Dolphins and porpoises of West Africa : a review of records (Cetacea : Delphinidae, Phocoenidae)

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Abstract. – A review indicates that nineteen species of dolphins and porpoises (cetacean families Delphinidae and Phocoenidae) occur in West African waters (from the Strait of Gibraltar to the Congo River). In addition, two other cold temperate species reach their southern limit at the northern border of the area. For each species, distribution records in West African waters are reviewed. A key to dolphins and porpoises of West Africa, based on external appearance, is presented to aid in identification.

Résumé. – Une recherche bibliographique a permis de dénombrer dix-neuf espèces de dauphins et marsouins (Cétacés : Delphinidae et Phocoenidae) dans les eaux de l'Afrique de l'Ouest (depuis le Détroit de Gibraltar jusqu'au fleuve Congo). De plus, deux espèces vivant dans des eaux froides et tempérées atteignent leur limite sud de répartition à la frontière nord de cette zone. La distribution de chaque espèce en Afrique de l'Ouest est passée en revue. Une clé d'identification des dauphins et marsouins de l'Afrique de l'Ouest, basée sur la morphologie externe, est proposée en vue de faciliter la détermination.

INTRODUCTION

The West African region has a diverse marine mammal fauna. The area, as defined in this paper (see below), is known to include at least seven species of baleen whales, nine toothed whales, 18 dolphins, one porpoise, one manatee, and one seal. Two of these species (the West African manatee, *Trichechus senegalensis,* and the Atlantic hump-backed dolphin, *Sousa teuszii*) are found nowhere else in the world, and a third species (the Mediterranean monk seal, *Monachus monachus*) has a major portion of its range in the West African region.

The marine mammals that occur in West Africa have been well-documented, mostly by French biologists (e.g., Cadenat 1959 a, Duguy 1976, Maigret *et al.* 1976,

Mammalia, t. 61, n° 1, 1997 : 87-108.

Maul and Sergeant 1977, Maigret 1986, Vonk and Martin 1988). However, there has been little directed study, and not much work on cetaceans has been done there in recent years. The work of previous researchers has been largely based on stranded animals, those caught for research, and those captured in fishing nets and taken for food by local people. However, the numbers of animals taken in these fisheries have not been documented. As far as we know, there have been no large-scale sighting surveys for cetaceans in this region.

Many different types of fisheries have accidental catches of marine mammals. Most prominent are gillnet and purse seine fisheries. Small cetaceans appear to be caught in both these fishery types in West Africa. Porpoises and dolphins are taken in gillnets in at least Morocco and Mauritania, and there is a large driftnet fishery for swordfish off the Ivory Coast and Ghana (Maigret 1994). Driftnets appear to have a universal catch of small cetaceans (see Northridge 1991). There is also a large tuna purse seine fishery off the West African coast. Similar to the situation in the eastern tropical Pacific, there is an association of dolphins and tuna in this area, and dolphins are known to be taken in purse seine nets there (Simmons 1968, Levenez *et al.* 1980, Maigret 1981 a, Arbex 1990, Santana *et al.* 1991, Ariz *et al.* 1992). There are also known cases of small cetaceans becoming entangled and killed in other types of fishing gear, such as midwater trawls and beach seines (review *in* Maigret 1994).

This paper has been prepared as part of a project that aims to provide information on the interactions of marine mammals, especially small cetaceans, with fisheries in West Africa. It was one of the 45 most urgent conservation projects recommended by the Cetacean Specialist Group of IUCN's Species Survival Commission (Perrin 1989), and the importance of this project was again emphasized in the most recent cetacean action plan (Reeves and Leatherwood 1994).

The purpose of this paper is to summarize information on distribution of dolphins and porpoises (Order Cetacea, Families Delphinidae and Phocoenidae) along the West African coast. Several guides to identification of marine mammals of specific parts of West Africa have been published (northwest Africa, Cadenat 1956 a ; Senegal, Maigret 1977 ; Mauritania, Maigret 1980 a ; Madeira, Reiner 1981 a), and a more recent field guide to all marine mammals has recently been published (Jefferson *et al.* 1993). These will assist biologists in collecting further records of small cetaceans from this area, and the dichotomous key to external features below will be useful for identification of "in hand" specimens (i.e., those either stranded or captured in fishing nets).

AREA OF COVERAGE

Although most of the information on the subsistence and incidental kills of West African small cetaceans comes from the countries of Mauritania, Senegal, and the Ivory Coast (Côte d'Ivoire), a larger area of coverage was chosen for this project because of the lack of information on marine mammals in the rest of West Africa. A convenient set of boundaries was provided by the Food and Agricultural Organization's Fishery Statistical Areas (FAO Area 34). This area, covering the region from the Strait of Gibraltar (36°N), south to the Congo River (6°S), and offshore to approximately half-way across the Atlantic, was chosen as the area of inclusion (Fig. 1). This is a large region ; it includes all West African countries that border the coast, from Morocco to Zaire, as well as several islands such as Madeira, the Canary Islands, Cape Verde Islands, Sao Tomé and Principe, and Annobon Island.

