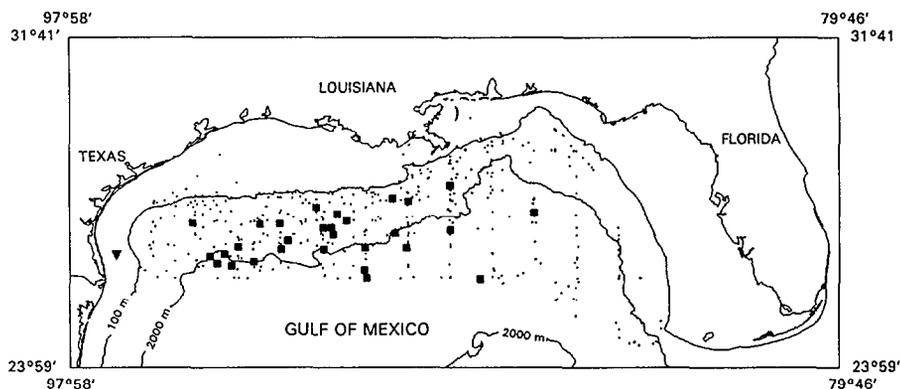


Figure 1. Distribution of Clymene dolphin sightings (■) in the Gulf of Mexico (▼—sighting by W. L. Perryman) during marine mammal surveys, 1990–1993 (•—8:00, 12:00 and 16:00 hour locations of the research vessels).

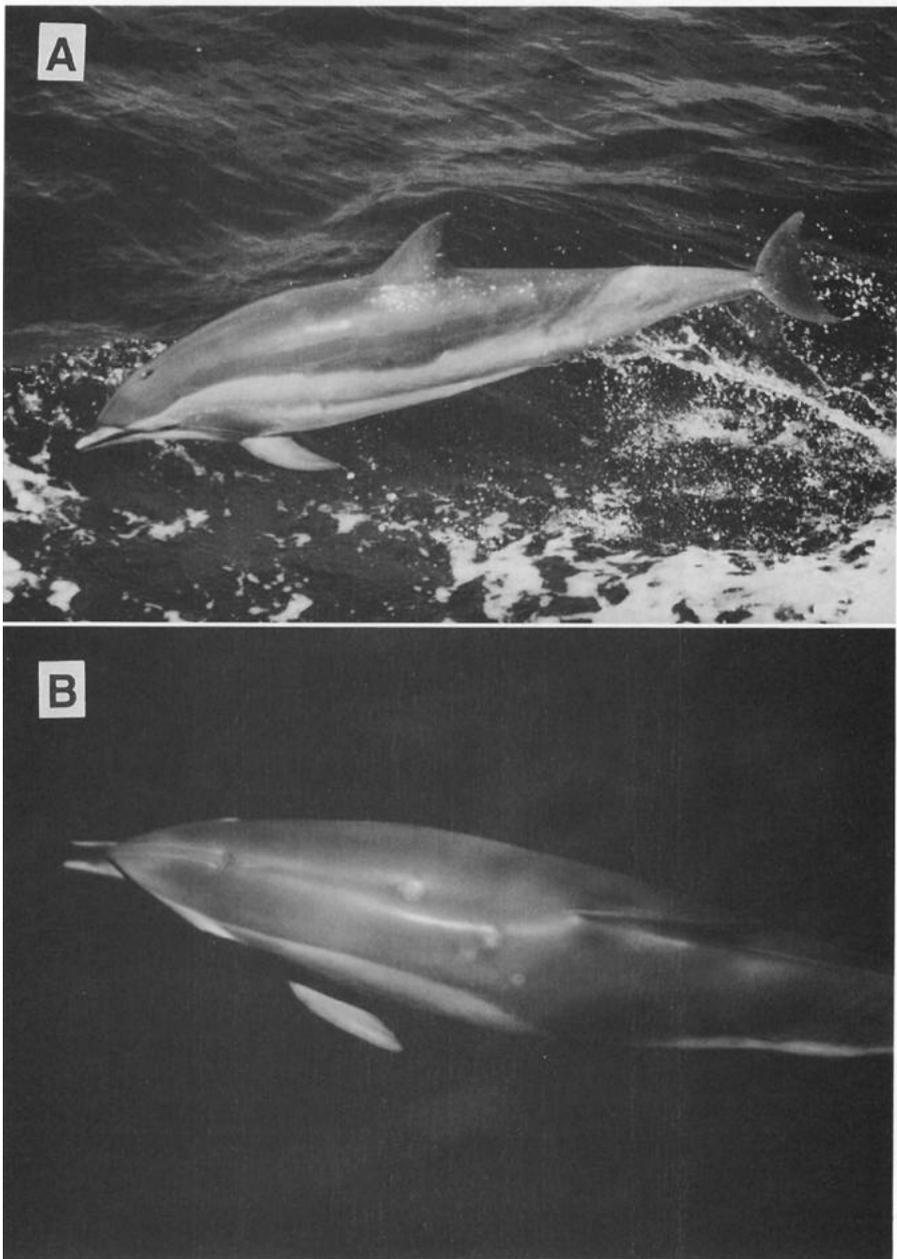
potentially threatened by oil and gas development in the U.S. Gulf of Mexico. The survey area was Gulf of Mexico waters inside the U.S. exclusive economic zone between 84° and 96°W longitude in water depths greater than 100 m (Fig. 1).

