

REVIEW

Biogeography of common dolphins (genus *Delphinus*) in the Southwestern Atlantic Ocean

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ABSTRACT

1. The common dolphins (genus *Delphinus*) have one of most problematic taxonomies and complex distribution patterns of all cetaceans. Although the taxonomy and the distribution seem to have been clarified somewhat in the eastern North Pacific and Indo-Pacific Oceans, many questions remain in the Southwestern Atlantic Ocean (SWA). We review the biogeography of *Delphinus* in the SWA.

2. We reviewed data from strandings, incidental catches and sightings since 1922. Systematic surveys were conducted in five major areas. Twenty-one natural history collections were examined, and 135 skulls were measured.

3. A total of 184 records of common dolphins were compiled. *Delphinus* apparently occurs in three stocks in the SWA: one located in northern Brazil and two from southeastern Brazil (~22°S) to central Argentina (~42°S). Two distinct patterns in habitat use were observed by depth: in southeastern Brazil, sightings were restricted to coastal waters with water depths ranging from 18m to 70m. On the other hand, in the area that extends from southern Brazil to Central Argentina (from 28°S to 42°S), sightings were recorded in deeper waters, ranging from 71m to 1435m, with the exception of occasional coastal sightings. The cranial analyses demonstrated that both short-beaked common dolphins *Delphinus delphis* and long-beaked common dolphins *Delphinus capensis* occur in the SWA.

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4. In the SWA, *Delphinus* seems to occur near areas of high productivity. One stock is associated with the productive waters discharged by the Amazon River and possibly with the coastal upwelling system off the coast of Venezuela, while the other stocks are associated with the Cabo Frio upwelling system and the Subtropical Convergence. Our results indicate that the current taxonomy does not adequately reflect the amount of variation within the genus in the world.

Keywords: Cetacea, Delphinidae, distribution, taxonomy, upwelling

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INTRODUCTION

Dolphins of the genus *Delphinus* Linnaeus, 1758, generally referred to as 'common dolphins', are among the most widely distributed cetaceans, occurring in temperate to tropical and subtropical waters (Evans 1994). The northernmost records in the Northern Hemisphere are from around 60°N, near the Shetland Islands (Weir et al. 2001). In the Southern Hemisphere, typical ranges extend down to roughly 40°S (Bastida & Rodríguez 2003); there is an extralimital record from Tierra del Fuego (Argentina, 54°S; Goodall et al. 2008).

Two species of common dolphins are currently recognized: the short-beaked common dolphin *Delphinus delphis* Linnaeus, 1758, and the long-beaked common dolphin *Delphinus capensis* Gray, 1828 (Heyning & Perrin 1994, Rosel et al. 1994). There are two other forms recognized as subspecies: the very long-beaked Indo-Pacific common dolphin *Delphinus capensis tropicalis* van Bree, 1971 (Jefferson & Van Waerebeek 2002) and a distinct short-beaked form in the Black Sea *Delphinus delphis ponticus* Barabash-Nikiforov, 1935 (Amaha 1994, Perrin 2009).

According to Perrin et al. (2009), and based on records with diagnostic characters presented by Heyning and Perrin (1994), *D. delphis* occurs from southern Norway to the northwest African coast (including in the Mediterranean and Black seas); from Newfoundland to Florida in the western Atlantic; in the coastal Pacific from southern Canada to Chile; and finally in pelagic waters (except in Hawaii) from central Japan and Taiwan to around New Zealand, New Caledonia and Tasmania. It is possibly absent in the South Atlantic and the Indian Ocean.

According to the same author, *D. capensis* occurs disjunctly in coastal temperate and tropical waters in western Africa; from Venezuela to Argentina in the south-western Atlantic and from southern California to central Mexico; in Peru and around Korea, southern Japan, and Taiwan; in the west Pacific, in Madagascan waters, South Africa and possibly the Oman Gulf in the Indian Ocean. In contrast, *D. c. tropicalis* occurs only in the northern Indian Ocean and in Southeast Asia (Perrin et al. 2009) and is restricted to shallow coastal waters (Jefferson & Van Waerebeek 2002).

Although the taxonomy of common dolphins is understood in the Pacific and the Indo-Pacific Oceans, little is known about the situation in other regions of the world (see e.g. Bell et al. 2002, Samaai et al. 2005, Murphy et al. 2006, Natoli et al. 2006, Amaral et al. 2007), especially in the Southwestern Atlantic Ocean (SWA), where the taxonomic status is unclear and has not received attention until recently (Tavares 2006).

The distribution of common dolphins along the eastern coast of South America (from Venezuela to Argentina) was suggested by Heyning & Perrin (1994) based on

the analysis of just 10 specimens examined by Casinos (1984). However, common dolphins have been reported in the SWA since the early 1950s (e.g. Carvalho 1963, Castello & Pinedo 1986, Geise & Borobia 1988, Lodi & Capistrano 1990, Barros 1991, Simões-Lopes & Ximenez 1993, González 2002, Santos et al. 2002) and their distribution and taxonomy are potentially more complex than represented by Heyning and Perrin (1994). Due to the unresolved taxonomic status of common dolphins in the SWA, we refer only to *D. delphis* and *D. capensis* in the present paper, in which we review the biogeography of the genus in the SWA based on data from strandings, incidental catches and sightings.

MATERIAL AND METHODS

Study area

The western region of the South Atlantic Ocean (SWA) is defined here as the waters south of the equator and west of 20°W. Distinctive bathymetry, hydrography, productivity patterns and biological communities characterize the eastern coast of South America (Bisbal 1995).

Three different current systems influence the SWA region (Fig. 1): the North Brazil Current that carries warm water from a South Atlantic origin northwest along the Brazilian coast, across the equator and into the Northern Hemisphere; the Brazil Current (BC) carrying warm and salty subtropical waters, that runs south along the

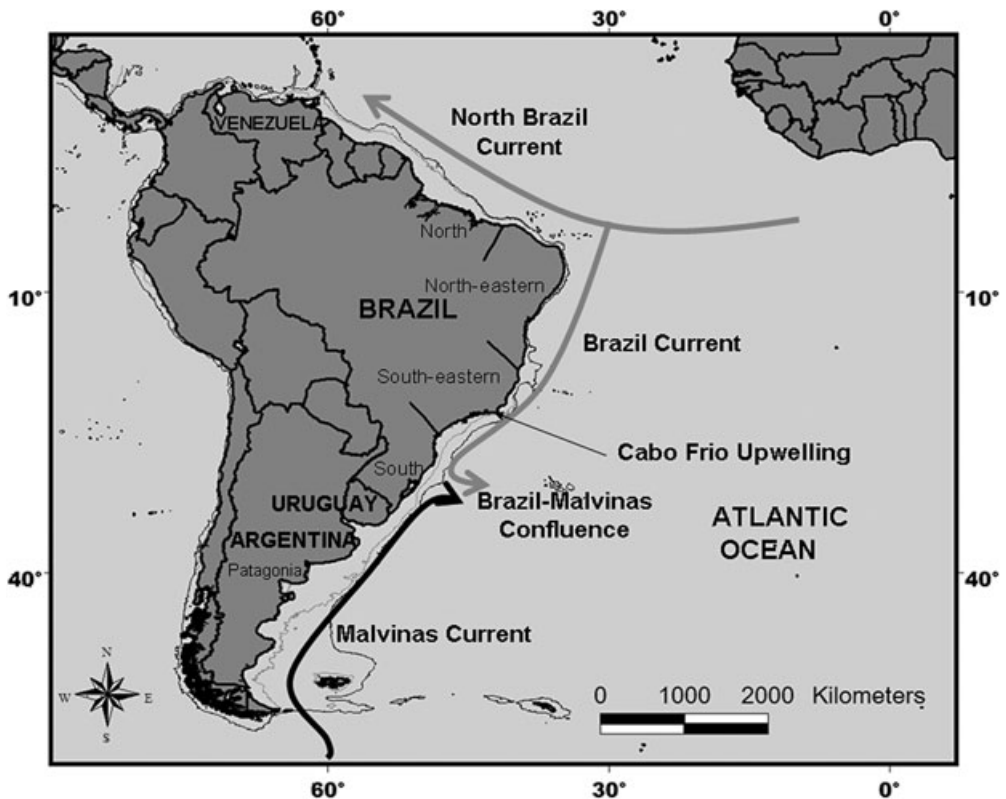


Fig. 1. Major currents in the Southwestern Atlantic Ocean.

coast of Brazil from about 9°S to about 38°S; and the Malvinas Current (MC), which is a northern branch of the Circumpolar Current that transports cold sub-Antarctic waters and flows northward along the continental shelf of Argentina and Uruguay. The MC reaches the BC offshore of the La Plata River to generate a region known as the Brazil-Malvinas Confluence Zone (BMC) or Subtropical Convergence, one of the most productive regions in all the oceans (Gordon 1981, Legeckis & Gordon 1982, Chelton et al. 1990, Peterson & Stramma 1991, Garzoli 1993, Seeliger et al. 1997, Piola & Matano 2001). The confluence is not controlled by bottom topography, and the convergence region pivots seasonally around a fixed point at 38.9°S/54.2°W for nearly 300 km (Saraceno et al. 2004). The confluence is very active all year round, can be identified by SST (Sea Surface Temperature) gradient and ocean colour data (Saraceno et al. 2005), and has a strong influence on biotic distribution (Brandini et al. 2000). The physical processes of water mass mixture occurring in the BMC region becomes more complex with the addition of freshwater from the La Plata River and Patos Lagoon outflows (Seeliger et al. 1997).