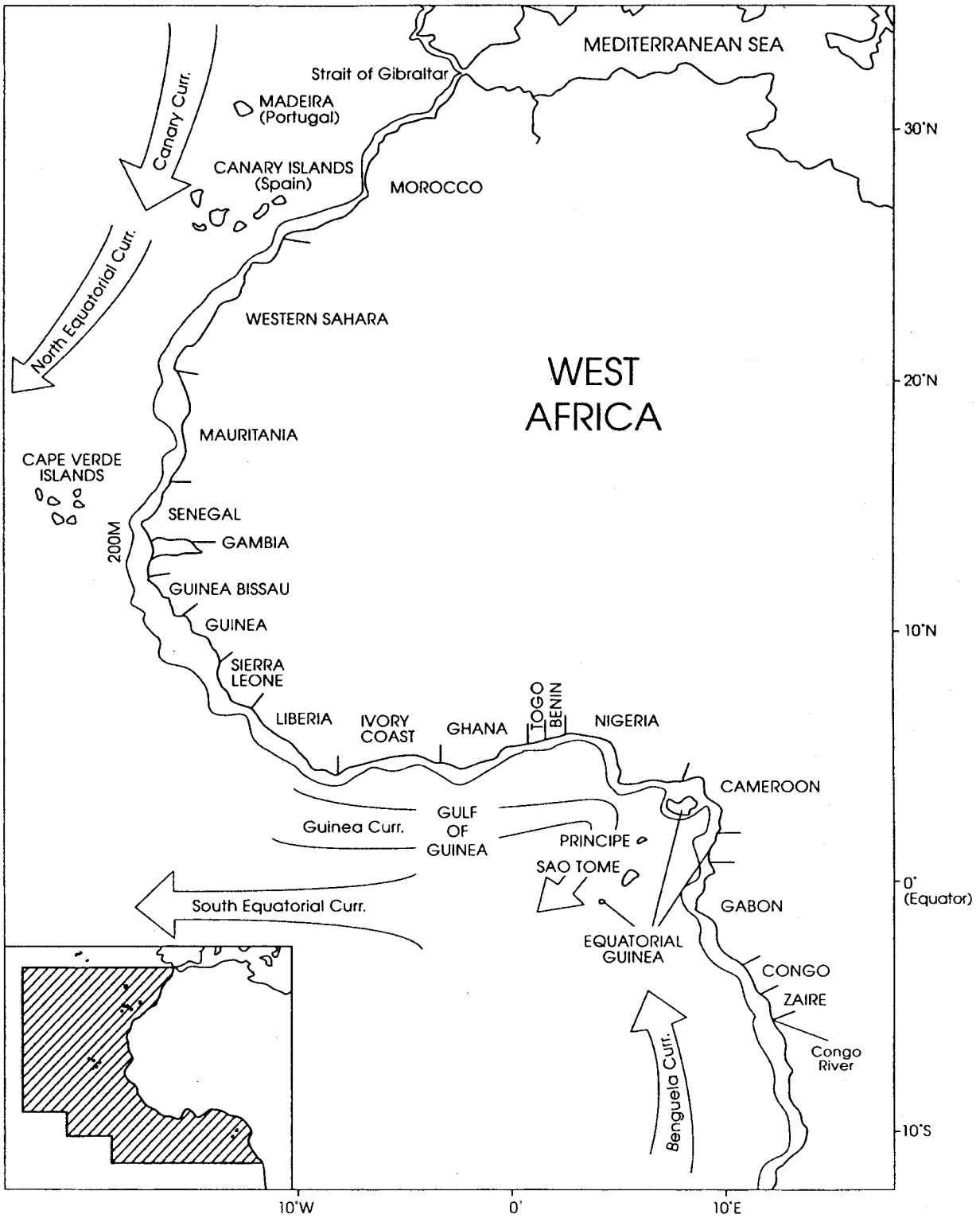

Fig. 1. – Map of the study area, showing major oceanographic currents and the northern and southern limits at the Strait of Gibraltar and the Congo River, respectively. Inset shows the offshore extent of the study area.

Oceanography indirectly affects the distribution of marine mammals by influencing the distribution of their prey. The study area is largely tropical, but in the northern area, not only is this region far from the equator, but it is also heavily influenced by the Canary Current, which brings cold polar waters south along the northwest African coast. This fact, no doubt, explains the unexpected distribution of the harbor porpoise (which in other parts of its range is not found south of 30°N) south to Mauritania and Senegal (to at least 15°N). The Guinea Current affects the area just north of the equator, and the southwest African coast is influenced by the Benguela Current.

Because of the unique oceanography of this area, cold temperate species (such as the harbor porpoise) overlap in distribution with largely tropical species (such as spinner and spotted dolphins of the genus *Stenella*). This is unusual and makes this area of particular interest for studies of cetacean ecology.

SPECIES ACCOUNTS

Harbor porpoise *(Phocoena phocoena)*

This porpoise occurs in temperate to subpolar shallow waters in the Northern Hemisphere. Harbor porpoises in the eastern North Atlantic reach their southern limits in northwest Africa. There are a number of records from around the Strait of Gibraltar (Castells and Mayo 1992), and records of animals becoming caught in nets and stranded in Morocco (Bayed and Beaubrun 1987, Maigret 1994), Senegal (Cadenat 1949, 1957, 1959 a, Fraser 1958, Dupuy and Maigret 1976, 1979, 1980, Maigret 1982), and Mauritania (Duguy 1976, Maigret 1981 a, Maigret *et al.* 1976, Vely 1991). They are considered to be rare or nonexistent south of Senegal, but there is a questionable record from Guinea (Cadenat 1957). Smeenk *et al.* (1992) recently reported several new sightings from Mauritania, and reviewed this species' occurrence in West Africa.

Killer whale *(Orcinus orca)*

Killer whales are cosmopolitan, although they are most common in cold temperate to subpolar nearshore waters. There are many records of sightings, strandings, and captures off West Africa and they can be expected anywhere in the study area (see review *in* Hammond and Lockyer 1988). Confirmed records of their occurrence in the study area are from Morrocco (Braud 1960, Chaney 1960, Aloncle 1964, Bayed and Beaubrun 1987, Reeves and Mitchell 1988), Madeira (Reiner and Biscoito, *in* Hammond and Lockyer 1988), the Canary Islands (Hervé-Gruyer 1989, Martin *et al.* 1992, Castells and Mayo 1992), Western Sahara (Reeves and Mitchell 1988), Mauritania (Cadenat 1959 a, Maigret 1981 b, 1990), Senegal (Cadenat 1957, 1959, Leung 1970, Dupuy 1974, Dupuy and Maigret 1976, 1982, Maigret 1990), Cape Verde Islands (Reeves and Mitchell 1988), Guinea (Cadenat 1959 a), Liberia (Hammond and Lockyer 1988), the Ivory Coast (Cadenat 1959 a), Ghana (C.W. Oliver, pers. comm.), Gabon (Reeves and Mitchell 1988), Annobon Island (Equatorial Guinea - Tormosov *et al.* 1980, Reeves and Mitchell 1988), and the offshore North Atlantic (Reeves and Mitchell 1988).

Long-finned pilot whale *(Globicephala melas)*

Long-finned pilot whales are found in temperate to subpolar areas, in both coastal and offshore waters. They prefer colder waters than the more tropical short-finned

pilot whale. Long-finned pilot whales are known only from the northern portions of the study area. There are records from at least the Strait of Gibraltar (Hashmi 1990, Castells and Mayo 1992), Morocco (Aloncle 1967), and Senegal/Mauritania (Maigret *et al.* 1976, Vely 1991). There are reports of long-finned pilot whales from the Canary Islands (Martin *et al.* 1992), and two sightings from the Cape Verde Islands (Lagendijk 1984), but how these animals were distinguished from *G. macrorhynchus* is unclear.

Short-finned pilot whale *(Globicephala macrorhynchus)*

These animals are found in tropical to warm temperate areas, in oceanic to coastal waters. Short-finned pilot whales, the more tropical of the two species, likely occur throughout the entire study area. Specific records are from Madeira (Maul and Sergeant 1977), Mauritania (Vely 1991), Senegal (Fraser 1950a, Cadenat 1959, Dupuy and Maigret 1976, Maigret 1979), the Ivory Coast (Cadenat 1959), and the Cape Verde Islands (Lagendijk 1984, Reiner *et al.* 1996). There appears to be a somewhat resident population around the Canary Islands, where their behavior has been well-studied (Heimlich-Boran and Heimlich-Boran 1990, 1991, Martin *et al.* 1992, Castells and Mayo 1992).

