

Distribution of the Clymene dolphin *Stenella clymene*

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ABSTRACT

1. The Clymene dolphin *Stenella clymene* is found in tropical and warm temperate waters of both the North and South Atlantic Oceans. Confusion surrounding the identifying characteristics of this species has contributed to a general lack of knowledge of this species.

2. We collected and verified a total of 195 records (109 sightings, 67 strandings, and 19 captures) of Clymene dolphins. Twenty-five per cent ($n = 49$) of these records were previously unpublished. Rejected records are discussed in order to clarify the literature.

3. The northernmost locations for the Clymene dolphin are 39°17'N, 74°35'W (NJ, USA) and 19°1.9'N, 16°13.5'W (113 km north of Nouakchott, Mauritania). The southernmost locations are 29°58'S, 50°07'W (Tramandaí, Rio Grande do Sul, Brazil) and 3°40'S, 18°5'W (off Ascension Island).

4. Clymene dolphins were found in waters with bottom depths ranging from 44 to 4500 m (mean = 1870 m; SE = 110 m; median = 1675 m; $n = 94$). A single sighting reported at a location with a bottom depth of 44 m is considered to be atypical, as this species has an otherwise exclusively oceanic distribution.

5. Group sizes ranged from at least one individual in a mixed-species school of spinner dolphins *Stenella longirostris* to a group of an estimated 1000 animals (mean = 76.1; SE = 11; median = 47; $n = 105$). Stranding group size ranged from 1 to 46 individuals ($n = 67$), with single individuals being most common ($n = 60$). There is information available for seven mass strandings, all of which occurred in the south-eastern USA.

Keywords: Atlantic Ocean, cetacean, habitat preference, marine mammal, sighting, stranding

INTRODUCTION

Although it has been more than 20 years since the recognition of the Clymene dolphin *Stenella clymene* (Gray, 1850) as a valid species (Perrin *et al.*, 1981), this dolphin continues to be the least known of those in the genus *Stenella*. It is known to be endemic to the tropical and warm temperate waters of the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico. However, as noted by Jefferson (2002), the range is not well documented, especially in South

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and mid-Atlantic waters. The present paper reviews what is known of the species' range, based on both published and unpublished records that were verified. The paper also discusses rejected locality records.

METHODS

All available sighting, stranding, and capture records for suspected and confirmed Clymene dolphins were compiled. Previously published records were reviewed, and some were either inaccurate or included questionable species identifications. For example, an animal could have been erroneously determined to be a Clymene dolphin or incorrectly identified as a different dolphin species and actually have been a Clymene dolphin. For each record, an attempt was made to verify the species identification. Verification could come in one of several manners: location of photographs or detailed descriptions of the animals demonstrating diagnostic features; identifications made by highly trained observers familiar with the Clymene dolphin; or examination of voucher materials deposited in institutions, such as skulls collected from stranded or captured specimens. Suspect records that could not be verified were not plotted or included in our analyses, but are discussed in this paper to clarify the literature.

Locations for some confirmed records were approximated if sufficient details were not provided by the information source (Fig. 1). A mass stranding was defined as that of two or more individual dolphins, with the exception of presumed mother/calf pairs.

RESULTS

The following records discussed in detail are: (i) dolphins that we were able to determine were misidentified as Clymene dolphins; (ii) Clymene dolphins that were misidentified as other species or labelled as just *Stenella* spp. and for which we were able to confirm species identification; and (iii) miscellaneous errors in the Clymene dolphin distribution literature that we correct here, such as errors in reported locations.

Rejected records

During February 1997 off the south-eastern USA, a Clymene dolphin reportedly was found with its tail wrapped in the mainline of a longline and released alive (Johnson, Yeung & Brown, 1999; Yeung, 1999). No additional details or photographs could be obtained to verify the species identification, so this identification should be considered tentative.

Perrin *et al.* (1981) erroneously listed specimen R-3-SLS (found at St. Augustine, FL, USA) as both the spinner dolphin *Stenella longirostris* and the Clymene dolphin. This specimen is confirmed to be a spinner dolphin, based on examination of specimen photographs.

Perdomo, Fuentes & Aguayo (1984) provided a listing of cetacean sightings made in the southern Gulf of Mexico. There was one reported sighting of a mixed school of Clymene dolphins and pantropical spotted dolphins *Stenella attenuata*, however, the authors did not provide any photographs or list diagnostic features used to identify the Clymene dolphins. Additionally, this dolphin has not been elsewhere reported to associate with pantropical spotted dolphins. Therefore, we consider the identification to be questionable.

The Institute of Cetacean Research (ICR) conducted a sighting survey along the west coast of St. Lucia during February 2000 (Rambally, 2000). Clymene dolphins were reportedly sighted. We contacted ICR for further information on the sighting(s) and to inquire about the verification of the species identifications (S. Nishiwaki, personal communication). Based on conversations with ICR staff, it is likely that the sightings were actually of spinner dolphins.

Gordon *et al.* (1995) reported sighting Clymene dolphins while conducting cetacean surveys in Dominican waters from January through March 1995. We were unable to verify the species identifications. Numerous studies of sperm whales *Physeter macrocephalus* and hump-

