MAMMALIAN SPECIES No. 64, pp. 1–2, 1 fig.

Arctocephalus galapagoensis. By Tim W. Clark

Published 21 November 1975 by The American Society of Mammalogists

Arctocephalus galapagoensis Heller, 1904

Galapagos Fur Seal

Arctocephalus galapagoensis Heller, 1904, p. 245. Isla Wenman, Galapagos Islands.

CONTEXT AND CONTENT. Order Carnivora, Family Otariidae, Subfamily Arctocephalinae. The genus contains six species:

A. pusillus, *A. forsteri*, *A. doriferus*, *A. tropicalis*, *A. galapagoensis*, and *A. phillipi*. *Arctocephalus galapagoensis*, as currently understood, is monotypic.

DIAGNOSIS. This fur seal is the smallest of the southern fur seals; however, no external body measurements or weights are available. Available specimens show a range in condylobasal length of skull from 201 to 210 mm for adult males and 171 to 186 mm for adult females (the largest known skull is that of the holotype). No other species of fur seal has an adult skull this small (Repenning *et al.*, 1971).

The Galapagos fur seal also is characterized by delicate and high-pointed postcanine teeth, which lack accessory cusps, except for a slight (one specimen out of eight) tendency to have a minute anterior cusp developing out of the cingulum; by posteriorly diverging dental arcades; and by conspicuous spaces between the upper molars and usually a slight space between the upper premolars.

The skull is distinctive (figure 1). The broad and moderately to deeply arched palate is broadest between either the first or second molars. The rostrum is short relative to the proportions of most other species. The short nasal bones flare moderately to greatly at front. The interorbital width tends to be great. The weak occipital crest and usual lack of a sagittal crest gives the impression of an unusually large braincase. The forehead, above the orbits, is usually flat or only slightly convex; a convexity appears only in mature males.

The mandible has a small and narrow coronoid process, the tip of which overhangs its posterior margin, and a low mandibular condyle that is about on the level of the alveolar margin of the toothrow. The coronoid process on the mandible is variable in form, but tends to have a medial surface that slopes ventromedially and it is deep dorsoventrally.

One young female skull (CAS 1185, 22 yrs old, estimated on suture fusion) lacks the last upper cheektooth on each side. Although the presence of this tooth in some sea lions is quite variable, this is the only specimen of *Arctocephalus* known in which the tooth is missing.

As noted earlier, there is a strong tendency in *A. galapagoensis* for the ascending rami of the premaxillary bones to narrow markedly between the incisors and the nasal bones, as in *Callorhinus*. The above was taken from Repenning *et al.* (1971).

GENERAL CHARACTERISTICS. The species posseses a short, pointed muzzle as in other members of the genus. Fur seals have a relatively thick neck. The front and sides of the muzzle and underparts of the body are a pale tan, contrasting with the grizzled gray-brown fur of the back and sides. Ears are pale tan except along the margins. Posterior vibrissae are dark, but the more anterior vibrissae on the muzzle are pale proximally, tending to dark distally. Flipper skin is blackish (Orr, 1973; Scheffer, 1958).

Little sexual dimorphism is evident, males have a minimal development of cranial crest and there are only minor size differences between the sexes. Some adult female skulls are only 15 mm shorter than the smallest adult male skulls. The only male skull with a significant sagittal crest among those examined by Repenning *et al.* (1971) was the type specimen. Their skull sample (eight males, seven females) revealed that female skulls may be identified by their thin canine teeth and by a condylobasal length of less than 190 mm; males have stout canines and, beyond a suture age of 15, are longer (CBL) than 200 mm. Most adult males have a weak occipital crest and some have a slight sagittal crest, but sexual distinction based on crest development is not always obvious. The above description is from Repenning *et al.* (1971).

DISTRIBUTION. Although once widespread in the Galapagos Islands, exploitation by sealers nearly eliminated the population toward the beginning of this century. Orr (1966) and Scheffer (1958) reviewed fur seal distributions up to the mid 1960's. After their discovery in 1535, the Galapagos Islands were often visited by whalers and sealers; exploitation by these sources greatly altered natural distributions. Capt. Morrell took about 5000 sealskins there in 1823 (Baur, 1897). During a sealing expedition of five to six month's duration in 1898 and 1899, only 200 skins were taken, chiefly on Isla Wenman, Isla Fernandina, and Isla Isabela (Heller, 1904). One seal was seen on Isla Culpepper and others were reported on Isla Genovesa and Isla Pinta. Heller thought each group to be resident and he commented: "The seals are so reduced in number and so scattered that no well-defined rookeries exist . . . the seals being widely scattered and well concealed in holes and crevices."