False killer whale *(Pseudorca crassidens)*

This species is found in tropical to temperate areas, primarily in oceanic waters. False killer whales probably occur throughout the entire region, but there are only a few specific records, a stranding from the Ivory Coast/Ghana border (van Bree 1972) and a sighting off the Atlantic coast of Morocco (Bayed and Beaubrun 1987). However, Castells and Mayo (1992) summarized several sightings from off the Strait of Gibraltar, just north of the study area.

Pygmy killer whale *(Feresa attenuata)*

The pygmy killer whale is a tropical to subtropical species, generally occurring in oceanic waters. This species can be expected to be found in most regions of the study area, with the possible exception of the very northern parts. So far it has only been recorded from the study area in Senegal (Cadenat 1958, 1959a, Fraser 1960), Annobon Island (Equatorial Guinea - Tormosov *et al.* 1980), and Cape Verde (Martin *et al.* 1992).

Melon-headed whale *(Peponocephala electra)*

Melon-headed whales are found in tropical and subtropical regions of the world. They are expected to be found in all but the most northern parts of the study area. In West Africa, a skull of this species was found at a refuse heap in Senegal (van Bree and Cadenat 1968). In the Cape Verde Islands, two specimens have been obtained recently ; one was found stranded and the other was harpooned by fishermen (Reiner *et al.* 1996). There is a record from around Guinea Bissau (van Bree and Cadenat 1968) and another specimen was collected offshore in the central equatorial Atlantic, within the area of coverage of this paper (Goodwin 1945). The only confirmed sighting in the region (other than the herd from which the above individual was collected) is from the offshore North Atlantic (Pilleri 1982).

Risso's dolphin *(Grampus griseus)*

Risso's dolphins occur in tropical to cold temperate waters of the world. Although they are sometimes seen nearshore, they are more common in offshore waters. They probably occur along the entire West African coast. Specific records of their occurrence are from offshore of the Strait of Gibraltar (Tormosov *et al.* 1980), northern Morocco (Kruse *et al.* in press), the Ivory Coast (Cadenat 1959 a), Mauritania (Maigret *et al.* 1976, Duguy 1976, Vely 1991), Senegal (Martin *et al.* 1992), the Canary Islands (Heimlich-Boran and Heimlich-Boran 1990, Martin *et al.* 1992, Castells and Mayo 1992), and the Cape Verde Islands (Broekema 1983, Reiner *et al.* 1996 ; Kruse *et al.* in press).

White-beaked dolphin *(Lagenorhynchus albirostris)*

This is a cold temperate to subarctic North Atlantic species, generally occurring in oceanic waters. White-beaked dolphins normally reach their southern limit along the Portuguese coast, and do not usually occur in the Mediterranean or Black seas (Reeves *et al.* in press). Castells and Mayo (1992) summarized six records for the Strait of Gibraltar area, although these are probably best considered extralimital. Cadenat (1949) reported a possible *Lagenorhynchus* skull from Senegal ; however, he may have been referring to a *Peponocephala* skull (this species was previously placed in the genus *Lagenorhynchus*).

Atlantic white-sided dolphin *(Lagenorhynchus acutus)*

Atlantic white-sided dolphins are found in cold temperate to subarctic North Atlantic waters, generally well offshore in deep waters. There is no definite evidence that the Atlantic white-sided dolphin occurs in West Africa. They normally occur further north (Reeves and Brownell, in press), but stragglers apparently do reach the northern border of the study area. Castells and Mayo (1992) provided a single sighting record from off the Strait of Gibraltar, although this is probably extralimital.

Rough-toothed dolphin *(Steno bredanensis)*

This tropical to warm temperate dolphin is probably found throughout the study area. It has been captured off the Strait of Gibraltar (Castells and Mayo 1992) and Madeira (Reiner 1981 b) ; captured, stranded, and sighted off Senegal (Cadenat 1949, 1959 a, Dupuy and Maigret 1976, 1980, 1982, Maigret 1979, Tormosov *et al.* 1980) ; stranded and sighted off Mauritania (Maigret *et al.* 1976, Duguy 1976) ; and captured off the Ivory Coast (Cadenat 1959 a). There are also records from the Cape Verde Islands and within the study area in the offshore South Atlantic (Miyazaki and Perrin 1994). There are recent records from the Canary Islands (Vonk and Martin 1988, S.L. Heimlich-Boran, pers. comm.), and C.W. Oliver (pers. comm.) had two sightings in 1972 in the Gulf of Guinea off Ghana.

Atlantic hump-backed dolphin *(Sousa teuszii)*

The habitat of this species is tropical to warm temperate coastal waters of the eastern Atlantic. The Atlantic hump-backed dolphin is the only species of cetacean endemic to the study area. It is found exclusively in shallow coastal waters. The type specimen was collected in Cameroon (Kükenthal 1892, van Bree and Duguy 1965), but since then nearly all records have been from Mauritania, Senegal, and Guinea (Fraser 1949, 1973, Cadenat 1956 b, 1959 a, Cadenat and Paraiso 1957, Busnel 1973, Pelletier

1975, Duguy 1976, Maigret *et al.* 1976, Dupuy and Maigret 1979, Maigret 1980b, 1981c). Maigret (1994) mentioned that they occur in Nigeria, and recent records have come from Western Sahara (Martin *et al.* 1992), Morrocco (Beaubrun 1990) and Guinea-Bissau (Spaans 1990, Sequeira and Reiner 1992).

Bottlenose dolphin *(Tursiops truncatus)*

The habitat of the bottlenose dolphin is tropical to temperate waters. There are many records from the Mediterranean and Strait of Gibraltar (Castells and Mayo 1992). Bottlenose dolphins are common nearshore along probably the entire West African coast, and around offshore islands such as the Canaries (Hervé-Gruyer 1989, Escorza *et al.* 1991, Martin *et al.* 1992) and Madeira (Maul and Sergeant 1977). They may occur in some oceanic waters as well. Specific records in the study area are from Morocco (Aloncle 1964, 1967, Dollfus 1968, Tormosov *et al.* 1980), Mauritania (Busnel 1973, Pelletier 1975, Maigret *et al.* 1976, Vely 1991), Senegal (Cadenat 1959b, Cadenat *et al.* 1959, Dupuy et Maigret 1978, Tormosov *et al.* 1980), the Cape Verde Islands (Lagendijk 1984, Reiner *et al.* 1996), Guinea-Bissau (Spaans 1990), and the Ivory Coast (Cadenat et Lassarat 1959a, Tormosov *et al.* 1980). Several sightings have also been reported from far offshore waters at around 30°N (Tormosov *et al.* 1980). Because bottlenose dolphins appear to be rare in deep offshore waters of the Atlantic, the species identification of these latter sightings should be questioned.

