

A NEW SPECIES OF OWL FROM THE PLEISTOCENE OF RANCHO LA BREA, CALIFORNIA

WITH ONE ILLUSTRATION

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Upon a recent examination of the owl bones in the Los Angeles Museum collections from Rancho La Brea, certain unusual specimens came to the writer's attention. All are of a size easily to be confused with slender bones of *Bubo virginianus* and, in fact, were found among the elements which had been so assigned in the first general survey of the collection. The specimens may be separated from those of the Horned Owl, however, on the basis of the same characters which distinguish members of the genus *Strix* from *Bubo*. Comparisons were made also with *Scotiaptex*, *Nyctea* and *Asio* of North America and *Pulsatrix*, *Rhinoptynx* and *Ciccaba* from the south.¹ The fossil, however, most closely accords with *Strix*, though it is larger than either North American species of that genus. Furthermore, from such information as can be gained from the literature on the subject, and from Dr. Wetmore who has kindly measured *Strix rufipes* for the writer, it is apparently larger than any other species of that genus or of the genus *Ciccaba*, which resembles *Strix* in many characters.

Nine of the principal skeletal elements have been identified and are fairly well represented, the number of available specimens totalling fifty-six.

With regard to the pelvis, the variation within the genus *Strix* and the similarities between *Strix* and *Bubo* in general characters make difficult a separation of the pelvis of these two genera; this fact coupled with the somewhat fragmentary condition of the La Brea specimens has made it impossible to identify this element of the fossil form. This is the case also with the ulna. No furcula, cranium, or lower mandible of the fossil species is available; these elements are but poorly represented and the few specimens of large owl which occur in the collection appear to belong to *Bubo*. No attempt has been made to identify the radius, vertebrae, ribs or phalanges.

In describing the species, a tarsometatarsus has been selected as the type because of completeness of the specimen and the diagnostic features of the element. The other available elements are discussed as referred material.

The photographs of the type specimen were made by Mr. H. Wm. Menke.

Strix brea, new species

Type specimen.—A complete and perfect tarsometatarsus, no. E9379 in the collection of the Los Angeles Museum, taken at a depth of 12 to 16 feet in Pit 16 at Rancho La Brea, California. Pleistocene.

Description.—Similar to *Strix* as distinguished from *Bubo*: (1) posterior surface of internal calcaneal ridge long and narrow, and concave on side toward edge of bone, this surface in *Bubo* either egg-shaped or slightly concave on opposite side; (2) distal margin of this surface (as seen in lateral view) sharply defined from portion of calcaneal ridge immediately distal to it, even overhanging; (3) internal calcaneal ridge noticeably set in from internal edge of shaft (in *Bubo* ridge blends into shaft); (4) sharp line of demarcation present on internal side between calcaneal ridge and shaft proper, caused in part by excavation of internal side of ridge; shaft in this region (as seen in internal view) narrowing decidedly, about 5 mm. from proximal end (*Bubo* lacks definite demarcation between ridge and shaft, ridge less

¹ Specimens of these owls were kindly loaned by Dr. Loye Miller, the United States National Museum, and the California Institute of Technology (Donald R. Dickey collection).

excavated and shaft broader); (5) at distal end, external edge of median trochlea straight, giving "sliced off" appearance (in *Bubo* this edge rounded).

Except for actual size, which exceeds both *varia* and *occidentalis*, the species characters show a combination of those of the latter forms. In its relative slenderness *Strix brea* parallels *S. occidentalis*, while in the less excavated anterior surface of the shaft it is closer to *varia*. The shaft in *occidentalis* is deeply excavated for



Fig. 15. TARSOMETATARSUS OF *Strix brea*, L. A. MUS. COLL. NO. E9379. TYPE SPECIMEN, NATURAL SIZE: a, ANTERIOR VIEW; b, EXTERNAL VIEW; c, POSTERIOR VIEW; d, MEDIAL VIEW.

about half the length of the bone, the tubercle for the tibialis anticus lying in this excavation; in *varia*, this region is only slightly depressed and in *brea* the depression is similar to *varia* in the region of the tubercle, but it does not extend as far distally even as in that species.

