

*DAKOTORNIS COOPERI*,  
A NEW PALEOCENE BIRD  
FROM NORTH DAKOTA

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Continuing work at The Science Museum of Minnesota's fossil crocodile quarry site in western North Dakota during 1974 turned up a rather complete and well preserved avian humerus belonging to a hitherto unknown form. It is reported on here as the second contribution to the Wannagan Creek quarry fauna.

As far as known the new fossil is closely allied to the ibises, yet similarity to a number of diverse groups is noted. It is therefore regarded as a generalized and primitive form. It is described herein as *Dakotornis cooperi*, gen. et sp. nov. and made the type of a new family Dakotornithidae. The species is named in honor of my dear friend, the late Professor Leland R. Cooper, who contributed much assistance with the development of this fauna.

Family **DAKOTORNITHIDAE** fam. nov.

*Diagnosis* – Primitive ibislike birds, with stout, heavy features of the limbs.

Genus **Dakotornis** gen. nov.

**Dakotornis cooperi** sp. nov.

*Diagnosis of genus and species* – A humerus similar to *Plegadis* with shaft more robust with broader extremities. Deltopectoral crest wide and long. Distal condyles large and well-developed branchial depression. Entepicondyle short. Only known species is the type of the genus, *Dakotornis cooperi*.

*Holotype* – SMM P74.24.106, complete right humerus.

*Horizon and locality* – SMM Wannagan Cr. quarry, lower-level, Tongue River Formation, NW¼ Sec. 18, T.141N., R.102W., Billings Co., North Dakota.

## DESCRIPTION

The type species, a solitary humerus, is essentially complete and preserves a remarkably accurate form of the entire bone (fig. 3). Minor compression, near the extremities of the shaft has not seriously affected important features, which indicate its affinities with members of the subfamily Threskiornithinae (Brodkorb, 1963).

The intact humerus has equivalent length with its homologue in *Plegadis falcinellus*. Contours of the bone are very similar to this species. Proximally, the head is somewhat stronger with a more salient external tubercle and the internal tubercle is also highly developed. The crista superior is expanded nearly as much as in *P. falcinellus* and the anconal cavity is deep, wide, and evidently contains a pneumatic foramen (fig. 2).

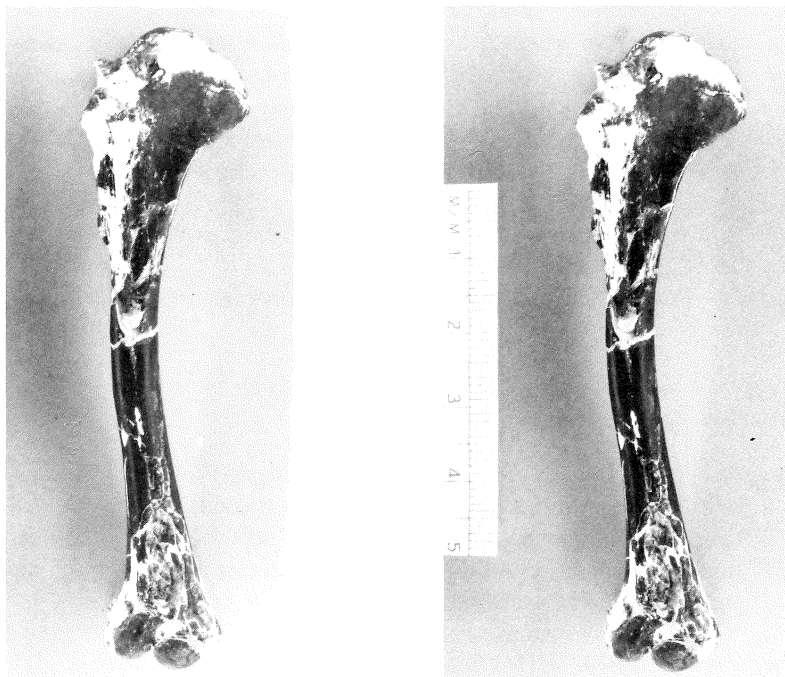


Figure 1

Stereophotograph of right humerus of *Dakotornis cooperi*, type specimen SMM P74.24.106 in palmar view.

A prominent deltopectoral crest extends down onto the shaft appreciably further than in the living form. Its outer margin is incompletely preserved; however, its point of coalescence with the shaft is intact. Below this it lacks any slight expansion from the side of the shaft that was noted by Wetmore (1962) as a feature of modern species of spoonbills.