Pantropical spotted dolphin *(Stenella attenuata)*

Pantropical spotted dolphins occur in tropical to subtropical oceanic waters of the world. They probably occur in all but the northern portions of the study area. Both species of spotted dolphin occur off West Africa ; however, because the taxonomy of this group was not sorted-out until the mid 1980s (Perrin *et al.* 1987), it is impossible to distinguish between the two in many records previous to that time. The pantropical species has been reported from the Cape Verde Islands (Cadenat 1959), the Ivory Coast (Cadenat and Lassarat 1959b, van Bree 1971a), Ghana (C.W. Oliver, pers. comm.), Gabon (Fraser 1950b, Matthews 1950), and offshore waters of the eastern Atlantic (Perrin *et al.* 1987, Perrin and Hohn 1994). A dolphin specimen collected in the 1700s by Pernety (1771) from near the Cape Verde Islands may have been of this species.

Atlantic spotted dolphin *(Stenella frontalis)*

Atlantic spotted dolphins are endemic to the tropical to warm temperate Atlantic Ocean. They appear to be found primarily along the offshore continental shelf and slope, and around some oceanic islands. They probably occur in all study area waters, except those near the northern borders of the region. Atlantic spotted dolphins have been reported off West Africa, from the Canary Islands (Martin *et al.* 1992), Senegal (Dupuy and Maigret 1976), the Cape Verde Islands (van Bree 1971b, Lagendijk 1984, Reiner *et al.* 1996), Guinea (Cadenat 1959a), the Ivory Coast (Cadenat 1959a, Cadenat and Lassarat 1959b), Gabon, and the Gulf of Guinea (Perrin *et al.* 1987). There are records of spotted dolphins from the Canary Islands that are apparently of this species (Perrin *et al.* 1987, Martin *et al.* 1992, Castells and Mayo 1992).

Spinner dolphin *(Stenella longirostris)*

Spinner dolphins occur in tropical to subtropical oceanic waters of the world. The tropical/subtropical spinner dolphin probably occurs throughout all but the very nor-

thern portions of the study area. The monk A.J. Pernety (1771) reported a sighting of spinners off northwest Africa in the mid 1700s (Pilleri and Arvy 1981). There are specimen records of this species from Senegal (Cadenat 1959a, Cadenat and Doutre 1959, Dupuy and Maigret 1976, 1982), Liberia (Broekema 1983), and the Ivory Coast (van Bree 1971c), and sightings off the Cape Verde Islands (Reiner *et al.* 1996), Mauritania (Maigret *et al.* 1976) and Senegal (Duguy 1976).

Clymene dolphin *(Stenella clymene)*

Clymene dolphins are endemic to the tropical/subtropical Atlantic Ocean, and probably occur in all but the very northern waters of the region. Robineau *et al.* (1994) recently summarized records of this species for West Africa. They include one stranding in Mauritania (Robineau *et al.* 1994), three strandings (Dupuy et Maigret 1979, 1980, Robineau *et al.* 1994) and two captures (Cadenat et Doutre 1958, Cadenat 1959a, Robineau *et al.* 1994) in Senegal, and one confirmed sighting in the Gulf of Guinea (Perrin *et al.* 1981, C.W. Oliver, pers. comm.). There are also two nineteenth century records from the offshore tropical Atlantic (Lütken 1889, Perrin *et al.* 1981). Mörzer-Bruyns (1971) reported several sightings off Senegal of an animal he called the "Senegal dolphin", which is probably this species.

Striped dolphin *(Stenella coeruleoalba)*

Striped dolphins occur in tropical to temperate, oceanic waters of the world. Striped dolphins are common in the Mediterranean, and around the Strait of Gibraltar and Iberian Peninsula (Wilson *et al.* 1987, Castells and Mayo 1992). Although they probably occur throughout the study area, there are only a small number of records of striped dolphins from the coast of West Africa. These are from Madeira (Martin *et al.* 1992), Senegal (Dupuy 1983), north of the Cape Verde Islands, southern Morrocco, and the Ivory Coast (see review in Wilson *et al.* 1987). There are additional records in the study area from the offshore South Atlantic and they have also recently been reported from the Canary Islands (Heimlich-Boran and Heimlich-Boran 1990, Abril *et al.* 1991, Castells and Mayo 1992, Martin *et al.* 1992).

Common dolphins (*Delphinus* spp.)

The taxonomy of common dolphins has recently been revised, and currently two species are recognized, the short-beaked common dolphin *(Delphinus delphis)* and the long-beaked common dolphin *(Delphinus capensis)* (Heyning and Perrin 1994). Common dolphins of both species occur in tropical to warm temperate waters of the world. The short-beaked species occurs primarily in oceanic waters, and the long-beaked species generally in coastal waters ; however, the two are sympatric in some deepwater nearshore regions (Evans 1994, Heyning and Perrin 1994).

Dolphins of the genus *Delphinus* may be the most common offshore delphinids off West Africa and are found along the entire region. The summary below is for the genus, since most of the records can not reliably be applied to one or the other species. There are many common dolphin records, from the Strait of Gibraltar (Hashmi 1990, Castells and Mayo 1992), Morocco (Aloncle 1967), Madeira (Maul and Sergeant 1977), the Canary Islands (Vonk and Martin 1988, Heimlich-Boran and Heimlich-Boran 1990, Martin *et al.* 1992), Western Sahara (Duguy 1976), Mauritania (Cadenat 1959a, Pelletier 1975, Maigret *et al.* 1976, Maigret 1981b, Maigret 1994, Vely 1991), Senegal (Cadenat 1959a, Dupuy and Maigret 1976, Maigret 1979), the Cape Verde

Islands (Lagendijk 1984, Reiner *et al.* 1995), Guinea (Cadenat 1959 a), Sierra Leone (van Bree and Purves 1972), the Ivory Coast (Cadenat 1959 a), Gabon (van Bree and Purves 1972), and Angola (Simmons 1968). Tormosov *et al.* (1980) reported sightings off Western Sahara, Liberia, Cameroon, and in the offshore mid-Atlantic.

Fraser's dolphin *(Lagenodelphis hosei)*

Fraser's dolphin is primarily a tropical species that occurs in oceanic waters of all major oceans. Until recently, there were no records of this tropical/subtropical dolphin from West Africa. The nearest records were from France and the Indian Ocean coast of South Africa. Tormosov *et al.* (1980) reported a sighting off Sierra Leone, but we consider this identification questionable because no details on the appearance of the animals were provided. In 1983, there was a stranding of a single Fraser's dolphin in the Canary Islands (Vonk and Martin 1990). Despite the fact that this is the only confirmed record, this species is expected to occur throughout the region, with the probable exception of the very northern parts.