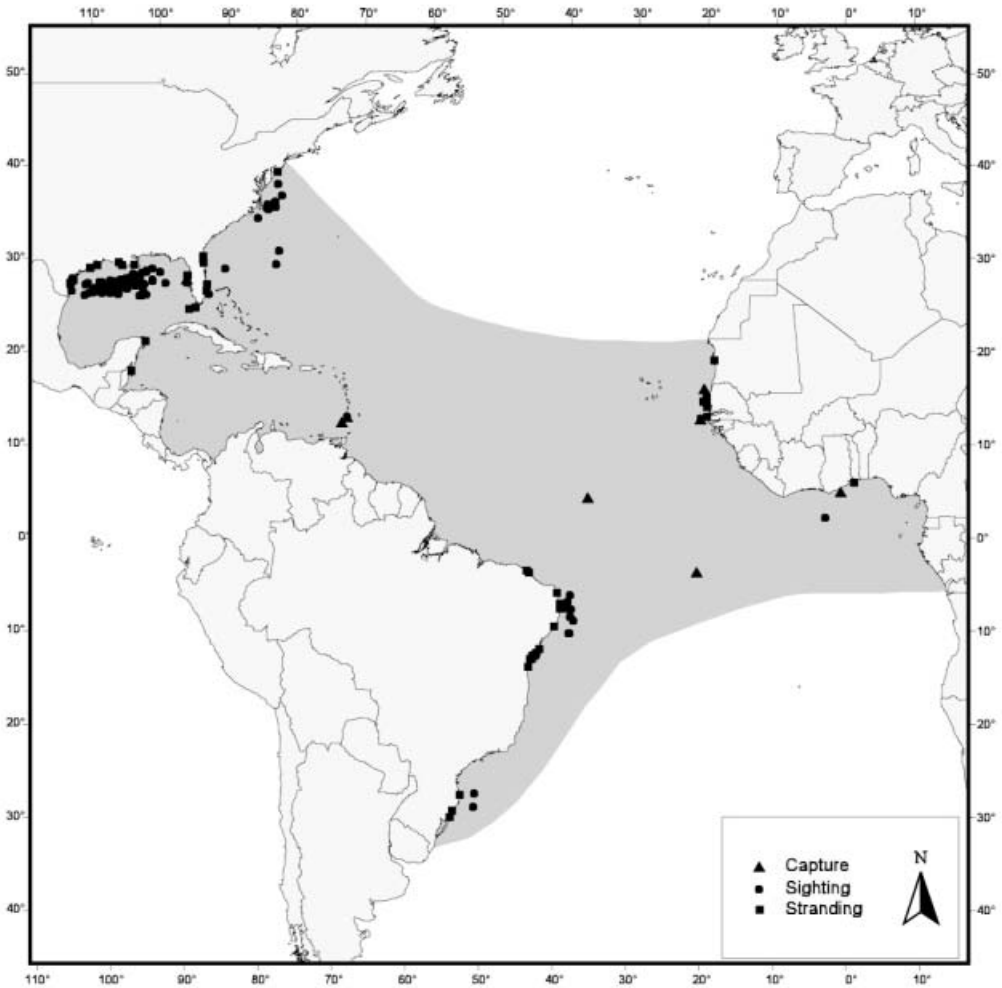


Fig. 1. Distribution of the Clymene dolphin. Only confirmed sighting, stranding, and capture records of this species are plotted. The shaded area is the area of this species' most likely occurrence within the Atlantic Ocean.

back whales *Megaptera novaeangliae* have been conducted in the waters off Dominica (Watkins, Moore & Tyack, 1985; Gordon *et al.*, 1998), yet the Clymene dolphin had not been previously documented in these waters. Due to the lack of diagnostic information needed to verify the species identifications, we have rejected these records.

Watkins & Moore (1982) and Watkins *et al.* (1985) reported sightings of Clymene dolphins during November 1981, November 1983, and March 1984. None of the sightings were accompanied by a convincing description (such as diagnostic features) to support the identification. For example, the authors did not report the moustache marking that is indicative of this species. It is possible that the authors were observing groups of juvenile spinner dolphins, which have a shorter beak and are smaller. These sightings are therefore considered to be of 'possible' Clymene dolphins and are not included in Appendix 1, Fig. 1, nor the estimates of group size.

An alleged Clymene dolphin was incidentally captured in a gillnet off Morro de Puerto Santo, Sucre, Venezuela (10°44'N, 63°09'W) (Agudo, 1990; Agudo & Romero, 1996; Romero,

Agudo & Green, 1997; Romero *et al.*, 2001). The skull was collected and is housed at the Museo de la Estación Biológica Rancho Grande (specimen EBRG 16887) (Agudo & Romero, 1996). According to Agudo (1990), the specimen was EBRG 16888, however, Agudo & Romero (1996) and Romero *et al.* (1997) later referred to this specimen as EBRG 16887. Bolaños-Jiménez (1995) examined both specimens and determined them to be misidentified spinner dolphins. EBRG 16887 was likely misidentified as a Clymene dolphin, based on tooth counts (J. Bolaños-Jiménez, personal communication). Therefore, the one record for this species' occurrence in Venezuelan waters is disputed.

Soto, Caseca-Santos & Ternes-Silva (1996) and Soto, Montibeler & da Silva-Ribeiro (2000) reported the capture of a Clymene dolphin off the coast of Rio Grande do Sul, southern Brazil, in August 1995. No description of the colour pattern or morphometrics of this specimen were presented. The authors were contacted but no information on the diagnostic characters they used in the identification of this dolphin was provided. We therefore dispute this record as being a Clymene dolphin and do not include it in our analysis. Soto *et al.* (2000) also reported that a Clymene dolphin stranded in September 1999 on the coast of Santa Catarina (Praia do Jacques) and provided morphometrics and tooth counts. A re-examination of the skull by one of us (I.B.M.) showed that this specimen was in fact a striped dolphin *Stenella coeruleoalba*.

Zerbini *et al.* (1997, 1998a,b) and Zerbini & Kotas (1998) reported a sighting of Clymene dolphins on 17 August 1996 in southern Brazil. This record was later corrected to *Stenella cf. clymene* in a subsequent paper (Zerbini *et al.*, in press). The colour pattern of individuals observed suggested the species identity, but it was late in the day and due to low light conditions the observers could not make a positive identification, and the identification was labelled as 'most likely' Clymene dolphin. This record is therefore not included in our analysis.

Rice (1998) reported that the Clymene dolphin allegedly has been sighted in the Red Sea. No further information was given to substantiate this claim, and the species is not known from anywhere outside the Atlantic Ocean. Therefore, this record is rejected and not included in our interpretation of distribution.

Accepted records

Perrin *et al.* (1981) reported that a Clymene dolphin was captured near the island of Curaçao. However, the coordinates they listed correspond to Carriacou, north of the island of Grenada, which is the correct location of the collection of the animal (J. Bolaños-Jiménez, personal communication with W.F. Perrin).

Zaniolo & Picanço (1998) reported the stranding of a dolphin identified as *Stenella* spp. This dolphin live-stranded and died 2 days later. It was identified as a Clymene dolphin based on its colour pattern ('moustache' and dorsal cape) in photos examined by one of us (I.B.M.). This record is included in Appendix 2 and in our analysis of the distribution of this species.

Simões-Lopes, Praderi & de Souza Paula (1992) reported that the first record of the Clymene dolphin in Brazil occurred in 1991. Perrin & Mead (1994) correctly indicated the stranding location on their map, but erroneously reported the location coordinates as 3°40'S and 18°05'W. According to Simões-Lopes, Praderi & Paula (1994), the stranding actually occurred on 11 June 1992 (not 1991) and the correct locality was 29°18'18"S and 49°42'02"W (1 km north of the mouth of the Manpituba River, Santa Catarina State, southern Brazil).

Analysis of distribution

We collected 109 verified sighting records; 13% ($n = 14$) were not previously published (Appendix 1). Of the 91 published sighting records, 49 (54%) were found in the 'grey' litera-

ture [published conference abstracts, cruise reports, International Whaling Commission (IWC) working papers, etc.]. *Clymene* dolphins were found in waters with bottom depths ranging from 44 to 4500 m (Fig. 2; mean = 1870 m; SE = 110 m; median = 1675 m; $n = 94$). Group sizes ranged from at least one individual in a mixed-species school of *Stenella longirostris* to a group of an estimated 1000 (Fig. 3; mean = 76.1; SE = 11.2; median = 47; $n = 105$). We collected 67 verified stranding records, 30 (46%) of these were previously unpublished (Appendix 2). The size of stranded groups ranged from 1 to 46 individuals, with single individuals being most common (90%, $n = 60$). There is information available for seven mass strandings, all of which occurred in the south-eastern USA. We compiled 19 capture records (Appendix 3); five (26%) of which were previously unpublished. Seven records were not confirmed but were considered probable captures. We consider them probable captures because they are usually old museum records with an unknown origin of collection. Most specimens collected at that time (*c.* 1800s), however, were from captures, not strandings. One of us (T.A.J.) was able to confirm species identity from skull measurements and/or tooth counts. These records were included in our analysis of distribution.