At the north portion (0–5°S) of the South American continent, the continental shelf is large and influenced by freshwater input from the Amazon River (Muehe 2001). The northeast portion (5–13°S) has a narrow continental shelf and the slope is relatively steep. Between 16 and 20°S a widening of the shelf occurs, corresponding to the Royal Charlotte Bank and Abrolhos Bank (Muehe 2001). The Abrolhos reefs form a topographical barrier to the BC (Floeter et al. 2001) and a narrowing of the shelf occurs south of this region until 23°S. The region between Cabo Frio (23°S) and Cabo de Santa Marta Grande (28°40'S) is named the South Brazil Bight (SBB; Castro & Miranda 1998) and presents a complex and dynamic hydrographic variation (Borzzone et al. 1999). At Cabo Frio, there is a change in coastal direction from north-south to east-west, and the proximity of the 100 m isobath leads to a topography which promotes upwelling of deep South Atlantic central water (SACW; Valentin 2001). The SACW regularly influences the entire inner continental shelf of SBB (Borzzone et al. 1999), bringing low-temperature (<18°C) and nutrient-rich waters close to the coastline (Floeter et al. 2001). At Cabo de Santa Marta Grande, the continental shelf is relatively narrow, but it widens progressively to the southern end of the continent (Bisbal 1995). From southern Brazil to northern Uruguay, the continental shelf widens from north to south, reaching minimum width in northern Argentina (ca. 170km) and maximum width at the Malvinas Plateau (ca. 850km; Parker et al. 1997).

Data collection

To evaluate the distribution patterns of *Delphinus* along the SWA, we compiled published and unpublished data on strandings, incidental catches and sightings. Only sightings obtained by experienced cetacean researchers and sightings for which the species identification was unquestionable (e.g. by means of photographs of good quality) were considered in this study.

Sightings

Sightings data were collected during opportunistic on-board activities as well as during systematic ship surveys. Opportunistic sightings were recorded from fishing or research vessels. Systematic surveys were conducted in five major areas (Table 1). The geographic range of the surveyed areas is shown in Fig. 2.

Table 1. Systematic surveys conducted in the Southwestern Atlantic Ocean, from which data on *Delphinus* distribution were derived. Effort is given in hours (h) and as the length of the transect surveyed (km)

Project/Cruise	Date	Effort	Surveyed area	Source of information
IWC minke whale assessment cruise	3 Nov 1981–5 Dec 1981	396h	4°–15°S	Best et al. 1986
REVIZEE – Score Sul project	Jul–Aug 1996; Apr–May 1997; Nov–Dec 1997	467.5h	22°15′–33°45′S	Zerbini et al. 2004a
Argo project	Nov–Dec 1996; Jul 1997; Mar 1998; Aug 1999	4074km	26°17′–33°45′S	Pinedo et al. 2002
Minke whale project	1998–2001	6308km	3°–12°S	Zerbini et al. 2000, 2004b
CENPES/Petrobras project	Sep 2004; Feb 2005	1337km	21°40′–27°S	This study

IWC, International Whaling Commission; REVIZEE, Programa de Avaliação do Potencial Sustentável de Recursos Vivos na Zona Econômica Exclusiva; CENPES, Centros de Pesquisas.

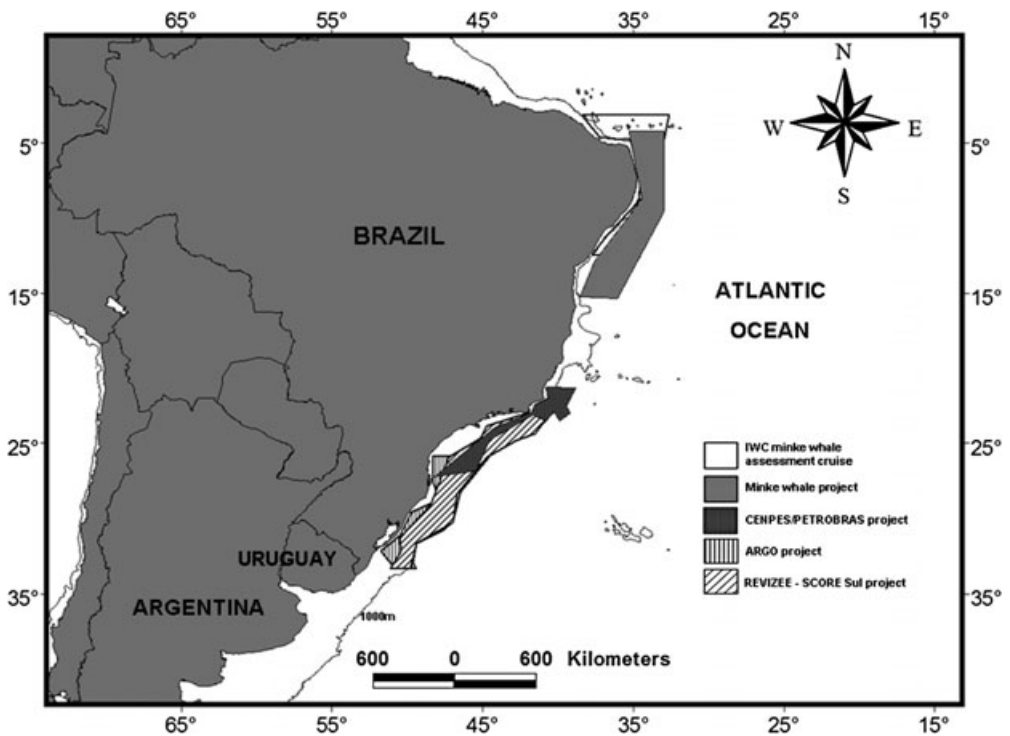


Fig. 2. Five major areas surveyed in the Southwestern Atlantic Ocean (see Table 1 for details of the surveys).

Strandings and incidental captures

Twenty-one scientific collections or museums were visited (Appendix 1) to evaluate osteological material collected from stranded or incidentally captured individuals. Specimens deposited in scientific collections were identified on the basis of skull morphology (for example, the presence of deep palatal grooves) and measurements,

according to Heyning and Perrin (1994) and Evans (1994). We measured 135 skulls of common dolphins (103 from Brazil, 3 from Uruguay and 29 from Argentina) to calculate the ratio between rostrum length and zygomatic width (RL/ZW), which has been cited as a diagnostic metric in determining species identity for *Delphinus* (*sensu* Heyning & Perrin 1994). Seventy-four adult skulls were available, but only 59 were included in the analyses of cranial measurements. Two rolled skulls were found in trawling nets during trawling operations in southern Brazil and were not used in the analysis. The other skulls ($n = 13$) were not included because they were broken in such a way that RL/ZW could not be measured. The individuals were identified as adults (physically, sexually and cranially mature) based on the characteristics proposed by Heyning and Perrin (1994). According to Perrin and Heyning (1993), distal fusion is not an accurate character of cranial maturity in *Delphinus delphis*. For this reason, the fusion degree of nasal bones, pterygoids, exoccipital bone, zygomatic process of squamosal and alveoli were also examined. The skulls were separated into three categories: juvenile (no fusion, bones move freely or are disarticulated and have opened alveoli), sub-adult (partially fused with some movement and semi-closed alveoli), adult (fused and secure, closed sutures, closed alveoli, and distal fusion between the premaxillae and maxillae at the tip of the rostrum).

RESULTS

A total of 185 records for the genus *Delphinus* were gathered for the southwest Atlantic Coast, most of them concentrated between southeastern Brazil (~22°S) and central Argentina (~42°S; Fig. 3, Appendix 2). However, recently, a skull of *D. capensis* was found on the coast of Pará, northern Brazil (0°36.6'S; 47°31.8'W; Siciliano et al. 2008), representing the northernmost confirmed stranding in the SWA. In addition, there are two confirmed sightings (Silva et al. 2008) and an incidental catch in pelagic longline fishery (Asano Filho et al. 2007) for the northern coast. Data from strandings, incidental catches and sightings collected during the present study suggest that *Delphinus* may be absent from northeastern Brazil (Fig. 3). This suggests the existence of three potential stocks of *Delphinus* in the SWA: one located in north Brazil (Pará State, stock 1) and the two others from southeastern Brazil (Rio de Janeiro State) to central Argentina (Patagonia). There is an extralimital record in Tierra del Fuego (54°23'S, Argentina; Goodall et al. 2008).