Distally the shaft is normally flattened and, in spite of slight fracturing on the palmar aspect, a large, deeply-incised branchial depression can be observed (fig. 1). Ulnar and radial trochleae are relatively large and the intertrochlear groove is narrow. A strong ectepicondylar process projects laterally. The entepicondyle is heavy and more developed than in the living species, yet it has less distal extension. Tricipital grooves are barely discernible on the anconal side and a broad, open olecranal fossa is present.

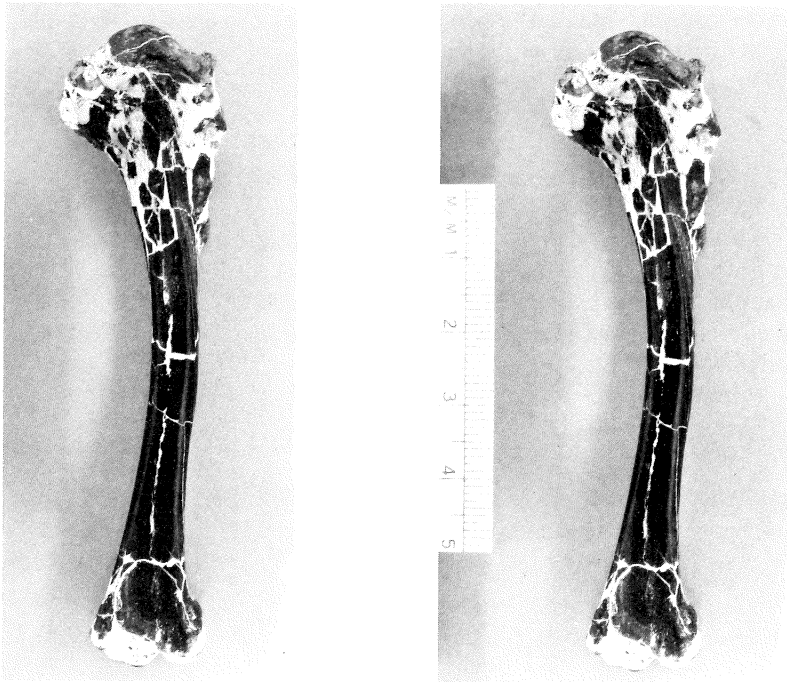


Figure 2  
Stereophotograph of right humerus of *Dakotornis cooperi*, type specimen SMM P74.24.106 in anconal view.

In comparison with other groups having similar humeri, the Paleocene fossil differs from *Telmatornis* with a smaller head and much less development of the external tuberosity and from *Phaethon* in the distal end of the element and the shape of the deltopectoral crest. *Burhinus*, a thick-knee, differs less but is distinguished by a more slender shaft and other characters that separate it from *Telmatornis* (S.L. Olson, personal communication, 1975).

The humeri of other early forms, which are themselves generalized, such as flamingos, and not diagnostic, e.g., *Torotix* (Brodkorb, 1963), show marked resemblance in some features; however, the differences are innumerable. The new fossil shows more lateral expansion at the distal end due to its larger and more protruded ectepicondylar process. The size and length of the entepicondyle is appreciably greater, reaching nearly the extent of the radial condyle. Both radial and ulnar condyles are less developed as well. It is difficult to make meaningful comment about *Proplegadis fisheri* (Harrison and Walker, 1971), from the Lower Eocene of England, as only the distal end of the humerus is preserved. Comparison, however, reveals that the new form and this specimen are distinct from one another in development of the distal condyles.

#### MEASUREMENTS IN MILLIMETERS

Total length .....	87.1
Width of head between internal and external tubercles .....	21.9
Depth of head .....	6.8
Distance from proximal end to end of internal tubercle .....	18.0
Distance from distal end of deltoid crest to distal end of radial condyle .....	53.0
Width of distal end .....	16.1
Depth of entepicondyle .....	5.3
Width of shaft above ectepicondylar process .....	10.9
Width of shaft at midlength .....	7.0

