Cetaceans of the Cape Verde Archipelago

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CETACEANS OF THE CAPE VERDE ARCHIPELAGO

The Cape Verde archipelago consists of 10 main islands and 8 islets (Fig. 1). The easternmost island, Boavista, is located about 445 km from Senegal, northwestern Africa. The volcanic islands of Cape Verde emerge steeply from depths of about 4,000 m. The climate is dry tropical, and strong winds are a dominant feature. These winds bring deep, nutrient-rich water to the surface in many areas, supporting abundant cephalopods and pelagic fishes (Forest 1994).

The winds also cause rough seas and often make navigation around the Cape Verde islands difficult and hazardous. This explains, in part, the lack of information about cetaceans occurring in the archipelago. We decided to compile records from various sources and to present a checklist of cetacean species found in this part of the southeastern North Atlantic. There are published records of nine species in the region (see Table 1), and we can now add five species based on our own investigations. We also review other species recorded on the continental northwestern coast of Africa that probably also occur around the Cape Verde archipelago.

Original information presented here results from sightings (at sea and from shore), from searches of newspaper files, and from a scrutiny of logbooks of oceanographic and selected fishing vessels. One author (FR) has participated in numerous field expeditions around the archipelago related to fisheries development, as a consultant for the local government since 1991. During these irregularly scheduled expeditions, usually on 12-m trawlers, many sightings of cetaceans were made. Whenever schedule and sea conditions permitted, animals were observed, identified as to species, and photographed.

One author (FWW) spent two periods of three months each dedicated to marine mammal surveys in 1990 and 1991. All such surveys were conducted in 5-m boats in the eastern part of the archipelago (Santiago, Boavista, and Sal Islands). Four stranded animals were examined on site and three dolphins were examined in marketplaces.

Species Accounts

Grampus griseus—Risso's dolphins are cosmopolitan in tropical and warm temperate oceanic waters (Leatherwood and Reeves 1983), and their occurrence in the region is to be expected. A neonate *Grampus griseus* offered to a Dutch expedition (CANCAP) was originally referred to as coming from Cape Verde (Broekema 1983, p. 73). However, our information that this specimen was stranded at São Miguel Island, Azores, was confirmed by Broekema (National Museum of Natural History, Leiden, the Netherlands, personal communication). We report a single observation of about 20 Risso's dolphins, readily

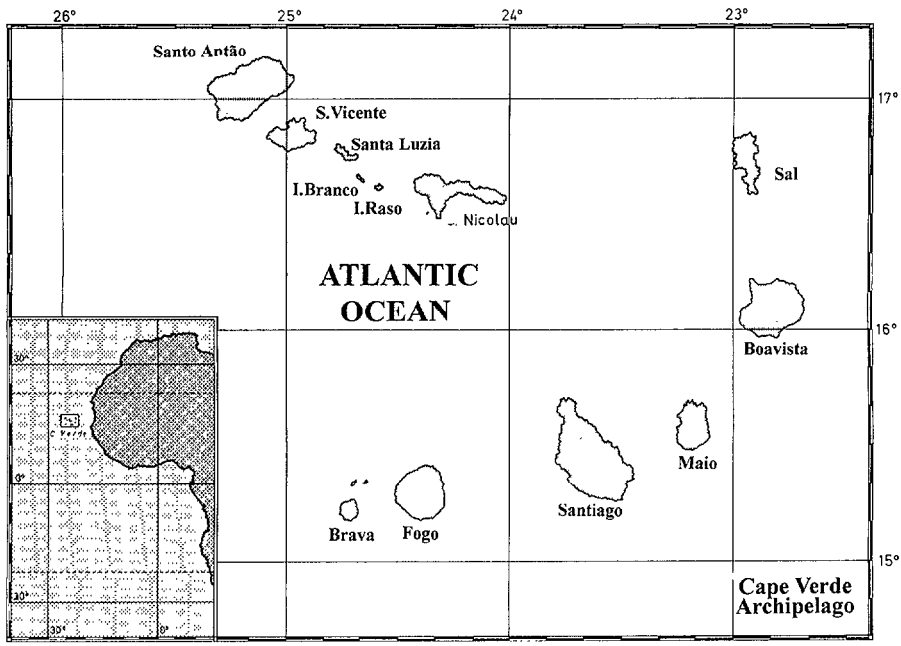

Figure 1. Map of the Cape Verde archipelago. The inset shows the location of the archipelago off continental northwestern Africa.

identified on account of their blunt snout, tall and falcate dorsal fin, and light gray, scarred skin (Leatherwood and Reeves 1983).