Based on the analysis of museum specimens, the first record of the genus *Delphinus* in the SWA dates from 1922 for the Argentinean coast. However, 74% of the total records were collected after 1990. Data from Brazilian waters included 97 strandings, 54 sightings, 18 incidental catches and two skulls recovered in trawling operations. In Uruguayan waters, there are few records and little information is available. Three skulls were found in museum collections; sightings are cited by Castello and Pinedo (1986) south to Cabo Polonio and captures by Pilleri (1977). In Argentinean waters, there are three incidental catch events and eight strandings. According to Crespo et al. (2000), around 100 individuals of *D. delphis* were caught in two fishing operations in front of Golfo San Matías, Argentina.

Sightings were recorded all year around. Two distinct patterns in habitat use stratified by water depth were found for *Delphinus* along its distribution in the SWA (Fig. 4). In southeastern Brazil, sightings were restricted to coastal waters, in depths ranging from 18m to 70m (stock 2). On the other hand, in the area that extends from southern Brazil to Argentina, sightings were recorded in deeper waters,

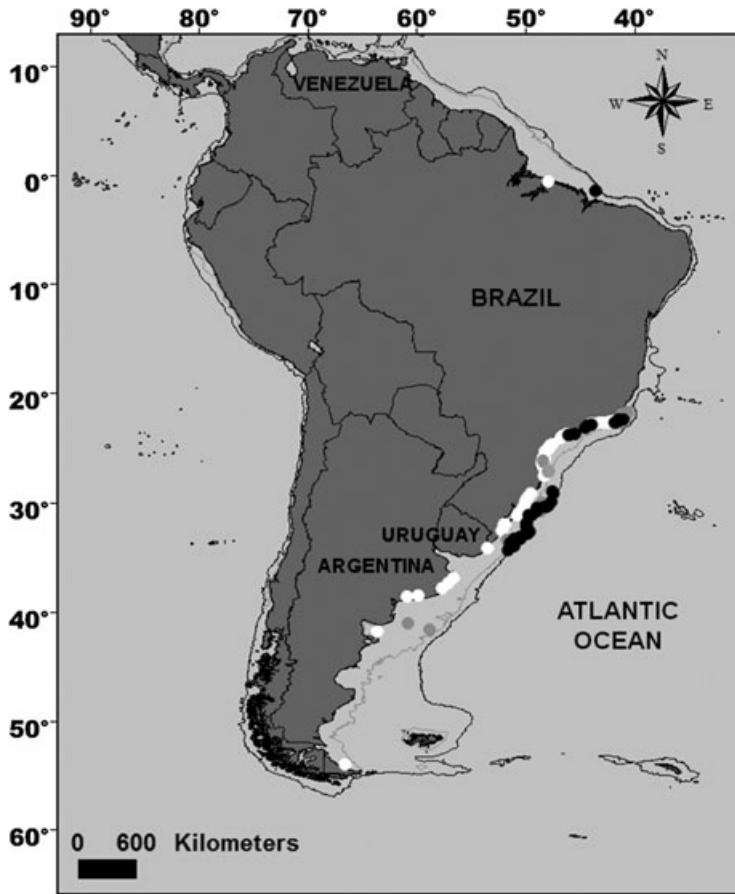


Fig. 3. Confirmed records of common dolphins (genus *Delphinus*) in the Southwestern Atlantic Ocean. Black circles ($n = 53$) represent sightings; grey circles ($n = 12$) are captures; white circles ($n = 84$) are strandings.

ranging from 71m to 1435m (stock 3) in the middle continental shelf and slope, with exceptional coastal sightings in Argentina.

Group size varied from one to 100; groups of up to 30 individuals were most frequently observed. In Brazilian waters, *Delphinus* were seen in association with long-finned pilot whales *Globicephala melas* (Traill, 1809) (Castello & Pinedo 1986), Bryde's whales *Balaenoptera edeni* Anderson, 1879 (Siciliano et al. 2006), and Atlantic spotted dolphins *Stenella frontalis* (G. Cuvier, 1829) (L. G. Fisher, pers. comm. 2005).

The adult specimens examined morphologically ($n = 59$) were identified based on the features described by Heyning and Perrin (1994). According to these characteristics, 47 were considered to be *D. capensis*, nine *D. delphis* and three presented intermediate RL/ZW between the two recognized species (Fig. 5). In Uruguay (~34°S), Santa Catarina State (27–28°S, southern Brazil), Rio de Janeiro State (22–23°S, south-eastern Brazil) and Pará State (0–1°S, northern Brazil), only *D. capensis* was identified. In other localities, both species were found with overlap in RL/ZW ranges.

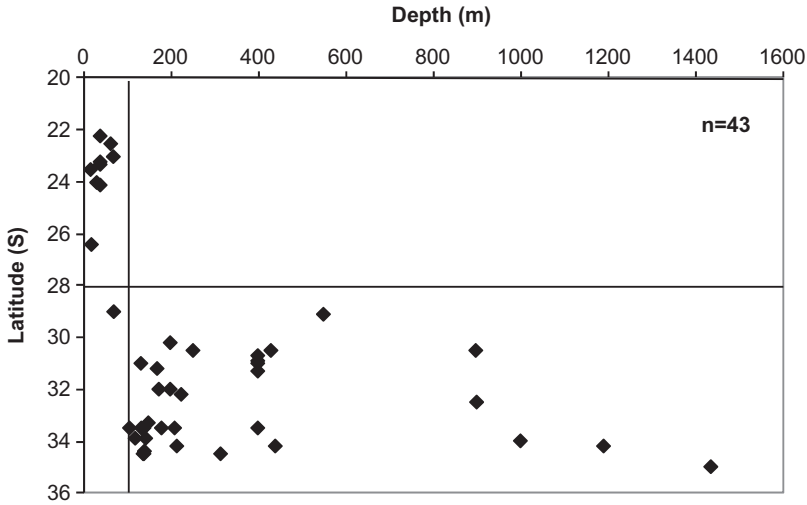


Fig. 4. The pattern of sightings of common dolphins (genus *Delphinus*) by depth, in the Southwestern Atlantic Ocean. The vertical line indicates the 100m isobath and the horizontal line indicates the latitude of 28°S.

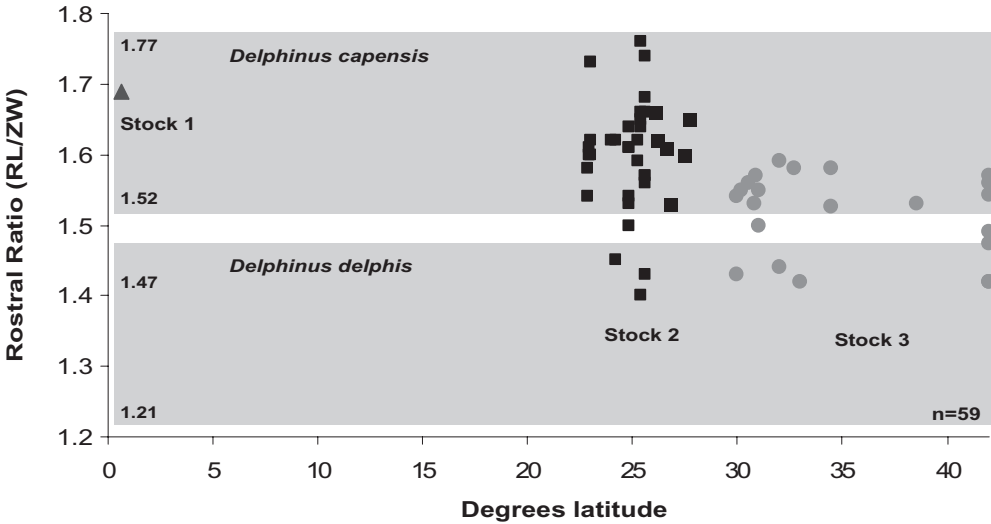


Fig. 5. Rostral ratios (RL/ZW) of the three potential stocks of common dolphins (genus *Delphinus*) in the Southwestern Atlantic Ocean. The upper grey polygon indicates the range for *Delphinus capensis*; the lower grey polygon for *Delphinus delphis*; ranges *sensu* Heyning and Perrin (1994).

