A NEW SPECIES OF PAINTED SNIPE (CHARADRIIFORMES: ROSTRATULIDAE) FROM THE EARLY PLIOCENE AT LANGEBAANWEG, SOUTHWESTERN CAPE PROVINCE, SOUTH AFRICA

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Received November 1988

SUMMARY

OLSON, STORRS L., & ELLER, K. G. 1989. A new species of painted snipe (Charadriiformes: Rostratulidae) from the Early Pliocene at Langebaanweg, Southwestern Cape Province, South Africa. *Ostrich* 60: 118–121.

A new species of *Rostratula*, intermediate in size between the two living species, is described from deposits of the early Pliocene Varswater Formation at Langebaanweg, Cape Province, South Africa. This constitutes the first valid fossil record for the family Rostratulidae. The fossil species may represent an extinct endemic African lineage. Its presence at Langebaanweg indicates at least temporary presence of freshwater marshes or swamp.

INTRODUCTION

The fluviatile and estuarine deposits of the early Pliocene Varswater Formation at Langebaanweg, Cape Province, have yielded a very extensive avifauna (Rich, 1980; Hendey 1981), of which only the Procellariiformes (Olson 1985a), Ciconiiformes (Olson 1984, 1985c; Haarhoff, 1988), and Coliidae (Rich & Haarhoff, 1985) have as yet been analysed in detail. In sorting the large collection of fossil Charadriiformes from this local fauna, we encountered bones of a distinct new species of Rostratulidae, a family otherwise unknown in the fossil record (Olson 1985b: 174).

MATERIAL EXAMINED

The fossils are housed in the collections of the Department of Cenozoic Palaeontology at the South African Museum, Cape Town; all fossil specimen numbers are prefixed by the acronym SAM-PQL, which is generally omitted below. Other museum acronyms are explained in the acknowledgments.

The following recent skeletons of Rostratulidae were used in the comparisons:

Rostratula benghalensis (Linnaeus, 1758): four males from China, Philippines, and Thailand (USNM 289956, 291554, 343038, 343516); three females from Philippines and Zimbabwe (USNM 291555, 430784, 431639).

R. semicollaris (Vieillot, 1816): two males and one female from Argentina (USNM 227770, UMMZ 157022 and 157021), and one unsexed trunk skeleton from Uruguay (USNM 227709).

SYSTEMATICS

Order Charadriiformes Huxley, 1867
Suborder Scolopaci *sensu* Strauch, 1978

The fossil humeri have a ridge in the capital groove, which identifies them with the suborder Scolopaci (Jacanidae, Rostratulidae, Thinocoridae, Phalaropodidae, and Scolopacidae) as defined by Strauch (1978: 334).

Family Rostratulidae Ridgway, 1919

The fossil humeri agree with the Rostratulidae in having a distinct but very small ectepicondylar spur (absent in Jacanidae, better developed in other families). The fossil tarsometatarsi agree with the Rostratulidae in the large distal foramen and deep extensor groove (smaller in the remaining Scolopaci except the Jacanidae, in which these conditions are even more exaggerated).

Genus *Rostratula* Vieillot, 1816

There are only two extant species in the family. That from South America, *R. semicollaris*, was separated as the type of a monotypic genus, *Nycticryphes*, on the basis of bill morphology and size and shape of the tail (Wetmore & Peters 1923). *Rostratula semicollaris* lacks the marked sexual dimorphism in plumage of *R. benghalensis*, and is less dimorphic in size. Strauch (1976: 198), however, included *Nycticryphes* in *Rostratula*, as did Johnsgard (1981). Although the differences in bill shape are reflected in the underlying bone, there are few other osteological differences between the two extant species except for size. The lacrimal in *R. semicollaris* is of a distinctly different shape, being broader dorsally, with an anterior projection lacking in *R. benghalensis*. Also, the tarsometatarsus is more slender and relatively longer in *R. semicollaris*. We do not consider these differences to be of generic importance and at least for paleontological purposes the family may be regarded as monotypic.

Rostratula minator, new species

Figure 1

Holotype

Complete left humerus lacking only part of the pectoral crest, SAM-PQL25552 (Figure 1B).

