

EVIDENCE OF A LARGE ALBATROSS IN THE MIOCENE OF ARGENTINA (AVES: DIOMEDEIDAE)

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Abstract.—A single pedal phalanx from early late Miocene marine deposits in Argentina provides the first Tertiary record of an albatross (Diomedidae, genus indet.) from South America. The specimen is from a species considerably larger than represented by the two Tertiary albatross fossils hitherto reported from the Southern Hemisphere.

Although the modern forms of albatrosses (Diomedidae, Procellariiformes) are concentrated mainly in the Southern Hemisphere, there is a much better fossil record for the family in the Northern Hemisphere. Tertiary albatrosses have been reported from California, Florida, England, and France, with numerous unpublished specimens being known from Oregon, North Carolina, and South Carolina (Brodkorb 1963; Olson, in press, a). Only two albatross fossils have been reported from the Southern Hemisphere: an incomplete rostrum from the late Miocene of Victoria, Australia, the holotype of *Diomedea thyridata* Wilkinson (1969); and the proximal end of a tarsometatarsus from the early Pliocene at Langebaanweg, Cape Province, South Africa (Olson 1983; in press, b). Both of these specimens are from relatively small species, the size of *D. melanophris*.

A third fossil now documents the former existence of a larger species of albatross in the Tertiary of the southern oceans. The specimen consists of the left basal phalanx of the fourth pedal digit (vertebrate paleontological collections of the National Museum of Natural History, Smithsonian Institution, USNM 336381). It was obtained at Punta Ninfas, on the south side of the entrance of Golfo Nuevo, opposite Peninsula Valdéz, Chubut Province, Argentina. The fossil was derived from beds of so-called Rionegrense age at a level 50 m (165 feet) above the present base of the cliff. Various outcrops in northeastern Argentina attributed to the Rionegrense because of similarities in lithology may not actually be contemporaneous, however, due to their discontinuous nature and the frequency of Neogene marine transgressions in this area (Zinsmeister *et al.* 1981). Fortunately, a volcanic tuff near the top of the Rionegrense horizon at the site of collection of the fossil is the source of the only radioisotopic age determination yet obtained for any of the Rionegrense beds. The mean of three glass concentrates from this tuff dated by the ^{40}K - ^{40}Ar method was 9.41×10^6 years, which correlates "with the late Miocene Tortonian marine stage in Europe and the Chasicuan Land Mammal Age in South America" (Zinsmeister *et al.* 1981).

The large size, very elongate, slender proportions, and occurrence in a marine context, identify the fossil with the Diomedidae. The specimen (Fig. 1) measures 53 mm from the dorsal margin of the proximal articular surface to the distal end; the width and depth of the shaft at the midpoint are 4.4×5.7 mm. Thus, in overall size the fossil is larger than any of the living albatrosses except *D. exulans* (56.0–62.0 mm, $n = 4$) and *D. epomophora* (57.0 mm; $n = 1$), with the closest



Fig. 1. Left pedal phalanx (p 1, d IV) of Diomedeidae gen. et sp. indet. from the Miocene of Peninsula Valdéz, Argentina (a, c); compared with *Diomedea albatrus* USNM 567025 (b, d). A, B, lateral aspect; C, D, ventral aspect. All figures natural size.

approach among lesser species being *D. albatrus* (41.0–45.0 mm; n = 3) and *D. cauta* (48.0 mm; n = 1). Postcranial specimens of *D. leptorhyncha* (= *D. irrorata* auct.) were not available for comparison. Because the fossil is more laterally compressed, it appears much more slender than in any of the species of albatrosses examined, including the two species of *Phoebetria*. Thus the affinities of the specimen within the family cannot be refined. Nevertheless, it constitutes the first Tertiary record of an albatross from South America.

Acknowledgments

I am grateful to Phyllis Dean and David W. Steadman for information and comments on the manuscript. The photographs are by Victor E. Krantz, Smithsonian Institution.

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