DISCUSSION

The stocks of *Delphinus* in the SWA seem to be associated with highly productive waters. A well-known population of apparently smaller individuals of *Delphinus* occurs off the Venezuela coast (Romero et al. 2001, Esteves & Oviedo 2007), and the records from northern Brazil (see Results) suggest two possible hypotheses: a small

and tentatively isolated stock inhabiting northern Brazil, or a distribution that extends northwards to the Guianas and Venezuela, but further research effort is needed. The other two potential stocks are distributed between southeastern Brazil (~22°S) and central Argentina (~42°S). Stock 2 has a northern limit clearly associated with the Cabo Frio upwelling system. A long-term monitoring program for sightings and strandings of cetaceans conducted in this particular area of southeast Brazil since 1999 has indicated that *Delphinus* inhabits these waters (Siciliano 2001, Siciliano et al. 2006) and individuals are regularly seen from land and boats.

The lack of *Delphinus* records in about 2000km (from north Rio de Janeiro to Pará State) of coast in the SWA could be interpreted as a result of limited beach survey effort in the area. Siciliano (1994) compiled all available data on incidental catches of small cetaceans for the Brazilian coast and did not find a record of *Delphinus* for the northeastern Brazilian coast, even though beach survey effort for cetaceans along this coast has increased since the early 1990s. The first regional stranding network in Brazil was established in this particular area in 2000 by 10 institutions working along the coast (Anonymous 2005). However, no stranding or capture of *Delphinus* has been reported so far and no skulls are available in local scientific collections in Northeast Brazil. Data provided by systematic ship survey programs for cetaceans conducted recently in Brazil (see Methods) do not include sightings of *Delphinus* in the study area. This strongly suggests that sightings attributed to *D. delphis* by Best et al. (1986) during an International Whaling Commission (IWC) cruise off northeastern Brazil in 1981 were probably misidentifications of Clymene dolphins *Stenella clymene* (Gray, 1850) (see discussion in Fertl et al. 2003, Moreno et al. 2005). According to Evans (1994), *S. clymene* has a colour pattern very similar to that of *Delphinus*, except for the flipper stripe. Recently, research cruises conducted in the same area did not report any *Delphinus*, but Clymene dolphins were seen regularly, which reinforces the possibility that the 1981 IWC cruise misidentified their sightings as suggested by Fertl et al. (2003) and Moreno et al. (2005).

The association with an upwelling area in southeastern Brazil is similar to the reported habitat for *D. capensis* in other parts of the world, such as in Venezuela (Romero et al. 2001) and California (Heyning & Perrin 1994). In contrast, the distribution of *Delphinus* in deep waters in southern Brazil, Uruguay and Argentina, resembles the pattern observed for *D. delphis* (e.g. Perrin et al. 2009).

Individuals of *Delphinus* are frequently seen in the coastal Golfo San Matías (Argentina, ca. 41°30'S; González 1994, Bastida & Rodríguez 2003), which is a deep gulf (ca. 200m), topographically depressed from the shallower nearby shelf bottom (Parker et al. 1997). With the exception of occasional coastal sightings, incidental captures over the outer continental shelf off Patagonia (Crespo et al. 2000) confirm that *Delphinus* prefers deep waters. On the other hand, long-term onboard surveys in coastal fishing vessels (1992–2005) and opportunistic ship surveys in coastal waters (depths up to 40m) of Rio Grande do Sul State, southern Brazil, did not record *Delphinus* in this area. Zerbini et al. (2004b) proposed the hypothesis that common dolphins seen in coastal waters between 22–28°S were *D. capensis* and dolphins found in more offshore areas, south of 28°S, may be *D. delphis* in Brazilian waters. These facts emphasize the gap in distribution of *Delphinus* in coastal waters south to 28°S and suggest a probable allopatric distribution between 22°S and 42°S; stock 2 extending north to 28°S and stock 3 south to 28°S (Fig. 6). However, this proposal

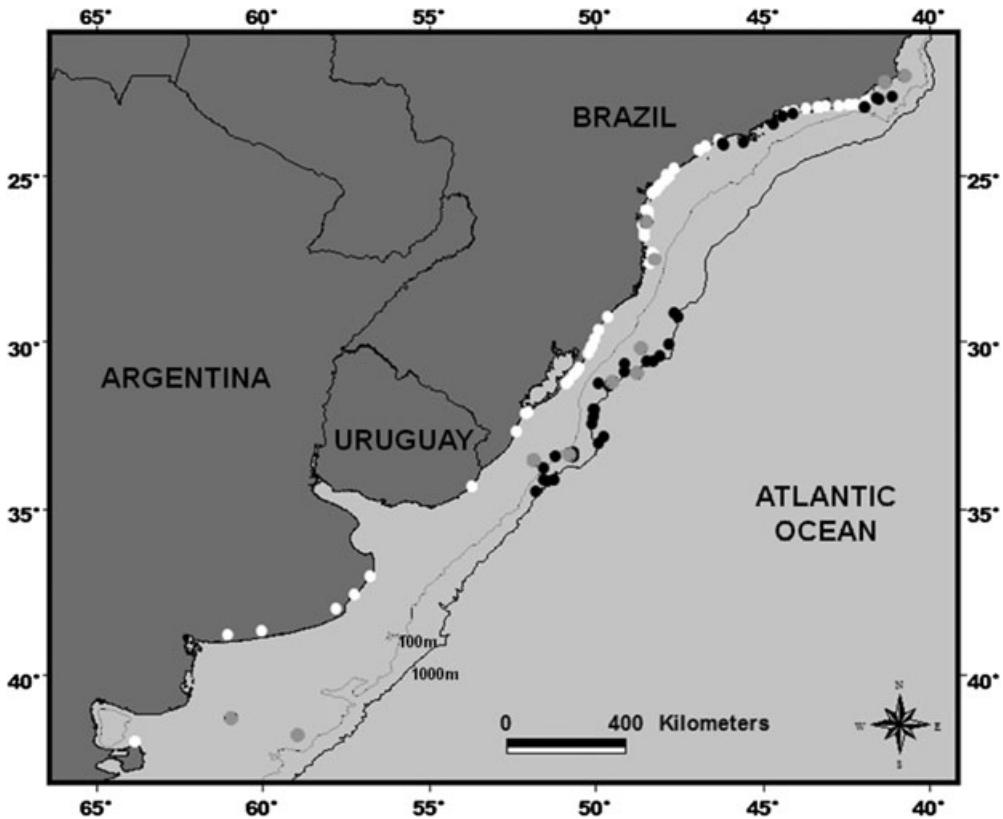


Fig. 6. Detailed map showing the confirmed records of common dolphins (genus *Delphinus*) found between 22°S and 42°S in the Southwestern Atlantic Ocean. Black circles ($n = 51$) represent sightings; grey circles ($n = 12$) are captures; white circles ($n = 82$) are strandings.

deserves further investigation. In the Southeast Pacific Ocean, *D. delphis* is found in oceanic waters at latitudes as high as 40°S, with records on Juan Fernández (~33°S) and Galapagos Islands (0°49'S; 91°00'W), whereas *D. capensis* inhabits coastal waters down to circa 28°S (Sanino et al. 2003).

The Delphinidae are highly mobile mammals and very plastic in terms of trophic habits. However, some general trends arise regarding *Delphinus* distribution in the framework of regional hydrological regimes. The coastal area between 22 and 28°S is dominated by the upwelling systems of Cabo Frio (Castro & Miranda 1998, Campos et al. 2000) and Cabo de Santa Marta Grande (Emilsson 1961, Matsuura 1986), and has been characterized as a medium primary production area, with blooms of short duration and low intensity, which are nonetheless important in this tropical (oligotrophic) region (Lins-da-Silva et al. 1988, Valentin & Coutinho 1989, Acha et al. 2004). Upwelling conditions are suggested to sustain increased biomass of some of *Delphinus*' potential main prey such as squid *Loligo sanpaulensis* Brakonieccki, 1984 (Haimovici & Perez 1991) and small pelagic fishes, such as the Brazilian sardine *Sardinella brasiliensis* (Steindachner, 1879) and the Argentine anchovy *Engraulis anchoita* Hubbs and Marini, 1935 (Bakun & Parrish 1991, Matsuura 1996). The northern limit of this 'Atlantic upwelling area' (*sensu* Acha et al. 2004; ca 22–23°S)

coincides with the northern distributional limit of coastal *Delphinus* (this paper), franciscanas *Pontoporia blainvillei* (Gervais & d'Orbigny, 1844) (Siciliano 1994) and of the southern population of Atlantic spotted dolphins (Moreno et al. 2005). The southern limit (ca. 28–29°S) coincides with the southern limit of coastal *Delphinus* (this paper) and the Guiana dolphin *Sotalia guianensis* P. J. Van Bénédén, 1864 (Borobia 1989), and is also a transitional area between northern (smaller) and southern (larger) forms of bottlenose dolphins *Tursiops truncatus* (Montagu, 1821) (Barreto 2000) and franciscanas (Pinedo 1991).

