

The first fossil of the Congo peafowl (*Galliformes: Afropavo*)

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A fossil from the Middle Stone Age internal deposits of Plovers Lake Cave in the Sterkfontein Valley, Gauteng province, South Africa, is the first fossil specimen that can be allocated to the Congo peafowl (*Afropavo congensis*), a species that is currently endemic to the Democratic Republic of Congo in central Africa. The fossil greatly extends the known geographic range of this rainforest taxon and suggests the presence of forested or even rainforest habitats near Plovers Lake Cave during the Middle Stone Age when the fossil was deposited. The presence of this central African taxon in South Africa implies that either its geographic range expanded during a period of climate change during the late Pleistocene or that its currently restricted distribution is a relict of a more extensive past distribution across a larger part of Africa.

Introduction

Excavations at the hominid-bearing locality of Plovers Lake Cave in the Sterkfontein Valley of Gauteng province, South Africa, have produced thousands of fossil vertebrate specimens, including birds. The site includes internal and external deposits. The external deposits are close to 1 Myr in age, and the internal Middle Stone Age deposits are between 62.9 and 88.7 kyr.¹⁻³ Examination of the avifauna from the internal deposits has uncovered a specimen of the Congo peafowl (*Afropavo congensis*), the first fossil peacock in South Africa and the first record of that species outside of central Africa. The diverse avifauna from the internal Plovers Lake deposits, including guineafowl and passerines, will be described elsewhere.

Until recently, the fossil record of peafowl (*Pavonini*) in Africa was unknown. However, fossils of the genus *Pavo* have been recovered from early Pliocene deposits in Ethiopia and Kenya, demonstrating the presence of the peafowl lineage in Africa in the late Neogene.^{4,5} At present, there is no known fossil record of peafowl in the African Pleistocene and no record of the extant African species prior to historical records. The extant species, *Afropavo congensis*, is restricted today to the eastern part of the Congo Basin in the Democratic Republic of Congo, and it occurs in undisturbed primary lowland rainforest.^{6,7} The specimen described below is the first fossil of this unique species and represents a significant expansion of its known geographic range.

Specimen PV 12185 is a proximal right humerus, which is housed at the University of the Witwatersrand in Johannesburg, South Africa.

Description

The specimen is coated over most of its surface with a crust that obscures some of the morphology. There are two punctures in the specimen that appear to be bite marks (Fig. 1). On the posterior surface, one of these punctures is distal to the dorsoventral midpoint of the head and the other is on the anterior surface on

the ventral side distal to the level of the distal end of the deltoid crest.

Posterior view. The head is inflated. The dorsal tubercle is an inflated dorsal extension of the head. No ligamental pit is visible on the dorsal tubercle. The dorsal tubercle is proximal to the level of the ventral tubercle. The distal end of the head has a ridge beginning at the dorsoventral midpoint that extends distally and then turns ventrally to the ventral tubercle. The capital incisure is a slit that extends from the proximoventral margin dorsodistally, is deepest anteriorly, and narrows posteriorly. It does not significantly undercut the humeral head. The pneumotricipital fossa is obscured by crust, but appears to be relatively shallow except for the proximal end. The proximal rim of the pneumotricipital fossa is nearly dorsoventrally orientated. The bicipital crest is relatively thick and extends distally about as far as the deltoid crest does.

Anterior view. There is only a slight concavity setting the head off from the rest of the humerus. The deltoid crest is parallel with the long axis of the humerus, and is relatively low. It may be broken, but the area is obscured by the crust. The ligamental groove is very shallow and is ventral to the ventral edge of the head.

Comparisons. The specimen is from a large galliform, placing it in the size range of a guineafowl or a peacock. This fossil specimen has the rounded ventral expansion of the bicipital crest present in *Afropavo* rather than the more squared-off or blocky outline of the crest in guineafowl. There is also a raised area adjacent to the capital incisure in guineafowl absent in *Afropavo* and this fossil. Although *Pavo* and other species of phasianids were present in the late Neogene^{4,8} of Africa, this fossil has a different morphology from *Pavo* (see below) and is from a taxon larger than the other phasianids. Other galliforms are present in the fossil deposits at Plovers Lake and are significantly smaller than this fossil taxon. The size of the fossil lies within the range reported for *Afropavo* and is smaller than that of fossil and recent specimens of *Pavo*⁴ (Fig. 1, Table 1).

The fossil's capital incisure is deeper and a more narrow 'V' than in *Pavo*. The depth and extent of the capital incisure varies among individuals of *A. congensis*. In Louisiana State University Museum of Zoology (LSUMZ) 131354, the incisure does not undercut the humeral head, as in the fossil specimen (Fig. 1). However, in LSUMZ 172532 the incisure excavates into the ventral side of the head. The fossil specimen's bicipital crest's ventral (distal) margin lacks the more concave shape of *Argusianus* and *Rheinhardia*.⁴ The morphology of the dorsal tubercle is similar to *Pavo cristatus*, but the fossil most closely resembles that of extant individuals of *Afropavo congensis*.

Discussion

Afropavo is the sister taxon to *Pavo*.⁸ The recent publication of Pliocene specimens of *Pavo* from Ethiopia and Kenya seems to indicate that the origin of the clade composed of *Afropavo* and

Table 1. Measurements of the proximal end of the humerus of Congo peafowl in mm.

