

## PLEISTOCENE BIRDS FROM FOSSIL LAKE, OREGON

JOSEPH R. JEHL, JR.

The Pleistocene avifauna from Fossil Lake, Oregon, is well known through Howard's (1946) detailed and thorough review. The present report considers additional fossils collected at the center of Sec. 8, T. 26 S, R. 19 E, Lake County, Oregon, by R. R. Miller, E. R. Hampton, and their families, in June 1963, and by Richard L. Wilson, in August 1965. Miller's work was supported by the National Science Foundation. The fossils were made available to me through the courtesy of Claude W. Hibbard of The University of Michigan Museum of Paleontology (UMMP).

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Data on relative abundance are from Howard (1946).

### SYSTEMATIC LIST

*Aechmophorus occidentalis lucasi* Miller. Abundant. Remains of Western Grebes averaging slightly larger than the modern species have all been assigned to this Pleistocene subspecies by Howard (1946). Five additional specimens may be referred to this form: the proximal end of a left tibiotarsus (UMMP No. 48220), a slightly worn cervical vertebra (UMMP No. 48223), a worn fragment of synsacrum (UMMP No. 48229) that is slightly larger than any of four male *A. occidentalis* available for comparison, the distal end of a left femur (UMMP No. 58230), and a complete left coracoid (UMMP No. 58231). With the exception of the synsacrum, all of the elements are within the size range of the modern form.

*Podiceps parvus* (Shufeldt). Uncommon. I have followed Howard in assigning grebes "intermediate in size between the Western Grebe and the Eared Grebe" to *Podiceps parvus*. The fossils are similar to *P. grisegena* but slightly smaller. The proximal end of a right humerus (UMMP No. 48230) measures 17.9 mm from the tip of the external tuberosity to the attachment of *M. infraspinatus*; comparable measurements of two female *P. grisegena* are 18.8 and 20.3 mm. The head of the humerus appears proportionately smaller, and the deltoid crest, in palmar view, slightly less curved. The distal end of a right humerus (UMMP No. 48226) measures 10.2 mm at its greatest width; two female *P. grisegena* measure 11.9 and 12.9 mm. A complete but slightly worn right femur (UMMP No. 48225) is 44.0 mm in length, 11.4 mm in greatest proximal width, and 12.0 mm in greatest distal width; comparable measurements of two female *P. grisegena* are 42.9 and 48.0, 12.4 and 12.5, and 13.0 and 13.4 mm. The femur is slenderer than that of *P. grisegena*, and its head is narrow and elongated as in *P. auritus*, less rounded than in *grisegena*.

*Podilymbus podiceps* (Linnaeus). Uncommon. Proximal end of left coracoid (UMMP No. 52822).

*Phalacrocorax macropus* (Cope). Uncommon. A fragment (UMMP No. 48234), the proximal 27 mm of a right carpometacarpus, is identical to Shufeldt's (1913) illustration.

*Cygnus buccinator* Richardson. Common. Distal end of a right coracoid (UMMP No. 52819).

*Branta canadensis* (Linnaeus). Abundant. A slightly worn thoracic vertebra (UMMP No. 48221) is tentatively referred to this species.

*Anser* (*Chen*?) sp. Medium-sized geese are represented by two elements. The proximal end of a left humerus (UMMP No. 48222) is not clearly separable from *Anser* or *Chen*. The proximal end of a right coracoid (UMMP No. 48231) likewise is not clearly separable from *Anser* or *Chen*,

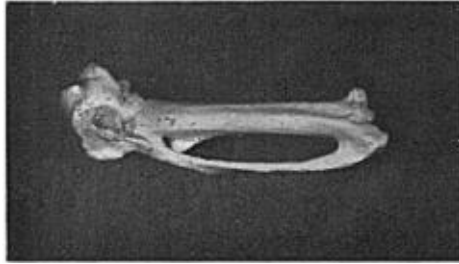


Figure 1. Carpometacarpus of *Dendragapus gilli* (UMMP No. 48233), internal view,  $\times 1$ .

although it is nearly identical with *Chen caerulescens* (U. Mich. Mus. Zool. No. 99511). Woolfenden (1961:49) noted that the coracoids of *Branta* and *Nesochen* could be separated from those of *Anser*, *Chen*, *Cygnopsis*, *Philacte*, and *Eulabeia* by the degree of undercutting of the furcular facet. In six *A. albifrons* examined, however, the degree of undercutting is variable, and one (UMMZ No. 151156), with the furcular facets of both coracoids deeply undercut, is extremely similar to *B. canadensis*.

