

- BÖHME, W. (1969): Beitrag zur Kenntnis der Zwergmaus, *Micromys minutus* (Pallas, 1778) (Rodentia, Muridae). Faun. Mitt. Norddeutschl. 3, 247–254.
- (1978): *Micromys minutus* (Pallas, 1778) – Zwergmaus. Handb. d. Säugetiere Europas. Vol. 1, 290–304. Wiesbaden: Akad. Verlagsges.
- HARRIS, S. (1979): History, distribution, status and habitat requirements of the harvest mouse (*Micromys minutus*) in Britain. Mammal Rev. 9, 159–171.
- KOSKELA, P.; VIRO, P. (1976): The abundance, autumn migration, population structure and body dimensions of the harvest mouse in northern Finland. Acta theriol 21, 375–387.
- PIECHOCKI, R. (1958): Die Zwergmaus. Wittenberg-Lutherstadt: A. ZIEMSEN.
- ROWE, F. P. (1958): Some observations on harvest mice from the corn ricks of a Hampshire farm. Proc. Zool. Soc. Lond. 131, 320–323.
- SOUTHWICK, C. H. (1956): The abundance and distribution of harvest mice (*Micromys minutus*) in corn ricks near Oxford. Proc. Zool. Soc. Lond. 126, 449–452.

Author's address: Dr. ULRICH JÜDES, Dorfstraße 15a, D-2419 Kulpin

On the distribution of *Globicephala melaena* (Traill, 1804) (Cetacea, Delphinidae) in the south-west Atlantic

By A. CASINOS

Department of Zoology (Vertebrates) University of Barcelona

Receipt of Ms. 23. 1. 1981

The genus *Globicephala* is considered as cosmopolitan (see, for exemple, TOMILIN 1967). Nevertheless, exact data on the distribution of the two species of the genus (*Globicephala melaena* and *Globicephala macrorhynchus*) are very scarce. The main cause is that the systematics of the genus has only been established recently (VAN BREE 1971).

According to the literature, information from the south-west Atlantic coasts is rather scarce. CABRERA (1940, 1961) accepts that *Globicephala melas* (sic) occurs from Mar del Plata as far as a latitude of about 70 °S (for all the localities see fig. 1). PIÑERO and CASTELLO (1975) comment that most of the Argentinian records are not based on determined specimens, because the preserved osteological material is very poor. After GOODALL (1978) the situation would be different for Tierra de Fuego where she has been able to collect many long-finned pilot whale skeletons.

Thanks to the kind permission of the respective curators, I had the opportunity of studying the Cetacean collections of four museums of the zone, these of Rio de Janeiro, São Paulo, Buenos Aires and La Plata. Osteological material of *Globicephala melaena* is kept in two of these museums. In the Museo Argentino de Ciencias Naturales „Bernardino Rivadavia“ there are two skulls, both of them from the coasts of Buenos Aires (localities, Buenos Aires and Miramar). In the „Museu de Zoologia“ of São Paulo there is a skull. In the table measurements of the three skulls are shown.

The São Paulo specimen is the most interesting one. It was collected in Cananéia, São Paulo state, in 1920 by LÜDERWALDT, according to the attached data. The animal had been identified as *Globicephala macrorhyncha* (sic). However, if one takes into account the characters that VAN BREE (1971) gives for determining the two species of the genus, this skull belongs to a long-finned pilot whale. First of all there were 10 alveoli on each side of the lower jaw. They were not visible in the upper jaw. Normally, the presence of more than nine teeth in each tooth row is a typical character of *Globicephala melaena*, always

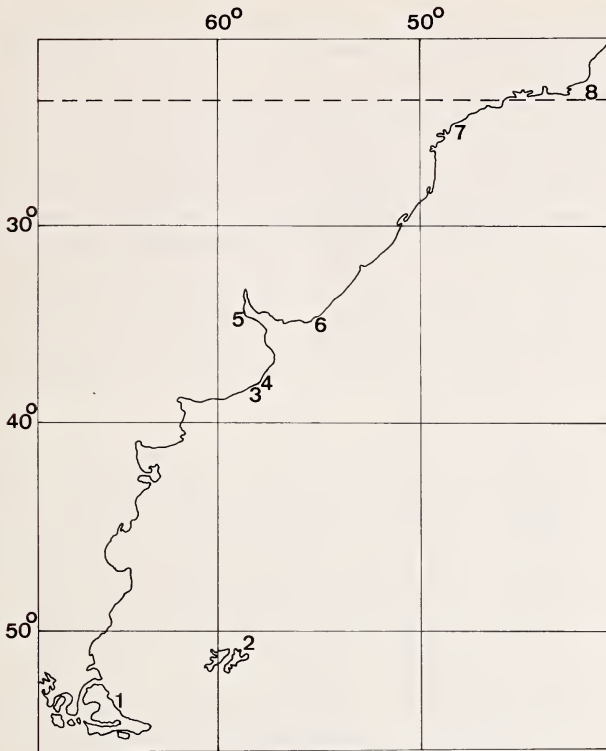


Fig. 1. South American localities mentioned in the text. 1 = Tierra de Fuego; 2 = Malvinas islands; 3 = Miramar; 4 = Mar del Plata; 5 = Buenos Aires; 6 = Santa María cape; 7 = Cananéia; 8 = Tropic of Capricorn



Fig. 2. Dorsal view of the skull of the Cananéia specimen

according to VAN BREE. Nevertheless, this character alone does not seem sufficient for determination. I have seen a specimen of short-finned pilot whale with ten teeth (CASINOS and BOU 1980). The other specific character however was very clear: the rostrum was rather long, with the lateral borders of the maxillae not covered by the premaxillae (fig. 2).