KEY TO IDENTIFICATION OF DOLPHINS AND PORPOISES OF WEST AFRICA

1a. Odontocete cetacean with body length < 10 m ; conspicuous creases on throat absent ; prominent median notch in flukes present ; upper and lower jaws of similar width (Dolphin, porpoise, or small toothed whale) ..... Go to 2

1b. Odontocete cetacean with body length > 11 m ; or conspicuous creases on throat present ; or median notch in flukes absent ; or upper jaw much wider than lower Beaked or pygmy/dwarf sperm whale (consult key in Jefferson *et al.* 1993).

2a. Teeth blunt with expanded crowns, laterally compressed, and relatively small (22-28 pairs in upper jaw, 21-25 in lower) ; beak extremely short or nonexistent ; body dark gray on back to white below ; dark gape to flipper stripe ; dorsal fin short, triangular, and wide-based ; maximum size to about 2.1 m ; known only from northern part of region.

Harbor porpoise *(Phocoena phocoena)*

2b. Teeth conical and sharply-pointed, unless heavily worn (in cross section, circular or oval) (Dolphin or small toothed whale) ..... Go to 3

3a. Head blunt with no prominent beak ..... Go to 4

3b. Head with prominent beak ..... Go to 10

4a. 2-7 pairs of teeth at front of lower jaw only (rarely 1-2 pairs in upper jaw), but teeth may be absent or extensively worn ; forehead blunt with vertical crease ; dorsal fin tall and dark ; body gray to white, covered with scratches and splotches in adults ; flippers long and sickle-shaped ; maximum body length 4.1 m.

Risso's dolphin *(Grampus griseus)*

4b. Teeth (7 or more pairs) in both upper and lower jaws ; forehead without vertical median crease ..... Go to 5

5a. Flippers large and paddle-shaped ; dorsal fin tall and erect (up to 0.9 m in females and 1.8 m in males) ; striking black and white coloration, with white post-ocular patches, white lower jaw, white ventrolateral field, and light gray saddle patch

behind dorsal fin ; 10-12 large (to 2.5 cm in diameter) oval teeth in each tooth row ; maximum body length 10 m.

Killer whale *(Orcinus orca)*

5b. Color pattern largely black or dark gray ; no large white patches on sides (may be a light gray patch behind dorsal fin) ..... Go to 6

6a. Dorsal fin low and broad-based, located on forward third of back ; head bulbous ; body black to dark gray with light anchor-shaped patch on belly and often light gray saddle behind dorsal fin ; often a light streak above and behind each eye ; tail stock deepened ; flippers long and sickle-shaped ; 7-13 pairs of teeth in front half only of each jaw (Pilot whale) ..... Go to 7

6b. Dorsal fin near middle of back ; teeth in both front and rear of jaws..... Go to 8

7a. Flipper length 15-30 % of body length, with prominent "elbow" ; 8-13 teeth in each tooth row ; maximum size to 7.6 m ; known only from northern part of region.

Long-finned pilot whale *(Globicephala melas)*

7b. Flipper length 14-19 % of body length ; 7-9 pairs of teeth in each tooth row ; maximum body length 6.1 m.

Short-finned pilot whale *(Globicephala macrorhynchus)*

8a. Flipper with distinct hump on leading edge ; body predominantly dark gray to black ; no beak ; 7-12 large teeth in each half of both jaws, circular in cross-section ; maximum body length 6.1 m.

False killer whale *(Pseudorca crassidens)*

8b. Body black or dark gray with white lips ; white to light gray patch on belly ; flippers lack hump on leading edge ; 8-25 teeth in each tooth row..... Go to 9

9a. Less than 15 teeth in each half of both jaws ; flippers rounded at tips ; distinct dorsal cape that dips slightly below dorsal fin ; head rounded from above and side ; maximum body length 2.6 m.

Pygmy killer whale *(Feresa attenuata)*

9b. More than 15 teeth per side of each jaw ; flippers sharply pointed at tip ; face often has triangular dark mask ; faint cape that dips low on side below dorsal fin ; head triangular from above ; extremely short, indistinct beak may be present in younger animals ; maximum body length 2.7 m.

Melon-headed whale *(Peponocephala electra)*

10a. Beak very short and well-defined (less than 2.5 % of body length) ; body stocky ..... Go to 11

10b. Beak moderate to long (greater than 3 % of body length) ..... Go to 13

11a. Flippers, flukes, and dorsal fin small ; broad dark stripe from eye to anus area (muted in some animals) ; dorsal fin slightly recurved and uniformly dark ; extremely short, but well-defined beak ; grooves on bony palate ; 38-44 teeth in each tooth row ; maximum known length 2.7 m.

Fraser's dolphin *(Lagenodelphis hosei)*

11b. Dorsal fin, flukes, and flippers of normal dolphin proportions ; short beak ; no palatal grooves ; found only near northern margins of region (*Lagenorhynchus* sp.) ..... Go to 12

12a. Dark gray to black back, light gray sides, white belly ; white streak in light gray patch under dorsal fin ; tan to yellow streak high on side of tail stock ; dark eye band ; deepened tail stock ; 29-40 teeth ; maximum size to 2.8 m.

Atlantic white-sided dolphin *(Lagenorhynchus acutus*)*

12b. Body mostly black to dark gray, with white to light gray patches on sides, and white belly and beak ; dorsal fin large and falcate ; 22-27 teeth in each row ; maximum size to 3.1 m.

White-beaked dolphin *(Lagenorhynchus albirostris*)*

13a. Head long and conical ; beak runs smoothly into melon, with no crease ; body dark gray to black above and white below, with many scratches and splotches ; narrow dorsal cape ; flippers relatively large ; 20-27 slightly wrinkled teeth in each half of both jaws ; maximum body length 2.7 m.

Rough-toothed dolphin *(Steno bredanensis)*

13b. Beak distinct from forehead (however, there may not be a prominent crease between beak and melon) ..... Go to 14

14a. Less than 39 teeth per tooth row ..... Go to 15

14b. Greater than 39 teeth per row ..... Go to 16

15a. Body moderately robust, with moderately long robust snout set off by distinct crease ; color dark to light gray dorsally, fading to white or even pink on belly ; 20-26 teeth in each half of upper jaw, 18-24 in lower jaw (teeth may be extensively worn or missing) ; maximum length in West Africa 3.8 m.

Bottlenose dolphin *(Tursiops truncatus)*

15b. Body gray to tan, with bluish, cream, or pink tinge, and light belly ; base of dorsal fin of adults expanded to form longitudinal ridge ; beak long, crease indistinct ; 27-38 teeth in each tooth row ; maximum size to at least 2.5 m ; not known from extreme northern and southern parts of region.