Two major fronts which have been described along the shelf-break and oceanic waters of the SWA, the Subantarctic Front (SAF) and the Brazil Current Front (BCF; Saraceno et al. 2004, Saraceno et al. 2005), could be relevant to the southern limit of *Delphinus* distribution. The SAF is formed by the Patagonian shelf-break front and the MC front, and forms the northern boundary of subantarctic waters. The BCF is the southern limit of the SACWs and is driven mainly by the trajectory of the BC, which runs south to 44°S and then turns NE. This feature is known as the BC 'overshoot' (Peterson & Stramma 1991); it is characterized by relatively warm surface water temperature and high chlorophyll a levels, and is associated with mesoscale activity of the BC and southward drifting eddies (Saraceno et al. 2005). This transitional area (30–40°S) is characterized by a combination of cetacean records of subtropical-temperate and subantarctic species; coastal areas are more influenced by the BC, and offshore areas are linked to the MC (Bastida et al. 2005, 2007). Moreover, the coastal southern limit (ca. 42°S) coincides with the southern limit of franciscanas (Crespo et al. 1998) and striped dolphins *Stenella coerulealba* (Meyen, 1833) (Bastida et al. 2001).

Geographical variation in morphology is used for defining mammal populations. The pattern of variation most common in cetaceans defines inshore and offshore forms (Perrin 1984). The morphological evidence for both forms of *Delphinus* occurring north and south of 28°S in the SWA, based on the RL/ZW presented by Heyning & Perrin (1994), is not completely understood yet. A local speciation event could be occurring and originating new species of *Delphinus* in the SWA. The existence of intermediate RL/ZW measurements, which fall between the ranges of those of the two recognized species (Fig. 5) demonstrates that *Delphinus* from the SWA does not show a clear affinity with Heyning and Perrin's (1994) proposition. It has been impossible or difficult to separate *Delphinus* definitively into two species in some areas based on morphology (e.g. Bell et al. 2002, Samaai et al. 2005, Murphy et al. 2006). According to Perrin et al. (2009) there may be more than two species of *Delphinus*, possibly making the present taxonomy incorrect. Another hypothesis suggested by Perrin (pers. comm.) is the existence of only one species of *Delphinus* in a 'Rassenkreis' (a group of subspecies connected by clines, maybe sexually or genetically isolated from each other).

We conclude that *Delphinus* in the SWA is associated with areas of high productivity. One stock seems to be restricted to the nutrient-rich waters discharged by the Amazon River and possibly with the coastal upwelling system off Venezuela, and the other two stocks are associated with the Cabo Frio upwelling system in the case of southeastern Brazil, and the Subtropical Convergence in southern Brazil, Uruguay and Argentina. Further studies, including work on morphology, colour pattern and genetics, are necessary to elucidate the problematic taxonomy of this genus in the SWA.

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APPENDIX 1

Abbreviations and full names of the scientific collections and Museums visited in the Southwestern Atlantic area

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- CEEMAM:** Centro de Estudos de Mamíferos Marinhos, Santos/SP, Brazil.
- FUNDAMAR:** Fundação Museu de História, Pesquisa e Arqueologia do Mar, São Sebastião/SP, Brazil.
- FZB-RS:** Fundação Zoobotânica do Rio Grande do Sul, Porto Alegre/RS, Brazil.
- GMM:** Grupo de Mamíferos Marinos, Facultad de Ciencias Exactas y Naturales, Mar del Plata, Argentina.
- GEMARS:** Grupo de Estudos de Mamíferos Aquáticos do Rio Grande do Sul, Porto Alegre/RS, Brazil.
- GEMM-Lagos:** Grupo de Estudos de Mamíferos Marinhos da Região dos Lagos, Escola Nacional de Saúde Pública, FIOCRUZ, Rio de Janeiro/RJ, Brazil.
- IOUSP:** Instituto Oceanográfico da Universidade de São Paulo, São Paulo/SP, Brazil.
- IPeC:** Instituto de Pesquisas Cananéia, Cananéia/SP, Brazil.
- LAMAQ-UFSC:** Laboratório de Mamíferos Aquáticos da Universidade Federal de Santa Catarina, Florianópolis/SC, Brazil.
- LMM-FURG:** Laboratório de Mamíferos Marinhos da Fundação Universidade do Rio Grande, Rio Grande/RS, Brazil.
- MACN:** Museo Argentino de Ciencias Naturales 'Bernardino Rivadavia', Buenos Aires, Argentina.
- MAQUA:** Projeto Mamíferos Aquáticos, Rio de Janeiro/RJ, Brazil.
- MCN.Z-UFPR:** Museu de Ciências Naturais da Universidade Federal do Paraná, Curitiba/PR, Brazil.
- MNRJ:** Museu Nacional, Rio de Janeiro/RJ, Brazil.
- MORG:** Museu Oceanográfico 'Eliézer de Carvalho Rios' – FURG, Rio Grande/RS, Brazil.
- MOVI-UNIVALI:** Museu Oceanográfico do Vale do Itajaí, Itajaí/SC, Brazil.
- MPEG:** Museu Paraense Emílio Goeldi, Belém/PA, Brazil.
- MZUSP:** Museu de Zoologia da Universidade de São Paulo, São Paulo/SP, Brazil.
- PA:** Projeto Atlantis, São Paulo/SP, Brazil.
- UNIVALI:** Universidade do Vale do Itajaí, Itajaí/SC, Brazil.
- ZVC:** Facultad de Ciencias, Montevideo, Uruguay.
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APPENDIX 2
Confirmed records of common dolphins (genus *Delphinus*) from the Southwestern Atlantic Ocean used in this study

Record	Date	Locality	Depth (m)	Latitude / Longitude	Number of animals	Event	Source
1	Nov 1922	Mar del Plata, BA, Argentina	NA	NA	1	Stranding	MACN 22.27
2	1941	Puerto Quequén, BA, Argentina	NA	NA	1	Stranding	MACN 47.125
3	1956	Praia da Querência, RS, Brazil	NA	32,19°S; 052,17°W	1	Stranding	MORG 0017, Castello & Pinedo 1986
4	Feb 1956	Torres, RS, Brazil	NA	29,32°S; 049,71°W	1	Stranding	MCN-FZB 00026, Simões-Lopes & Ximenez 1993
5	1962	Ilha Grande, RJ, Brazil	NA	NA	1	Capture	MZUSP 9040, Carvalho 1963
6	Aug 1964	Cananéia, SP, Brazil	NA	25,04°S; 047,96°W	1	Stranding	MZUSP 18945
7	Sep 1975	Santa Clara del Mar, BA, Argentina	NA	NA	1	Stranding	MACN 20529
8	7 Dec 1978	South coast RS, Brazil	135–140	34°29'S; 052°01'W	60	Sighting	Castello & Pinedo 1986
9	4 Apr 1980	North coast RS, Brazil	71	29°22'S; 048°56'W	50	Sighting	Castello & Pinedo 1986
10	2 Aug 1980	North coast RS, Brazil	252	30°39'S; 048°57'W	20	Sighting	Castello & Pinedo 1986
11	29 Oct 1980	South coast RS, Brazil	400	33°41'S; 050°47'W	10	Sighting	Castello & Pinedo 1986
12	21 Nov 1981	South coast RS, Brazil	141	34°24'S; 051°53'W	2	Sighting	Castello & Pinedo 1986
13	2 Nov 1982	South coast RS, Brazil	133	31°10'S; 049°52'W	20–25	Sighting	Castello & Pinedo 1986
14	1983	Barra da Tijuca, RJ, Brazil	NA	23,01°S; 043,41°W	1	Stranding	MQ 047
15	21 May 1983	South coast RS, Brazil	140	34°31'S; 052°06'W	10	Sighting	Castello & Pinedo 1986
16	22 May 1983	South coast RS, Brazil	1000	34°12'S; 051°23'W	30	Sighting	Castello & Pinedo 1986
17	23 May 1983	South coast RS, Brazil	144	33°50'S; 051°18'W	5–6	Sighting	Castello & Pinedo 1986
18	27 May 1983	South coast RS, Brazil	180	33°32'S; 050°58'W	50	Sighting	Castello & Pinedo 1986
19	Jun 1983	Península Váldez, Chubut, Argentina	NA	NA	2	Stranding	MACN 18119, MACN 18120
20	3 Jun 1983	South coast RS, Brazil	225	32°11'S; 050°05'W	100	Sighting	Castello & Pinedo 1986
21	1 May 1984	Praia do Cassino, RS, Brazil	NA	32°09'S; 052°06'W	1	Stranding	Barros 1991
22	23 Mar 1985	Monte Hermoso, BA, Argentina	NA	NA	1	Stranding	MACN 18121
23	3 Jun 1985	Barra da Tijuca, RJ, Brazil	NA	23,01°S; 043,29°W	1	Stranding	MZUSP 23799, Geise & Borobia 1988

