A FOSSIL OWL FROM SANTA ROSA ISLAND, CALIFORNIA

With Comments on the Eared Owls of Rancho La Brea

HILDEGARDE HOWARD[1]
Los Angeles County Museum

Among the fossil bird bones collected many years ago on Santa Rosa Island, by the California Institute of Technology, is an owl tibiotarsus that was never recorded. The locality number on the bone reads "106." Field notes for this locality state, "Pleistocene sediments and alluvium, northerly face of westerly part of Santa Rosa Island, Santa Barbara County, Calif. In sea cliffs and banks of stream cuttings tributary to Santa Barbara channel." A label with the specimen reads, "Arlington Canyon, E. of canyon mouth." The exact date of collecting is not noted, but presumably it was between 1928 and 1931 as these dates are found on previous and subsequent locality notations. In a previous paper (Howard, 1962:228) it was noted that according to Phil C. Orr of the Santa Barbara Museum of Natural History, all of the deposits in Arlington Canyon are of the Tecolote member of the Santa Rosa Island Formation, and are, therefore, of Wisconsin age.

Study of the specimen in comparison with tibiotarsi of existing owls indicates allocation to the Strigidae rather than to the Tytonidae on the basis of lesser posterior protrusion of the distal condyles and longer, more smoothly contoured internal cnemial crest. Within the Strigidae the combination of shallow, rounded depression posteriorly above the distal condyles, relatively short external cnemial crest, narrow shaft and relatively long fibular crest place the species represented in the genus *Asio*. Detailed characters distinguish it from existing American species of the genus.

ACKNOWLEDGMENTS

This report is part of a series of studies on avian fossils of western United States being conducted under a John Simon Guggenheim Foundation research fellowship; my appreciation is extended to that Foundation. I wish also to thank the University of California Museum of Vertebrate Zoology for the loan of skeletons of *Asio flammeus galapagoensis* and *Asio stygius*.

[1]Research Associate, Los Angeles County Museum.

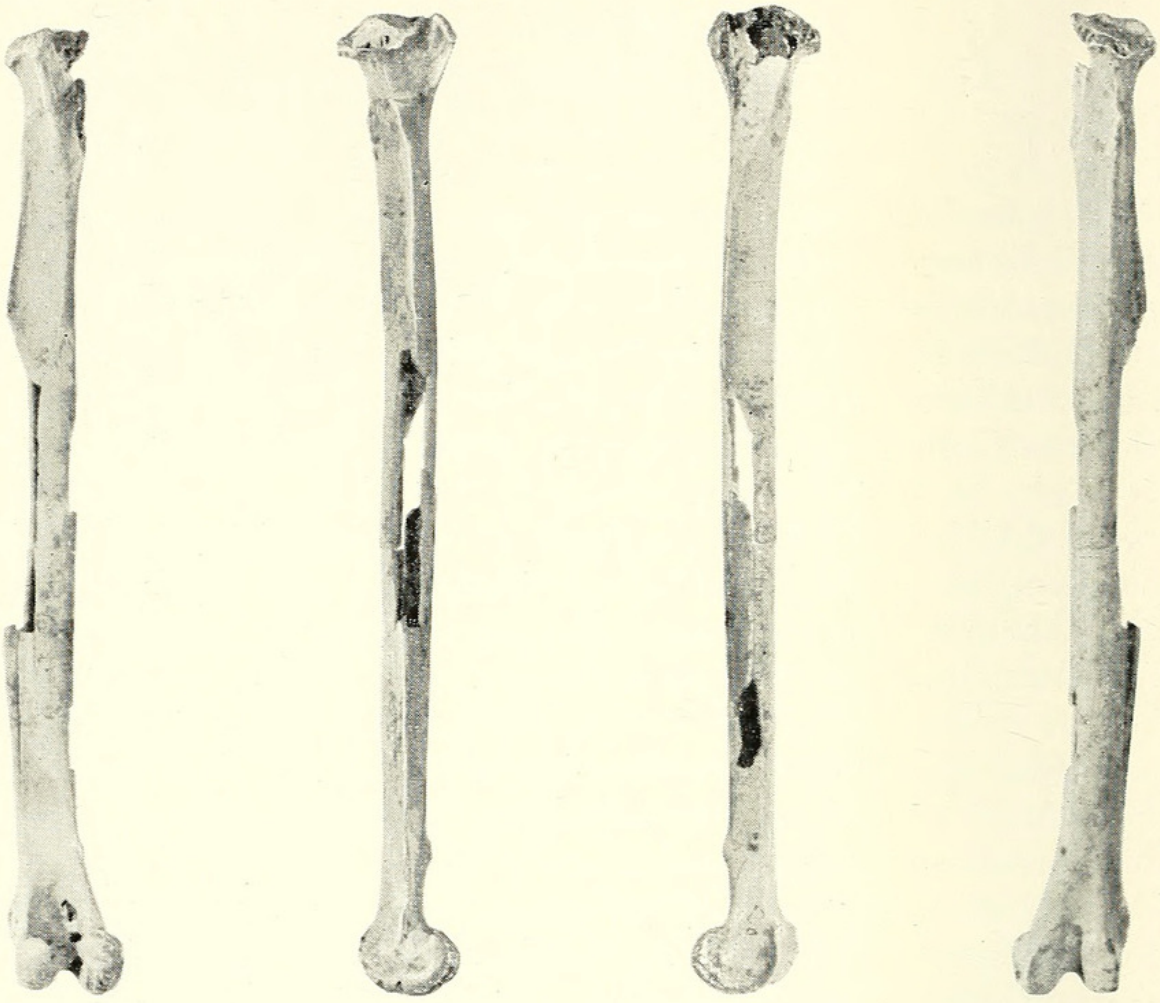

Figure 1. Type tibiotarsus of *Asio priscus*. Left to right, anterior, external, internal, and posterior views. Natural size.