Species	Proximal width [†]	Thickness of head [†]
PV12185	21.8	9.6
LSUMZ 172532*	24.4, 24.4	11.0, 10.9
LSUMZ 131354	24.0, 24.5	10.1, 10.4
LSUMZ 160363	22.4, 23.8	9.6, 9.6
LSUMZ 149020	24.9, 26.0	10.3, 10.4

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[†]LSUMZ specimens of *A. congensis* (all male) are listed with the measurement from the left preceding the right element.

[†]Louchart¹ reported proximal widths 20.7–23.0 mm and head thicknesses of 8.75–9.1 mm.

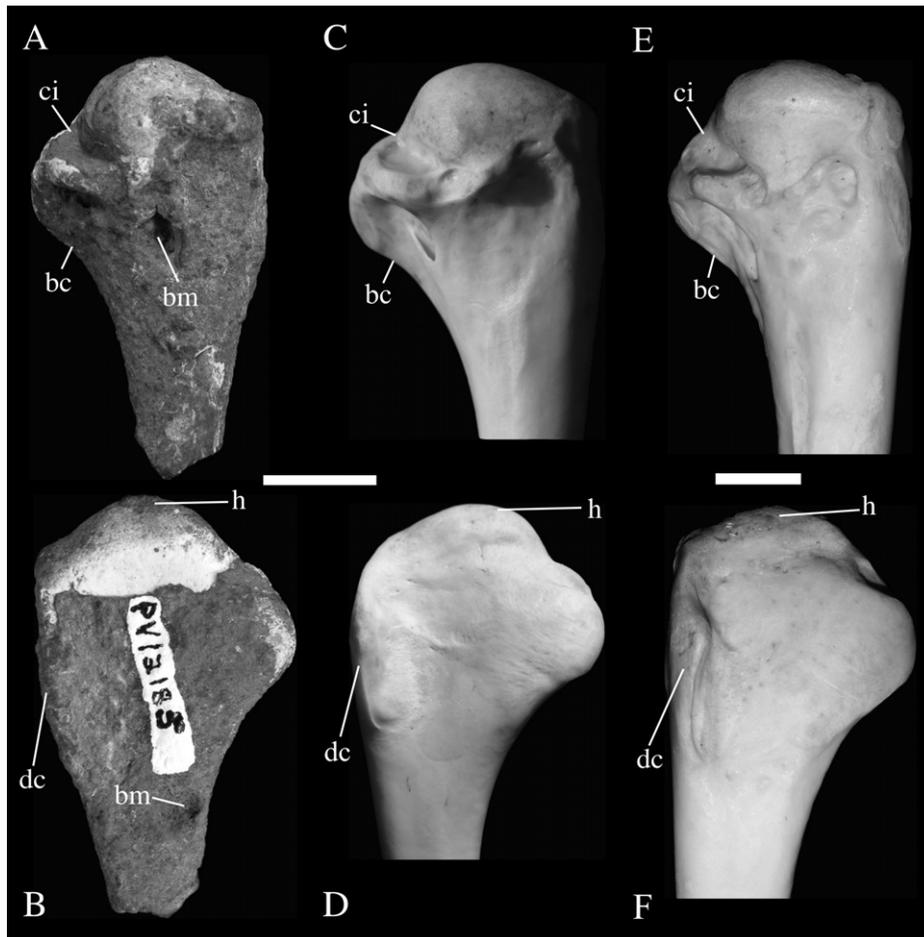


Fig. 1. PV 12185 proximal right humerus of *Afropavo* in **A**, posterior view; **B**, anterior view. *Afropavo congensis* (LSU MZ 131354) right humerus in **C**, posterior view; **D**, anterior view. *Pavo cristatus* (Museum of Vertebrate Zoology 53919) right humerus in **E**, posterior view; and **F**, anterior view. Abbreviations: bc, bicipital crest; bm, bite mark; ci, capital incisure; dc, deltoid crest; h, head. Scale bars are 1 cm. Left scale bar for **A–D** and right scale bar for **E–F**.

Pavo might have been in Africa.^{4,5} The split between *Afropavo* and *Pavo* has been estimated to be between 9 and 14 Myr,⁹ older than the oldest fossil specimens of *Pavo* in Africa.⁵ The sister relationship between *Afropavo* and *Pavo* and the fossil record of *Pavo* extending into the early Pliocene indicates that *Afropavo* also should have been present in the early Pliocene. Louchart⁴ suggested that *Afropavo* may not have been distributed outside of east-central Africa during its history. The presence of an *Afropavo* specimen in South Africa younger than the known African specimens of *Pavo* presents an interesting biogeographical problem. The Plovers Lake specimen indicates that *Afropavo* was more widely distributed in Africa in the past. The expansion of that taxon outside of central Africa may have been temporary and related to the significant climate change during the late Pleistocene, or its current geographic distribution may in fact be a relict of a larger past distribution that diminished only at the end of the Pleistocene.

Bite marks on the specimen likely indicate that the specimen was brought into the cave by mammalian predators, as many of the coeval mammalian bones appear to have been.² Thus, the bird probably was not transported very far from where it had lived. The palaeoenvironment of the area around the cave during the Middle Stone Age has been postulated to have been predominantly grassland with some permanent source of water nearby and some small amount of closed/wooded habitat.^{2,3} However, the presence of the tropical forest taxon *Afropavo* in the cave deposit is not entirely consistent with that mammal-based palaeoenvironmental hypothesis, and the bird fossil suggests

the presence of more closed forest or even rain forest.⁷ Further analysis of the avian fauna is needed to determine if additional rainforest indicators are present in the cave deposits.

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