DISCUSSION

The *Clymene* dolphin is found off the USA Atlantic Coast; in the Gulf of Mexico; in the Caribbean Sea (waters off the Windward Islands and Belize); Brazil; West Africa; and in the middle of the Atlantic between South America and Africa (Fig. 1). The northernmost locations are 39°17'N, 74°35'W (NJ, USA; Perrin *et al.*, 1981; Ulmer, 1981) and 19°1.9'N, 16°13.5'W (113 km north of Nouakchott, Mauritania) (Robineau, Vely & Maigret, 1994). The southernmost locations are 29°58'S, 50°07'W (Tramandaí, Rio Grande do Sul, Brazil) (Moreno, 2002) in the western South Atlantic and 3°40'S, 18°5'W (off Ascension Island) in the eastern South Atlantic (Lütken, 1889; Perrin *et al.*, 1981).

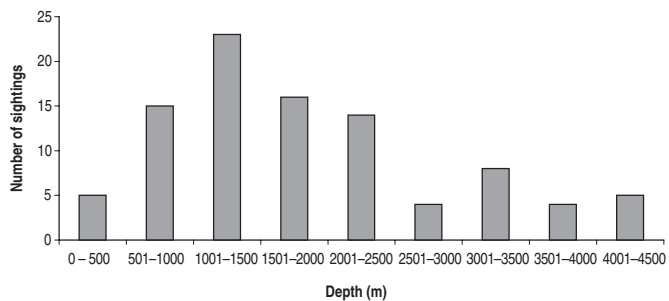


Fig. 2. Depth distribution of the *Clymene* dolphin.

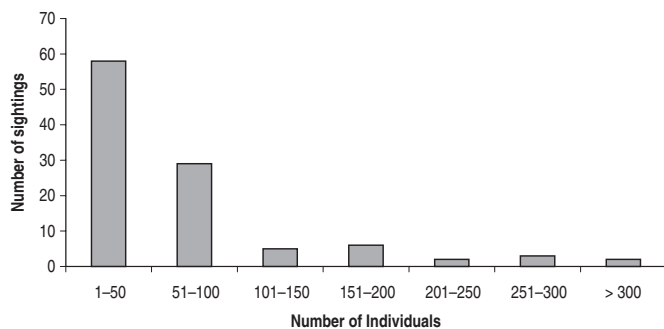


Fig. 3. Distribution of estimated group size for the *Clymene* dolphin.

Biogeographically, the Clymene dolphin is found in the warmer waters of the North Atlantic from the North Equatorial Current, the Gulf Stream, and the Canary Current (Robineau *et al.*, 1994). In the south-western Atlantic Ocean, it is primarily found in the warmer waters of the Brazil Current as far south as approximately 30° S. There are no records of Clymene dolphins further south in the waters off Argentina or Uruguay (Moreno, 2002). Most of the distributional records for this dolphin are in warm waters. In the mid-Atlantic off the USA, these records suggest the warm waters of the Gulf Stream influence Clymene dolphin distribution. The northernmost record for this species, a stranding in NJ (USA), occurred during the summer. Based on the available distributional records, as well as the apparent warm-water preference of this species, we suggest a somewhat modified distribution for the Clymene dolphin from previously published maps (Fig. 1).

The Clymene dolphin is similar to the Atlantic spotted dolphin *Stenella frontalis* in terms of only being found in the Atlantic Ocean (vs. the pantropical distribution of the other three species of *Stenella*). Perrin, Mitchell & van Bree (1978) suggested that the historical zoogeography of tropical pelagic dolphins might account for the relative richness of Atlantic delphinid fauna (including the genus *Stenella*). They suggested that during Pleistocene glacial periods, the Cape of Good Hope might have acted as a one-way filter admitting tropical, Indo-Pacific oceanic forms to the tropical Atlantic (Perrin *et al.*, 1978).

The restricted distribution of the Clymene dolphin means that there is a greater chance of depletion than for a more widely distributed species. However, there are no indications of serious conservation problems involving this species at present, with the possible exception of the potential kill in the tuna purse seine fishery in the eastern tropical Atlantic, which operates primarily in the Gulf of Guinea (Maigret, 1981). Dolphin mortality is very poorly documented for this fishery (Jefferson & Curry, 2003).

The Clymene dolphin is considered to be an oceanic species (Perrin & Mead, 1994). The sighting reported over the continental shelf off southern Texas in waters with a bottom depth of 44 m is considered to be atypical, since this dolphin is not usually sighted over the continental shelf (Mullin *et al.*, 1994). The bottom depths reported in this paper are consistent with a study of habitat preferences for the Clymene dolphin in the Gulf of Mexico, where this species was found more often on the lower continental slope and deepwater regions in areas of cyclonic or confluence circulation (Davis *et al.*, 2002).

Culik (2003) listed the range states as including the USA, Mexico, Belize, Honduras, Nicaragua, Costa Rica, Panama, Colombia, Venezuela, Guyana, Surinam, French-Guyana, Brazil, Cuba, Bahamas, Dominican Republic, Haiti, Mauritania, Senegal, Gambia, Guinea-Bissau, Guinea, Sierra Leone, Liberia, Ivory Coast, Ghana, Togo, Benin, Nigeria, Cameroon, and Gabon. This is an interpretation of the distribution map and is not based on confirmed sightings of the species from the shores of the countries listed (B. Culik, personal communication). Such interpretations of the range of a species often occur when there are sparse distribution data. When we examined the range, we encountered several problems, including lack of survey effort in areas of known or suspected occurrence and difficulty in species identification. There were few available records in the eastern portion of the North Atlantic Ocean. As noted by Robineau *et al.* (1994), this is more likely a reflection of poor sampling effort, rather than the actual distribution of this species. Jefferson, Odell & Prunier (1995) provided a similar explanation regarding the near absence of records from Mexican and Cuban waters. We recommend increased survey effort in such areas, using experienced observers trained in cetacean species identification.

The Clymene dolphin appears to be most commonly confused with the short-beaked common dolphin (Fig. 4), and sometimes the spinner dolphin, especially at sea (Jefferson,



Fig. 4. The very similar external appearance of the Clymene dolphin (upper) and short-beaked common dolphin *Delphinus delphis* (lower) has led to much confusion in species identity. The two species have almost identical body shapes, and the basic colouration is much the same. The major differences are that the Clymene dolphin has a rounded (vs. pointed in the common dolphin) lower cape margin, a moustache marking on the dorsal surface of the beak, and an indistinct eye-to-flipper (vs. chin-to-flipper in the common dolphin) stripe. Photos by R.L. Pitman and I. Visser.

1995; Jefferson & Schiro, 1997). It also has been confused with the Atlantic spotted dolphin and the striped dolphin (Perrin *et al.*, 1981). Further compounding the difficulty of identification is the fact that Clymene dolphins have been found in association with spinner dolphins and other long-beaked oceanic species, not only during sightings at sea (Cadenat & Doutre,

1958; NMFS-NEFSC, unpublished photos), but also during mass strandings (Jefferson *et al.*, 1995).

As noted by Jefferson & Curry (2003), before the Clymene dolphin was re-described by Perrin *et al.* (1981), it was often misidentified as other species of long-beaked dolphins. For example, a sighting of common dolphins *Delphinus delphis* in the Gulf of Mexico (Caldwell, 1955) was probably actually a sighting of Clymene dolphins (Jefferson & Curry, 2003). More than 30 sightings of common dolphins were recorded off north-eastern Brazil during an IWC shipboard survey conducted in 1981 (Best, da Rocha & da Silva, 1986), yet when this same area was surveyed from 1998 to 2001, no common dolphins were sighted, but Clymene dolphins were (da Rocha *et al.*, 1999; Moreno, 2002). A group of small dolphins sighted in Jamaican waters appeared to be a then unknown species of *Stenella* spp. (Caldwell, 1961), and, based on the description, were probably Clymene dolphins (Jefferson & Curry, 2003). Additionally, the 'Senegal dolphin' of Mörzer Bruyns (1971) and Dupuy (1983) is probably this species (Perrin & Mead, 1994; Jefferson & Curry, 2003). Since none of these records are confirmed, they were not plotted in Fig. 1, recorded in Appendices 1 through 3, or included in the analysis of distribution.