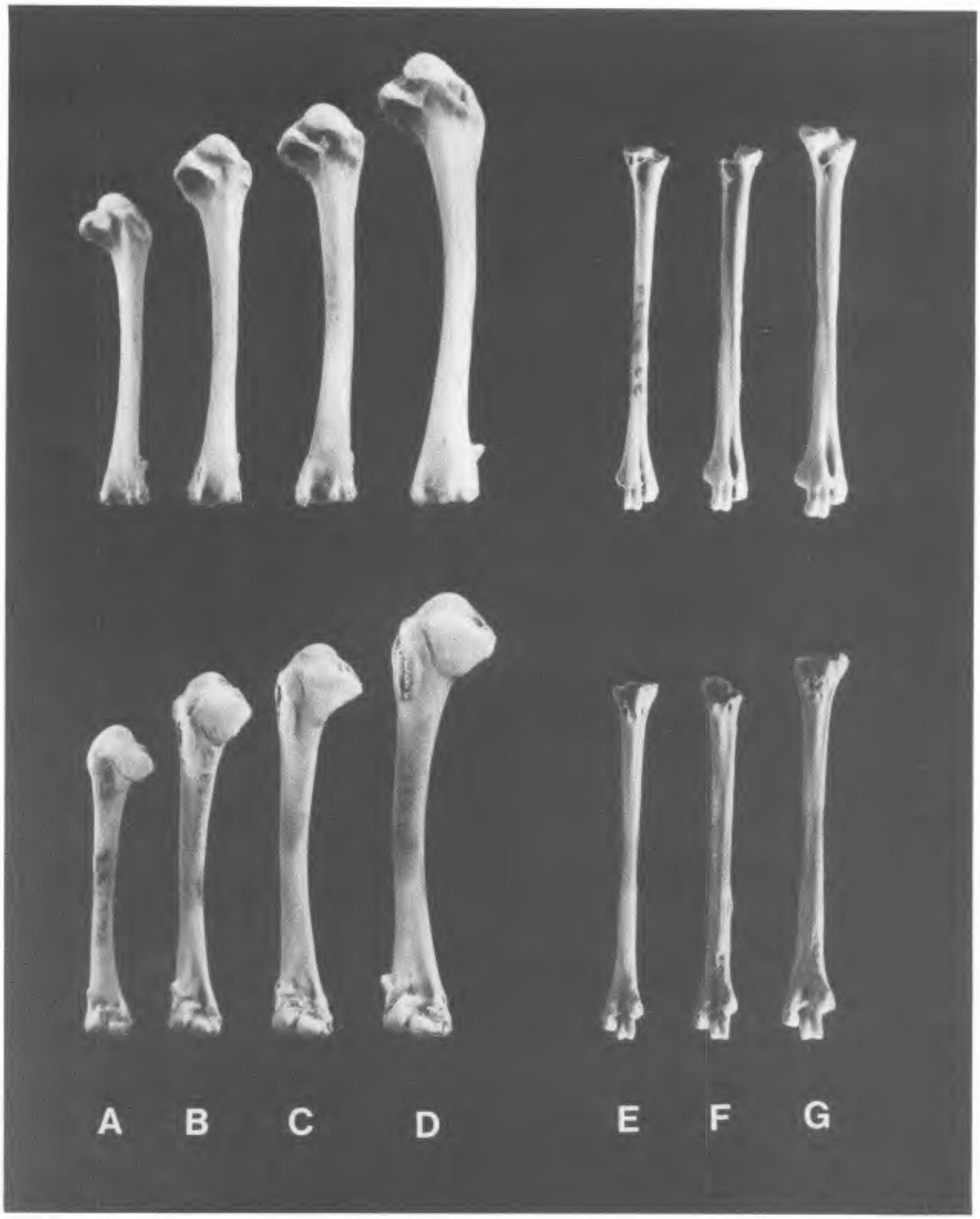

FIGURE 1

Comparisons of skeletal elements of *Rostratula*. Humeri (A–D) in anconal view (top row) and palmar view (bottom row) and tarsometatarsi (E–G) in anterior view (top row) and posterior view (bottom row). *A: R. semicollaris* USNM 227770 (reversed photographically to facilitate comparison); *B: R. minator* new species, holotype SAM-PQL25552; *C, D: R. benghalensis* USNM 343516, USNM 291554 (these are both sexed as male but the larger is probably female); *E: R. semicollaris* USNM 227770; *F: R. minator* new species, paratype SAM-PQL28198G; *G: R. benghalensis* USNM 343516. All figures 1,5 ×.