Atlantic hump-backed dolphin *(Sousa teuszii)*

16a. Dorsal fin erect to slightly falcate ; back dark and belly white ; tan to buff thoracic patch and light gray streaked tail stock form an hourglass pattern that crosses below dorsal fin, also forming a distinctive V at their intersection ; chin-to-flipper stripe (contacts gape in some individuals) ; 40-61 teeth in each row ; bony palate with two deep longitudinal grooves ; maximum size 2.6 m (common dolphin, *Delphinus* sp.) ..... Go to 17

16b. No hourglass pattern on side ; palatal grooves, if present, shallow (*Stenella* sp.) ..... Go to 18

17a. Body relatively stocky ; beak shorter ; melon rounded ; thoracic patch relatively light ; flipper stripe not approaching gape, narrowing ahead of eye ; eye patch dark and distinct ; light patches often on flippers and dorsal fin ; 41-54 teeth per row ; maximum size 2.3 m.

Short-beaked common dolphin *(Delphinus delphis)*

17b. Body relatively slender ; beak longer ; melon flatter ; thoracic patch not contrasting as strongly with cape ; flipper stripe meets lip patch near or just ahead of gape, remaining wide ahead of eye ; eye patch dark, not as strongly contrasting ; light patches on extremities faint, if present ; 47-60 teeth per row ; maximum size 2.6 m.

Long-beaked common dolphin *(Delphinus capensis)*

18a. Color pattern black to dark gray on back, white on belly, prominent black stripes from eye to anus and eye to flipper ; light gray spinal blaze extending to below dorsal fin (not always present) ; shallow palatal grooves often present ; 39-55 teeth in each row ; maximum size 2.6 m.

Striped dolphin *(Stenella coeruleoalba)*

18b. Generally, no eye-to-anus stripe ; distribution limited to tropical and warm temperate waters ..... Go to 19

19a. Light to heavy spotting present on dorsum of adults (may be very faint or nearly absent in some individuals) ; cape (if present) generally dips to lowest point in front of dorsal fin ; no palatal grooves ..... Go to 20

19b. No spotting on dorsum of adults ; cape dips to lowest point at level of dorsal fin ; eye-to-flipper stripe present ; shallow palatal grooves ..... Go to 21

20a. Body moderately robust, dark gray above, with white belly ; light spinal blaze (not always visible) ; slight to heavy spotting on adults ; 30-42 teeth per row ; maximum size 2.3 m.

Atlantic spotted dolphin *(Stenella frontalis)*

20b. Dorsal fin narrow and falcate ; dark cape that sweeps to lowest point on side in front of dorsal fin ; dark gape-to-flipper stripe ; beak tip and lips white ; adults with light to extensive spotting (may be nearly absent on some) and gray bellies ; 34-48 teeth in each tooth row ; maximum size 2.6 m.

Pantropical spotted dolphin *(Stenella attenuata)*

1) Body and beak relatively robust ; heavy spotting that nearly obliterates cape.

Coastal-type pantropical spotted dolphin*

2) Body and beak relatively slender ; spotting slight to moderate (some may be unspotted).

Offshore-type pantropical spotted dolphin

21a. Body relatively robust ; body color three-part (dark gray cape, light gray flanks, white belly) ; cape dips in two places (above eye and below dorsal fin) ; snout light gray with dark tip, dark lips, and dark line from tip to apex of melon ; often, dark "moustache" on top of beak ; 38-49 teeth in each tooth row ; maximum size 2.0 m.

Clymene dolphin *(Stenella clymene)*

21b. Body relatively slender ; dorsal fin slightly falcate to canted forward ; beak exceedingly long and slender ; tip of snout and lips dark ; 45-65 very fine sharply pointed teeth per tooth row ; maximum size 2.1 m.

Spinner dolphin *(Stenella longirostris)*

1) Color pattern three-part (white belly, light gray sides, dark gray cape) ; dorsal fin falcate to erect ; post-anal hump of adult males relatively small.

Gray's spinner dolphin *(S. l. longirostris)*

2) Pigmentation nearly monotone gray, possibly with light patches around genital area and axillae, or lighter belly ; dorsal fin triangular to canted forward (extremely canted in adult males) ; adult males with deepened tail stock and enlarged post-anal hump.

Eastern-type or whitebelly-type spinner dolphin*

Note : the asterisks indicate the forms, subspecies or species which have not yet been confirmed from the area considered here.

CLÉ D'IDENTIFICATION DES DAUPHINS ET DES MARSOUINS D'AFRIQUE DE L'OUEST

(Texte traduit et adapté par Daniel Robineau)

1a. Cétacé odontocète de longueur totale < 10 m ; absence de sillons sur la gorge, présence d'une profonde encoche médiane au bord postérieur de la nageoire caudale ; mâchoires supérieure et inférieure de même largeur.
Dauphin, marsouin ou petit odontocète 2

1b. Cétacé odontocète de longueur totale > 11 m, ou présence de sillons sous la gorge ; ou absence d'encoche médiane au bord postérieur de la nageoire caudale ; ou mâchoire supérieure plus large que l'inférieure : cétacé à bec (famille des ziphiidés) ou cachalot : grand/pygmée/nain (famille des physétéridés) (cf. clé *in* Jefferson *et al.* 1993).

2a. Dents relativement petites (22 à 28 paires en haut, 21 à 25 paires en bas), à couronnes élargies et aplaties latéralement ; bec extrêmement court ou inexistant ; corps de gris foncé dorsalement à blanc ventralement ; bande pigmentée sombre entre l'ouverture buccale et la nageoire pectorale ; nageoire dorsale petite, triangulaire à base large ; longueur totale maximale 2,1 m environ ; espèce connue seulement dans la partie nord de la région considérée.
Marsouin commun *(Phocoena phocoena)*

2b. Dents côniques et aiguës (mais pouvant s'émousser plus ou moins par usure) à section circulaire ou ovalaire.
Dauphins ou petits odontocètes 3

3a. Tête obtuse, sans bec bien distinct 4

3b. Tête présentant un bec bien distinct 10

4a. De 2 à 4 paires de dents (parfois absentes ou très usées) à la partie antérieure de la mâchoire inférieure (parfois 1 ou 2 dents à la mâchoire supérieure) ; extrémité de la tête obtuse formant une sorte d'étrave subverticale ; nageoire dorsale haute et de couleur sombre ; corps gris à blanchâtre, parsemé chez l'adulte de balafres et de taches ; nageoires pectorales longues et falciformes ; longueur maximale 4,1 m.
Dauphin de Risso *(Grampus griseus)*