MEASUREMENTS OF TARSOMETATARSUS

	^a Length	^b Breadth prox. end	^c Breadth dist. end	^d Breadth shaft	Ratio b to a	Ratio c to a	Ratio d to a
Type, <i>Strix brea</i>							
L.A.M. no. E9379	67.2 mm.	14.3 mm.	16.4 mm.	7.1 mm.	21.2%	24.4%	10.5%
<i>Bubo virginianus</i>							
L.A.M. no. Bi 66*	61.1	13.2	16.1	7.1	21.6	26.3	11.6
<i>Strix varia</i>							
L.A.M. no. Bi 55	56.4	13.0	15.5	7.2	23.0	27.4	12.7
<i>Strix occidentalis</i>							
L. H. Miller no. 286	54.6	11.6	13.2	5.7	21.2	24.1	10.4

There are eight tarsometatarsi of this species other than the type. These range in length from 63.5 to 68.0 mm., and the ratios of breadth of proximal and distal ends relative to length of bone are 19.4 to 21.2 per cent and 22.7 to 25.3 per cent, respectively, with ratios of breadth of shaft relative to length of bone, 9.4 to 11.0 per cent. In length these specimens all fall within the range of size of *Bubo virginianus* from Rancho La Brea though they are closer to the maximum than to the minimum for that species; all are more slender than *Bubo*, however.

Referred material.—In addition to the tarsometatarsi, the following elements referable to *Strix brea* are present: Two rostra, two sterna, nine coracoids, eight

*Most slender modern specimen of *Bubo* available.

scapulae, six humeri, five carpometacarpi, four femora and eleven tibiotarsi. In general it may be said that each of these elements resembles *Strix*, but differs from the living species of that genus in larger size. More detailed characters and the principal measurements for each element follow.

Rostrum: Turbinates as seen in ventral view of palatal region less inflated than in *Bubo* and thus more widely separated in median line; similar to *Strix*, particularly *S. varia* in this character. Measurements of specimen K2713, height of rostrum (at posterior end of external nares) 20.7 mm., breadth of rostrum (at same point) 21.5 mm.

Sternum: Intermuscular line arising at ventral labial prominence or from edge of sterno-coracoidal impression posterior thereto (in *Bubo* line arises back of edge of sulcus and toward median line from sterno-coracoidal impression). Measurements of specimen E2477, breadth across sulcus 27.5 mm., greatest length (incomplete) 57.5 mm.

Coracoid: Resembling *Strix* rather than *Bubo* in sharply curved edge of furcular facet and less distinct pneumatic foramen adjacent thereto (this region not identical with either *varia* or *occidentalis*, however). On external side, most sharply convex portion of shaft stopping distal and slightly anterior to glenoid facet (in *Strix* and *Bubo* it continues proximally to bicipital attachment, in a direct line in the former and at an angle in the latter); except for this character external view of head region similar to *Strix*. Lateral relative to anteroposterior measurement of head less than *Bubo* and similar to *Strix*. Length of coracoids 44.2 mm. to 49.3 mm. (shortest *Bubo* 47.4 mm., longest *Strix* 43.2 mm.).

Scapula: Acromion broader (laterally) and deeper (dorsoventrally) than in *Bubo* and similar to *Strix*. Glenoid facet with more rounded sides (appearing more "heart-shaped") than *Bubo* (ventral side straight in that genus); resembling *Strix* in this character but by measurement found to be relatively longer and narrower with proportions similar to *Bubo*. Breadth of anterior end 11.8 mm. to 12.3 mm., proportions of glenoid facet (breadth to length) 65.5 to 78.5 per cent.