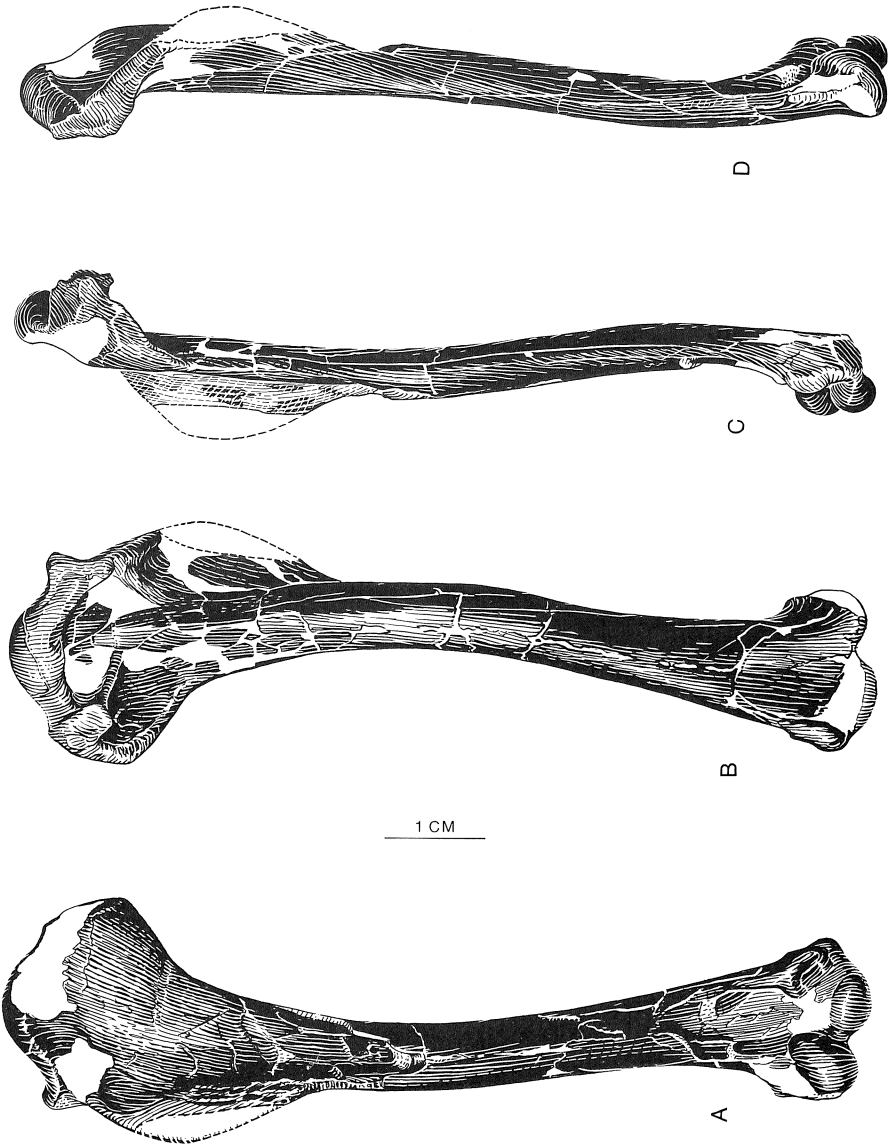


Figure 3  
Right humerus of *Dakotornis cooperi*, type specimen SMM P74.24.106.  
A, palmar view; B, anconal view; C, medial view; D, lateral view.

## DISCUSSION

Osteological homogeneity among birds, especially of closely related taxa, is well known and a serious obstacle to the taxonomy of fossil materials frequently resulting in misidentifications. This is especially true of new taxa established on fragmentary specimens. Despite these restrictions, the new fossil, even though only presently known from a solitary element, shows distinctions from all known groups — modern and fossil. It bears closest resemblance to ibises, especially the modern genus *Plegadis*, and interestingly, even more so than to any other form yet referred to as “ibis” or “ibislike.” Since, by its similarity, the possibility of being allied to a number of diverse groups also exists, the Paleocene form would seem to represent a generalized type and a possible ancestor of not only the ibises but perhaps several primitive lines. While apparently closest to true ibises (Threskiornithinae), its distinctions require taxonomic separation. For the new genus, I would propose the new family Dakotornithidae for inclusion under the suborder Platalea.

Alliance to ibises, which occur in both northern and southern hemispheres, poses the interesting possibility of a North American origin for this widespread group of highly successful birds. The vast network of stream systems and backswamps that dominated the Paleocene of the Dakotas would have provided the habitat for development of the great variety of water-loving waders, shore birds, and marsh birds that were evidently undergoing much diversification at the time. It is unknown if the new form had achieved the long legs or the long bill characterizing many later forms, but it would not be unexpected to find such specialized structures lacking in a Paleocene ancestor. Its general appearance may well have resembled that of a modern thick-knee.

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