

FOSSIL OWLS FROM THE REXROAD FAUNA OF THE
UPPER PLIOCENE OF KANSAS

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Since 1936 field parties led by Claude W. Hibbard of The University of Michigan Museum of Paleontology have made extensive fossil collections from Upper Pliocene deposits in Meade County, Kansas, with the result that the Rexroad fauna from the Rexroad Formation, Early Blancan Age, is at present the largest known nonmarine Pliocene fauna in North America. Previous reports on some of the numerous bird remains found in this fauna have been made by Wetmore (1944), Tordoff (1951, 1959), and Collins (1964). Among the bird material yet to be described are 13 fossils which represent owls and which are the subject of this paper. The general paleoecology of the Rexroad fauna has been described by Hibbard (1941).

The specimens herein described were collected at three localities: K.U. Locality no. 3, Fox Canyon Locality (UM-K1-47), and K.U. Locality 2a (Hibbard, 1950). The nomenclature of the bones used is that of Howard (1929), except where noted. Modern skeletons used for comparative material included representatives of all genera of owls occurring in the New World except *Pseudoscops* and *Gymnoglaux* and are mostly from the collections of The University of Michigan Museum of Zoology (UMMZ). Supplemental specimens were borrowed from the United States National Museum and the Museum of Vertebrate Zoology, Berkeley, California. The fossils are deposited in the collection of The University of Michigan Museum of Paleontology (UMMP).

Otus cf. *asio*

Anterior one-half of left coracoid (UMMP no. 50982, Fox Canyon Locality) with tip of procoracoid, tip of head, and posterior portion of furcular facet missing. The coracoid of *Otus* differs from those of other small New World owls in a number of constant characters, most of which have been lost from the fossil. However, the fossil is clearly an *Otus* on the basis of the remaining basal portion of the procoracoid. In a mesial view of the coracoids of other genera of small owls, the procoracoid projects strongly anteriorly from its origin on the shaft, while its posterior (lower) margin slopes gradually upward from the tip of the process toward the inner margin of the shaft, forming a shallow curve. In most *Otus*, the procoracoid has less of an anterior inclination, and the posterior margin of the process joins the shaft of the coracoid in a deep curve.

Of the six New World species of *Otus* available for comparison, the fossil is larger than *flammeolus* and *trichopsis*; smaller than *clarkii*; and similar in size to *asio*, *choliba*, and *guatemalae*. The latter three species are separable from each other (14 specimens of *asio*, 3 of *choliba*, 1 of *guatemalae*) on the basis of the curve of the posterior margin of the procoracoid. This curve is deep in *choliba*, shallow in *guatemalae*, and intermediate in *asio*. The fossil appears to be closest to *asio* in this character and is otherwise indistinguishable from that species. However, since the specimen is imperfect, only provisional identification seems justifiable.

The genus *Otus* has previously been reported from the Pleistocene of North America (Wetmore, 1956; Brodkorb, 1959a, b).

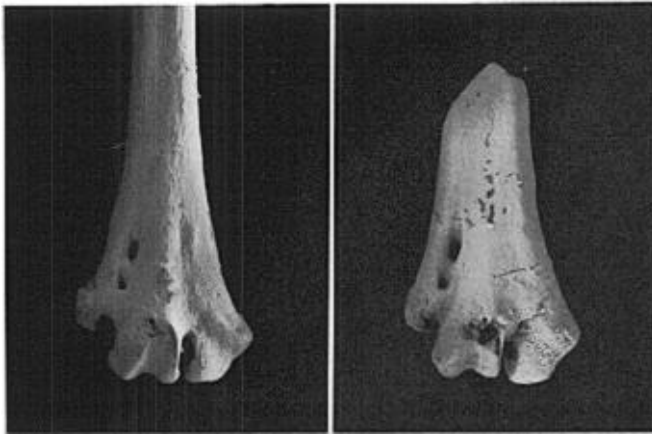


Figure 1. Distal ends of right tarsometatarsi of (left) *Speotyto cunicularia*, UMMZ no. 99406; and (right) *Speotyto megalopeza*, UMMZ no. 50979 (type). Both specimens twice natural size.

Speotyto megalopeza, new species

The distal end of the tarsometatarsus of *Speotyto* may be differentiated from other New World owl genera as follows: outer rim of trochlea for digit 3 much larger in diameter than inner rim; dorsal extent of both rims of this trochlea on posterior surface about equal; posterior portion of outer rim of same trochlea pointed in side view; mesial surface of trochlea for digit 2 straight.

Type. Distal 13 mm of right tarsometatarsus, trochlea for digit 3 slightly worn on anterior surface. The University of Michigan Museum of Paleontology no. 50979. K.U. Locality 3; Lake Larrabee quad., 1000 feet east and 1800 feet north of the southwest corner of Sec. 22, T. 33 S, R. 29 W, Meade Co., Kansas. Upper Pliocene (Rexroad Formation). Collected by C. W. Hibbard and party, summer 1959.

Diagnosis. Morphologically similar to *S. cunicularia* but distinct in having slightly more robust trochleae and a much wider and thicker shaft. Width across trochleae, 7.6 mm; width of shaft, 4.0 mm, measured 9 mm from distal surface of groove of middle trochlea; depth of shaft at same level, 2.3 mm. Corresponding dimensions for the largest (UMMZ no. 99406) of 13 individuals of *cunicularia* examined are, respectively: 7.6 mm, 3.2 mm, and 1.9 mm.

