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Phocoena spinipinnis

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Phocoena spinipinnis.

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Phocoena spinipinnis Burmeister, 1865

Burmeister's Porpoise

Phocaena spinipinnis Burmeister, 1865:228. Type locality "in the mouth of the River Plata," Argentina.
Phocaena philippii Philippi, 1893:9. Type locality S. Pacific: Chile.

CONTEXT AND CONTENT. Order Cetacea, Suborder Odontoceti, Superfamily Delphinoidea, Family Phocoenidae. The genus *Phocoena* now includes four species. No subspecies are recognized in *P. spinipinnis*.

DIAGNOSIS. *Phocoena spinipinnis* may be distinguished externally from all other members of the genus by the slightly convexed anterior and posterior borders and the rounded blunt tip of the dorsal fin. Horny denticles or spines are present along the anterior border of the dorsal fin.

The skull of *P. spinipinnis* is similar to that of *P. phocoena*, but differs by having: (1) the brain case much less compressed from front to back; (2) a dorsal profile of the supraoccipital bone in line with the dorsal profile of the rostrum instead of tilted at an angle of slightly over 20°; (3) a larger temporal fossa; and (4) fewer teeth (13 to 18 in each upper jaw and 15 to 20 in each lower jaw).

GENERAL CHARACTERS. Burmeister (1865) reported that the holotype was 162 cm in total length but Gallardo (1917) stated that its length remounted was 168 cm. We examined several adults taken off Punta del Diablo, Uruguay, that ranged from 180 to 200 cm. A few morphometric data presented by Burmeister (1869) and Allen (1925) consisted largely of measurements not in standard use today. Unpublished external measurements (in mm) of one adult male specimen (RP 301) are: total length (anterior tip of upper jaw to fluke notch), 1,790; tip of upper jaw to gape, 97; to center of eye, 190; to blowhole, 185; to anterior insertion of flippers, 315; to tip of dorsal fin, 1,440; and to center of anus, 1,250; length of flipper, anterior insertion to tip, 288; axilla to tip, 230; maximum flipper width, 125; height of dorsal fin (tip to base), 147; length of dorsal fin base, 240; fluke, width tip to tip, 473; nearest point of anterior border to fluke notch, 150; and depth of fluke notch, 65. Body proportions of *P. spinipinnis* are closer to those of *P. sinus* than *P. phocoena* (Brownell, 1983).

The color of Burmeister's mounted *P. spinipinnis* was completely black. However, he noted that live specimens were brown like those of the European species (*P. phocoena*), becoming darker on the dorsal side and lighter on the ventral surface. Perez Canto (1896) described a freshly dead specimen as very dark greenish-black all over, and Philippi (1896) referred to another as uniform shining black all over, except for a very narrow white mid-ventral line. Würsig et al. (1977) reported *P. spinipinnis* were light brown color in life but turned black after death.

The color pattern based on a fresh specimen (supplemented by our observations of a fetus, RLB 901) is: flippers and flukes (both sides), dorsal fin and dorsal surface are all lead gray (Fig. 1). The lateral side of the body is light gray. The light-colored (gray to white) abdominal field (terminology of Mitchell, 1970) extends to the anogenital region. The flipper stripe is dark gray and extends from the axilla of the flipper anteriorly along the throat to the lip patch on the lower jaw. This stripe may be variable between individuals as it is in *P. phocoena* (Mercer, 1973).

Descriptions, photographs, and measurements of *P. spinipinnis* skulls are found in Allen (1925), Burmeister (1865), Noble and Fraser (1971), Pilleri and Gihr (1972, 1974), and Praderi (1971). Norris and McFarland (1958) compared the skull of *P. sinus* with those of *P. phocoena*, *P. spinipinnis*, and *P. dioptrica*. Noble and Fraser (1971) compared the skeletons of *P. phocoena*, *P. sinus*, and *P. spinipinnis*. Allen (1925) and Pilleri and Gihr (1972) described and illustrated some post-cranial bones of *P. spinipinnis*. The skull is illustrated in Fig. 2 and the tympanic and periotic bones in Fig. 3. The mean and range of condylobasal lengths of 10 specimens of *P. spinipinnis* were 273 mm and 224 to 290 mm (Brownell and Praderi, 1982). Selected measurements (in mm) are: zygomatic width, 160 to 181 (n = 7); mandible length, 218 to 226 (n = 5). Tooth number on each side ranged from 13 to 18 in the upper jaw (n = 10) and from 15 to 20 in the lower jaw (n = 10). The teeth essentially are uniform throughout (Fig. 4) and have spade-shaped crowns as in other species of the genus.