Record	Date	Locality	Depth (m)	Latitude / Longitude	Number of animals	Event	Source
24	Jul 1985	Pontal do Sul, PR, Brazil	NA	25,58°S; 048,38°W	1	Stranding	MCN.Z 001
25	30 Nov 1985	Praia Morro das Pedras, Florianópolis, SC, Brazil	NA	27,71°S; 048,50°W	1	Stranding	UFSC 1014, Simões-Lopes & Ximenez 1993
26	20 Dec 1985	Praia dos Ingleses, Florianópolis, SC, Brazil	NA	27,42°S; 048,41°W	1	Stranding	UFSC 1012, Simões-Lopes & Ximenez 1993
27	Jan 1986	Barra da Lagoa, Florianópolis, SC, Brazil	NA	27,58°S; 048,42°W	1	Capture	UFSC 1009, Simões-Lopes & Ximenez 1993
28	31 Oct 1986	Marujá, Ilha do Cardoso, SP, Brazil	NA	25,23°S; 048,02°W	1	Stranding	MZUSP 27642, Schmiegelow 1990
29	14 Nov 1986	Praia do Santinho, Florianópolis, SC, Brazil	NA	27,45°S; 048,37°W	1	Capture	UFSC 1030, Simões-Lopes & Ximenez 1993
30	1987	Praia do Santinho, Florianópolis, SC, Brazil	NA	27,45°S; 048,37°W	1	Capture	UFSC 1035, Simões-Lopes & Ximenez 1993
31	1987	Município de Navegantes, SC, Brazil	NA	26,90°S; 048,65°W	1	Stranding	UFSC 1036, Simões-Lopes & Ximenez 1993
32	1987	Ilha Comprida, SP, Brazil	NA	24,86°S; 047,72°W	1	Stranding	IOUSP, Schmiegelow 1990
33	27 Jun 1987	Ilha Comprida, SP, Brazil	NA	24,86°S; 047,72°W	1	Stranding	MZUSP 27580, Schmiegelow 1990
34	27 Jul 1987	Quissamã, RJ, Brazil	NA	22,22°S; 041,52°W	1	Capture	MZUSP 25655, Lodi & Capistrano 1990
35	28 Jul 1987	Praia Deserta, Ilha de Superagüi, PR, Brazil	NA	25,39°S; 048,18°W	1	Stranding	MZUSP 27581, Schmiegelow 1990
36	28 Jul 1987	Praia Deserta, Ilha de Superagüi, PR, Brazil	NA	25,39°S; 048,18°W	1	Stranding	MZUSP 27582, Schmiegelow 1990
37	28 Jul 1987	Praia Deserta, Ilha de Superagüi, PR, Brazil	NA	25,39°S; 048,18°W	1	Stranding	MZUSP 27583, Schmiegelow 1990
38	28 Jul 1987	Marujá, SP, Brazil	NA	25,23°S; 048,02°W	1	Stranding	MZUSP 27584, Schmiegelow 1990
39	28 Jul 1987	Marujá, SP, Brazil	NA	25,23°S; 048,02°W	1	Stranding	MZUSP 27585, Schmiegelow 1990
40	28 Jul 1987	Praia Deserta, Ilha de Superagüi, PR, Brazil	NA	25,39°S; 048,18°W	1	Stranding	MZUSP 27624, Schmiegelow 1990
41	28 Jul 1987	Praia Deserta, Ilha de Superagüi, PR, Brazil	NA	25,39°S; 048,18°W	1	Stranding	MZUSP 27643, Schmiegelow 1990

Record	Date	Locality	Depth (m)	Latitude / Longitude	Number of animals	Event	Source
42	29 Jul 1987	Ilha Comprida, SP, Brazil	NA	24,86°S; 047,72°W	1	Stranding	MZSUP 27586, Schmiegelow 1990
43	29 Jul 1987	Ilha Comprida, SP, Brazil	NA	24,86°S; 047,72°W	1	Stranding	MZUSP 27587, Schmiegelow 1990
44	23 Oct 1987	Praia Deserta, Ilha de Superagüi, PR, Brazil	NA	25,39°S; 048,18°W	1	Stranding	MZUSP 27589, Schmiegelow 1990
45	Mar 1988	Praia de Barrancos, PR, Brazil	NA	NA	1	Stranding	MCN.Z 016
46	Dec 1989	Armação do Itapocoroy, Penha, SC, Brazil	NA	26,79°S; 048,62°W	1	Stranding	UFSC 1088, Simões-Lopes & Ximenez 1993
47	2 Dec 1990	Ilhas Jorge Grego, RJ, Brazil	<50	23,21°S; 044,16°W	~30	Sighting	S. Siciliano, pers. obs.
48	4 Dec 1990	Ponta da Juatinga, Paraty, RJ, Brazil	<50	23,30°S; 044,50°W	>6	Sighting	S. Siciliano, pers. obs.
49	Jul 1991	Patagonia, Argentina	NA	42°20'S / 62°00'W	4	Capture	GMM-DD01-04
50	15 Dec 1991	56Km south Tramandaí, RS, Brazil	NA	30,40°S; 050,30°W	1	Stranding	GEMARS 0015
51	Jan 1992	Praia Deserta, Ilha de Superagüi, PR, Brazil	NA	25,39°S; 048,18°W	1	Stranding	MCN.Z 105
52	26 Aug 1992	Praia do Farol, Ilha do Mel, PR, Brazil	NA	25,54°S; 048,30°W	1	Stranding	MCN.Z 053
53	1993	Barra da Tijuca, RJ, Brazil	NA	23,01°S; 043,29°W	1	Stranding	MQ 04
54	22 Aug 1993	Coast RS, Brazil	NA	NA	1	Capture	Zerbini & Kotas 1998
55	20 Sep 1993	Rio Grande, RS, Brazil	NA	NA	1	Capture	MQ 05
56	14 Oct 1993	North coast RS, Brazil	NA	30°56'S; 049°11'W	NA	Sighting	L. Dalla Rosa, pers. obs.
57	23 Oct 1993	South coast RS, Brazil	NA	32°54'S; 049°49'W	NA	Sighting	T. Vasquez Jr., pers. obs.
58	25 Oct 1993	Praia do Vilage, Pontal do Sul, PR, Brazil	NA	25,58°S; 048,38°W	1	Stranding	MCN.Z 096
59	1994	Praia Vermelha, Ilha Grande, Angra dos Reis, RJ, Brazil	NA	23,16°S; 044,35°W	1	Stranding	MQ 012
60	2 Jan 1994	Praia do Barco, RS, Brazil	NA	29,72°S; 049,99°W	1	Stranding	GEMARS 0170
61	Jun 1994	Ilha de Cabo Frio, Arraial do Cabo, RJ, Brazil	NA	22,99°S; 042,02°W	1	Stranding	MQ 042
62	Jul 1994	Southeast coast, Brazil	NA	NA	1	Recovered	FMZ 003