Tursiops truncatus—The bottlenose dolphin is found worldwide in temperate and tropical waters (Klinowska 1991), and it is obviously an abundant species in this archipelago, seen throughout the year. Lagendijk (1984) observed bottlenose dolphins on two occasions during a cruise in the archipelago in that year. We add 13 records (see Table 2). In late March 1991, one animal was

Table 1. Cetacean species reported previously in the Cape Verde archipelago.

Common name	Species	First record
Bottlenose dolphin	*Tursiops truncatus*	Lagendijk 1984
Atlantic spotted dolphin	*Stenella frontalis*	Cuvier 1829
Pantropical spotted dolphin	*Stenella attenuata*	Perrin *et al.* 1987
Common dolphin	*Delphinus delphis*	Lagendijk 1984
Long-finned pilot whale	*Globicephala melas*	Lagendijk 1984
Short-finned pilot whale	*Globicephala macrorhynchus*	Lagendijk 1984
Cuvier's beaked whale	*Ziphius cavirostris*	Haase 1987
Blue whale	*Balaenoptera musculus*	Ingebrigtsen 1929
Humpback whale	*Megaptera novaeangliae*	Atwood 1887

Table 2. Occurrences of cetaceans in the Cape Verde archipelago recorded by the authors.

Species	Date	Location	Event
Grampus griseus	26 June 1993	17°00′N, 25°03′W	Sighting of about 20 individuals
Tursiops truncatus	6 March 1991	16°38′N, 22°53′W	Sighting of 4–6 animals
	late March 1991	Off Santiago Island	Adult harpooned by fishermen
	15 October 1991	16°06′N, 23°09′W	Sighting of about 200 individuals
	17 June 1993	16°21′N, 24°20′W	Sighting of about 20 individuals
	23 July 1993	15°56′N, 22°51′W	Sighting of 7 individuals
	14 September 1993	15°08′N, 23°51′W	Sighting of about 50 individuals
	28 October 1993	16°57′N, 25°03′W	Sighting of about 30 individuals
	28 October 1993	15°04′N, 24°22′W	Sighting of about 200 individuals
	14 February 1994	17°13′N, 25°05′W	Sighting of about 15 individuals
	3 March 1994	16°57′N, 25°21′W	Sighting of about 50 individuals
	17 March 1994	16°53′N, 24°54′W	Sighting of about 30 individuals
	28 March 1994	17°14′N, 25°06′W	Sighting of about 30 individuals
	August 1994	Off Sal Island	Adult harpooned by fishermen
Stenella frontalis	21 February 1994	16°36′N, 24°27′W	Sighting of about 30 individuals
Stenella longirostris	1 March 1986	16°13′N, 24°47′W	Sighting of about 10 individuals
	6 March 1986	14°52′N, 23°30′W	Sighting of 3 individuals
	18 January 1991	17°11′N, 25°35′W	Sighting of about 100 individuals
Delphinus sp.	10 June 1993	16°50′N, 25°02W	Sighting of about 30 individuals
	16 June 1993	Off São Vicente Island	180-cm male harpooned by fishermen
	5 July 1993	15°09′N, 23°47′W	Sighting of about 300 individuals
	6 July 1993	15°09′N, 23°47′W	Sighting of about 300 individuals
	16 August 1993	15°05′N, 23°11′W	Sighting of about 300 individuals
	17 March 1994	16°49′N, 23°07′W	Sighting of about 200 individuals
	18 March 1994	17°12′N, 25°00′W	Sighting of about 50 individuals
Peponocephala electra	10 July 1993	16°52′N, 24°55′W	Stranded animal, skull recovered
	16 December 1994	16°35′N, 24°25′W (approx.)	Adult harpooned by fishermen

Table 2. Continued.