Photographs of the type specimen were taken by George Brauer, retouched by Mary Butler.

Asio priscus,[2] new species

Type: Right tibiotarsus, lacking small portions of proximal end and shaft; Los Angeles County Museum No. 4712. Collected by Calif. Instit. Tech. party 1929-1930 (?).

[2]Latin, *priscus*, belonging to former times.

Locality, age and formation.—L.A. Co. Mus. (C.I.T.) locality No. 106; Arlington Canyon, Santa Rosa Island, California; late Pleistocene Tecolote member, Santa Rosa Island Formation.

Diagnosis: Similar to *Asio flammeus* and *Asio otus* in general contours of the tibiotarsus, and deep excavation of shaft anteriorly above distal condyles, but differing as follows: fibular crest flared externally, with broad longitudinal depression medial to its edge anteriorly, contrasting with broadly convex contour of anterior face of shaft in the existing species; intermuscular line above fibular crest slanting more abruptly posteriorly from crest, as viewed from external side; external cnemial crest less excavated at its postero-external edge; muscle papilla on internal side of distal end prominent; internal condyle 5 to 13 per cent deeper antero-posteriorly relative to its depth than in Recent species; length of bone measured to articular surfaces, 6.0 mm. greater than maximum of available Recent specimens of *A. flammeus* from California, and 1 mm. longer than female specimen of that species (Univ. Calif. Mus. Vert. Zool. No. 140967) from the Galapagos Islands.

TABLE 1
Measurements of Owl Tibiotarsi, Genus *Asio*

	A. priscus LACM no. 4712	*A. flam. flammeus* LACM no. Bi 892	*A. flam. galapagoensis* UCMVZ no. 140967	*A. otus wilsonianus* LACM no. Bi 910	*A. stygius* UCMVZ no. 93789
Length to articular surfaces	90.4 mm.	84.4 mm.	89.4 mm.	80.4 mm.	95.5 mm.
Breadth distal end	10.1	9.5	10.1	8.6	10.6
Depth external condyle	8.5	7.5	8.25	7.4	9.3
Depth internal condyle	8.3	7.3	8.2	7.3	9.1
Height, internal condyle, posteriorly	7.2	5.9	6.7	5.35	7.1
Greatest breadth across fibular crest	6.45	5.6	5.85	5.0	6.1
Depth internal side of shaft at level of distal edge of fibular crest	5.1	4.2	4.5	3.7	4.7
Ratio height (posteriorly) to depth of internal condyle[3]	86.7%	80.7%	81.7%	73.3%	78.1%

[3]Range of this ratio is approximately 73-82% in both *A. otus* and *A. flammeus*.

Discussion: Diagnostic features of *Asio priscus* as described above also separate the fossil from *Asio stygius* of Mexico and south. In addition, the tibiotarsus of *A. stygius* is more deeply indented posteriorly above the condyles, and the muscle attachment above and posterior to the fibular crest is not delimited by a ridgelike line as in *A. priscus* and the two existing North American species.

The occurrence of this fossil owl in the Santa Rosa Island Pleistocene prompted a reexamination of the *Asio* bones found at Rancho La Brea. Both *Asio otus* and *Asio flammeus* were originally thought to occur at this locality, but only the larger species *(A. flammeus)* is now recorded (Wetmore, 1956:19). In a series of 125 complete tibiotarsi from Rancho La Brea, none equals the island specimen in length, or resembles it in the diagnostic characters described above. The maximum length in the series (88.2 mm.) lacks 1.2 mm. of equalling the tibiotarsal length of the female specimen of *A. flammeus galapagoensis*, and .6 mm. of a male specimen (U.C.M.V.Z. No. 140966). Fourteen La Brea tibiotarsi exceed the maximum of the two available Recent specimens of *A. flammeus flammeus* by 1 to 4 mm. At the other extreme (with a minimum of 72.2 mm.) there are five bones that are 1 to 3.5 mm. shorter than the minimum measurement of four available tibiotarsi of *A. otus wilsonianus*. As size alone distinguishes the limb elements of the two existing North American species, the size range of tibiotarsi suggests that both species were present at Rancho La Brea. This is borne out by measurements of the other leg elements, as well as the humerus and carpometacarpus. The minimum length of the Rancho La Brea series of ulnae, however, is larger by 3 mm. than the maximum of the Recent specimens of *A. o. wilsonianus*. Pit by pit study of each element of the Rancho La Brea eared owls would be of value, and might result in some significant observations concerning the relative proportions of wing to leg lengths in fossil and Recent owls. In this regard it should be noted that although the female specimen of *A. flammeus galapagoensis* notably exceeds *A. f. flammeus* in length of tibiotarsus, tarsometatarsus and ulna, its humerus and carpometacarpus are the same size as the maximum of *A. f. flammeus*, and the femur slightly less than the maximum. I am inclined to believe that both *Asio otus* and *Asio flammeus* occurred at Rancho La Brea, but that racially one or both may not fully have attained the skeletal proportions found in the existing California populations. In those elements in which *A. f. galapagoensis* exceeds *A. f. flammeus*, Rancho La Brea specimens do not attain the size of the Galapagos

race, although they may exceed the maximum of *A. f. flammeus*.

The island fossil, *Asio priscus*, adds a third species to the California Pleistocene record of eared owls. Both in size and qualitative characters, *A. priscus* is distinct from the mainland forms.

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