

Occurrence of Hector's beaked whale, *Mesoplodon hectori*, in Southern Brazil

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Abstract

In February 1994, a Hector's beaked whale, *Mesoplodon hectori*, was found ashore 80 km north of Rio Grande (32°07'S, 52°05'W), southern Brazil. The skull (CBL=497 mm) and post-cranial skeleton (C 7, T 11, L 10, Ca 17=45) were collected and placed at the Museu Oceanográfico Prof. Eliézer de Carvalho Rios' collection (MORG 0104). The whale was identified based on skull morphology and measurements, as well as shape and position of the mandibular teeth. The small size (skeletal length=236 cm), unfilled mesorostral channel, wide open tooth pulp cavity, and unfused vertebral epiphysis indicated that the animal was young. This whale is the first record of the species in Brazil. In addition, it extends northwards the known range of Hector's beaked whale in the west South Atlantic Ocean by about 800 km and represents the northernmost record of the species.

Key words: *Mesoplodon hectori*, stranding, distribution, osteology, Brazil, South Atlantic Ocean.

Introduction

The Hector's beaked whale, *Mesoplodon hectori* (Gray, 1871), is one of the least known ziphiid species. It is found primarily in cold temperate waters of the Southern Hemisphere between 35°S and 55°S (Mead & Baker, 1987; Goodall & Lichter, 1988; Mead, 1989; Jefferson *et al.*, 1993). Individuals found ashore and sighted at sea along the coast of California (USA) were attributed to this species (Mead, 1981). However, recent molecular analyses of these whales suggested that they belong to a different, undescribed species (Dalebout *et al.*, 1999). In the South Atlantic Ocean, Hector's beaked whale is known from individuals found ashore in Argentina, the Falkland Islands, and

South Africa (e.g., Ross, 1970, 1984; Goodall & Lichter, 1988).

Specimen Description

In early January 1994, a small ziphiid whale was reported to have stranded 80 km north of Rio Grande (32°07'S, 52°05'W), Rio Grande do Sul State, southern Brazil. Poor weather and beach conditions precluded collection of the specimen until early February. It was found in an advanced stage of decomposition (code 5 according to Geraci & Lounsbury, 1993, p. 181), which prevented sex determination. The skull (Fig. 1) and nearly complete post-cranial skeleton were preserved (MORG 0104). After cleaning and preparation, the specimen was identified as a ziphiid of the genus *Mesoplodon*. The skull was measured (Table 1) following Moore (1963) and Ross (1984) and the whale was identified as a Hector's beaked whale. The determining diagnostic characters were: the relatively narrow width of the premaxillary crest (Ross, 1970), which in our specimen was almost equal to the width across the premaxillaries at the level of the anterior border of the superior nares, and the triangular shape of the teeth that were positioned near the tip of the lower jaw (Fig. 1). The mesorostral channel and tooth pulp cavity were both open. After removing all organic material, the dried weight of the left and right teeth were 1.06 g and 1.07 g, respectively. The vertebral formula was C 7, T 11, L 10, Ca 17=45. There were eight chevrons and all vertebral epiphyses were unfused to the centrum of each vertebrae. The skull and post-cranial skeleton measured 236 cm in a straight line.

Discussion

The osteological information indicated that the present specimen was young. Previous calf records