Referred Material. In addition to the type, the following elements are referred to this species.

Tarsometatarsus: Distal 15 mm of left tarsometatarsus with most of the trochlea for digit 4 missing (UMMP no. 24759, Fox Canyon Locality, XI Ranch). Morphologically identical to the type and has corresponding measurements of 7.4+ mm, 4.0 mm, and 2.2 mm. This specimen is dark brown in color, whereas the type is cream-colored.

Proximal 13 mm of left tarsometatarsus (UMMP no. 27153, Fox Canyon Locality). Agrees with *Speotyto* in that the shaft narrows rapidly below the cotylae, and in having a relatively deep and narrow posterior metatarsal groove. Although this element falls within the size range of *cunicularia*, it is assigned to *megalopeza*, since it seems more probable that it represents either an immature individual or an adult

in the small end of the size range of that species, rather than a different species (modern or fossil) of *Speotyto*.

Coracoid: The anterior (humeral) end of the coracoid of *Speotyto* has several morphological characters that distinguish it from the other two New World genera available (*Otus* and *Aegolius*) which have species in the same size range. In *Speotyto* the glenoid facet is relatively larger; the coraco-humeral surface is concave along its long axis, rather than flat; the posterior extent of the furcular facet is at the level of the middle of the glenoid facet, whereas it extends to the level of the posterior margin of this facet in the other two genera; the long axis of the furcular facet is rotated to the inside, while it is rotated to the outside in *Otus* and parallel to the long axis of the coracoid in *Aegolius*. The procoracoid of *Speotyto* differs from that of *Aegolius* in being slightly more anteriorly inclined, and from *Otus* in having its posterior margin shallowly curved. Enough of these characters remain on the three specimens described below to permit their allocation to *Speotyto*.

Right coracoid (UMMP no. 27147, Fox Canyon Locality) with most of procoracoid missing, head broken off at level of middle of glenoid facet. Somewhat larger in all dimensions measured than 13 specimens of *cunicularia*, especially in depth of shaft: depth of shaft 2.6 mm, measured 12 mm anterior to midpoint of sternal end; *cunicularia* mean 1.93 mm (range, 1.6–2.2).

Anterior 11 mm of right coracoid (UMMP no. 45525, K.U. Locality 2a), inner surface of furcular facet badly eroded. Slightly greater in depth posterior to glenoid facet than 12 specimens of *cunicularia*: fossil, 3.3 mm; *cunicularia* mean 2.85 mm (range, 2.6–3.2 mm).

Anterior 13.5 mm of left coracoid (UMMP no. 50983, Fox Canyon Locality), procoracoid and upper part of furcular facet missing, outer edge of glenoid facet abraded. Falls within upper size range of the modern species.

Two sternal portions of coracoids (UMMP nos. 50984 and 27152) from the Fox Canyon Locality appear to represent *Speotyto*, but lack characters that might make them certainly separable from other genera. They probably represent *megalopeza* since the latter fossil, which has enough of the shaft remaining to measure its depth 12 mm anterior to the sternal end, is larger than *cunicularia*.

Carpometacarpus: Proximal one-third of right carpometacarpus (UMMP no. 50981, Fox Canyon Locality). Agrees with *Speotyto* in having the proximal origin of the groove on the internal surface, formed by the fusion of the bases of metacarpals II and III, more distal than in other owls of similar size, being almost directly below the pollical facet. Falls within upper limit of size range of modern species; matched in width across carpal trochlea (3.4 mm) by only one of 13 *cunicularia* (UMMZ no. 135396).

Quadrate: Left quadrate (UMMP no. 27169, Fox Canyon Locality) lacking the orbital process. Agrees morphologically with *Speotyto* and differs most notably from New World owls of similar size in lacking the capitular groove (from Walker, 1888) on the otic process between the external and internal capitula (*op. cit.*). Differs from *cunicularia* in having a wider shaft and generally more robust appearance.

Humerus: A badly worn head of a left humerus (UMMP no. 50980, Fox Canyon Locality) agrees morphologically with *Speotyto*, but lacks any characters that would make identification positive. On the basis of size and association it probably represents *megalopeza*.

S. megalopeza appears to have been very similar to the modern *S. cunicularia*, differing most notably in being more robustly built (distal end of tarsometatarsus,

coracoid, quadrate). The length of the foot cannot be accurately reconstructed from the pieces of tarsometatarsus studied, but since the proximal end of this element possesses characters associated with length in *cunicularia*, it seems likely that *mega-lopeza* was a long-legged owl.

This appears to be the first record of the genus from the Pliocene.

Asio sp.

Anterior one-half of right scapula (UMMP no. 31892, Fox Canyon Locality) with acromion abraded. On the basis of size, proportions, and the presence of a small process (tip broken off on fossil) on the lower edge of the internal margin of the neck just posterior to the acromion, this fossil clearly represents the genus *Asio*, but it cannot be assigned to species. Unfortunately, its size falls in the area of overlap between males of *flammeus* and females of *otus*, and I am unable to find any constant morphological differences by which the scapulae of the two species can be separated.

Fossils representing the genus *Asio* have previously been reported in North America only from the Pleistocene (Wetmore, 1956; Stettenheim, 1958; Howard, 1964).

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