Species	Date	Location	Event
Globicephala macrorhynchus	14 June 1993	16°56′N, 22°55′W	Sighting of 1 individuals
	12 February 1994	17°11′N, 25°17′W	Sighting of 8 individuals
Physeter macrocephalus	September 1981	14°53′N, 24°31′W	Stranding of 1 individual
	January 1988	16°13′N, 22°55′W	Stranding of 1 individual
	June and July 1990	16°36′N, 22°57′W	Repeated sightings of mother-calf pair
	January 1991	16°46′N, 22°52′W	Stranding of 6 individuals
	14 June 1994	14°58′N, 23°45′W	Sighting of 1 individual
	15 June 1994	15°15′N, 23°26′W	Sighting of 1 individual
Balaenoptera musculus	5 June 1993	16°33′N, 24°00′W	Sighting of 1 individual
Balaenoptera physalus	2 November 1983	14°55′N, 23°37′W	Stranding of a juvenile male
	11 April 1993	17°09′N, 24°57′W	Sighting of 2 individuals
Megaptera novaeangliae	17 February 1990	16°32′N, 22°51′W	Sighting of 4–5 individuals
	4 March 1990	16°34′N, 22°55′W	Sighting of 1 individual
	7 March 1991	16°30′N, 22°58′W	Sighting of 2 individuals
	26 March 1991	16°20′N, 22°58′W	Sighting of 1 individual
	12 April 1991	16°36′N, 22°59′W	Sighting of 2 individuals
	16 April 1991	16°57′N, 25°05′W	Sighting of 3 individuals
	3 March 1992	16°55′N, 24°56′W	Stranding of 3 individuals
	16 July 1993	16°34′N, 24°23′W	Sighting of 1 individual
	12 June 1994	15°57′N, 23°42′W	Sighting of 1 individual

harpooned off Santiago island, and observed in the marketplace of Praia, Santiago Island, by FWW, before being butchered and sold for local consumption. Another bottlenose dolphin was harpooned off Sal Island in August 1994, photographed at the harbor by a tourist, and it came to our knowledge through a Portuguese newspaper. Most of our sightings of bottlenose dolphins occurred quite far from the nearest coast, and some involved large herds. We are not aware of any coastal population in the archipelago, and the animals observed probably belong to an offshore ecotype.

Stenella frontalis—Spotted dolphins, whose taxonomy has been revised by Perrin *et al.* (1987), were collected in the archipelago in the 19th century. In fact, the holotype of the Atlantic spotted dolphin, *S. frontalis,* came from Cape Verde (collected at about 15°N, 24°W) and was first described as *Delphinus frontalis* by Cuvier (1829); also see Robineau (1990). Lagendijk (1984) reported a sighting of Atlantic spotted dolphins. We report a single sighting of a group of about 30 individuals observed swimming about 200 m from shore, passing by the lighthouse of Tarrafal, São Nicolau Island (Table 2). It was possible to identify these animals from the ship as Atlantic spotted dolphins by their dorsal spots, spinal blaze, and broad eye and blowhole stripes (Perrin *et al.* 1987).

Stenella attenuata—Two animals from Cape Verde, described by Gray in 1866 as *Clymene punctata,* were considered by Perrin *et al.* (1987) to be pantropical spotted dolphins, making them the first records of that species in the region, and the only one known to us.

Stenella longirostris—The spinner dolphin is known from tropical and subtropical pelagic waters (but also in shelf waters and near islands), including the coastal waters of western Africa. The unpublished reports of the oceanographic research vessel "Fengur" record two sightings of spinner dolphins (Table 2). We also add the sighting of a group of about 100 individuals identified by their long, slim beaks and their triangular dorsal fins leaning slightly forward.

Delphinus spp.—Common dolphins are the most abundant and widely distributed cetaceans in Cape Verde waters. Heyning and Perrin (1994), based on convincing evidence from several characteristics, have proposed the separation of common dolphins into two species: the "short-beaked", *D. delphis,* and the "long-beaked", *D. capensis.* The Cape Verde archipelago is located in a region where both species may occur (Heyning and Perrin 1994). However, the records presented here do not allow species discrimination.

Lagendijk (1984) sighted common dolphins on two occasions, identifying them as *D. delphis,* but is not possible to rule out *D. capensis.* We report the observation of common dolphins at sea on seven occasions (Table 2).

Peponocephala electra—This pelagic delphinid is widely distributed in tropical and subtropical waters, but it has been rarely reported in the eastern South Atlantic (Leatherwood and Reeves 1983). The remains of a melon-headed whale in an advanced state of decay were found at Praia do Norte, São Vicente Island. The skull was recovered for the National Museum of Natural History in Lisbon (MNHN 22175). Recently, another occurrence of the melon-headed

whale was brought to our knowledge. On 16 December 1994 an adult specimen was harpooned by local fishermen off Tarrafal, São Nicolau Island.

