

## A PLIOCENE GULL FROM FLORIDA

BY PIERCE BRODKORB

FEW fossil gulls have been described and none is known from the Pliocene Epoch. The only Pliocene record for the Laridae as a whole is that of Wetmore (1944), who examined an undetermined tern from Kansas. Collections made by Mr. George C. Elmore in Middle Pliocene deposits of southern Florida include several specimens of a medium-sized gull which is described in the present paper.

### *Larus elmorei*, new species

*Type*.—Distal end of right humerus, No. 140, collection of Pierce Brodkorb; Middle Pliocene (Bone Valley formation); one and one-half miles south of Brewster, Polk County, Florida, in Sec. 5, T. 32 S, R. 24 E. Collected February, 1952, by George C. Elmore (locality 2).

*Description*.—Shaft wide, somewhat flattened on anconal surface; olecranal fossa wide, gradually merging into shaft without abrupt depression; external tricipital groove pronounced; internal tricipital groove scarcely separated from olecranal fossa, except for a raised area at base of shaft.

Palmar surface of lower portion of shaft somewhat convex, for reception of *brachialis anticus*; brachial depression deep and wide, its external portion crossed by two complete and one incomplete diagonal ridges; ridge bordering internal side of brachial depression pronounced, the distal portion of the ridge with surface for attachment of anterior articular ligament broadened distally, and sloping distally and toward brachial depression; attachment for *pronator brevis* bounded by a raised area on summit of ridge, its surface sloping proximally; internal condyle a flat oval; external condyle diagonal, its distal end not extending quite as far as end of internal condyle; entepicondylar prominence well developed, with two depressions on its side; ectepicondyle large, extending at an angle of about 45 degrees from palmar surface, and situated relatively high on shaft, its proximal edge being in line with proximal boundary of brachial depression; a round scar for *supinator brevis* prominent at base of ectepicondyle.

Color white; well mineralized.

Measurements of the type humerus are the maxima in Table 1.

*Comparisons*.—Distal end of humerus most similar to that of Recent *Larus delawarensis* Ord. Differs in larger average size; in having the internal tricipital groove broader; internal condyle relatively shorter; brachial depression deeper; surface for attachment of anterior articular ligament broader and less sloping distally; surface for attachment of *pronator brevis* broader.

The fossil species is more distantly related to other living gulls. From *Larus canus*



*brachyrhynchus* Richardson it may be separated by its larger size; wider distal end; deeper brachial depression; relatively shorter internal condyle.

It differs from *Larus heermanni* Cassin in larger size; relatively shorter internal condyle; more projecting entepicondyle. *L. heermanni* has a deep brachial depression as in the fossil, but the distal end of the humerus is more compressed than in *elmorei*, with the entepicondylar prominence not visible in palmar view.