DISTRIBUTION. The geographic range of *P. spinipinnis* (Fig. 5) on the Pacific side of South America is from Bahía de Paita (05°01′S), Peru (Allen, 1925) southward to Valdivia (39°50′S), Chile (Aguayo, 1975). Along the southwestern Atlantic coast the range is from off Punta del Diablo (34°22′S), Uruguay (Pilleri and Gihr, 1972) and southward to Golfo San Jose (42°23′S), Argentina (Würsig et al., 1977). The distribution of *P. spinipinnis* along the coasts of southern Argentina and Chile is poorly known, but recently Goodall (1978) reported eight specimens from the eastern shore of Tierra del Fuego and the Beagle Channel. Additional investigations are needed off Chile and Argentina south of 40° S to Tierra del Fuego to better determine the distribution of this species in those areas.

FOSSIL RECORD. *Phocoena spinipinnis* is not known from fossil remains. The certain geologic range of the family extends from late Miocene (Valmonte Diatomite Member of the Monterey Formation in southern California) to Recent (Barnes, 1976). The European genera *Protophocaena* and *Palaeophocaena* probably are not phocoenids (Winge, 1921; Barnes, pers. comm.), and *Mi-*

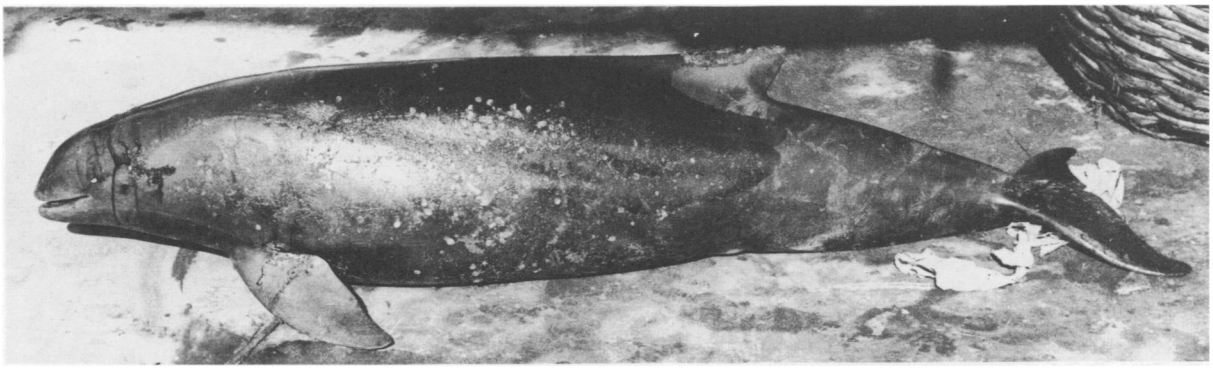

FIGURE 1. Lateral view of a *Phocoena spinipinnis* captured incidentally in a net fishery off Chimbote, Peru. Total length of the specimen, a female (KSN 68-38SA), is 153 cm. Photograph by Kenneth S. Norris.