4b. Présence de dents (7 paires ou plus) aux deux mâchoires ; extrémité de la tête ne formant pas d'étrave subverticale 5

5a. Nageoires pectorales de grande taille, en forme de battoirs ; nageoire dorsale haute (pouvant atteindre 0,9 m chez les femelles et 1,8 m chez les mâles) ; pigmentation noire et blanche très caractéristique : tache post-oculaire blanche, mâchoire inférieure et portions ventro-latérales blanches ; une aire gris clair en forme de selle en arrière de la nageoire dorsale ; de 10 à 12 grosses dents de section ovale (plus grand diamètre de 2,5 à 5 cm) par demi-mâchoire ; taille maximale 9 m.
Orque *(Orcinus orca)*

5b. Pigmentation en majeure partie noire ou gris foncé ; pas de grandes taches blanches sur les flancs, mais parfois une zone gris clair en arrière de la nageoire dorsale 6

6a. Nageoire dorsale basse et à large base se dressant dans la partie antérieure du corps ; tête globuleuse ; corps noir à gris foncé présentant ventralement une tache claire en forme d'ancre et, souvent, en arrière de la nageoire dorsale, une zone gris clair en forme de selle ; souvent, une strie claire au-dessus et en arrière de l'œil ; pédoncule caudal élargi verticalement ; nageoires pectorales longues et falciformes ; de 7 à 13 paires de dents implantées dans la moitié antérieure de chaque mâchoire.
Globicéphale 7

6b. Nageoire dorsale se dressant vers le milieu de la longueur du corps ; dents s'implantant sur toute la longueur des mâchoires 8

7a. Longueur de la nageoire pectorale représentant 15 à 30 % de la longueur du corps ; bord antérieur de cette nageoire formant une saillie prononcée ; de 8 à 13 dents par demi-mâchoire ; taille maximale 7,6 m ; espèce connue seulement dans la partie nord de la région.
Globicéphale commun *(Globicephala melas)*

7b. Longueur de la nageoire pectorale représentant 14 à 19 % de la longueur du corps ; de 7 à 9 paires de dents par demi-mâchoire ; taille maximale 6,1 m.
Globicéphale tropical *(Globicephala macrorhynchus)*

8a. Bord antérieur de la nageoire pectorale présentant une convexité bien marquée ; corps en général gris foncé à noir ; pas de bec ; de 7 à 12 grosses dents par demi-mâchoire supérieure ou inférieure, à section circulaire ; taille maximale 6,1 m.
Faux-orque *(Pseudorca crassidens)*

8b. Corps noir ou gris foncé ; lèvres blanches ; aires blanches à gris clair sur le ventre ; pas de convexité très marquée du bord antérieur de la nageoire pectorale ; de 8 à 25 dents par demi-mâchoire 9

9a. Moins de 15 dents par demi-mâchoire ; nageoires pectorales à extrémité arrondie ; on distingue une cape dorsale foncée dont la limite inférieure s'abaisse légèrement à l'aplomb de la nageoire dorsale ; tête à contour arrondi en vue dorsale ou latérale ; taille maximale 2,6 m.
Orque pygmée *(Feresa attenuata)*

9b. Plus de 15 dents par demi-mâchoire ; nageoires pectorales à extrémité pointue ; la tête présente souvent un masque foncé de forme triangulaire ; cape dorsale peu distincte, dont la limite inférieure s'abaisse fortement sur les flancs à l'aplomb de la nageoire dorsale ; tête de forme triangulaire en vue supérieure ; un bec très court et peu distinct peut être présent chez les juvéniles ; taille maximale 2,7 m.
Péponocéphale *(Peponocephala electra)*

10a. Bec très court (moins de 2.5 % de la longueur totale du corps) et bien délimité 11

10b. Bec de taille moyenne à grande (plus de 3 % de la longueur totale du corps) 13

11a. Nageoires pectorales, dorsale et caudale de petite taille ; une large bande pigmentée foncée (moins visible chez certains spécimens) parcourt latéralement le corps de l'œil à la région anale ; nageoire dorsale légèrement recourbée vers l'arrière et de couleur uniformément foncée ; bec très court mais bien distinct ; des sillons sur le palais osseux ; de 38 à 44 dents par demi-mâchoire, taille maximale connue 2,7 m.
Dauphin de Fraser *(Lagenodelphis hosei)*

11b. Nageoires pectorales, dorsale et caudale de taille habituelle pour un dauphin ; bec court ; pas de sillons sur le palais osseux ; espèces susceptibles d'être rencontrées seulement dans la partie la plus septentrionale de la région.
Lagénorhynques (*Lagenorhynchus sp.)*

12a. Dos gris foncé à noir, flancs plus clairs, ventre blanc ; une marque blanche allongée s'étale sur le gris clair des flancs à l'aplomb de la nageoire dorsale, tandis qu'une bande jaune (ou jaunâtre) s'étend sur la partie haute, foncée, du pédoncule caudal ; présence d'une tache oculaire foncée, présentant un prolongement antérieur effilé ; pédoncule caudal élargi verticalement, de 29 à 40 dents par demi-mâchoire ; taille maximale 2,8 m.
Lagénorhynque à flanc blanc de l'Atlantique *(Lagenorhynchus acutus*)*

12b. Corps en majeure partie noir ou gris foncé, présentant sur les flancs des taches allongées blanches ou gris clair ; bec et ventre blancs ; grande nageoire dorsale falciforme ; de 22 à 27 dents par demi-mâchoire ; taille maximale 3,1 m.
Lagénorhynque à bec blanc *(Lagenorhynchus albirostris*)*

13a. Tête allongée en forme de cône ; bec mal délimité du melon (absence de sillon entre ces deux éléments) ; corps gris foncé à noir dorsalement, blanc ventralement et présentant de nombreuses balafres et taches ; cape dorsale étroite, nageoires pectorales de grande taille ; de 20 à 27 dents par demi-mâchoire ; taille maximale 2,7 m.
Sténo *(Steno bredanensis)*

13b. Bec délimité postérieurement du melon (mais cette délimitation n'est pas obligatoirement marquée par un sillon bien net) 14

14a. Moins de 39 dents par demi-mâchoire 15

14b. Plus de 39 dents par demi-mâchoire 16

15a. Corps modérément robuste avec un bec de taille moyenne, bien délimité du melon par un sillon ; pigmentation dorsale gris foncé à clair, s'éclaircissant jusqu'au blanc (parfois rosé) du ventre ; de 20 à 26 dents par demi-mâchoire supérieure et de 18 à 24 dents par demi-mâchoire inférieure (à noter que les dents peuvent subir une forte usure et certaines tomber) ; taille maximale le long des côtes africaines 3,8 m.
Grand dauphin *(Tursiops truncatus)*