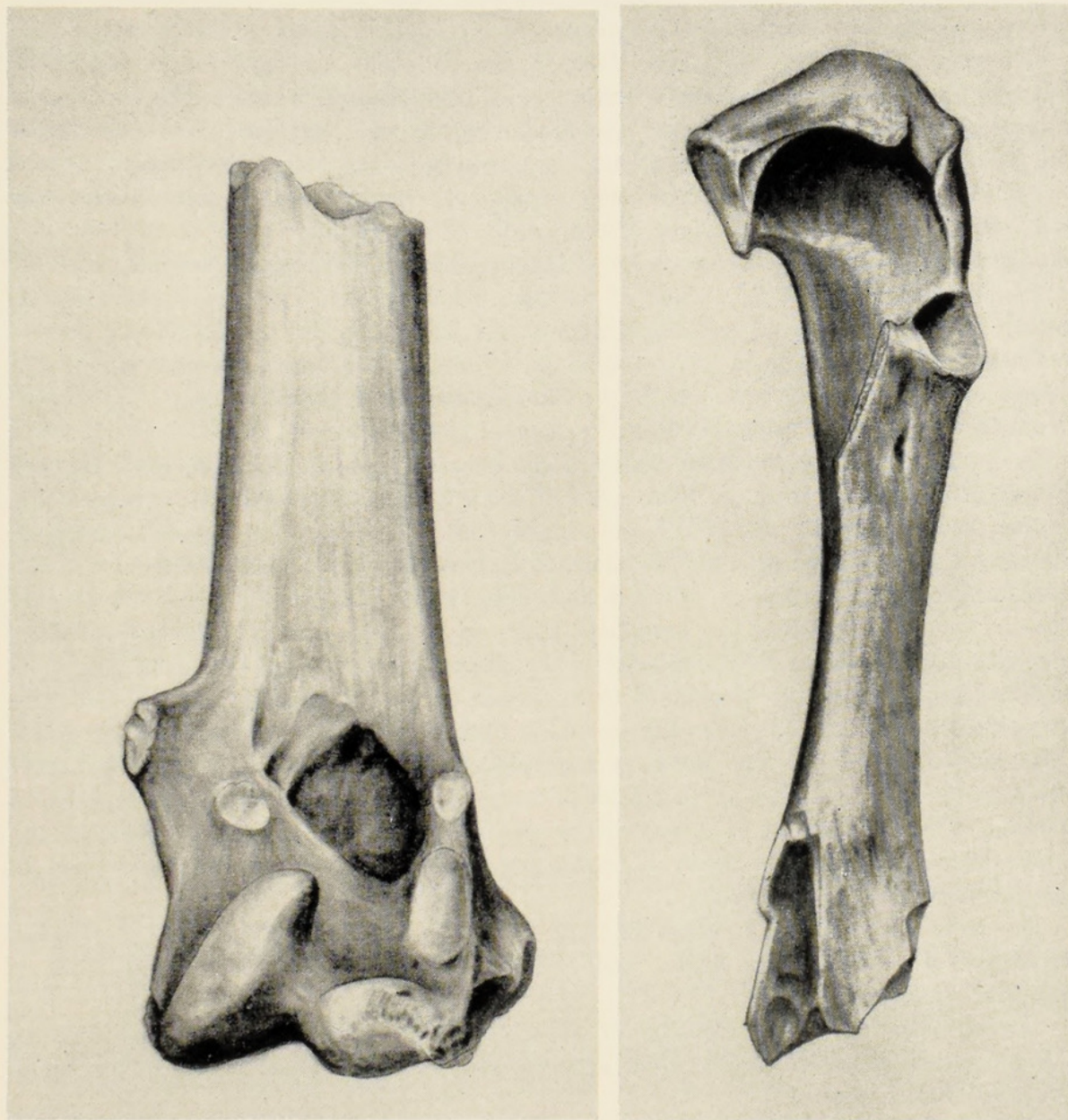


FIG. 1. *Larus elmorei*. Type humerus (left) and referred coracoid. Three times natural size.

The fossil may be separated from *Larus californicus* Lawrence by the smaller size and relatively wider internal tricipital groove in the fossil. Other living gulls are either considerably larger or smaller than the Pliocene species.

The new species differs from *Larus oregonus* Shufeldt (1892:398), of the Pleistocene of Oregon, in lesser width of distal end (15.3–16.0 mm. in *oregonus*, *fide* Howard, 1946:



186). Only the proximal portion of the humerus of *oregonus* has been figured (Shufeldt, 1892:pl. 15, figs. 3 and 4), so that other differences which may exist in the distal end are not known.

The humerus of *Larus robustus* Shufeldt (1892:398), of the Pleistocene of Oregon, is unknown. The type coracoid, however, is from a very large gull.

*Larus vero* Shufeldt (1917), of the Pleistocene of Florida, was based upon a carpometacarpus. According to Wetmore (1931:16) this bone came from a Yellow-crowned Night Heron, and therefore the name is a synonym of *Nyctanassa violacea* (Linnaeus). I have examined a cast of the type, No. V320 in the collection of the Florida Geological Survey. The cast shows some slight discrepancies from Shufeldt's figure. Apparently the tuberosity of the second metacarpal was broken off between the time of preparation of the figure and casting. The cast appears inaccurate in having more distal fusion between the shafts of the second and third metacarpals than appears in the figure. The only published measurement of the type is the length, which Shufeldt gives as 5.75 cm. My measurements of the cast are as follows: length 58.8 mm, height of proximal end 10.8, width through trochleae 5.3, width of second metacarpal 4.1, width of distal end 4.2, length of fusion of second and third metacarpals 8.8. It is obvious that *Larus vero* is not a gull, since it differs in the shape of the process of the first metacarpal and in the course of the tendinal groove. As far as can be determined from the cast, I agree with Wetmore that it is not separable from *Nyctanassa violacea*.

In the same paper in which he described *Larus vero*, Shufeldt (1917:38, pl. 1, fig. 12) listed *Larus?* (sp. ?) from the Pleistocene of Vero, Florida. The specimen on which this record is based is the distal half of a right tibiotarsus (not the tarsometatarsus as stated). I have studied this specimen, which is now No. V3500 in the collection of the Florida Geological Survey. It is not a gull, since it has the internal condyle relatively shorter, stouter, and with a less prominent notch on the distal end. The fossil came from a small duck and shows close similarity to the tibiotarsus of *Lophodytes cucullatus*. This raises the question of the identity of *Querquedula floridana* Shufeldt, the only currently recognized species of the three supposed new birds from Vero. Wetmore noted certain differences between the type humerus and that element in living *Anas* [*Querquedula*] *discors*. He has identified as *Q. floridana* material from other Pleistocene deposits in Florida. From a study of two casts of the type and other material I am struck by the similarity of the humeri to those of *Lophodytes*. This point will be elaborated upon in another connection at a later date.