Humerus: The humeri are very much chipped on the edges so that in no one specimen can all characters be observed nor can any characters of unusual importance be discerned. Set apart from *Bubo* by character of muscle scars on palmar side at distal end, difficult to describe but somewhat similar to *S. varia*, and by relatively higher pneumatic opening under median crest. Large size indicates specific distinction from *Strix varia* or *occidentalis*. Measurements on three nearly complete humeri: length 112.5 mm. to 121.3 mm. (minimum length of *Bubo* 121.6 mm., maximum length of *Strix* 104.6 mm.), breadth of proximal end 19.6 mm. to 20.9 mm. On only the largest specimen can the distal end be measured, its breadth being 19.8 mm.

Carpometacarpus: Distinguished from *Bubo* by character of distal metacarpal symphysis, difficult to describe but in general thicker through proximal portion and with proximal border continuous with a ridge extending short distance up shaft on posterior side; characters of symphysis similar to *Strix* though ridge continuing from proximal border present only in *S. occidentalis*. Distal portion of metacarpal III, seen in posterior view, slightly depressed, giving flat appearance as in *Strix*; distal portion of M III in *Bubo* (posterior view) distinctly convex. Maximum and minimum lengths of five specimens of *S. brea*, 59.9 mm. and 56.2 mm., smallest *Bubo* 60.5 mm., largest *Strix* 52.2 mm.

Femur: Similar to *Strix* and distinguished from *Bubo* by central position of muscle scar on external side of shaft near distal end; this scar in *Bubo* located at anterior edge of shaft. Large size separates specimens from living species of *Strix*. Length (on internal side) 75.6 mm. to 76.6 mm. (about equal to average *Bubo*, largest *Strix* 69.7 mm.), breadth of distal end relative to length 19.1 to 20.2 per cent, breadth of proximal end relative to length, 19.3 to 20.2 per cent.

Tibiotarsus: Like the humeri, the tibiotarsi have all been broken or slightly chipped. A study of the ten available specimens, however, reveals at least two general characters which distinguish these specimens from *Bubo*: (1) muscle scars of inner cnemial crest not extending distal to crest proper and parallel to shaft; (2) less angular difference present between lines drawn tangent to proximal and distal edges of condyles (the angle formed by the extension of these lines ranges from four to seven degrees in the fossil and from nine to thirteen degrees in *Bubo*). In both

of these characters fossil specimens resemble *Strix*, but larger size precludes the possibility of identity with living species of that genus. Length 112.7 mm. to 120.0 mm. (minimum of *Bubo* 116.9, maximum of *Strix* 103.4 mm.), relative breadth of proximal and distal ends approximately 11.4 and 11.8 per cent, respectively.

Remarks.—Though in length of the individual elements *Strix brea* is closer to *Bubo* than to either *S. occidentalis* or *S. varia*, in its proportions the resemblance is with *Strix*. The difference from *Bubo* is immediately evident upon comparing the tarsometatarsi and femora, which equal or even exceed the longest specimens of *Bubo* in size, with the other limb elements and the coracoid, all of which extend below the minimum for that genus. Ratios of one element relative to another indicate close similarity with *Strix* throughout, with the exception of the coracoid which appears to be relatively shorter. *S. occidentalis* and *S. varia* differ in the relative length of tarsometatarsus, and the fossil agrees with the former.

It should be noted that the discovery of the specimens here described as *Strix brea* entails a slight, though interesting change in a graph published by Husband (Condor, xxvi, 1924, p. 221) showing the comparative measurements of thirty-six specimens of tarsometatarsus supposedly all of *Bubo virginianus*. We find that specimens number 11, 35 and 36 of her chart, each of which forms a noticeable low point in the measurements other than length, are of the new species, *Strix brea*. The occurrence of these three specimens in this chart provides an excellent illustration of the relatively greater slenderness of the tarsometatarsus of *Strix brea* as compared with *Bubo virginianus*.

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