Townsend (1930) reported no sightings of fur seals. Banning (1933) in his account of the Hancock Expedition of 1933 mentioned the capture of six seals on Tower Island. Eibl-Eibesfeldt (1958) discovered "a large colony" in 1957 on James Island. Subsequently Leveque (1963) has shown that the species is presently much more widespread in the northern part of the archipelago than was previously suspected. He

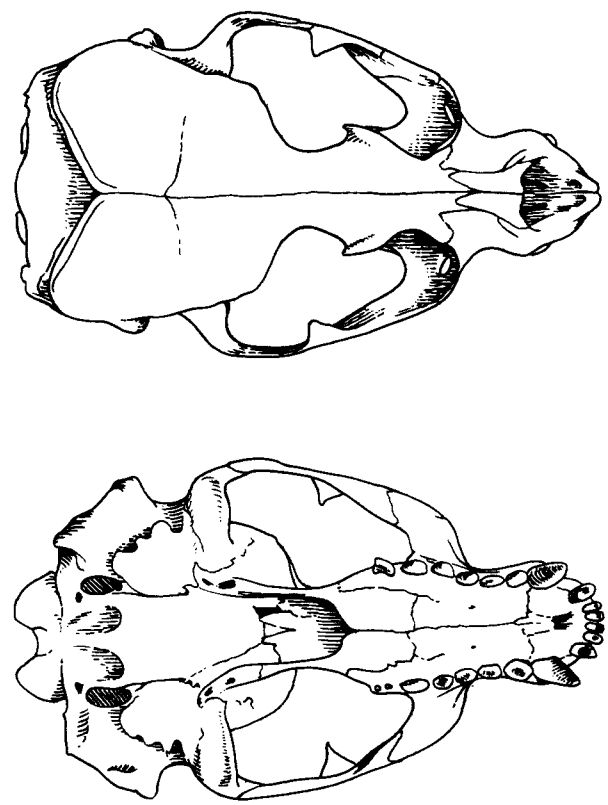

FIGURE 1. Views of skull of *Arctocephalus galapagoensis*. Redrawn from Repenning *et al.* (1971).

noted nearly 500 animals on the east coast of Isabela. Brosset (1963) observed 60 individuals at James Bay on James Island in 1962 and four on Santa Cruz Island at the entrance of the channel that separates it from Baltra Island. He also observed four on Tower Island.

Distributions from 1970 to 1973 were summarized by Orr (1973). Perry (1970) indicated that well established colonies were recently seen along the south and southwest coasts of Fernandina, between Punta Mangle and Cabo Hammond, and on Isabela at Cabo Marshall, south of Punta Garcia, Punta Essex and Punta Tortuga, as well as at Isla Pinta. The same report mentioned 200 to 300 fur seals at James Bay on James Island and probably up to 100 individuals at Buccaneer Bay on the same island. Other permanent but small colonies were reported on Wolf Island, on the east coasts of Seymour Island, in the south channel between Baltra and Santa Cruz islands, and 20 or 30 individuals on the northwest coast of Pinzon Island. Perry (1970) further noted a colony found in May on Isla Espanola at Pinta Suarez. This group contained 33 individuals, mainly males.

From the foregoing figures, which obviously are far from complete, it is clear that there has been an increase in the Galapagos fur seal population during the past 30 to 40 years and that presently, as a conservative estimate, there are considerably more than 1000 individuals distributed on at least 10 islands. From north to south, these islands are Wolf, Marchena (where a sick individual was observed and reported to me by Peter Kramer in 1971), Tower, Isabela, Fernandina, James, Pinzon, Seymour, Santa Cruz, and Hood.

REPRODUCTION AND DEVELOPMENT. The breeding season is thought (perhaps without foundation) to be indefinite (Scheffer, 1958). Orr (1973) reported that the only evidence of reproduction seen by him in August 1971 was a small pup that had been dead for several months; all other animals seen were immature or adults.

ECOLOGY AND BEHAVIOR. The ecology and ethology of the Galapagos fur seal is almost completely unknown; only a series of brief notes exist on the subject. Orr (1973) gave the following observations. "Like most members of the genus *Arctocephalus* that have been studied, Galapagos fur seals prefer rocky areas where there are sea caves that are relatively inaccessible. In August 1971, I visited the fur seal colony at James Bay on the west side of James Island. The salt mine at Espumilla Beach was no longer operating and within a quarter of a mile of that site a dozen fur seals were observed. They did not allow as close approach on land as sea lions nor were they as accessible. For the most part they tended to lie in shaded situations on lava ledges above the water or very close to it and moved into the sea when a person came near. In the water they approached one closely, even coming up to my mask when I was snorkeling in a grotto."

"In swimming they often assume a vertical position with the tail up and the head down and tend to spin around almost constantly so that the body is rotating on its long axis. None was observed any distance at sea, unlike the sea lions which frequently are encountered several miles from shore."

An unknown epizootic, causing a fairly high mortality, was first reported in the sea lion population in late 1970 and early 1971 on Bindloe and Santiago Islands (Kramer and Villa, 1971). Orr (1973) reported that this epizootic was noted in a communique dated 25 June 1971 from Kramer, then Director of the Charles Darwin Research Station at Academy Bay on Indefatigable Island. He reported that "a dead male fur seal was found near their camp on the SW coast of Bindloe apparently affected by the same disease as the sea lions."

Scheffer (1958) gave estimates of fur seal populations in the Galapagos to be between 100 and 500; sea lions populations were thought to be in the range from 20,000 to 50,000. Recent estimates of fur seal numbers are more than 1000 (Orr, 1973) and some estimates are near 5000. However, Orr (1973) pointed out that the species is still within the "danger zone."

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