Globicephala melas—Lagendijk (1984) reported two sightings of long-finned pilot whales, without further details, which makes it impossible to rule out the possibility of confusion with *G. macrorhynchus.*

Globicephala macrorhynchus—The short-finned pilot whale is widely distributed in tropical and warm temperate waters, and it is possible to identify it on the basis of its bulbous head, the falcate dorsal fin, and the pectoral fins shorter than one-sixth of the body length (Leatherwood and Reeves 1983). Lagendijk (1984) also reported two sightings of short-finned pilot whales, and we add two observations of these animals (Table 2).

Ziphius cavirostris—Haase (1987) reported the sighting of a group of five Cuvier's beaked whales on 18 August 1986, south of the archipelago (14°19'N, 23°13'W). Although the animals were described in detail, species identification of beaked whales can be extremely difficult without photograpic documentation or actual specimens.

Physeter macrocephalus—Sperm whales are widely distributed and certainly to be expected in Cape Verde waters, but we found no previous record, including the historical whaling literature, of the species in the region. We report two strandings of single animals, another stranding of six individuals, and six sightings (Table 2).

Balaenoptera musculus—Ingebrigtsen (1929) reported the sighting of 12 blue whales between the Cape Verde archipelago and continental Africa in March 1911. Kirpichnikov (1950, in Klinowska 1991) considered that a stock of blue whales (the eastern Atlantic stock) winters around the Cape Verde Islands, but apparently there are no other recent records. We report one sighting of a large adult (Table 2), recognized by its enormous size, a broad and nearly U-shaped head, and a minuscule dorsal fin in a very posterior position.

Balaenoptera physalus—Fin whales are widely distributed but not very common in tropical waters, and we found no previous record for the region. On 2 November 1993 a 4.5-m long, juvenile male stranded on the beach of Cidade Velha, Santiago Island. The event was described in a local newspaper (now defunct, *Voz di Povo,* 30 November 1993). We add one sighting (Table 2).

Megaptera novaeangliae—Humpback whales in the eastern North Atlantic have been found from the British Isles north as far as Bear Island (75°N) and Spitsbergen (78°N) (Mitchell and Reeves 1983). It has been speculated that they may winter in the vicinity of the Cape Verde Islands (Townsend 1935, Winn *et al.* 1981, Mitchell and Reeves 1983). The Cape Verde archipelago includes shallow banks and protected reefs similar to those found in the waters north of the Dominican Republic, which have been recognized as the largest breeding area for this species in the Atlantic (Winn *et al.* 1975).

New England whalers hunted humpback whales in the Cape Verde Islands during the winter months in the 19th century (Mitchell and Reeves 1983). Atwood's (1887) summary of the itinerary of Provincetown (Massachusetts, USA) "humpbackers" described the West Indian whaling grounds, but also

noted that "another favorite ground is around the Cape Verde Islands, where these vessels cruise near the shore for the humpback during the winter months." The Cape Verdeans also hunted humpback whales from shore-whaling stations during the mid-19th century. Ingebrigtsen (1929) stated that northeast Atlantic humpback whales were severely depleted between 1885 and 1927 and the fleet "appears to have entirely exterminated" the stock.

We report eight sightings of humpback whales (Table 2), recognized by their characteristically long and whitish pectoral fins. During one of these sightings (17 February 1990), a 9-min song was recorded in the vicinity of a single animal. Also, on three different days during 1991, distant singers (not in sight) were recorded off Sal Island. Many other sightings were reported to us by fishermen, windsurfers, yachters, and divers, including observations of mother-calf pairs.

As to strandings/captures, there are three events of interest. Fishermen reported that during February or March 1988 one adult whale was killed near Ribeira da Barca, on the west coast of Santiago Island. It had been swimming near shore, and fishermen who were interviewed felt that the animal was weak enough to be killed. Whale ribs and vertebrae can still be found on the shore. In February or March 1989 one calf was stranded alive near Cidade Velha, Santiago Island, and subsequently killed for meat. On 3 March 1992 one of the authors was alerted to three whales, one of which was probably a juvenile, that were stranded on the west coast of São Vicente Island. The animals were about 50 m apart, all in an advanced state of decay, and apparently were already so when beached at that location. Vertebrae and other bones were soon removed by local people.

Two humpback fluke photographs were obtained on 12 April 1991. They were later compared with the 5,000+ fluke photographs from the North Atlantic Humpback Whale Catalog and the 4,500+ fluke photographs in the YONAH (Years of the North Atlantic Humpback) catalog, kept at the College of the Atlantic, Bar Harbor, Maine. Neither fluke photographed matched any animal in those catalogs.