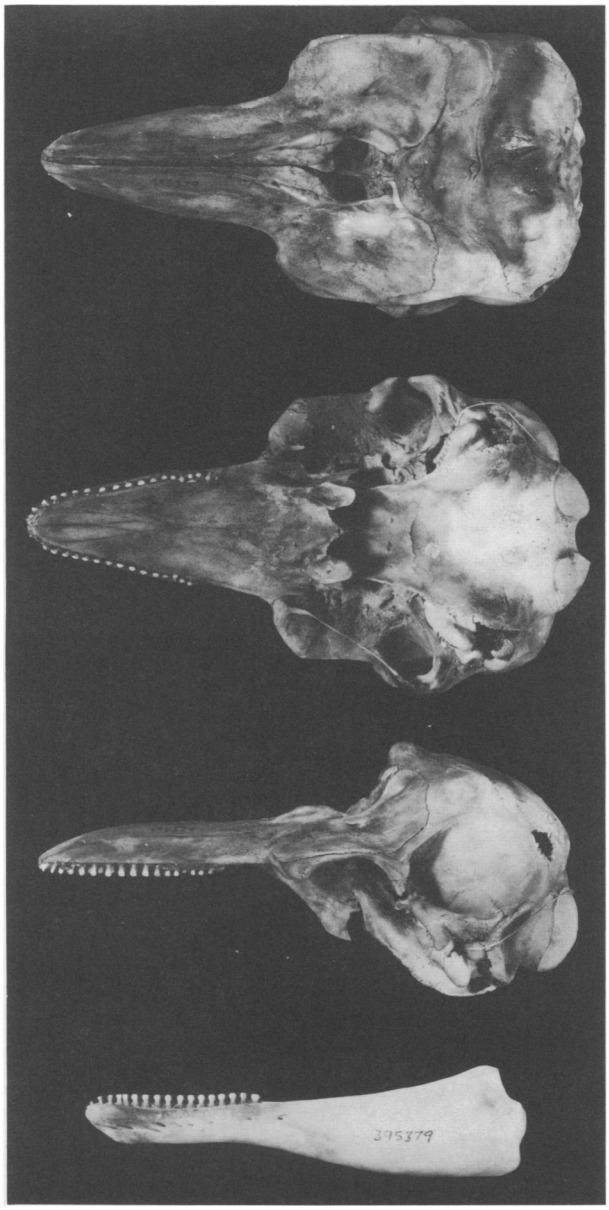

FIGURE 2. Photographs of skull of *Phocoena spinipinnis* (USNM 395379) from 5 mi S Iquique, Chile. From top to bottom, dorsal view, ventral view, lateral view of cranium and lateral view of mandible. The condylobasal length is 275 mm. Photographs by Smithsonian Institution.

crophocaena since has been reassigned to the extinct delphinoid family Kentriodontidae (Barnes, 1978). Huxley (1859) described *Phocaenopsis mantelli* as a phocoenid of Pleistocene age from New Zealand; Simpson (1945) included the species in the Phocoenidae. Fordyce (1981), however, re-evaluated *P. mantelli* and concluded that it was not allied with the Phocoenidae and was of Early Miocene age.

FORM. The vertebral count of one specimen was: 7 cervical, 14 thoracic, 15 lumbar, and 32 caudal vertebrae (Allen, 1925). The first three cervicals are fused. The first eight ribs have capitular and tubercular attachments. Seven pairs of sternal ribs are present, with the anterior four attached directly to the sternum. The phalangeal formula of the Allen specimen was: I-2, II-8, III-7, IV-4, and V-2. No organ systems have been studied.

REPRODUCTION. Brownell and Praderi (1982) reported a male fetus 44 cm in total length collected from a 183+ cm carcass (RLB 901) in February off Punta del Diablo, Uruguay. Therefore, calving can take place during the austral fall in Uru-

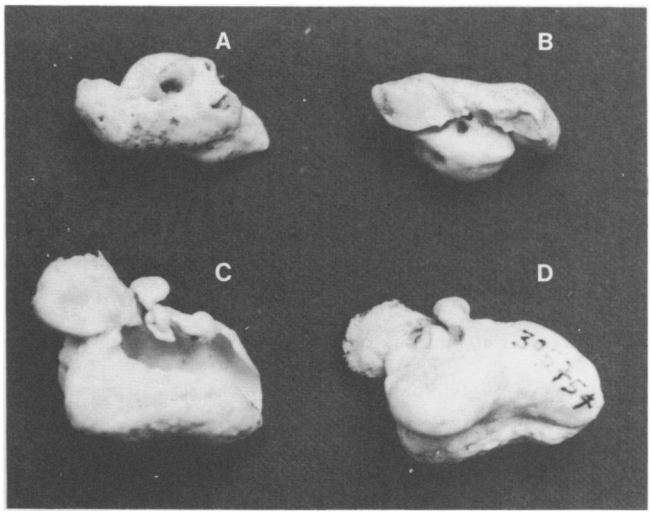

FIGURE 3. Tympanic bullae and periotics of *Phocoena spinipinnis* (USNM 395754) from N Arica, Chile: A, left periotic dorsal view; B, right periotic ventral view; C, left bulla dorsal view; D, right bulla ventral view. Photograph by Robert L. Brownell, Jr.

guayan waters. A 179-cm male (AO 1974-23), also from Uruguay, had sperm present in its testes during February (Brownell and Praderi, 1982).

ECOLOGY AND BEHAVIOR. One specimen (RP 301) collected in Uruguayan waters had remains of one Patagonian hake, *Merluccius hubbsi*, one porgy, *Pagraus sedecim*, and one unidentified squid in its stomach (Brownell and Praderi, 1982). Both species of fish are abundant in Uruguayan coastal waters. One *P. spinipinnis* examined by Brownell and Praderi (1982) had nematodes in its stomach. No other endoparasites are known (Dailey and Brownell, 1972).

Man is an important predator. Clarke et al. (1978) reported that these porpoises were sold for human consumption in fish markets at Chimbote, Ancón, Callao, Pucusana, San Andres, and Ilo, Peru. Brownell and Praderi (1982) discussed confusing figures published on the capture of this species in Peru and concluded the take was close to 2,000 per year. Actual catch statistics still are not available.

In northern Chili (Iquique, Antofagasta) *P. spinipinnis* also is taken for human consumption (Aguayo, 1975). Fishermen also catch small cetaceans accidentally in gill nets in the provinces of Tarapaca, Antofagasta, and Coquimbo in the north, Valparaiso and Concepcion in central Chile, and Valdivia, Chiloe, and Aysen in the south; some of these are *P. spinipinnis* (Mitchell, 1975). No statistics by number or species are available for Chile.