Due to the difficulty in identifying Clymene dolphins to species, we suggest that diagnostic features of candidate sightings be noted and that video and/or still photographs, as well as biopsy samples, be taken whenever possible. In part, special attention should be paid to the presence or absence of the moustache marking on the dorsal surface of the beak, which is this species' most diagnostic external feature (Fig. 5). In the case of stranding events, collection of at least the skull or a tissue sample for genetics is imperative, and photographs should be taken of live- or freshly stranded individuals.



Fig. 5. Moustache marking on the upper surface of the beak of the Clymene dolphin. This is specimen GEMARS 0795, a stranded individual from Brazil. Photo by I.B. Moreno.

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APPENDIX 1

Verified sighting records of the Clymene dolphin

Date	Latitude	Longitude	Area	Depth (m)	Number seen	Status	Source
2 Aug 1972	38°N	74°W	Atlantic USA	N/A	N/A	U	W.E. Schevill, personal communication with W.F. Perrin
20 Aug 1972	2°10'N	2°30'W	Gulf of Guinea	N/A	c. 50	P	Photo in Leatherwood, Caldwell & Winn, 1976; Perrin <i>et al.</i> , 1981; Perrin & Mead, 1994; Robineau <i>et al.</i> , 1994; Van Waerebeek & Ofori-Danson, 1999
17 May 1976	13°N	61°W	Caribbean	N/A	N/A	P	Perrin <i>et al.</i> , 1981; Perrin & Mead, 1994
13 May 1977	13°N	61°W	Caribbean	1829–2134	15–20	P	Perrin <i>et al.</i> , 1981; Perrin & Mead, 1994
23 Feb 1978	13°N	61°W	Caribbean	1829–2134	25	P	Perrin <i>et al.</i> , 1981; Perrin & Mead, 1994
23 Apr 1983	28°53'N	78°11'W	Atlantic USA	N/A	8	P	Rumage, 1983; Perrin & Mead, 1994
29 Apr 1983	29°22'N	71°52'W	Atlantic USA	N/A	3	P	Rumage, 1983; Perrin & Mead, 1994
1 May 1983	30°48'N	71°48'W	Atlantic USA	N/A	15	P	Rumage, 1983; Perrin & Mead, 1994
21 May 1989	26°09.34'N	79°37.04'W	Caribbean	N/A	50–75	U	N. Black & P. Byrnes, personal communication
18 May 1990	27°01.80'N	90°18.20'W	Gulf of Mexico	2195	16	P	Mullin <i>et al.</i> , 1994
19 May 1990	26°08.30'N	90°59.50'W	Gulf of Mexico	2286	8	P	Mullin <i>et al.</i> , 1994
19 June 1990	26°32'N	96°53'W	Gulf of Mexico	44	18	P	Mullin <i>et al.</i> , 1994
21 June 1990	27°41'N	87°02'W	Gulf of Mexico	3029	75	G	Mullin <i>et al.</i> , 1991; K. Mullin, <i>in litt.</i> ; Jefferson, 1995
21 June 1990	28°33'N	88°02'W	Gulf of Mexico	2288	83	G	Mullin <i>et al.</i> , 1991; K. Mullin, <i>in litt.</i> ; Jefferson, 1995
22 Apr 1991	27°32.10'N	87°00.20'W	Gulf of Mexico	3064	38	P	Mullin <i>et al.</i> , 1994
26 Apr 1991	26°37.10'N	91°59.20'W	Gulf of Mexico	1756	20	P	Mullin <i>et al.</i> , 1994
12 May 1991	27°52.10'N	90°22.20'W	Gulf of Mexico	805	51	P	Mullin <i>et al.</i> , 1994
20 May 1991	27°34.10'N	91°59.20'W	Gulf of Mexico	704	39	P	Mullin <i>et al.</i> , 1994
6 Jun 1991	35°26'N	74°42'W	Atlantic USA	N/A	At least 1*	U	P. Olson & A. Sierra Williams, personal communication
25 Apr 1992	27°22.00'N	92°10.00'W	Gulf of Mexico	1018	40	P	Mullin <i>et al.</i> , 1994
13 May 1992	25°58.65'N	88°17.53'W	Gulf of Mexico	3009	82	P	Mullin <i>et al.</i> , 1994
18 May 1992	26°12.34'N	91°01.13'W	Gulf of Mexico	2195	64	P	Mullin <i>et al.</i> , 1994
20 May 1992	27°18.66'N	93°01.28'W	Gulf of Mexico	1097	30	P	Mullin <i>et al.</i> , 1994
1 Jun 1992	27°17.09'N	93°30.77'W	Gulf of Mexico	933	43	P	Mullin <i>et al.</i> , 1994
5 Jun 1992	26°43.84'N	90°02.26'W	Gulf of Mexico	2652	28	P	Mullin <i>et al.</i> , 1994
5 Jun 1992	27°49.50'N	89°59.84'W	Gulf of Mexico	732	27	P	Mullin <i>et al.</i> , 1994
28 Jan 1993	28°09.10'N	88°59.90'W	Gulf of Mexico	1244	8	P	Mullin <i>et al.</i> , 1994
10 Feb 1993	27°16.05'N	95°04.25'W	Gulf of Mexico	1143	5	P	Mullin <i>et al.</i> , 1994
13 Feb 1993	27°27.60'N	93°37.20'W	Gulf of Mexico	N/A	38	G	Davis & Fargion, 1996
5 May 1993	26°33.18'N	94°16.57'W	Gulf of Mexico	1646	2	P	Mullin <i>et al.</i> , 1994
8 May 1993	26°24.53'N	93°38.85'W	Gulf of Mexico	1646	12	P	Mullin <i>et al.</i> , 1994