We propose that the humpback whales sighted in the Cape Verde archipelago during the months of February, March, and April are probably representatives of the wintering eastern North Atlantic humpback whale stock. The sightings of humpback whales during June and July could be late-departing animals of the eastern North Atlantic. However, the possibility cannot be excluded that they belong to a Southern Hemisphere population of humpbacks. It is possible that Northern and Southern Hemisphere humpback whale populations utilize the same habitat in equatorial regions during the breeding season. However, no confirmatory data are presently available.

While recognizing the high probability that Northern and Southern Hemisphere humpback whale populations are geographically or temporally separated, additional research must be done to investigate whether "interchange" ever occurs between stocks. In order to determine whether Cape Verde humpbacks belong to an eastern North Atlantic, a western North Atlantic, or a Southern Hemisphere humpback whale stock, at least three sources of information

would be required: (1) a larger sample of humpback fluke photographs obtained in Cape Verde (to be compared with the catalogs); (2) an extensive biopsy/genetic sampling program of humpback whales in the region; and (3) a larger sample of humpback whale songs.

Additional species have been reported from neighboring countries, and some of them are likely to occur also in the Cape Verde archipelago. Searching the literature, we found records of the following species not mentioned above: harbor porpoise, *Phocoena phocoena,* in Senegal (Fraser 1958, Cadenat 1959, Dupuy and Maigret 1976), and in Mauritania (Cadenat 1957, 1959; Smeenk *et al.* 1992); rough-toothed dolphin, *Steno bredanensis,* in Senegal (DeKeyser 1955, Cadenat 1959, Dupuy and Maigret 1976), and off Mauritania (Addink *et al.* 1995); Atlantic hump-backed dolphin, *Sousa teuszii,* in Senegal (Fraser 1949, Cadenat 1956, Dupuy and Maigret 1976), and in Guinea-Bissau (Spaans 1990, Sequeira and Reiner 1992); clymene dolphin, *Stenella clymene,* in Senegal (Perrin *et al.* 1981, Robineau *et al.* 1994); pygmy killer whale, *Feresa attenuata,* in Senegal (Cadenat 1958); killer whale, *Orcinus orca,* in Mauritania (Cadenat 1959), Senegal (DeKeyser 1955, Cadenat 1959, Dupuy and Maigret 1976), the Ivory Coast (Cadenat 1959), and in offshore waters north of the Cape Verde archipelago (a sighting recorded on 18 April 1816 at 19°01'N, 19°41'W, reviewed by Reeves and Mitchell 1988); Gervais' beaked whale, *Mesoplodon europaeus,* in Guinea-Bissau (Reiner 1979), and in Mauritania (Robineau and Vely 1993); pygmy sperm whale, *Kogia breviceps,* in Senegal (Cadenat 1959, Dupuy and Maigret 1976); northern right whale, *Eubalaena glacialis,* in Mauritania (Schevill and Moore 1983); and Bryde's Whale, *Balaenoptera edeni,* in Senegal (Cadenat 1955).

Miyazaki and Perrin (1994, p. 3) present a distribution map for the rough-toothed dolphin, *S. bredanensis,* which includes the Cape Verde archipelago. Perrin (National Marine Fisheries Service, U.S.A., personal communication) recently stated that this was because of geographical error, since the record in question referred to Cape Verde in Senegal. In fact, it is a common mistake in the zoological literature to confuse Cape Verde, Senegal, with the Cape Verde Republic.

All species of cetaceans are fully protected in Cape Verde by recent legislation (Law 17/1987). However, enforcement is not effective, so cetaceans are occasionally captured and their meat is sold and consumed.

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FRANCISCO REINER, Projecto Delfim, Apartado 23051, 1100 Lisboa, Portugal; MANUEL E. DOS SANTOS, Unidade de Investigação em Eco-Etologia, Instituto Superior de Psicologia Aplicada, Rua Jardim do Tabaco, 44, 1100 Lisboa, Portugal; FREDERICK W. WENZEL, Center for Vertebrate Studies, Northeastern University, Boston, Massachussets 02115, U.S.A, and Allied Whale, College of the Atlantic, 105 Eden Street, Bar Harbor, Maine 04609, U.S.A. Received 7 July 1995. Accepted 13 December 1995.