J. Mar. Biol. Ass. U.K. (2003), **83**, 887–888
Printed in the United Kingdom

On the occurrence of the Arnoux's beaked whale (*Berardius arnuxii*) in Brazil

Salvatore Siciliano* and Marcos César de Oliveira Santos†

*Grupo de Estudos de Mamíferos Marinhos da Região dos Lagos—GEMM-Lagos, Laboratório de Ecologia, Departamento de Endemias, ENSP/FIOCRUZ, Rua Leopoldo Bulhões 1480-térreo—Manguinhos, Rio de Janeiro, RJ 21041-210 Brazil. E-mail: sal@ensp.fiocruz.br †Projeto Atlantis/LabMar, Departamento de Ecologia, Instituto de Biociências, Universidade de São Paulo, Brazil, Rua do Matão, 321, Cidade Universitária, São Paulo, SP 01454-010. E-mail: marcosos@usp.br

A specimen of Arnoux's beaked whale was recorded from the coast of Brazil on 4 August 1993. The specimen was identified from the skeleton in 1994. Arnoux's beaked whales (*Berardius arnuxii*) are known to have a circumpolar distribution in the Southern Hemisphere, from the Antarctic continent and ice edge (78°S) north to about 35°S in the southern Pacific, southern Atlantic, and Indian Ocean. Few sighting and stranding records are known. Its distribution in deep and cold waters, mainly far from the coast and in higher latitudes, is probably the main reason preventing the collection of more information on the biology of this species. It is still considered as 'insufficiently known' by the International Union for the Conservation of Nature and Natural Resources. Sighting records are more common in Antarctic waters, where some individuals sometimes become trapped in ice holes, and in the South Pacific. Strandings are relatively rare. About 30 strandings were reported around New Zealand, and single ones occurred in southern Australia, in South Africa, Argentina and the Falkland Islands. The majority of records occurred south of the latitude 40°S (Ross, 1984).

On 4 August 1993, a six metres long cetacean specimen was reported floating dead close to the coast of São Sebastião (23°49′S 45°24′W), São Paulo State, Brazil. The carcass was towed to a local buoy and only on 8 August it was buried in a local beach. Photographs of the carcass did not allow the identification of the species and its gender as it was in an advanced state of decomposition. In March 1994, the authors recovered almost all the skeleton of this specimen except for the pelvic bones, a few phalanges, chevrons and some caudal vertebrae. The specimen was identified as an Arnoux's beaked whale (*Berardius arnuxii* Duvernoy, 1851) because of its cranial morphology, and by the presence of a pair of triangular teeth at the tip of the lower jaw close to a pair of alveoli posterior and close to the erupted teeth. The skull is slightly asymmetrical bilaterally, the rostrum is shorter than the mandibles and the maxillae are much shorter than the premaxillae. The condylobasal length is 1180 mm and the vertebral formula is: C7, T10, L12, Ca15+=44+. A total of 19 ribs were recovered. Based on its size, no abrasion of its anterior pair of teeth and the fact that all the vertebral epiphyses were not fused to their centra, this individual could be considered as physically immature. Cranial measurements were taken following Moore (1963) and Ross (1984) and are shown in Tables 1 and 2. Teeth measurements were not taken. Local curators lost them when preparing the skeleton for exhibition. The almost complete skeleton is in exhibition at a local public museum placed at Praia do Balneário dos Trabalhadores, São Sebastião.

A total of 42 cetacean species have already been reported along the Brazilian coast, including the following ziphiid species: the southern bottlenose whale, *Hyperoodon planifrons*, the Blainville's beaked whale, *Mesoplodon densirostris*, the Gray's beaked whale, *Mesoplodon grayi*, the Hector's beaked whale, *Mesoplodon hectori*, the strap-toothed beaked whale, *Mesoplodon layardii*, and the Cuvier's beaked whale, *Ziphius cavirostris*. Almost half of these records were attributed to *Z. cavirostris*. The present record is the first one of Arnoux's beaked whale in Brazil, adding a new ziphiid species to this country's coast. This record also represents the northernmost one reported to *Berardius arnuxii* in the Southern Hemisphere. As this stranding was attributed to an uncommon species, misunderstood information was quoted elsewhere following the misidentification of the specimen (Hetzel & Lodi, 1993; Soto et al., 1993), as well as describing the incorrect date and length of the specimen (Martuscelli et al., 1995).

Stranding records of Arnoux's beaked whales were common in late spring or early summer in higher latitudes. Based on these data, Ross (1984) suggested that *Berardius arnuxii* could move onshore during summer months. In South America, the only known record which was reported as soon as the specimen stranded occurred in early autumn. The specimen we reported was observed in August 1993 in mid-winter and could possibly be assigned as a stray. However, little information on ziphiid biology and distribution in the Southern Hemisphere is available. Besides that, there are few cetacean sighting surveys along the Brazilian coast, as well as there is a very small number of *Berardius arnuxii* strandings in the Southern Hemisphere. Thus, it is still not possible to conclude that local waters take part of this species ordinary distribution or if this specimen is a stray.

James G. Mead, Ken Balcomb and Koen Van Waerebeck confirmed the species identification. The Prefecture of São Sebastião helped the authors to organize the skeleton recovery in March 1994, as well as biologist André Rossi from FUNDAMAR. Eduardo R. Secchi reviewed the earlier drafts of this note.