Small numbers of the species also are taken each year in Uruguay and Argentina (Brownell and Praderi, 1982). At least two specimens were taken in *Centolla* or southern king crab (*Lithodes antarctica*) nets set in the Beagle Channel (Goodall, 1978). Again, no catch statistics are available.

Phocoena spinipinnis usually occurs in groups, although we

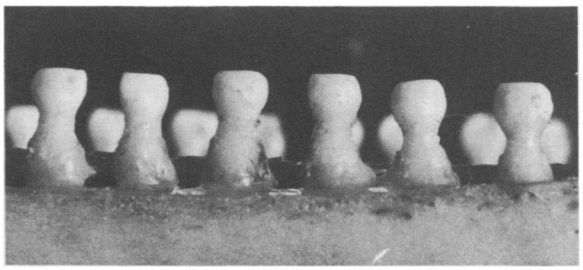

FIGURE 4. Lateral view of teeth 7 through 12 (anterior to left) of left lower jaw of *Phocoena spinipinnis* (MNHNM 2674) captured incidentally in a shark fishery off Punta del Diablo, Uruguay. Photograph by Robert L. Brownell, Jr.

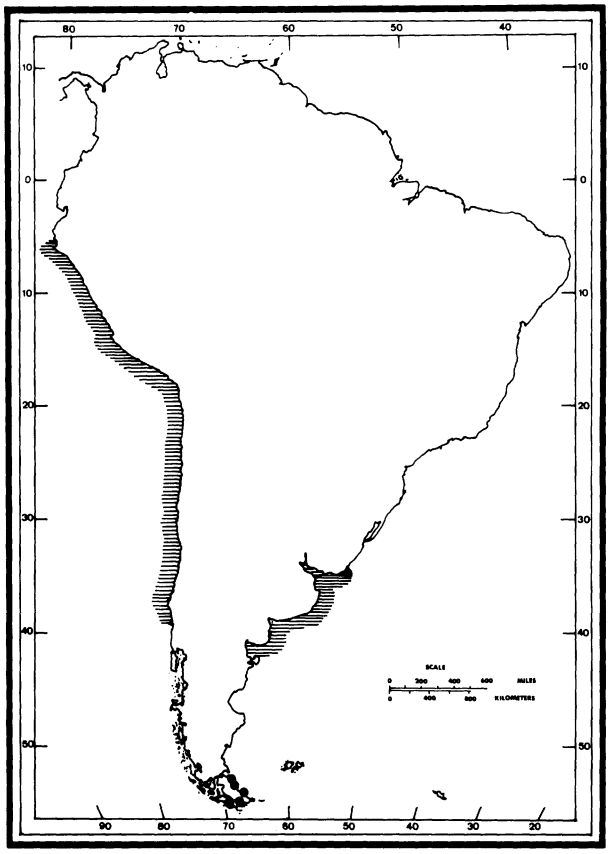

FIGURE 5. Geographic distribution of *Phocoena spinipinnis* in South American waters. Solid circles represent several records reported by Goodall (1978) from Tierra del Fuego.

recorded only single animals captured in gill nets set for sharks in Uruguayan waters. Aguayo (1975) observed a group of eight *P. spinipinnis* at the mouth of the Loa River, Chile (21°25'S) in October 1965. In Argentine waters groups of up to six or eight animals were observed (Würsig et al., 1977). In the Gulf of San Jose, Chubut, Argentina, surface movements of *P. spinipinnis* were slow (3.5 to 4.5 km/h) and caused little disturbance of the water surface. In the same area this species appeared to swim close to shore during spring, summer, and fall; during the winter months they may be in more open water (Würsig et al., 1977). Respiration intervals of two individuals observed by Würsig et al. (1977) ranged from 30 s to 3 min and 20 s.

Phocoena spinipinnis was listed on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora on 28 June 1979.

REMARKS. The holotype, consisting of a skin and skull, was in the collections of the Museo Publico de Buenos Aires (Museo Argentino de Ciencias Naturales "Bernardino Rivadavia") before H. Burmeister (1807–1892) started working at the museum. On a number of occasions we searched the mammal collections at the museum (MACNBA) in hopes of finding the skull, but all osteological material from this specimen now seems to be lost. The dried and mounted skin of the holotype illustrated by Gallardo (1917) is still extant (MACNBA 27-2). True (1903) discussed the holotype of *P. philippii* and stated that it was identical with *P. spinipinnis*. The specific name *spinipinnis*, from *spina* (L) a thorn and *pinna* (L) a fin, was used by Burmeister to describe the animal's unique dorsal fin.

In Spanish, *Phocoena spinipinnis* is known as the marsopa espinosa. Nothing is known of the genetics or physiology of this species.

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