*Anas platyrhynchos* Linnaeus. Uncommon. Proximal end of right humerus (UMMP No. 52821).

*Melanitta deglandi* (Bonaparte). Not previously reported from Fossil Lake, the White-winged Scoter is represented by a complete right coracoid (UMMP No. 48228). The element measures 50.4 mm from head to internal distal angle. Comparable measurements of five female *M. deglandi* range from 50.3 to 52.8 mm.

*Oxyura jamaicensis* (Gmelin). Common. Distal end of right humerus (UMMP No. 52828).

*Dendragapus gilli* (Shufeldt). This species, originally described as the type of a new genus *Palaeotetrix* (Shufeldt, 1892), has been known previously only from a carpometacarpus (Am. Mus. Nat. Hist. No. 3474). A second carpometacarpus (fig. 1; UMMP No. 48233), complete and unworn, is now available. It is similar to the type but slightly shorter (table 1).

The genus *Palaeotetrix* was established chiefly on the basis of size; as suggested by Shufeldt, the species appears to have been slightly smaller than females of *Centrocercus urophasianus*. Howard (1946:181) considered that "the significant features of *Paleotetrix* [*sic*], however, lie in its physical contours rather than in actual size. The character stressed by Shufeldt is evident in the cast, namely, the presence of a distinct space between the abruptly terminated border of the external crest of the carpal trochlea and the internal crest of the same." On examining the type I was unable to confirm Howard's findings. Our differences clearly stem from the cast, in which both the contours and dimensions of the type are inaccurately reproduced. Moreover, the trochlear region of the type is slightly worn, a condition that is not evident in the cast, so that the original size of this space cannot be determined accurately.

The metacarpus of *Palaeotetrix* are similar to those of *Dendragapus obscurus* and differ from them only in length and robustness. The *Palaeotetrix* metacarpus are 43.8 and 45.1 mm in length; carpi of seven male *D. obscurus* range between 38.8 and 42.5 mm. The greater robustness of the *Palaeotetrix* metacarpus can be quantified by the ratio of the width of metacarpal II to the total length of the carpometacarpus. The ratios in this species are 11.5 and 11.9 per cent; the ratio in *D. obscurus* averages 10.0 per cent (table 2). These differences are not sufficient to justify the continued recognition of *Palaeotetrix* as a genus distinct from *Dendragapus*.

Because of the great sexual dimorphism in grouse, and the geographic variation within the modern Blue Grouse, *D. obscurus*, one might suspect that the metacarpus

TABLE 1  
MEASUREMENTS OF CARPOMETACARPI OF *Dendragapus gilli*

	Length	Width metacarpal II at midpoint	Height through metacarpal I	Width of trochleae	(width metacarpal II/length carpometacarpus) × 100
AMNH No. 3474 (type)	45.1 mm	5.2 mm	13.4 mm	6.0 mm	11.5
UMMP No. 48233	43.8	5.2	13.5	6.5	11.9

referred to *Dendragapus gilli* may be those of extremely large males of *D. obscurus*. This possibility can be rejected, as no metacarpus of *obscurus* shows either the great length or robustness characteristic of *gilli*. I have examined 25 metacarpi, from seven of the eight currently recognized races of *obscurus*, and can find no geographic variation in length or robustness. Metacarpi of male *D. obscurus* average slightly heavier than those of females (Jehl, unpublished data).