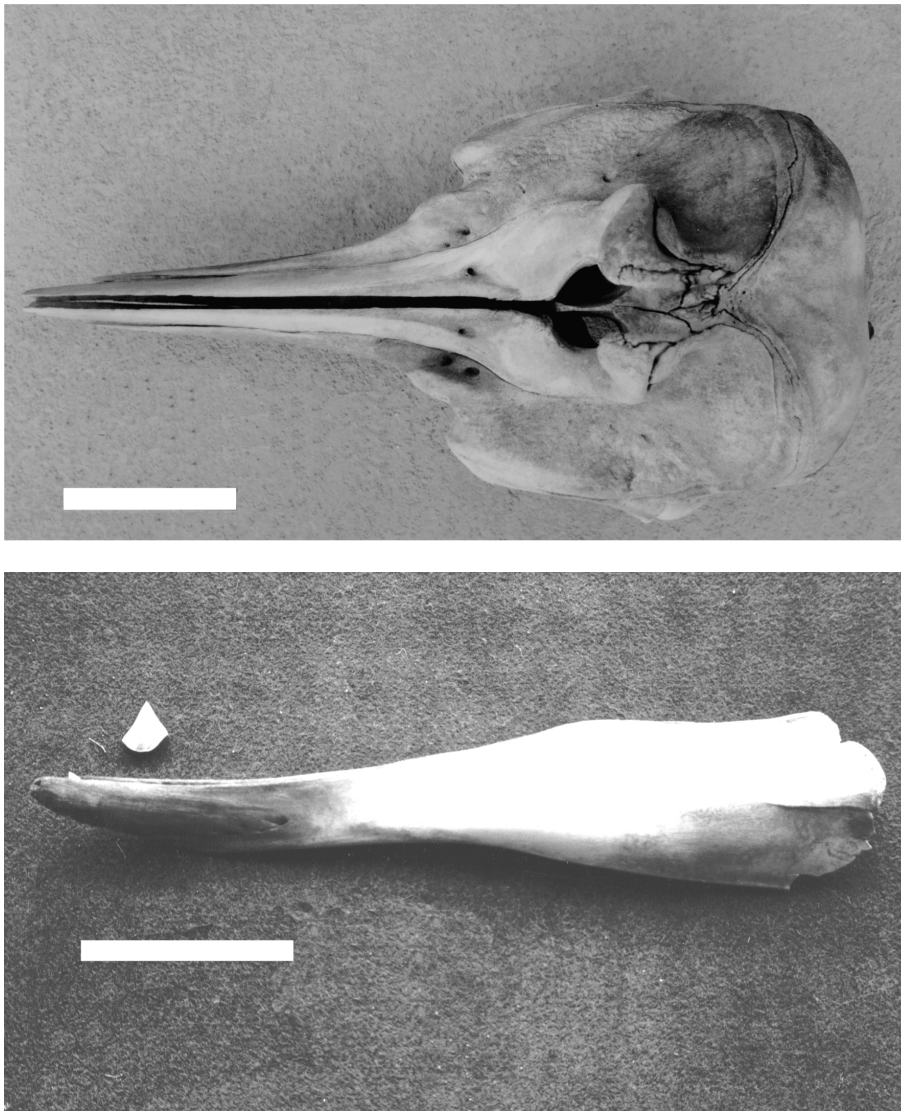


Figure 1. (top) Dorsal view of the skull, (bottom) right tooth and left mandible (with left tooth located within the alveoli) of specimen MORG 0104. (Scale=10 cm)

(e.g., Lichter, 1986) suggested that the species was probably 190–202 cm long at birth. Mead (1984, 1989) assumed that one growth layer group (GLG) represents one year in *Mesoplodon*. Goodall & Lichter (1988) estimated 1–1.2 GLGs in the teeth of a 300 cm long young specimen (RNP 860). The whale reported here was intermediate in length between newborn calves and specimen RNP 860, thus it was possibly a yearling.

Despite the increasing interest in cetacean science and the resulting increase in reports of stranded animals, records of ziphiid whales along the

Brazilian coast are poorly documented. Six *Mesoplodon* species are expected to occur in Brazil (e.g., Pinedo *et al.*, 1992), but four have been positively recorded to date: *M. densirostris* (Castello & Pinedo, 1980; Secchi & Zarzur, 1999), *M. grayi* (Soto & Vega, 1994, Pinedo *et al.*, in press), *M. layardii* (Pinedo, pers. comm.) and *M. hectori* (present record).

Like most previous Hector's beaked whale strandings (see summary in Table 8, Goodall & Lichter, 1988), the present record occurred in summer. Ross (1984) proposed that this seasonality of

Table 1. Cranial and mandible measurements of the *Mesoplodon hectori* specimen (MORG 0104) stranded in Southern Brazil.