Line transect sampling methods developed for surveys of oceanic cetaceans from ship platforms were used (see Holt and Sexton 1989). Transect lines totaling 22,583 km and 5,248 km were searched by the SEFSC and TAMU, respectively. Sightings were made using two 25 × 150 binoculars mounted 7.7–10.3 m above the water. Surveys were conducted during daylight hours, with two rotating teams of three observers. When cetaceans were sighted, the ship was generally diverted from the transect line to approach the herd. As the ship approached, dolphins would usually come to the ship to bow-ride; this behavior facilitated identification and observation.

Identification of Clymene dolphins was based on the following criteria: a tripartite color pattern with a dark gray cape that dips above the eye and below the dorsal fin, a light gray lateral field, and a white ventral field; a body size and shape that is noticeably chunkier than that of the spinner dolphin (*S. longirostris*) and appears to be similar to that of the striped dolphin (*S. coeruleoalba*); and a shorter rostrum than the spinner dolphin, with a distinct black dorso-mesial line and, in most cases, a distinctive and characteristic black “moustache” on the dorsal surface (Fig. 2).

Twenty-nine Clymene dolphin herds were sighted during the surveys (Table 1, Fig. 1). At sighting locations, sea surface temperatures (SST) ranged from 22.8° to 29.1°C ( $\bar{x}$  = 25.6, SE = 0.241), and water depths ranged from 704 to 3,064 m ( $\bar{x}$  = 1,672.8, SE = 123.68). Estimated herd sizes ranged from 2 to 100 animals ( $\bar{x}$  = 41.6, SE = 5.14). Calves were observed in 45% of the herds.

Clymene dolphin herds represented 3.9% of the identified herds (20 species



*Figure 2.* Two views of Clymene dolphins from the Gulf of Mexico showing: (A) cape pattern and dark lateral band; (B) short beak and rostral pigment pattern and “cookie cutter” shark scars on dorsum anterior to the dorsal fin. (Photographs: SEFSC Marine Mammal Program.)

Table 1. Summary of Clymene dolphin sightings in the Gulf of Mexico.