After PIÑERO and CASTELLO (1975) the most northerly record of long-finned pilot whale in the south-west Atlantic would be Santa María cape (Rocha district, Uruguay). So, as very often happens with cetacean distribution, we wonder if the Cananéia specimen is an isolated one or it exemplifies the normal distribution of the species in this zone. The record would move the known limit about 9° to the north, very close to the theoretical limit if we accept the antitropical distribution of *Globicephala melaena* in the Atlantic postulated by DAVIES (1963). There is only a little more than a degree between Cananéia and the Tropic of Capricorn.

Let us examine the distribution of the long-

finned pilot whale off the African coasts. A recent paper (VAN BREE et al. 1978) has shown the presence of both species of pilot whale in South Africa, although it seems that *Globicephala melaena* is predominant. The real northern limit of this species in the zone does not appear clearly. For the north-west African coast, we have DUGUY's data (1976). He observed long-finned pilot whales at 21° 24' N/17° 42' W, that means about 2° below the Tropic of Cancer. Perhaps we can establish a comparison with the situation in the south-west Atlantic. In both zones cold currents exist that reach as far as subtropical/tropical waters. In Africa there is the Canaries current; in South America the Malvinas current. MITCHELL (1975) has already shown the presence of *Globicephala melaena* in the cold

Table
Measurements of the three skulls

| Measurements | M.A.C.N.B.R. | | M.Z.S.P. | % | | |
|---|--------------|----------------|---------------|------|------|------|
| | Buenos Aires | Miramar 25-136 | Cananéia 4192 | | | |
| 1 Total skull length* | 557 mm | 683 mm | 653 mm | 100 | 100 | 100 |
| 2 Rostrum length | 311 mm | 385 mm | 318 mm | 55.8 | 56.3 | 48.7 |
| 3 Rostrum basal width | 240 mm | 280 mm | 284 mm | 43.0 | 40.9 | 43.5 |
| 4 Rostrum width 60 mm anterior to base | 225 mm | 261 mm | 265 mm | 40.3 | 38.2 | 40.6 |
| 5 Rostrum width at middle | 179 mm | 239 mm | 214 mm | 32.1 | 34.0 | 32.7 |
| 6 Rostrum width at ¾ of the length | 137 mm | 159 mm | 175 mm | 24.5 | 23.2 | 26.8 |
| 7 Maximum premaxillae width | 157 mm | 184 mm | 188 mm | 28.1 | 26.9 | 28.8 |
| 8 Preorbital width | 400 mm | 463 mm | 450 mm | 71.8 | 67.8 | 69.0 |
| 9 Postorbital width | 429 mm | 512 mm | 495 mm | 77.0 | 75.0 | 75.8 |
| 10 Zygomatic width | 413 mm | - | 498 mm | 74.1 | - | 76.2 |
| 11 Width of braincase across squamosals | 281 mm | 318 mm | 315 mm | 50.4 | 46.5 | 48.2 |
| 12 Length temporal fossa | 108 mm | 144 mm | 150 mm | 19.3 | 21.0 | 23.0 |
| 13 Height temporal fossa | 93 mm | 100 mm | 127 mm | 16.7 | 14.6 | 19.4 |
| 14 Tip rostrum to the nares | 408 mm | 478 mm | 460 mm | 73.2 | 70.0 | 70.4 |
| 15 Tip rostrum to the pterygoid bone | 336 mm | 417 mm | 382 mm | 60.3 | 61.0 | 58.5 |
| 16 Length of upper tooththrow (right) | - | 183 mm | - | - | 26.8 | - |
| 17 Length of upper tooththrow (left) | - | 171 mm | - | - | 25.0 | - |
| 18 Number of alveoli of the upper jaw (right) | - | 11 | - | - | - | - |
| 19 Number of alveoli of the upper jaw (left) | - | 9 | - | - | - | - |
| 20 Lower jaw length (left side) | 476 mm | 558 mm | 524 mm | 85.4 | 81.6 | 80.2 |
| 21 Coronoid height | 126 mm | 159 mm | 162 mm | 22.6 | 23.2 | 24.8 |
| 22 Length of the lower jaw symphysis | 58 mm | 66 mm | 69 mm | 10.4 | 9.6 | 10.5 |
| 23 Length of the lower tooththrow (right) | 158 mm | 160 mm | 154 mm | 28.3 | 23.4 | 23.5 |
| 24 Length of the lower tooththrow (left) | 150 mm | 160 mm | 158 mm | 26.9 | 23.4 | 24.2 |
| 25 Number of alveoli of the lower jaw (right) | 11 | 10 | 10 | - | - | - |
| 26 Number of alveoli of the lower jaw (left) | 10 | 10 | 10 | - | - | - |