15b. Corps gris à brun clair avec une nuance bleutée, crème ou rose, et un ventre clair ; chez l'adulte la base de la nageoire dorsale s'étend en forme de long repli longitudinal ; long bec assez mal délimité du melon (absence de sillon) ; de 27 à 38 dents par demi-mâchoire ; taille maximale 2,5 m ; espèce non connue au nord et au sud de la région.
Dauphin à bosse de l'Atlantique *(Sousa teuszii)*

16a. Nageoire dorsale de subtriangulaire à légèrement falciforme ; dos noir et ventre blanc ; une tache thoracique de couleur variant entre le brun clair et le jaune clair, et une tache gris clair portée par le pédoncule caudal dessinent un motif en forme de sablier allongé ; au point de jonction de ces deux taches, à l'aplomb de la nageoire dorsale, la coloration sombre du dos dessine un V largement ouvert ; une bande foncée relie la mâchoire inférieure à la base de la nageoire pectorale ; de 40 à 61 dents par demi-mâchoire ; palais osseux muni de deux profonds sillons longitudinaux ; taille maximale 2,6 m.
Dauphin commun *(Delphinus sp.)*

16b. Pas de motif en forme de sablier allongé sur les flancs ; sillons du palais osseux peu marqués ou absents.
Stenella sp. 18

17a. Corps relativement trapu et bec relativement court ; melon arrondi ; tache thoracique assez claire ; bande pigmentée reliant la mâchoire inférieure à la pectorale restant à distance de l'angle de la bouche et étroite en avant de l'œil ; tache oculaire sombre bien visible ; présence, souvent, de zones claires sur les nageoires pectorales et dorsales ; de 41 à 54 dents par demi-mâchoire ; taille maximale 2,3 m.
Dauphin commun brévirostre *(Delphinus delphis)*

17b. Corps relativement élancé et bec long ; melon à convexité moins marquée ; tache thoracique ne contrastant pas aussi nettement avec la cape dorsale ; bande pigmentée reliant la mâchoire inférieure à la pectorale proche de l'angle de la bouche et large en avant de l'œil ; tache oculaire moins marquée ; zones claires des nageoires peu visibles ou absentes ; de 47 à 60 dents par demi-mâchoire ; taille maximale 2,6 m.
Dauphin commun longirostre *(Delphinus capensis)*

18a. Pigmentation du dos noire à gris foncé, ventre blanc ; d'étroites bandes sombres s'étendent latéralement de l'œil à la région anale et de l'œil à la base de la nageoire pectorale ; une flamme gris clair (parfois absente) marque la cape dorsale sombre jusqu'en dessous de la nageoire dorsale ; sillons osseux palatins peu marqués souvent présents ; de 39 à 55 dents par demi-mâchoire ; taille maximale 2,6 m.
Dauphin bleu et blanc *(Stenella coeruleoalba)*

18b. En général, pas de raie sombre entre l'œil et la région anale ; distribution limitée aux eaux tropicales et tempérées chaudes 19

19a. Dos des adultes plus ou moins tacheté (mais les taches peuvent être peu marquées ou même absentes chez certains individus) ; la cape dorsale, lorsqu'elle est distincte, atteint son extension ventrale maximale en avant de la nageoire dorsale ; pas de sillons osseux palatins 20

19b. Dos des adultes non tacheté ; la cape dorsale atteint son extension ventrale maximale à l'aplomb de la nageoire dorsale ; présence d'une bande pigmentée entre l'œil et la nageoire pectorale ; sillons osseux palatins peu profonds..... 21

20a. Corps modérément robuste, gris foncé dorsalement et blanc ventralement ; une flamme plus claire se distingue parfois sur la cape dorsale, en avant de la nageoire dorsale ; tacheture de l'adulte de légère à forte ; de 30 à 42 dents par demi mâchoire ; taille maximale 2.,3 m.
Dauphin tacheté de l'Atlantique *(Stenella frontalis)*

20b. Nageoire dorsale étroite et falciforme ; cape dorsale foncée atteignant son extension ventrale maximale en avant de la nageoire dorsale ; une bande foncée de l'ouverture buccale à la base de la nageoire pectorale ; extrémité du bec et lèvres de couleur blanche ; tacheture des adultes plus ou moins intense (parfois absente sur certains individus) et ventre gris ; de 34 à 48 dents par demi-mâchoire ; taille maximale 2,6 m.
Dauphin tacheté pantropical *(Stenella attenuata)*

1) Corps et bec relativement robustes ; tacheture très dense masquant presque la cape dorsale.

Dauphin tacheté pantropical : forme côtière*

2) Corps et bec relativement minces ; tacheture légère à modérée (quelques individus non tachetés).

Dauphin tacheté pantropical : forme du large

21a. Corps relativement robuste à pigmentation tricolore (cape gris foncé, flancs gris clair, ventre blanc) ; la limite inférieure de la cape s'abaisse en deux endroits : au-dessus de l'œil et au-dessous de la nageoire dorsale ; museau gris clair à pointe noire ; lèvres foncées ; une ligne sombre parcourt le melon de son extrémité antérieure à son sommet ; souvent une « moustache » foncée à la face dorsale du museau ; de 38 à 49 dents par demi-mâchoire ; taille maximale 2,0 m.

Dauphin de Clymène *(Stenella clymene)*

21b. Corps relativement élancé ; nageoire dorsale légèrement falciforme, mais pouvant se dresser verticalement et même s'incliner un peu vers l'avant ; bec très long et mince ; extrémité du museau et lèvres foncées ; de 45 à 65 petites dents très aiguës par demi-mâchoire ; taille maximale 2,1 m.

Dauphin longirostre *(Stenella longirostris)*

1) Pigmentation tricolore (cape dorsale gris foncé, flancs gris clair, ventre blanc) ; nageoire dorsale falciforme ou redressée ; bosse post-anale des mâles adultes relativement peu développée.

Dauphin longirostre de Gray *(S. l. longirostris)*

2) Pigmentation grise presque uniforme, avec parfois des taches plus claires dans les régions génitale et axillaire, ou un ventre plus clair ; nageoire dorsale triangulaire s'orientant parfois vers l'avant, surtout chez les mâles adultes ; mâles adultes présentant un pédoncule caudal très développé dorso-ventralement et une grosse bosse post-anale.

Dauphin longirostre (forme orientale ou à ventre blanc*)

* Les espèces, sous-espèces ou formes marquées par un astérisque n'ont pas encore été observées dans la région considérée et leur description est donnée à titre purement informatif.

ACKNOWLEDGMENTS

W.F. Perrin was very generous with his time and allowed us to go through his accumulated files and use photos from them. We thank C. Mok for preparing the map and D. Robineau and two anonymous reviewers for reviewing earlier drafts of the manuscript.

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