REFERENCES

Hetzel, B. & Lodi, L., 1993. *Baleias, botos e golfinhos: guia de identificação para o Brasil*. Rio de Janeiro, Brasil: Editora Nova Fronteira.

Martuscelli, P., Milanelo, M. & Olmos, F., 1995. First record of Arnoux's beaked whale (*Berardius arnuxii*) and southern right whale dolphin (*Lissodelphis peronii*) from Brazil. *Mammalia*, **59**, 274–275.

Moore, J.C., 1963. Recognizing certain species of beaked whales of the Pacific Ocean. *American Midland Naturalist*, **70**, 396–428.

https://doi.org/10.1017/S0025315403007999h Published online by Cambridge University Press

Table 1. *Cranial measurements taken from the studied* Berardius arnuxii *specimen collected in São Sebastião, São Paulo—Brazil in August 1993. Bilateral measurements were taken from the left side. Measurements followed Moore (1963) and Ross (1984).*

Cranial measurement description	cm	% CBL
1. Condylobasal length	118.0	100.0
2. Length of rostrum	74.0	62.7
3. Tip of rostrum to posterior margin of pterygoid near midline	85.0	72.0
4. Tip of rostrum to most posterior extension of wing of pterygoid	90.5	76.7
5. Tip of rostrum to most anterior extension of pterygoid	63.0	53.4
6. Tip of rostrum to most posterior extension of maxillaries	71.0	60.2
7. Tip of rostrum to most posterior extension of maxillary plate	109.0	92.4
8. Tip of rostrum to anterior margin of superior nares	87.0	73.7
9. Tip of rostrum to most anterior point on the premaxillary crest	95.0	80.5
10. Tip of rostrum to most posterior extension of temporal fossa	108.0	91.5
11. Tip of rostrum to most posterior extension of lateral tip of premaxillary crest	100.0	84.7
12. Tip of rostrum to most anterior extension of pterygoid sinus	60.5	51.3
13. Length of temporal fossa	23.5	19.9
14. Length of orbit	11.0	9.32
15. Length of right nasal on vertex of skull	13.6	11.5
16. Length of nasal suture	12.4	10.5
17. Breadth of skull across postorbital process of frontals	63.0	53.4
18. Breadth of skull across zygomatic processes of squamosals	61.0	51.7
19. Breadth of skull across centres of orbits	60.0	50.8
20. Least breadth of skull across posterior margins of temporal fossae	35.0	29.7
21. Greatest span of occipital condyles	17.0	14.4
22. Greatest width of an occipital condyle	6.5	5.5
23. Greatest length of an occipital condyle	13.5	11.4
24. Greatest breadth of foramen magnun	6.2	5.2
25. Breadth of skull across exoccipitals	49.0	41.5
26. Breadth of nasals on vertex	12.0	10.2
27. Least distance between premaxillary crests	10.5	8.9
28. Greatest span of premaxillary crests	19.6	16.6
29. Least width of premaxillae where they narrow opposite superior nares	14.7	12.5
30. Greatest width of premaxillae anterior to place of measurement # 29	17.6	14.9
31. Width of premaxillae at midlength of rostrum	8.5	7.2
32. Width of rostrum in apices of antorbital notches	36.0	30.5
33. Greatest width of rostrum at midlength of rostrum	15.0	12.7
34. Greatest depth of rostrum at midlength of rostrum	9.5	8.1
35. Greatest transverse width of superior nares	9.0	7.6
36. Greatest inside width of inferior nares on the pterygoids	18.0	15.2
37. Height of skull	46.5	39.4
38. Greatest width of temporal fossa	12.7	10.8
39. Least distance between maxillary foramina	13.2	11.2
40. Least distance between premaxillary foramina	7.2	6.1
41. Distance from posterior margin of left maxillary foramen to most anterior extension of left maxillary prominence	5.0	4.2
42. Greatest length of vomer visible at surface of palate	33.5	28.4
43. Length of tympanic bulla, left	8.0	6.8
44. Length of tympanic bulla, right	7.6	6.4

Table 2. *Mandibular measurements taken from the studied* Berardius arnuxii *specimen collected in São Sebastião, São Paulo—Brazil, in August 1993. Bilateral measurements were taken from the left side. Measurements followed Moore (1963) and Ross (1984).*

Cranial measurement description	cm	% CBL
1. Length of mandible	106.0	100.0
2. Greatest length of symphysis	25.0	23.6
3. Height of mandible at coronoid process	22.0	20.8
4. Outside height of mandible at midlength of alveolus	7.0	6.6
5. Inside height of mandible at midlength of alveolus	5.0	4.7
6. Length from most posterior extension of symphysis to most posterior extension of condyle	83.0	78.3
7. Length from posterior margin of alveolus to condyle	100.0	94.3
8. Length of alveolus	6.0	5.7
9. Width of alveolus	4.0	3.8

Ross, G.J.B., 1984. The smaller cetaceans of the south coast of Southern Africa. *Annals of the Cape Province Museum, Natural History*, **15**, 173–410.

Soto, J.M.R., Vega, S.S. & Caseca-Santos, L.R., 1993. Novos registros de baleias focinho-de-garrafa *Hyperoodon planifrons* Flower 1882 (Cetacea: Ziphiidae) na costa brasileira. *VI Semana Nacional de Oceanografia*, 4–8 de outubro. Resumo **692**.

Submitted 13 September 2002. Accepted 26 May 2003.

https://doi.org/10.1017/S0025315403007999h Published online by Cambridge University Press