Cranial measurement	mm	%CBL	%ZGW
1. Condylbasal length (CBL)	497.0	100.0	210.6
2. Length of rostrum	273.0	54.9	115.7
Tip of rostrum to			
3. posterior margin of pterygoid near midline	365.0	73.4	154.7
4. most posterior extension of wing of pterygoid	387.0	77.9	164.0
5. most anterior extension of pterygoid	229.0	46.1	97.0
6. most posterior extension of maxillaries between pterygoids on the palate	282.0	56.7	119.5
7. most posterior extension of maxillary plate	453.0	91.1	191.9
8. anterior margin of superior nares	328.0	66.0	139.0
9. most anterior point on premaxillary crest	367.0	73.8	155.5
10. most posterior extension of temporal fossa	450.0	90.5	190.7
11. most posterior extension of lateral tip of premaxillary crest	384.0	77.3	162.7
12. most posterior extension of pterygoid sinus	25.0	5.0	10.6
Length of			
13. temporal fossa	62.2	12.5	26.4
14. orbit	85.3	17.2	36.1
15. right nasal on vertex of skull	58.0	11.7	24.6
16. nasal suture	45.6	9.2	19.3
Breadth of skull across			
17. postorbital process of frontals	240.0	48.3	101.7
18. zygomatic process of squamosal (ZGW)	236.0	47.5	100.0
19. center of orbits	213.0	42.9	90.3
20. Least breadth of skull across posterior margins of temporal fossa	202.0	40.6	85.6
Greatest			
21. span of occipital condyles	87.9	17.7	37.2
22. width of an occipital condyle	34.3	6.9	14.5
23. length of an occipital condyle	55.9	11.2	23.7
24. breadth of foramen magnum	41.5	8.4	17.6
25. Breadth of skull across exoccipitals	211.0	42.5	89.4
26. Breadth of nasals at vertex	34.3	6.9	14.5
27. Least distance between premaxillary crests	23.6	4.7	10.0
28. Greatest extension of right premaxillary posterior of right nasal on vertex	8.8	1.8	3.7
29. Greatest span of premaxillary crests	110.0	22.1	46.4
30. Least width of premaxillae where they narrow opposite to superior nares	102.0	20.5	43.2
31. Greatest width of premaxillae anterior to place of measurement no. 30	102.0	20.5	43.2
Width of			
32. premaxillae at midlength of rostrum	25.6	5.2	10.8
33. rostrum in apices of antorbital notches	123.0	24.8	52.2
34. rostrum in apices of proeminent notches			
Greatest			
35. width of rostrum at midlength of rostrum	40.9	8.2	17.3
36. depth of rostrum at midlength of rostrum	33.9	6.8	14.4
37. transverse width of superior nares	43.8	8.8	18.6
38. inside width of interior nares, at apices of pterygoids, on the pterygoids	61.1	12.3	25.9
39. height of skull	227.0	45.7	96.2
40. width of temporal fossa approximately at right angles to greatest length	39.0	7.8	16.5
41. Least distance between (main or anterior) maxillary foramina	71.6	14.4	30.3
42. Least distance between premaxillary foramina	28.9	5.8	12.2
43. Distance from post. margin of left maxillary foramen to most ant. extension of maxillary prominence	34.3	6.9	14.5
44. Greatest length of vomer visible at surface of palate	116.0	23.3	49.0
45. Amount added to beak because of breakage	25.0	—	—
46. Length of left tympanic bulla	47.7	9.6	20.2
47. Length of right tympanic bulla	50.9	10.2	21.6

Table 1 continued overleaf

Table 1. Continued.

Mandible measurements (right side)	mm	%CBL	%ZGW
1. Length	402.0	80.9	170.3
2. Greatest length of symphysis	107.0	21.5	45.3
3. Height at coronoid process	88.5	17.8	37.5
4. Outside height at midlength of alveolus	20.0	4.0	8.5
5. Inside height at midlength of alveolus	19.2	3.9	8.1
6. Length from most posterior extension of symphysis to most posterior extension of condyle	300.0	60.4	127.1
7. Length from posterior margin of alveolus to condyle	372.0	74.8	157.6
8. Length of alveolus	18.0	3.6	7.6
9. Width of alveolus	3.8	0.8	1.6
10. Tip of mandible to alveolus	10.5	2.1	4.4
11. Greatest length of tooth	24.9	5.0	10.6
12. Greatest antero-posterior width of tooth at approximately right angles to long axis of tooth	20.5	4.1	8.7
13. Greatest breadth of tooth	4.4	0.9	1.9

strandings might be related to offshore-onshore movements or to seasonal migration from cold temperate/sub-Antarctic waters. Similar seasonal patterns also have been observed for other Southern Hemisphere *Mesoplodon* species distributed in circumpolar temperate waters, such as the strap-toothed whale, *M. layardii*, and the Gray's beaked whale, *M. grayi* (e.g., Ross 1984; Sekiguchi *et al.*, 1996).

Hector's beaked whale is one of the rarest species in the genus *Mesoplodon*. Published records described less than 30 specimens found ashore (e.g., Mead & Baker, 1987; Goodall & Lichter, 1988; Mead, 1989). In the western South Atlantic, *M. hectori* is known only from strandings in the Falkland Islands (Fraser, 1950) and in the Provinces of Tierra del Fuego and Buenos Aires, Argentina (Goodall, 1978; Lichter, 1986; Goodall & Lichter, 1988). The present specimen is the first occurrence of the Hector's beaked whale in Brazil. This record extends northwards the known range of the species in the western South Atlantic by nearly 7 latitudinal degrees (about 800 km) and represents the northernmost record of Hector's beaked whale.

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