Date	Herd size	Depth (m)	Sea surface temp. (°C)	Latitude	Longitude
18 May 90	16	2,195	26.3	27°01.80'N	90°18.20'W
19 May 90	8	2,286	26.2	26°08.30'N	90°59.50'W
22 Apr 91	38	3,064	24.7	27°32.10'N	87°00.20'W
26 Apr 91	20	1,756	24.9	26°37.10'N	91°59.20'W
12 May 91	51	805	26.1	27°52.10'N	90°22.20'W
20 May 91	39	704	25.5	27°34.10'N	91°59.20'W
25 Apr 92	40	1,018	24.5	27°22.00'N	92°10.00'W
13 May 92	82	3,009	25.4	25°58.65'N	88°17.53'W
18 May 92	64	2,195	25.0	26°12.34'N	91°01.13'W
20 May 92	30	1,097	24.8	27°18.66'N	93°01.28'W
1 Jun 92	43	933	26.3	27°17.09'N	93°30.77'W
5 Jun 92	28	2,652	26.6	26°43.84'N	90°02.26'W
5 Jun 92	27	732	28.0	27°49.50'N	89°59.84'W
28 Jan 93	8	1,244	22.8	28°09.10'N	88°59.90'W
10 Feb 93	5	1,143	23.3	27°16.05'N	95°04.25'W
5 May 93	2	1,646	23.9	26°33.18'N	94°16.57'W
8 May 93	12	1,646	23.5	26°24.53'N	93°38.85'W
10 May 93	40	1,481	26.1	27°06.66'N	91°50.19'W
10 May 93	50	1,408	25.9	27°11.69'N	91°47.63'W
10 May 93	75	1,326	25.8	27°16.82'N	91°44.09'W
25 May 93	80	2,177	25.9	27°06.72'N	88°58.05'W
27 May 93	100	1,902	25.3	26°40.81'N	91°00.16'W
30 May 93	30	1,143	26.4	26°49.24'N	93°58.66'W
30 May 93	39	973	25.7	27°28.00'N	92°10.00'W
31 May 93	48	1,423	26.1	26°52.14'N	92°49.96'W
2 Jun 93	47	2,481	25.7	26°17.23'N	94°23.79'W
2 Jun 93	10	2,245	25.7	26°16.68'N	94°38.85'W
5 Jun 93	90	1,866	26.7	26°21.45'N	93°00.12'W
5 Sep 93	85	1,962	29.1	26°17.27'N	94°12.39'W

were identified). However, when compared only to sightings in water depths greater than 700 m, Clymene dolphin herds made up 7.5% of the herds, and 12.4% of the individual cetaceans sighted.

Sightings were recorded throughout the day and there were no apparent trends in temporal distribution. Many of the animals were observed to have circular wounds and multiple scars of the type usually attributed to "cookie-cutter" sharks (*Isistius brasiliensis* or *I. plutodus*, Jones 1971, Fig. 2). Stranded animals in Texas have had as many as 31 *Isistius* bite scars on their bodies (Jefferson and Odell 1993). In all of the sightings Clymene dolphins rode waves at the bow, the beam, and/or the stern of the ship. In many instances they performed aerial behaviors such as leaping and spinning, similar to those of spinner dolphins and striped dolphins; spins of up to 3–4 revolutions were observed. During one sighting, an individual performed a full 360° spin while riding the bow wave. Similar reactions to ships and aerial behavior have been observed in the Caribbean Sea and off West Africa (Perrin *et al.* 1981; C. W. Oliver, personal commu-