* From the tip of the rostrum to the basioccipital
Abbrev.: M.A.C.N.B.R., Museo Argentino de Ciencias Naturales „Bernardino Rivadavia“; M.Z.S.P., Museu de Zoologia de São Paulo.

currents of the Southern Hemisphere. Therefore, it could be useful to say some words on the Malvinas current in order to analyse the possible distribution of the long-finned pilot whale in the area.

BOLTOVSKOY (1959) gives a synthetic survey of the Malvinas current. It seems that this current is formed by a mass of cold water off the coasts, limited easterly by the Brazil current. The most interesting characteristic for our problem is the northern limit. BOLTOVSKOY used foraminifera as biological indicators. He found foraminifera typical of the Malvinas current as far north as 22° 11' S. Nevertheless, it seems that the cold water reaches up to this latitude flowing only on the bottom, since in some place more to the south, off the Brazilian coasts, the waters of the Malvinas current sink and do not rise to the surface. Of course, this current, like any other oceanic one, is not constant in its characteristics and limits. We can assume that changes at the northern limit can influence the distribution of species, like *Globicephala melaena*, which cannot normally be expected to reach such low latitudes.

Acknowledgements

Thanks are given to Prof. ALBERTO ARRIZAGA (Universidad Católica de Chile, Talcahuano) for providing bibliography on the Malvinas current; to Dr. J. GOSÁLBEZ and Prof. J. NADAL (Universitat de Barcelona) for their collaboration in the review of the South American collections; and to Dr. P. J. H. VAN BREE (Universiteit van Amsterdam) and Dr. D. E. SERGEANT (Arctic Biological Station, Ste. Anne de Bellevue, Québec) for their valuable remarks. Moreover, the latter improved the English text. The photograph was generously supplied by Dr. NORMA GOMES (Museu de Zoologia, São Paulo).

The trip to South America was made possible with funds of the „Programa de Cooperación Internacional con Iberoamérica“ of the former „Ministerio de Educación y Ciencia“ of Spain.

References

- BOLTOVSKOY, E. (1959): La corriente de Malvinas (un estudio en base a la investigación de Foraminíferos). Serv. Hidrogr. Naval, H. 1015, 1–96.
- BREE, P. J. H. VAN (1971): On *Globicephala sieboldii* GRAY, 1846, and other species of Pilot Whales (Notes on Cetacea, Delphinoidea III). *Beaufortia* 19, 79–87.
- BREE, P. J. H. VAN; BEST, P. B.; ROS, G. J. B. (1973): Occurrence of two species of Pilot Whales (genus *Globicephala*) on the coast of South Africa. *Mammalia* 42, 323–328.
- CABRERA, A. (1961): Mamíferos de América del Sur. II. *Rev. Mus. Arg. Cienc. Nat. Bs. As.* 4, 309–732.
- CABRERA, A.; YEPES, J. (1940): Mamíferos sud-americanos (vida, costumbres y descripción). Buenos Aires: Compañía Argentina de Editores.
- CASINOS, A.; BOU, J. (1980): On a massive stranding of short-finned pilot whale, *Globicephala macrorhynchus* Gray, 1846, on Margarita Island (Venezuela). *Sci. Rep. Whales Res. Inst.* 32, 191–194.
- DAVIES, J. L. (1963): The antitropical factor in cetacean speciation. *Evolution* 17, 107–116.
- DUGUY, R. (1976): Contribution à l'étude des Mammifères marins de la côte nordouest d'Afrique. *Rev. Trav. Inst. Pêches marit.* 39, 321–332.
- GODALL, R. N. P. (1978): Report on the small cetaceans stranded on the coasts of Tierra de Fuego. *Sci. Rep. Whales Res. Inst.* 30, 197–230.
- MITCHELL, E. (Ed.) (1975): Report on the Meeting of Smaller Cetaceans. *J. Fis. Res. Board. Can.* 32, 889–983.
- PIÑERO, M. E.; CASTELLO, H. P. (1975): Sobre „ballenas piloto“ *Globicephala melaena edwardii* (Cetacea, Delphinidae) varadas en la isla Trinidad (Provincia de Buenos Aires). *Rev. Mus. Arg. Cienc. Nat. Bs. As.* 12, 13–24.
- TOMLIN, A. G. (1967): Mammals of the U.S.S.R. and adjacent countries. IX. Cetacea. Jerusalem: Israel Progr. f. Scient. Traslát.

Author's address: Dr. A. CASINOS, Department of Zoology (Vertebrates), Faculty of Biology, University of Barcelona, Barcelona – 7, Spain