Record	Date	Locality	Depth (m)	Latitude / Longitude	Number of animals	Event	Source
63	18 Jul 1994	South coast RS, Brazil	134	33°34'S; 051°54'W	2	Capture	MORG 0105, MORG 0106
64	24 Sep 1994	Praia do Mar Grosso, RS, Brazil	NA	NA	1	Stranding	MORG 108
65	29 Sep 1994	Peruíbe, SP, Brazil	NA	24,31°S; 047,00°W	1	Stranding	MZUSP 29376
66	30 Oct 1994	North coast RS, Brazil	NA	31°18'30"S; 050°58'W	1	Stranding	GEMARS 0221
67	7 Nov 1994	Off Laje de Santos, SP, Brazil	<50	24,12°S; 046,31°W	NA	Sighting	Photo, C. Musso/ AVIDEPA/Vila Velha/ES
68	1995	Praia de Palmas, Ilha Grande, RJ, Brazil	NA	23,14°S; 044,14°W	1	Stranding	MQ 021
69	1995	Slope in front of Golfo San Matías, Argentina	NA	NA	40	Capture	Crespo et al. 2000
70	4 Jun 1995	Restinga da Marambaia, RJ, Brazil	NA	23,06°S; 043,78°W	1	Stranding	MN 50086
71	6 Aug 1995	Barra Velha, SC, Brazil	NA	26,56°S; 048,66°W	1	Stranding	MOVI 05270
72	Nov 1995	Southeast coast, Brazil	NA	NA	1	Recovered	FMZ 007
73	27 Jul 1996	Southeast coast, Brazil	18	23°30,46'S 044°44,01'W	20	Sighting	Zerbini et al. 2004a
74	20 Aug 1996	Marujá, SP, Brazil	NA	25,23°S; 048,02°W	1	Stranding	PA-023, Santos 1999
75	20 Aug 1996	Marujá, SP, Brazil	NA	25,23°S; 048,02°W	1	Stranding	PA-024, Santos 1999
76	23 Aug 1996	Coast RS, Brazil	898	30°37,02'S 048°22,04'W	>20	Sighting	Zerbini et al. 2004a
77	31 Aug 1996	South coast RS, Brazil	900	32°29,39'S 050°09,43'W	2	Sighting	Zerbini et al. 2004a
78	22 Sep 1996	South coast RS, Brazil	138–141	33°25'09"S; 050°49'14"W	1	Capture	MORG 124
79	Oct 1996	Farol de São Thomé, RJ, Brazil	NA	22,03°S; 041,05°W	1	Capture	MN 53650, Di Benedetto et al. 2001
80	10 Oct 1996	Ilha Comprida, SP, Brazil	NA	24,86°S; 047,72°W	1	Stranding	PA – 048, Santos 1999
81	23 Apr 1997	South coast RS, Brazil	1190	34°10'S 051°18'W	dozens	Sighting	Zerbini et al. 2004a
82	24 Apr 1997	South coast RS, Brazil	150	33°21'S; 050°43'W	>30	Sighting	Zerbini et al. 2004a
83	2 May 1997	South coast RS, Brazil	200	32°04'S; 050°05,21'W	100	Sighting	Zerbini et al. 2004a
84	2 May 1997	South coast RS, Brazil	174	32°05'S; 050°08,10'W	30	Sighting	Zerbini et al. 2004a
85	14 May 1997	Imbé, RS, Brazil	NA	29°57'52"S; 050°06'51"W	1	Stranding	GEMARS 0419
86	10 Jul 1997	South coast RS, Brazil	NA	33,09°S; 049,99°W	8	Sighting	Pinedo et al. 2002
87	18 Jul 1997	North coast RS, Brazil	NA	29,34°S; 047,63°W	25	Sighting	Pinedo et al. 2002

Record	Date	Locality	Depth (m)	Latitude / Longitude	Number of animals	Event	Source
88	23 Jul 1997	North coast RS, Brazil	NA	30,61°S; 048,56°W	35	Sighting	Pinedo et al. 2002
89	28 Jul 1997	South coast RS, Brazil	NA	32,32°S; 050,12°W	40	Sighting	Pinedo et al. 2002
90	10 Aug 1997	Ilha Comprida, SP, Brazil	NA	24,86°S; 047,72°W	1	Stranding	PA – 085, Santos 1999
91	10 Aug 1997	Ilha Comprida, SP, Brazil	NA	24,86°S; 047,72°W	1	Stranding	PA – 087, Santos 1999
92	24 Sep 1997	Balneário Grajaú, PR, Brazil	NA	NA	1	Stranding	IPeC 037
93	26 Sep 1997	Pontal do Sul, PR, Brazil	NA	25,58°S; 048,38°W	1	Stranding	IPeC 038
94	26 Sep 1997	Pontal do Sul, PR, Brazil	NA	25,58°S; 048,38°W	1	Stranding	IPeC 039
95	4 Nov 1997	South Praia do Cassino, RS, Brazil	NA	NA	1	Stranding	LMM 2079
96	14 Nov 1997	Coast RJ, Brazil	64	22°43,28'S; 041°12,23'W	3	Sighting	Zerbini et al. 2004a
97	21 Dec 1997	South coast RS, Brazil	120	33°51,28'S; 051°37,61'W	8–10	Sighting	Zerbini et al. 2004a
98	2 Jun 1998	Praia da Vila, Saquarema, RJ, Brazil	NA	22,93°S; 042,49°W	1	Stranding	MQ 100
99	6 Aug 1998	Praia de Itapoá, SC, Brazil	NA	26,11°S; 048,61°W	1	Stranding	MOVI 15055
100	13 Aug 1998	Balneário Atami, PR, Brazil	NA	NA	1	Stranding	IPeC 080
101	14 Aug 1998	Balneário Atami, PR, Brazil	NA	NA	1	Stranding	IPeC 082
102	18 Aug 1998	Praia Deserta, Superagüi, PR, Brazil	NA	25,38°S; 048,17°W	1	Stranding	IPeC 084
103	22 Aug 1998	Praia de Itaguaçu, São Francisco, SC, Brazil	NA	26,17°S; 048,53°W	1	Stranding	UFSC 1250, Cherem et al. 2004
104	31 Aug 1998	Superagüi, PR, Brazil	NA	25,38°S; 048,19°W	1	Stranding	IPeC 089
105	8 Sep 1998	Balneário Solymar, PR, Brazil	NA	NA	1	Stranding	IPeC 092
106	21 Sep 1998	Balneário Atami, PR, Brazil	NA	NA	1	Stranding	IPeC 101
107	22 Sep 1998	Ilha Comprida, SP, Brazil	NA	24,86°S; 047,72°W	1	Stranding	PA-118, Santos 1999
108	22 Sep 1998	Ilha Comprida, SP, Brazil	NA	24,86°S; 047,72°W	1	Stranding	PA – 119, Santos 1999
109	22 Sep 1998	Ilha Comprida, SP, Brazil	NA	24,86°S; 047,72°W	1	Stranding	PA – 120, Santos 1999
110	22 Sep 1998	Ilha Comprida, SP, Brazil	NA	24,86°S; 047,72°W	1	Stranding	PA-124, Santos 1999
111	22 Sep 1998	Ilha Comprida, SP, Brazil	NA	24,86°S; 047,72°W	1	Stranding	PA – 126, Santos 1999

Record	Date	Locality	Depth (m)	Latitude / Longitude	Number of animals	Event	Source
112	22 Sep 1998	Ilha Comprida, SP, Brazil	NA	24,86°S; 047,72°W	1	Stranding	PA – 130, Santos 1999
113	10 Oct 1998	Balneário Ipanema, PR, Brazil	NA	25,10°S; 047,91°W	1	Stranding	IPeC 109
114	Jan 1999	In Front of Golfo San Matias, Argentina	NA	North to 42°S	60	Capture	GMM-DD05-19; DD137-138; DD148; Crespo <i>et al.</i> 2000
115	27 Apr 1999	South Praia do Cassino, RS, Brazil	NA	NA	1	Stranding	LMM 2252
116	8 Aug 1999	Praia Grande, SP, Brazil	NA	24,01°S; 046,42°W	1	Stranding	CEEMAM 067
117	13 Aug 1999	Arraial do Cabo, RJ, Brazil	NA	22,99°S; 042,02°W	>40	Sighting	S. Siciliano, pers. obs.
118	20 Aug 1999	Arraial do Cabo, RJ, Brazil	NA	22,99°S; 042,02°W	>30	Sighting	S. Siciliano, pers. obs.
119	21 Aug 1999	Arraial do Cabo, RJ, Brazil	NA	22,99°S; 042,02°W	>30	Sighting	S. Siciliano, pers. obs.
120	31 Aug 1999	Cabo Frio, RJ, Brazil	NA	23°00'S; 042°01'W	1	Sighting	S. Siciliano, pers. obs.
121	12 Feb 2000	Ponta Negra, RJ, Brazil	NA	22,96°S; 042,69°W	~15	Sighting	S. Siciliano, pers. obs.
122	May 2000	Armação do Itapocoroy, SC, Brazil	NA	26,79°S; 048,62°W	1	Stranding	MOVI 16451
123	Dec 2000	Arraial do Cabo, RJ, Brazil	NA	22,96°S; 042,03°W	1	Stranding	GEMM 016
124	29 Jan 2001	Barra de Maricá, RJ, Brazil	NA	22,96°S; 042,78°W	1	Stranding	MQ 152
125	Jun 2001	North coast RS, Brazil	170	31°11,78'S; 049°33,20'W	1	Capture	MOVI 23686
126	3 Jun 2001	North coast RS, Brazil	430	30°29'S; 048°10'W	>15	Sighting	Photos, A.L. Garcia, PROA
127	11 Jun 2001	North coast RS, Brazil	200	30°11,53'S; 048°40,76'W	1	Capture	MOVI 25229
128	14 Jul 2001	Barra Velha, SC, Brazil	NA	26,60°S; 048,68°W	1	Stranding	MOVI 33254
129	16 Aug 2001	South coast RS, Brazil	315	34°32'32"S; 051°52'54"W	NA	Sighting	Photos & video, L. G. Fisher
130	17 Aug 2001	South coast RS, Brazil	215	34°10'42"S; 051°35'90"W	20 a 30	Sighting	L. G. Fisher, pers. obs.
131	18 Aug 2001	South coast RS, Brazil	107	33°29'16"S; 051°16'88"W	~100	Sighting	Photos & video, L. G. Fisher
132	21 Aug 2001	South coast RS, Brazil	210	33°29'34"S; 050°42'53"W	~30	Sighting	Photos & video, L. G. Fisher
133	27 Aug 2001	Praia Grande, Ilha de São Francisco, SC, Brazil	NA	26,31°S; 048,54°W	1	Stranding	UFSC 1300
134	May–Jul 2001	North coast RS, Brazil	339–447	NA	1	Capture	Photos, A.H. Amim Jr, PROA
135	Jun–Aug 2001	North coast RS, Brazil	300–500	30°41'S; 049°12'W	NA	Sighting	Photos, G. Soares, PROA
136	Jun–Aug 2001	North coast RS, Brazil	300–500	30°55'S; 048°47'W	1	Capture	Photos, G. Soares, PROA