Date	Latitude	Longitude	Area	Depth (m)	Number seen	Status	Source
10 May 1993	27°06.66'N	91°50.19'W	Gulf of Mexico	1481	40	P	Mullin <i>et al.</i> , 1994
10 May 1993	27°11.69'N	91°47.63'W	Gulf of Mexico	1408	50	P	Mullin <i>et al.</i> , 1994
10 May 1993	27°16.82'N	91°44.09'W	Gulf of Mexico	1326	75	P	Mullin <i>et al.</i> , 1994
12 May 1993	27°34.20'N	92°19.50'W	Gulf of Mexico	N/A	9	G	Davis & Fargion, 1996
17 May 1993	27°25.10'N	89°52.80'W	Gulf of Mexico	N/A	40	G	Davis & Fargion, 1996
25 May 1993	27°06.72'N	88°58.05'W	Gulf of Mexico	2177	80	P	Mullin <i>et al.</i> , 1994
27 May 1993	26°40.81'N	91°00.16'W	Gulf of Mexico	1902	100	P	Mullin <i>et al.</i> , 1994
30 May 1993	26°49.24'N	93°58.66'W	Gulf of Mexico	1143	30	P	Mullin <i>et al.</i> , 1994
30 May 1993	27°28.00'N	92°10.00'W	Gulf of Mexico	973	39	P	Mullin <i>et al.</i> , 1994
31 May 1993	26°52.14'N	92°49.96'W	Gulf of Mexico	1423	48	P	Mullin <i>et al.</i> , 1994
2 Jun 1993	26°17.23'N	94°23.79'W	Gulf of Mexico	2481	47	P	Mullin <i>et al.</i> , 1994
2 Jun 1993	26°16.68'N	94°38.85'W	Gulf of Mexico	2245	10	P	Mullin <i>et al.</i> , 1994
5 Jun 1993	26°21.45'N	93°00.12'W	Gulf of Mexico	1866	90	P	Mullin <i>et al.</i> , 1994
17 Aug 1993	27°47.90'N	88°39.30'W	Gulf of Mexico	N/A	33	G	Davis & Fargion, 1996
5 Sep 1993	26°17.27'N	94°12.39'W	Gulf of Mexico	1962	85	P	Mullin <i>et al.</i> , 1994
17 Apr 1994	27°02.30'N	90°00.40'W	Gulf of Mexico	2388	50	G	Davis & Fargion, 1996
8 May 1994	27°41.20'N	91°00.00'W	Gulf of Mexico	810	25	G	Davis & Fargion, 1996
8 May 1994	27°27.80'N	91°00.10'W	Gulf of Mexico	1076	35	G	Davis & Fargion, 1996
8 May 1994	27°22.10'N	90°56.80'W	Gulf of Mexico	1392	200	G	Davis & Fargion, 1996
9 May 1994	26°43.60'N	92°00.10'W	Gulf of Mexico	1800	140	G	Davis & Fargion, 1996
15 May 1994	27°29.70'N	89°10.80'W	Gulf of Mexico	1700	30	G	Davis & Fargion, 1996
29 May 1994	28°26.40'N	88°31.30'W	Gulf of Mexico	1700	168	G	Davis & Fargion, 1996
31 May 1994	27°10.40'N	93°07.80'W	Gulf of Mexico	1068	35	G	Davis & Fargion, 1996
1 Jun 1994	27°35.40'N	89°19.00'W	Gulf of Mexico	1598	70	G	Davis & Fargion, 1996
23 Apr 1996	26°00.10'N	87°59.60'W	Gulf of Mexico	1650	78	G	Davis, Evans & Würsig, 2000
26 Apr 1996	27°22.00'N	92°10.00'W	Gulf of Mexico	1135	40	G	Davis <i>et al.</i> 2000
27 Apr 1996	27°30.20'N	91°00.20'W	Gulf of Mexico	610	68	G	Davis <i>et al.</i> 2000
28 Apr 1996	26°51.70'N	91°59.40'W	Gulf of Mexico	1030	100	G	Davis <i>et al.</i> 2000
29 Apr 1996	26°15.70'N	93°00.00'W	Gulf of Mexico	1030	75	G	Davis <i>et al.</i> 2000
30 Apr 1996	27°19.00'N	95°01.00'W	Gulf of Mexico	621	150	G	Davis <i>et al.</i> 2000
17 May 1996	26°41.80'N	87°59.60'W	Gulf of Mexico	1475	15	G	Davis <i>et al.</i> 2000
21 May 1996	26°56.60'N	91°00.10'W	Gulf of Mexico	1000	55	G	Davis <i>et al.</i> 2000
22 May 1996	26°34.90'N	91°58.80'W	Gulf of Mexico	900	75	G	Davis <i>et al.</i> 2000
15 Jul 1996	28°30.40'N	86°16.80'W	Gulf of Mexico	382	150	G	Davis <i>et al.</i> 2000
22 Jul 1996	27°19.90'N	85°19.80'W	Gulf of Mexico	1049	80	G	Davis <i>et al.</i> 2000
14 Sep 1996	27°25.00'S	46°37.90'W	South America	900–1200	50–100	G	Dalla-Rosa, 1998
24 Sep 1996	27°12.44'N	95°17.61'W	Gulf of Mexico	1243	30	P	Fertl, Schiro & Peake, 1997
26 Oct 1996	26°06.10'N	87°26.20'W	Gulf of Mexico	3095	12	G	Davis <i>et al.</i> 2000
20 May 1997	26°02.50'N	95°09.60'W	Gulf of Mexico	960	70	G	Davis <i>et al.</i> 2000
25 May 1997	28°18.60'N	89°35.40'W	Gulf of Mexico	455	20	G	Davis <i>et al.</i> 2000
8 Dec 1997	28°52'S	46°56'W	South America	1390	14–15	P	Zerbini <i>et al.</i> , 1997; Zerbini & Kotas, 1998
9 Feb 1998	28°51.80'N	87°18.10'W	Gulf of Mexico	971	130	U	Davis <i>et al.</i> 2000
12 Feb 1998	28°51.80'N	87°18.10'W	Gulf of Mexico	N/A	32	U	Davis <i>et al.</i> 2000
25 Apr 1998	27°25.30'N	93°19.20'W	Gulf of Mexico	N/A	8	U	Davis <i>et al.</i> 2000
13 July 1998	34°19.80'N	75°25.20'W	Atlantic USA	300	151	P	Mullin & Fulling, in press; K. Mullin, <i>in litt.</i>