Two other extinct species of *Dendragapus* are known only from Fossil Lake (Howard, 1946). *Dendragapus lucasi* (Shufeldt) averaged smaller than *D. obscurus* (Jehl, unpublished data); many elements of *lucasi* are known, and it is extremely unlikely that birds the size of *gilli* are referable to that species. *Dendragapus nanus* was described as being even smaller than *D. lucasi* (Shufeldt, 1892).

Table 2 indicates that some metacarpi of *Dendragapus* may be distinguished from the very similar metacarpi of *Pedioecetes phasianellus* and *Tympanuchus cupido* by their greater robustness. In *Dendragapus* the ratio averages 10 per cent or larger; in the other two forms, the ratio averages less than 10 per cent. The metacarpi of *Centrocercus urophasianus* are also similar to those of the above forms, but are longer and relatively more slender. I find no other metacarpal characters by which these forms may be distinguished.

*Fulica americana shufeldti* Brodkorb. Abundant. This coot, originally described as *Fulica minor* (Shufeldt, 1892), is represented by a complete and unworn right humerus (UMMP No. 48235), two fragments of tibiotarsus (UMMP Nos. 48227, 52827), the distal end of a right humerus (UMMP No. 52820), the distal end of a left ulna (UMMP No. 52829), the proximal end of a right carpometacarpus (UMMP No. 52826), the proximal end of a right coracoid (UMMP No. 52824), the proximal end of a left femur (UMMP No. 52823), and the proximal end of a right

TABLE 2  
RELATIVE STOUTNESS OF GROUSE CARPOMETACARPI  
(WIDTH METACARPAL II/LENGTH CARPOMETACARPUS) × 100

Species	No.	Range and mean
<i>Dendragapus obscurus</i>	25	8.8–10.9 (10.0)
<i>Dendragapus lucasi</i>	7	9.9–10.0 (10.2)
<i>Dendragapus gilli</i>	2	11.5, 11.9
<i>Canachites canadensis</i>	10	8.4–9.1 (8.8)
<i>Bonasa umbellus</i>	8	10.0–11.3 (10.7)
<i>Lagopus lagopus</i>	10	8.7–10.0 (9.4)
<i>Tympanuchus cupido</i>	6	9.2–10.1 (9.7)
<i>Pedioecetes phasianellus</i>	8	9.3–10.1 (9.7)
<i>Centrocercus urophasianus</i>	5	8.5–8.8 (8.7)

tarsometatarsus (UMMP No. 50236). All of these elements are within the size range of modern *F. americana*.

I agree with Howard (1946) rather than Wetmore (1959) that the minor size differences between the fossil and modern coots are insufficient for species differentiation, and that the Pleistocene form is best treated as a temporal subspecies of *F. americana*. However, since *Fulica minor* is preoccupied and has been renamed *F. shufeldti* (Brodkorb, 1964), the fossil population should be known as *Fulica americana shufeldti*.

*Totanus melanoleucus* (Gmelin). Previously reported on the basis of two fragments of humerus, the Greater Yellowlegs is here represented by the distal 23.5 mm of a left tarsometatarsus (UMMP No. 52825).

*Erolia melanotos* (Vieillot). Previously unreported from Fossil Lake, the Pectoral Sandpiper is represented by the worn distal end of a left tibiotarsus (UMMP No. 52832). The element is much larger than those of other eroliine sandpipers and smaller than that of *Calidris canutus*. It is similar in size to tibiotarsi of *Micropalama himantopus*, but the condyles are more flared, the shaft is relatively heavier, and the anterior intercondylar fossa is relatively wider than in the latter species.

#### SUMMARY

Two small collections of avian fossils from Fossil Lake, Oregon, are reported. *Melanitta deglandi* and *Erolia melanotos* are reported from these deposits for the first time. A second carpometacarpus of "*Palaeotetrix*" *gilli* is described, and the genus is placed in the synonymy of *Dendragapus*. *Fulica shufeldti* Brodkorb is treated as a temporal subspecies of *Fulica americana*, as suggested by Howard.

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