Record	Date	Locality	Depth (m)	Latitude / Longitude	Number of animals	Event	Source
137	2 Sep 2001	North coast RS, Brazil	-400	31°21'00"S; 049°40'12"W	NA	Sighting	Photos, L. G. Fisher
138	2002	Off Laje de Santos, SP, Brazil	<50	22,18°S; 046,26°W	10	Sighting	Photo, O. Luiz Jr.
139	2002	South coast, Brazil	500-963	NA	NA	Sighting	Photos, V.N. Duarte, PROA
140	Jan 2002	Praia Seca, Araruama, RJ, Brazil	NA	22,94°S; 042,30°W	1	Stranding	GEMM 029
141	Mar 2002	Tierra del Fuego	NA	NA	1	Stranding	Goodall et al. 2008
142	25 Mar 2002	South coast RS, Brazil	440	34°13'82"S; 051°31'90"W	NA	Sighting	Photos, L. G. Fisher
143	Jun-Aug 2002	South coast RS, Brazil	195-493	NA	1	Capture	Photos, N. P. Vechani, PROA
144	14 Jul 2002	Itanhaém, SP, Brazil	NA	24,19°S; 046,81°W	1	Stranding	CEEMAM 154
145	9 Aug 2002	Intanhaém, SP, Brazil	NA	24,19°S; 046,81°W	1	Stranding	CEEMAM 166
146	14 Dec 2002	Barra de Maricá, RJ, Brazil	NA	22,96°S; 042,78°W	1	Stranding	MQ 172
147	8 Aug 2003	Ilha do Remédio, Barra do Sul, SC, Brazil	20	26,43°S; 048,57°W	1	Capture	MOVI 30372
148	14 Sep 2003	South coast SC, Brazil	520-600	29°12'S; 047°45'W	NA	Sighting	Photos, F.L. Silveira, PROA
149	8 Nov 2003	Puerto Quequén, Buenos Aires, Argentina	NA	NA	1	Stranding	MACN 22222
150	10 Nov 2003	Barra da Tijuca, RJ, Brazil	NA	23,01°S; 043,29°W	1	Stranding	MQ 186
151	11 Nov 2003	Copacabana, RJ, Brazil	NA	22,97°S; 043,18°W	1	Stranding	MQ 187
152	14 Nov 2003	Marine boundary between Brazilian and Uruguayan waters	1435	35°02'S; 051°13'W	NA	Sighting	Photos, E. Pedroso & C. Etchichury
153	3 Jan 2004	Barra da Tijuca, RJ, Brazil	NA	23,01°S; 043,29°W	1	Stranding	MQ 189
154	Feb 2004	90 Km south Praia do Cassino, RS, Brazil	NA	32°43'0,8"S; 052°26'43,4"	1	Stranding	GEMARS 1164
155	5 Aug 2004	Costa do Sol, RS, Brazil	NA	30°13'47,2"S; 050°13'20,7"W	1	Stranding	GEMARS 1183
156	13 Aug 2004	Praia do Boqueirão, Saquarema, RJ, Brazil	NA	22,93°S; 042,49°W	1	Stranding	GEMM 061
157	11 Sep 2004	Off Península de Búzios, RJ, Brazil	NA	22,73°S; 041,67°W	>40	Sighting	I. B. Moreno, pers. obs.

Record	Date	Locality	Depth (m)	Latitude / Longitude	Number of animals	Event	Source
158	11 Sep 2004	Off Península de Búzios, RJ, Brazil	NA	22,78°S; 041,60°W	~50	Sighting	I. B. Moreno, pers. obs.
159	Oct 2004	Ilha Comprida, SP, Brazil	NA	24,86°S; 047,72°W	1	Stranding	IPeC 229
160	11 Oct 2004	Orla 500, Cabo Frio, RJ, Brazil	NA	22,89°S; 042,02°W	1	Stranding	GEMM 067
161	2 Nov 2004	Cidreira, RS, Brazil	NA	30°09'32,5"S; 050°11'43,1"W	1	Stranding	GEMARS 1190
162	29 Nov 2004	North coast RS, Brazil	NA	30°50'00"S; 050°34'14"W	1	Stranding	GEMARS 1194
163	13 Dec 2004	North coast RS, Brazil	NA	31°01'33"S; 050°42'43,1"W	1	Stranding	GEMARS 1214
164	13 Dec 2004	North coast RS, Brazil	NA	30°55'12,7"S; 050°38'15"W	1	Stranding	GEMARS 1218
165	18 Dec 2004	Santos, Brazil	NA	NA	1	Capture	Photos, C. Bertozzi/Projeto BioPesca/Praia Grande/SP
166	12 Feb 2005	Ilha do Farol, Arraial do Cabo, RJ, Brazil	70	23,03°S; 042,00°W	50	Sighting	I. B. Moreno, pers. obs.
167	22 Feb 2005	Ponta do Focinho, Arraial do Cabo, RJ, Brazil	NA	23,01°S; 042,00°W	20 a 30	Sighting	M. Tavares, pers. obs.
168	5 Jun 2005	Coast RJ, Brazil	NA	NA	1	Stranding	Photos, MAQUA/UERJ
169	10 Jun 2005	Arraial do Cabo, RJ, Brazil	NA	23,02°S; 042,01°W	40	Sighting	I. B. Moreno, pers. obs.
170	2 Nov 2005	9 Km south Balneário Mostardense, RS, Brazil	NA	31°12'43"S; 050°51'52,8"W	1	Stranding	GEMARS 1241
171	30 Nov 2005	Off Alcatrazes Archipelago, SP, Brazil	30–35	24°03,95'S; 045°38,9'W	30	Sighting	Photos, S. P. de Souza/Instituto Terra & Mar/ São Sebastião/ SP
172	28 Dec 2006	Praia Seca, Araruama, RJ, Brazil	NA	22,94°S; 042,30°W	1	Stranding	GEMM 117
173	06 Mar 2007	North coast, Brazil	48	1°44,63'S; 043°48,67'W	4	Sighting	Silva et al. 2008
174	10 Mar 2007	North coast, Brazil	42	1°44,19'S; 043°48,54'W	8	Sighting	Silva et al. 2008
175	May 2007	Praia do Mupéua, Maracanã, PA, Brazil	NA	0,61°S; 047,53°W	1	Stranding	MPEG 38742, Siciliano et al. 2008
176	12 Abr 2008	Figueira, Arraial do Cabo, RJ, Brazil	NA	NA	1	Stranding	GEMM 144
177	20 Jul 2008	Praia Grande, Arraial do Cabo, RJ, Brazil	NA	NA	1	Stranding	GEMM 147
178	NA	Praia do Peró, Cabo Frio, RJ, Brazil	NA	22,83°S; 041,99°W	1	Stranding	MQ 041

Record	Date	Locality	Depth (m)	Latitude / Longitude	Number of animals	Event	Source
179	NA	Praia do Abraãozinho, Ilha Grande, RJ, Brazil	NA	23,13°S; 044,15°W	1	Stranding	MQ 118
180	NA	North coast, Brazil	NA	NA	1	Capture	Asano Filho et al. 2007
181	NA	Punta Médanos, BA	NA	NA	1	Stranding	MACN 26.160
182	NA	Argentina	NA	NA	1	Stranding	MACN 20530
183	NA	Cabo Polonio, Rocha, Uruguay	NA	34°24'30"S; 53°46'25"W	1	NA	ZVC 459
184	NA	Rocha, Uruguay	NA	NA	1	NA	ZVC 1089
185	NA	Uruguay	NA	NA	1	NA	ZVC 2108

BA, Buenos Aires; NA, not available; PA, Pará State; PR, Paraná State; PROA, Programa de Observadores da Frota Arrendada da Universidade do Vale do Itajaí; RJ, Rio de Janeiro State; RS, Rio Grande do Sul State; SC, Santa Catarina State; SP, São Paulo State. The names of the scientific collections and museums, which are abbreviated here, are given in full in Appendix 1.