Date	Latitude	Longitude	Area	Depth (m)	Number seen	Status	Source
13 July 1998	35°14.50'N	74°23.70'W	Atlantic USA	1830	69	P	Mullin & Fulling, in press; K. Mullin, <i>in litt.</i>
7 Aug 1998	35°35.90'N	74°29.40'W	Atlantic USA	139	2	P	Mullin & Fulling, in press; K. Mullin, <i>in litt.</i>
8 Aug 1998	35°28.40'N	73°30.20'W	Atlantic USA	3020	14	P	Mullin & Fulling, in press; K. Mullin, <i>in litt.</i>
10 Aug 1998	35°44.6'N	74°38.7'W	Manteo, NC, Atlantic USA	N/A	N/A	U	FONT 2001
28 Sep 1998	7°35'S	33°50'W	South America	4300	50–60	U	This paper
29 Sep 1998	6°54'S	33°49'W	South America	3700	50–70	U	This paper
1 Oct 1998	6°09'S	33°32'W	South America	4400	2	U	This paper
2 May 1999	27°13'N	88°59'W	Gulf of Mexico	2150	86	G	C. Hubard & K. Mullin, <i>in litt.</i>
22 May 1999	28°41'N	88°00'W	Gulf of Mexico	2086	56	G	C. Hubard & K. Mullin, <i>in litt.</i>
23 May 1999	27°30'N	88°59'W	Gulf of Mexico	1894	300	G	C. Hubard & K. Mullin, <i>in litt.</i>
23 May 1999	27°03'N	89°01'W	Gulf of Mexico	2196	125	G	C. Hubard & K. Mullin, <i>in litt.</i>
24 May 1999	26°46'N	89°57'W	Gulf of Mexico	2471	195	G	C. Hubard & K. Mullin, <i>in litt.</i>
1 Jun 1999	28°03'N	89°43'W	Gulf of Mexico	688	23	G	C. Hubard & K. Mullin, <i>in litt.</i>
1 Jun 1999	28°05'N	89°27'W	Gulf of Mexico	1199	80	G	C. Hubard & K. Mullin, <i>in litt.</i>
11 Sep 1999	7°12'S	33°57'W	South America	3500	c. 20	U	This paper
12 Sep 1999	7°40'S	33°25'W	South America	4200	c. 300	U	This paper
19 Sep 1999	36°05'N	73°45'W	Atlantic USA	2955	165	G	NMFS-SEFSC, <i>in litt.</i>
20 Sep 1999	35°47'N	74°00'W	Atlantic USA	2763	1000	G	NMFS-SEFSC, <i>in litt.</i>
23 Sep 1999	7°26'S	34°16'W	South America	3200	c. 50	U	This paper
24 Sep 1999	8°28'S	33°29'W	South America	4000	250	U	This paper
26 Sep 1999	10°16'S	33°39'W	South America	4500	c. 15	U	This paper
26 Sep 1999	10°14'S	33°46'W	South America	4500	c. 40	U	This paper
2 May 2000	26°20'N	91°59'W	Gulf of Mexico	1876	35	G	C. Hubard & K. Mullin, <i>in litt.</i>
7 May 2000	27°38'N	89°25'W	Gulf of Mexico	1351	220	G	C. Hubard & K. Mullin, <i>in litt.</i>
19 May 2000	27°15'N	87°59'W	Gulf of Mexico	2654	325	G	C. Hubard & K. Mullin, <i>in litt.</i>
21 May 2000	27°10'N	89°00'W	Gulf of Mexico	2187	16	G	C. Hubard & K. Mullin, <i>in litt.</i>
22 May 2000	27°43'N	90°02'W	Gulf of Mexico	915	64	G	C. Hubard & K. Mullin, <i>in litt.</i>
23 May 2000	27°26'N	91°00'W	Gulf of Mexico	1427	10	G	C. Hubard & K. Mullin, <i>in litt.</i>
28 May 2000	27°30'N	91°24'W	Gulf of Mexico	988	180	G	C. Hubard & K. Mullin, <i>in litt.</i>
20 Aug 2000	8°30'S	33°34'W	South America	3800	6	U	This paper
21 Aug 2000	8°53'S	34°00'W	South America	4000	60	U	This paper
6 Mar 2002	36°45'N	73°07'W	Atlantic USA	3184	275	G	NMFS-SEFSC, <i>in litt.</i>

U – unpublished information; P – published articles and book chapters; G (grey) – published conference abstracts, cruise reports, International Whaling Commission working papers, government reports; N/A – information not available.

*At least one *Clymene dolphin* in a group of 20 spinner dolphins.

APPENDIX 2

Verified stranding records of the Clymene dolphin

Date	Location	Latitude	Longitude	No.	Specimen no.	Status	Source
N/A	Probably north-east US coast	N/A	N/A	1	USNM 550458	U	This paper
Oct 1955	St. Augustine, FL, USA	N/A	N/A	1	R-2-SLS	P	Caldwell & Caldwell, 1975; Perrin <i>et al.</i> , 1981; Schmidly, 1981
May 1956	Keta, Ghana, Africa	05°55'N	00°59'E	1	N/A	G	Van Waerebeek & Ofori-Danson, 1999
20 Jul 1957	South of Saloum River, Senegal, Africa	c. 14°N	N/A	1	IFAN N/A	P	Cadenat & Doutre, 1958; Perrin <i>et al.</i> , 1981; Perrin & Mead, 1994; Robineau <i>et al.</i> , 1994
12 Sep 1971	Yarbrough Pass, Padre Island, TX, USA	27°40'N	97°00'W	3	LSUMZ 18519, TCWC 25576, TCWC 52870	P	Schmidly, Bealeu & Hildebrand, 1972; Perrin <i>et al.</i> , 1981; Schmidly, 1981; Jefferson & Baumgardner, 1997
11 Jan 1973	St. Augustine Inlet, FL, USA	29°55.6'N	81°17.4'W	1	R-1-SLS=UF018715	P	Caldwell & Caldwell, 1975; Perrin <i>et al.</i> , 1981; Schmidly, 1981; Perrin & Mead, 1994
14 Aug 1975	Jewfish Key, FL, USA	27°25'N	82°40'W	3	UF14186-88	P	Perrin <i>et al.</i> , 1981; Perrin & Mead, 1994; Jefferson <i>et al.</i> , 1995
21 Jun 1976	NJ, USA	39°17'N	74°35'W	1	USNM 504408	P	Perrin <i>et al.</i> , 1981; Ulmer, 1981; Perrin & Mead, 1994
15 Sep 1977	Gokhou M'Bath Beach, Senegal, Africa	c. 16°N		1	IFAN 78-11a	P	Robineau <i>et al.</i> , 1994; Van Waerebeek <i>et al.</i> , 2000
29 Jun 1978	Dakar, Senegal, Africa	14°35'N	17°30'W	1	IFAN 79-102	P	Dupuy & Maigret, 1979; Perrin & Mead, 1994; Robineau <i>et al.</i> , 1994; Van Waerebeek <i>et al.</i> , 2000
23 Feb 1979	Kajar, Senegal, Africa	15°00'N	17°05'W	1	IFAN 79-106	P	Dupuy & Maigret, 1979; Robineau <i>et al.</i> , 1994; Van Waerebeek <i>et al.</i> , 2000
30 Mar 1979	Galveston, TX, USA	28°56'N	95°19'W	1	TCWC 50849	P	Jefferson <i>et al.</i> , 1995; Jefferson & Baumgardner, 1997; Jefferson & Schiro, 1997
27 Oct 1981	West Africa	12°44'N	17°45'W	1	IFAN N/A	P	Robineau <i>et al.</i> , 1994
24 Jan 1982	TX, USA	27°19'N	97°20'W	1	SE0735=C18	P	Perrin & Mead, 1994
22 Mar 1983	Jacksonville Beach, Duval Co., FL, USA	30°15.2'N	81°22.5'W	4	SE1069-1072	P	Perrin & Mead, 1994; Jefferson <i>et al.</i> , 1995
6–8 Jul 1983	Archer Key, Key West, FL, USA	24°33.8'N	81°53.5'W	6*	SE1213-1218	P	Perrin & Mead, 1994; Jefferson <i>et al.</i> , 1995
26 Apr 1984	Padre Island, TX, USA	27°42.4'N	97°08.8'W	1	TCWC 50938=C154	P	Jefferson <i>et al.</i> , 1995; Jefferson & Baumgardner, 1997
27 May 1984	TX, USA	28°59'N	95°15'W	1	SE1636=C158	U	Jefferson, 1995
27 Oct 1984	Port Aransas, TX, USA	27°50'N	97°03'W	2	TCWC 50939–50940	P	Jefferson <i>et al.</i> , 1995; Jefferson & Baumgardner, 1997
11 Mar 1985	Padre Island National Seashore, TX, USA	27°30'N	97°11'W	1	TCWC 50936=C206	P	Jefferson <i>et al.</i> , 1995; Jefferson & Baumgardner, 1997