The humerus of *Larus pristinus* Shufeldt (1915:54), from the Oligocene of Oregon, is unknown. According to Miller and Sibley (1941:566), the type tibiotarsus is of doubtful allocation.

Several species from the Oligocene of Europe have been described in the genus *Larus*. All are either larger or smaller than *elmorei*, and several of them probably should be referred to other genera.

Gulls from the Miocene are *Gaviota niobrara* A. H. Miller and C. G. Sibley (1941), from Nebraska, and *Pseudosterna dejener* and *P. pampeana* Mercerat (1879), from Argentina. In these genera the spur is located more proximally than in *Larus*. *Gaviota* differs further from *Larus elmorei* in much larger size, in smaller spur, and in having the scar for *pronator brevis* situated on the medial side of the ridge instead of on the summit.

*Referred material*.—Other material referred to this species includes three specimens from Elmore's Locality 1, in the NE corner of the NE  $\frac{1}{4}$  of the SW  $\frac{1}{4}$ , Sec. 32, T. 31 S, R. 24 E, one and one-half miles southeast of Brewster, Florida.



TABLE 1

MEASUREMENTS (in mm.) OF *Larus elmorei* AND *Larus delawarensis*

	<i>elmorei</i>	<i>delawarensis</i>
	(1 or 2 specimens)	(8 specimens)
<i>Humerus:</i>		
Proximal base of spur to end of external condyle ..	12.7 (12.4, 13.0)	12.3 (11.0–12.8)
Width across condyles .....	11.8 (11.5, 12.0)	11.6 (10.3–12.1)
Width of distal end .....	14.0 (13.7, 14.3)	13.4 (12.5–13.8)
Width of shaft above spur .....	9.1 (8.8, 9.3)	8.7 (8.3–9.2)
Width of inner tricipital groove .....	5.9 (5.5, 6.3)	5.1 (4.8–5.3)
Diagonal length of external condyle .....	8.4 (8.3, 8.5)	7.9 (7.3–8.4)
Length of internal condyle .....	3.8 (3.7, 3.9)	4.0 (3.7–4.2)
Depth of external condyle .....	8.1 (7.9, 8.2)	8.2 (7.6–8.5)
Depth of internal condyle .....	4.4 (4.3, 4.5)	4.2 (4.0–4.3)
<i>Coracoid:</i>		
Brachial tuberosity to furcular facet .....	4.4	4.2 (3.8–4.7)
Furcular facet to head .....	6.5	6.0 (4.6–6.8)
Head to glenoid facet .....	5.6	5.3 (4.8–5.7)
Glenoid facet to scapular facet .....	8.6	8.6 (7.8–9.2)
Furcular facet to glenoid facet (width of head) ..	10.3	9.6 (8.3–10.5)
Brachial tuberosity to glenoid facet .....	9.2	9.2 (8.5–9.7)
Head to scapular facet .....	12.7	12.3 (11.2–13.4)
Width of shaft through scapular facet .....	5.8	5.3 (4.8–5.6)
Narrowest transverse diameter of shaft .....	3.7	3.8 (3.4–4.1)
Narrowest depth of shaft .....	3.0	2.9 (2.6–3.2)
Breadth of furcular facet .....	9.0	8.4 (7.1–9.2)
<i>Carpometacarpus:</i>		
Width of second metacarpal .....	4.0	3.9 (3.5–4.1)
Height of distal end .....	6.8+	7.2 (6.4–7.8)
Width of distal end .....	5.5	5.5 (5.1–6.0)
Distal fusion of second and third metacarpals .....	6.3	6.1 (5.7–6.5)

The distal portion of a left humerus (P. B. No. 176) is similar to the type but comes from a slightly smaller individual. The spur has been broken off near its base.

The proximal three-quarters of a right coracoid (No. 134) resembles the corresponding bone in *Larus delawarensis*. It differs in being somewhat more robust; in having the internal border of the glenoid facet convexly oval instead of nearly straight; and in having the head of the bone relatively wider, particularly the median portion.

The coracoid of *elmorei* differs from that of *L. robustus* in much smaller size and in configuration of the head as described above.

The coracoid of *L. oregonus* has not been figured and has only briefly been described. From the ratios published by Howard (1946), it appears that the breadth of the furcular facet and the distance from the distal end of the scapular facet to head are less in *elmorei*.

The distal end of a left carpometacarpus (P. B. No. 178) is not separable from the corresponding element in *L. delawarensis*.

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Museum of Vertebrate Zoology, and Dr. Herbert Friedmann of the United States National Museum. The drawings (Fig. 1) were made by Miss Esther Coogle.

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