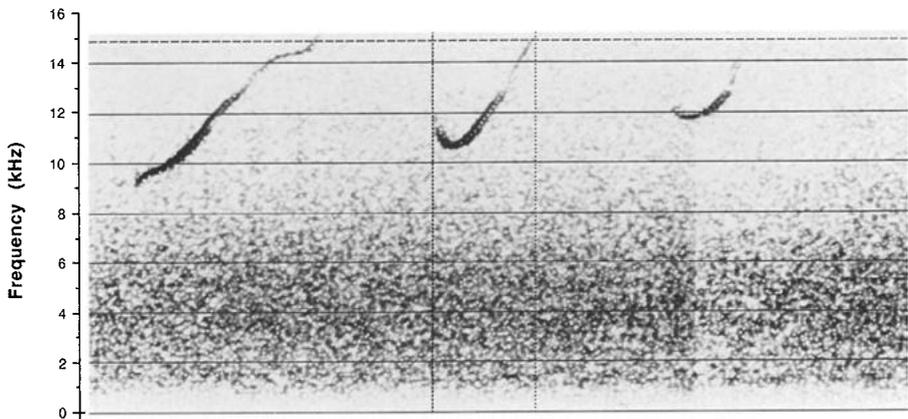


Figure 3. Sample sonogram of three Clymene dolphin whistles recorded from a herd of about 40 animals on 25 April 1992.

nication). Clymene dolphins were also observed, in one instance, playing with pieces of *Sargassum* sp. (catching them on their flippers and swiping at them with their flukes while bow-riding).

None of the herds were associated with other cetaceans. However, the species has been reported with spinner dolphins in the Caribbean Sea (Watkins and Moore 1982). A mass stranding at Key West, Florida in 1983 was comprised of at least six Clymene dolphins and one spinner dolphin (Jefferson and Odell 1993).

Clymene dolphins are very vocal, and whistles of bow-riding dolphins can often be heard by observers on the bow of a ship (TAJ, personal observation). Twenty whistles were recorded from a herd of about 40 in the Gulf of Mexico on 25 April 1992. [For a description of the recording methods see Leatherwood *et al.* (1993).] The structure of these whistles was similar to that previously described for other species of the genus *Stenella*, but generally had slightly higher frequencies (see Steiner 1981, Hohn and Benson 1990, Moore 1990). Sound energy was between 6.33 and 19.22 kHz, with a mean beginning frequency of 10.64 kHz and a mean ending frequency of 12.68 kHz; the mean whistle duration was 0.61 sec (Wang Ding 1993). A sample sonogram is presented in Figure 3. Other recordings have been obtained since, but these have not yet been analyzed.

Clymene dolphins were observed on eight of the 11 surveys. Twenty-six of the 29 herds were sighted during the period from April to June. However, most of the survey days (65%) were during this period. One herd each was sighted during January, February, and September. None was sighted during August or November. However, poor sighting conditions (*i.e.*, higher sea states) were more pervasive during late fall and winter surveys than during the spring. Since most of the survey effort was during the same time of year, seasonal distribution and relative abundance cannot be determined, but strandings have occurred throughout the year (Jefferson and Odell 1993).

Clymene dolphins are sympatric in the northern Gulf of Mexico with three other species of the genus *Stenella*: spinner, striped, and pantropical spotted dolphins (*S. attenuata*). Pantropical spotted dolphin herds were the most commonly sighted dolphins in oceanic waters and were seen six times more often than Clymene dolphin herds, while spinner dolphin herds were sighted least often. Clymene dolphins are apparently parapatric in the northern Gulf of Mexico with the Atlantic spotted dolphin (*S. frontalis*), which has been sighted in the Gulf almost exclusively at depths less than 700 m (generally <400 m; SEFSC, TAMU, unpublished data).

The distribution of the Clymene dolphin in the Gulf of Mexico is primarily in deep oceanic waters (Fig. 1). However, a herd of 18 Clymene dolphins was sighted over the continental shelf off southern Texas on 19 June 1990 (depth = 44 m, SST = 28.7°C; W. L. Perryman, personal communication). However, we believe that this is not a common occurrence. Small cetaceans sighted during aerial surveys and from ships-of-opportunity over the continental shelf in the Gulf of Mexico have been almost exclusively bottlenose dolphins (*Tursiops truncatus*) and Atlantic spotted dolphins. No other Clymene dolphins have been identified over the shelf.

While the Clymene dolphin represents a significant component of the cetacean fauna of the northern Gulf of Mexico, almost nothing is known of its natural history. Continued monitoring of cetacean distribution and numbers in the Gulf of Mexico will provide important information on this poorly known dolphin.

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