Date	Location	Latitude	Longitude	No.	Specimen no.	Status	Source
30 Apr 1985	Mustang Island, TX, USA	27°47'N	97°05'W	1	SE1950=C217	G	Jefferson, 1995
2-? Oct 1985	Point au Fer, LA, USA	29°16'N	91°18'W	46	USNM 550498-550543	P	Harris, 1986; Perrin & Mead, 1994; Jefferson <i>et al.</i> , 1995; Jefferson & Baumgartner, 1997
30 Jan 1986	Marsh Island, LA, USA	29°35'N	91°50'W	1	SE4612	P	Jefferson & Baumgardner, 1997
5 Feb 1986	Bryan Beach, Brazoria County, TX, USA	28°56'N	95°19'W	1	TCWC 50934=C259	P	Jefferson & Baumgardner, 1997
9 Sep 1986	Padre Island National Seashore, TX, USA	27°18.8'N	97°21.5'W	1	TCWC 50937=C362	P	Jefferson & Baumgardner, 1997
14 Sep 1987	Galveston, TX, USA	29°16'N	94°29'W	1	TCWC 50947=C516	P	Jefferson & Baumgardner, 1997
28 Sep 1987	Del Rey Beach, Palm Beach Co, FL, USA	26°28.8'N	80°3.1'W	1	SE3108	U	D.K. Odell, pers. comm.
18 Aug 1989	Mustang Island, TX, USA	27°42'N	97°10'W	1	SE4573=C759	G	Jefferson, 1995
16 Jan 1990	João Pessoa, PB, Brazil	7°06'S	34°51'W	1	UFPB1410	P	Lucena, Paludo & Langguth, 1998
1 Feb 1991	Ambergris Caye, Belize	18°N	88°W	1	no number assigned	U	B. Bilgre, pers. comm.
17 Oct 1991	Cancun, Quintana Roo, Mexico	21°05.8'N	86°45.60'W	1	N17101991Sc (RVMMCM)	G	de la Parra Venegas 1998; R. de la Parra Venegas, <i>in litt.</i>
11 Jun 1992	Passo de Torres, SC, Brazil	29°18'18"S	49°42'02"W	1	UFSC1100	P†	Simões-Lopes <i>et al.</i> , 1992; Simões-Lopes <i>et al.</i> , 1994
16 Nov 1992	Praia do Cabo Branco, PB, Brazil	7°09'S	34°49'W	1	UFPB2001	P	Lucena <i>et al.</i> , 1998
27 Nov 1992	113 km north of Nouakchott, Mauritania	19°1.9'N	16°13.5'W	1	VSCL01	P	Robineau <i>et al.</i> , 1994
6-10 Dec 1992	Key West, FL, USA	24°42.1'N	81°07.1'W	23	SE7502-7516, SE7519-7526	P	Jefferson <i>et al.</i> , 1995
15 Feb 1993	Pratagai, Alagoas state, Brazil	9°31'S	35°35'W	1	C1152/64	G	Fragoso <i>et al.</i> , 1994
12 Mar 1993	Praia da Taiba, CE, Brazil	3°32'S	38°49'W	1	GECC30101	P	Alves <i>et al.</i> , 1996
Apr 1993	Ondina, Salvador, BA, Brazil	13°00'S	38°30'W	1	LABNEC-C1150/9	U	A. Pereira, pers. comm.
7 May 1994	Praia de Imbassai, BA, Brazil	12°30'S	37°58'W	1	Specimen not collected	G	Reis & Queiroz, 1994
6 Nov 1994	Praia do Forte, BA, Brazil	12°34'S	37°59'W	1	CCPM0004	U	R. Maia-Nogueira, pers. comm.
8 Dec 1994	FL, USA	27°11.3'N	80°09.6'W	1	SE9685	U	This paper
15 Jun 1995	Tarpon Springs, FL, USA	28°09'N	82°47.5'W	21	SE10568,10203-10220	U	D.K. Odell, pers. comm.
Jul 1995	Massarandupió, Entre Rios, BA	12°22'S	37°51'W	1	LABNEC-C1150/16	U	A. Pereira, pers. comm.
1 Nov 1995	Bijol Islands, Gambia	13°23.1'N	16°49'W	1	PFM-001	G	Van Waaerebeek <i>et al.</i> , 2000
9 Mar 1996	Grand Isle, LA, USA	90°01.45'N	29°12.04'W	1	LA029-96	U	This paper
10 Apr 1996	Praia de Interlagos, Camaçari, BA, Brazil	12°41'S	38°19'W	1	CCPM0009	U	R. Maia-Nogueira, pers. comm.
1 Feb 1997	Barra Grande, Vera Cruz, BA, Brazil	13°52'S	38°57'W	1	LABNEC-C1152/23	U	A. Pereira, pers. comm.
May 1997	Barra Grande, Vera Cruz, BA, Brazil	13°52'S	38°57'W	1	LABNEC-C1152/24	U	A. Pereira, pers. comm.
1 Feb 1998	Barra Grande, Vera Cruz, BA, Brazil	13°52'S	38°57'W	1	LABNEC-C1151/44	U	A. Pereira, pers. comm.

Date	Location	Latitude	Longitude	No.	Specimen no.	Status	Source
8 Mar 1998	Arembepe, Camaçari, BA, Brazil	12°41'S	38°6'W	1	CCPM0029	U	R. Maia-Nogueira, pers. comm.
18 Apr 1998	Praia Carne de Vaca, PE, Brazil	7°35'S	34°50'W	1	Specimen not collected	G [†]	Zaniolo & Picanço, 1998
2 Sep 1998	Praia de Patamares, BA, Brazil	12°58'S	38°30'W	1	CCPM0040	U	R. Maia-Nogueira, pers. comm.
29 Sep 1998	Pinellas County, Anclote Key, FL, USA	28°10.8'N	2°51.2'W	1	SE13802	U	This paper
1 Feb 1999	Flagler County, FL, USA	29°30.1'N	81°7.8'W	1	SE14094	U	This paper
6 Jan 2000	Barreira do Inferno, RN, Brazil	5°55'S	35°09'W	1	UFRN-05	U	F.J.S. Lima, pers. comm.
12 Feb 2000	Praia de Pituauçu, Salvador, BA, Brazil	12°58'S	38°30'W	1	CCPM0074	U	R. Maia-Nogueira, pers. comm.
14 Feb 2000	Praia do Forte, BA, Brazil	12°34'S	37°59'W	1	CCPM0075	U	R. Maia-Nogueira, pers. comm.
3 Jun 2000	Praia de Berlinque, Vera Cruz, BA, Brazil	13°01'S	38°38'W	1	CRMA#0004	U	R. Maia-Nogueira, pers. comm.
10 Jun 2000	Praia da Penha, Salvador, BA, Brazil	12°58'S	38°30'W	1	CCPM0084	U	R. Maia-Nogueira, pers. comm.
23 Jul 2000	Jardim de Alá, Salvador, BA, Brazil	12°59'S	38°26'W	1	CCPM0089	U	R. Maia-Nogueira, pers. comm.
17 Sep 2000	Praia de Imbassai, Entre Rios, BA, Brazil	11°57'S	37°31'W	1	CCPM0095	U	R. Maia-Nogueira, pers. comm.
8 Apr 2001	Itacimirim, Praia da Espera, BA, Brazil	12°35'S	38°02'W	1	CCPM, no number	U	R. Maia-Nogueira, pers. comm.
9 Apr 2001	Tramandaí, RS, Brazil	29°58'S	50°07'W	1	GEMARS0795	U	Moreno, 2002
4 Jul 2001	Praia dos Ingleses, Florinópolis, SC, Brazil	27°32'S	48°32'W	1	UFSC1292	U	P.C. Simões-Lopes & P.A.C. Flores, pers. comm.
7 Apr 1996	CE, Brazil	3°43'S	38°32'W	1	GECC30102	U	C. Negão, pers. comm.
N/A	Costa Azul, Litoral Norte, BA, Brazil	12°58.2'S	38°30.6'W	1	CCPM0008	U	R. Maia-Nogueira, pers. comm.
N/A	Probably Texas coast, USA	N/A	N/A	1	TCWC 50847	P	Jefferson & Baumgardner, 1997
N/A	TX, USA	N/A	N/A	1	TMMSN sclu1	U	T. Jefferson, <i>in litt.</i>

Acronyms (locations): Brazil: AL – Alagoas, BA – Bahia, CE – Ceará, PB – Paraíba, PE – Pernambuco, RN – Rio Grande do Norte, RS – Rio Grande do Sul, SC – Santa Catarina; USA: FL – Florida, LA – Louisiana, NC – North Carolina, NJ – New Jersey, TX – Texas.

BMNH – British Museum of Natural History, London, UK; CCPM – Coleção Científica do Projeto Mamíferos Marinhos, Salvador/BA, Brazil; CRMA – Centro de Resgate de Mamíferos Aquáticos, Salvador/BA, Brazil; GECC – Grupo de Estudos de Cetáceos do Ceará, Fortaleza/CE, Brazil; GEMARS – Grupo de Estudos de Mamíferos Aquáticos do Rio Grande do Sul, Porto Alegre/RS, Brazil; IFAN – Institut Fondamental d'Afrique Noire, Dakar; these specimens are now located at the Paris Muséum national d'Histoire naturelle (Van Waerebeek *et al.*, 2000); LABNEC – Laboratório de Nectologia da Universidade Federal da Bahia, Salvador/BA, Brazil; LSUMZ – Louisiana State University Museum of Zoology, Baton Rouge, LA; PFM – this specimen is curated at the Department of Parks and Wildlife Management, Abuko National Park, The Gambia; PREAMAR – Programa de Estudos de Animais Marinhos, Salvador/BA, Brazil; RVMMCM – Red de Varamientos de Mamíferos Marinos del Caribe Mexicano; SE – South-east Marine Mammal Stranding Network, USA; TCWC – Texas Cooperative Wildlife Collection, Texas A&M University, College Station, TX; TMMSN – Texas Marine Mammal Stranding Network, Galveston, TX; UF – University of Florida, Gainesville, FL; UFSC – Universidade Federal de Santa Catarina, Laboratório de Mamíferos Aquáticos, Florianópolis/SC, Brazil; UFPB – Universidade Federal da Paraíba, João Pessoa/PB, Brazil; UFRN – Universidade Federal do Rio Grande do Norte, Natal/RN, Brazil; USNM – Smithsonian Institution National Museum of Natural History (United States National Museum), Washington, D.C.; UZMC – Universitets Zoologiske Museum, Copenhagen; VSCL01 – private collection M. Vely, Centre national d'Élevage et de Médecine vétérinaire.

U – unpublished information; P – published in article or book chapter; G (Grey) – published thesis/dissertations, conference abstracts, government reports; N/A – information not available.

*Mass stranding (18); 6 of 7 recovered were Clymene.

[†]Record discussed in text.

APPENDIX 3

Verified capture records of the *Clymene dolphin*

Date	Location	Latitude	Longitude	Specimen no.	Type	Status	Source
N/A	N/A	N/A	N/A	BMNH 1948.5.1.2	Probable capture	U	This paper
N/A	N/A	N/A	N/A	BMNH 352c	Probable capture	U	This paper
N/A	N/A	N/A	N/A	BMNH 352e	Probable capture	U	This paper
N/A	N/A	N/A	N/A	BMNH 352f	Probable capture	U	This paper
N/A	N/A	N/A	N/A	C143c	Probable capture	U	Fraser, <i>in litt.</i> ; this paper
N/A	N/A	N/A	N/A	BMNH 1947.7.2.2	Probable capture	P	F.C. Fraser, <i>in litt.</i> ; Perrin <i>et al.</i> , 1981
Pre-1846	N/A	N/A	N/A	BMNH 350a	Probable capture	P	F.C. Fraser, <i>in litt.</i> ; Gray, 1846; Perrin <i>et al.</i> , 1981
1846–?	North-west of St. Paul Island, Atlantic	4°18'N	31°20'W	UZMCLütken 9	Capture	P	F.C. Fraser <i>in litt.</i> ; Lütken, 1889; Perrin <i>et al.</i> , 1981
1869	Between Ascension and St. Paul Islands	3°40'S	18°5'W	UZMCLütken 13 and 7	Capture	P	F.C. Fraser <i>in litt.</i> ; Lütken, 1889; Perrin <i>et al.</i> , 1981
Pre-1889	N/A	N/A	N/A	UZMCLütken 12	Capture	P	F.C. Fraser <i>in litt.</i> ; Lütken, 1889; Perrin <i>et al.</i> , 1981
20 Jul 1957	South of Saloum River, Senegal, Africa	16°N	17°20'W	No IFAN #	Capture	P	Cadenat & Doutre, 1958; Cadenat, 1959; Perrin <i>et al.</i> , 1981; Robineau <i>et al.</i> , 1994; Van Waerebeek <i>et al.</i> , 2000
Spring 1965	Bunces Pass, FL, USA	27°45'N	82°45'W	R-G-1-SLS	Capture	P	Caldwell & Caldwell, 1975; Perrin <i>et al.</i> , 1981; Jefferson & Schiro, 1997
14 Feb 1969	Carriacou, north of Grenada, Caribbean	12°25'N	61°36'W	BMNH 239115	Capture	P*	Perrin <i>et al.</i> , 1981; J. Bolaños, pers. comm.
1970s	Windward Islands, Caribbean	13°N	61°W	N/A	Capture	P	Perrin <i>et al.</i> , 1981; Perrin & Mead, 1994
17 May 1976	Windward Islands, Caribbean	13°N	61°W	N/A	Capture	P	Perrin <i>et al.</i> , 1981; Perrin & Mead, 1994
13 May 1977	Windward Islands, Caribbean	13°N	61°W	N/A	Sight/capture	P	Perrin <i>et al.</i> , 1981; Perrin & Mead, 1994
23 Feb 1978	Windward Islands, Caribbean	13°N	61°W	SV78-1-SLS	Sight/capture	P	Perrin <i>et al.</i> , 1981; Perrin & Mead, 1994
27 Oct 1981	West Africa	12°44'N	17°45'W	IFAN 79-106	Capture	P	Robineau <i>et al.</i> , 1994
23 Sep 1998	Winneba, Ghana, Africa	N/A	N/A	N/A	Capture	G	Van Waerebeek & Ofori-Danson, 1999; Van Waerebeek <i>et al.</i> , 2000

BMNH – British Museum of Natural History, London, UK; IFAN – Institut Fondamental d'Afrique Noire, Dakar; these specimens are now located at the Paris Muséum national d'Histoire naturelle (Van Waerebeek *et al.*, 2000); UZMC – Universitets Zoologiske Museum, Copenhagen.

U – unpublished information; P – published in article or book chapter; G (grey) – published in cruise report, thesis/dissertations, conference abstracts, government reports; N/A – information not available

*Record discussed in text