Type locality, horizon, and age

"E" Quarry, Langebaanweg, southwestern Cape Province, South Africa. Quartzose Sand Member (East Stream Dump 2) of the Varswater Formation; early Pliocene.

Paratypes

Right coracoids 25798, 28174CB; left coracoids 25770, 28173CM, 28174CF; right humerus (proximal end 25539DK, distal end 28177BK — these are from the same site within "E" Quarry and are almost certainly from a single bone, although a contact is only barely preserved); right humerus lacking distal end 20707WI; distal ends of right humeri 29215, 56262A; proximal end of left humerus 25575C; distal ends of left humeri 28469R, 50346D; left carpometacarpus lacking minor metacarpal 17024E; distal end of right tarsometatarsus 20691G; left tarsometatarsus lacking internal cotyla and intercotylar knob 28198G.

These fossils are from both the Quartzose Sand Member (14 specimens) and from Bed 3aN of the Pelletal Phosphorite Member (two specimens). The minimum number of individuals represented in each member is three and one, respectively; with regard to individual collecting localities within the mine, the total minimum number of individuals may be as high as eight.

Measurements of holotype (in mm)

Length 39,3; proximal width 8,7; shaft width at midpoint 2,8; distal width 6,0.

Measurements of paratypes

See Table 1.

Diagnosis

Larger than *Rostratula semicollaris* but smaller than *R. benghalensis*. Tarsometatarsus proportionately shorter and stouter than in *R. semicollaris*, more similar to that of *R. benghalensis*.

Etymology

Latin, m. *minator*, threatener, in reference to the striking threat display of *R. benghalensis* (Muller 1975), which is remarkably similar to that of the sunbittern *Eurypyga helias* (Eurypygidae). The specific name is a noun in appositon.

Remarks

The two extant species of *Rostratula* differ greatly in size, *R. semicollaris* being much the smaller. *R. minator* is almost perfectly intermediate (Table 1). The only overlap with *R. semicollaris* is in the length of the coracoid and widths of the ends of the humerus, which results from the large size of the single female of *R. semicollaris* examined. Overlap with *R. benghalensis* is only in the distal width of the tarsometatarsus. The range of measurements of *R. minator* is sufficiently great to suggest that it was probably sexually dimorphic in size, so that if the three species could be compared sex for sex, there would probably be no overlap whatever. The relative length and robustness of the tarsometatarsus of *R. minator* is more like that of *R. benghalensis*. Although this is not an especially important similarity, a closer relationship between *R. minator* and *R. benghalensis* would be expected on geographic grounds alone.

DISCUSSION

The only previous fossil record attributed to the Rostratulidae was *Rhynchaeites messelensis* Wittich, from the renowned middle Eocene deposits at Messel, Germany. This species, however, was conclusively shown by Peters (1983) to be a small, primitive ibis (Plataleidae). Therefore, the specimens of *R. minator* constitute the first valid fossil record for the family Rostratulidae.

Throughout its range from Africa and Madagascar through India, Asia, the Philippines and the Sunda region, *Rostratula benghalensis* is considered not to show significant geographic variation in size or coloration. Only the populations of Australia and Tasmania have been separated subspecifically as *R. b. australis* (Gould, 1837), based

TABLE 1
MEASUREMENTS (MM) OF BONES OF RECENT AND FOSSIL SPECIES OF *Rostratula*

	R. semicollaris			*R. minator*, new species			*R. benghalensis*		
	n	range	mean	n	range	mean	n	range	mean
CORACOID									
Length[1]	4	14,2–17,4	(15,5)	3	16,7–17,4	(17,1)	6	18,7–21,9	(20,7)
HUMERUS									
Length	3	31,4–33,5	(32,8)	2	37,3–39,3	(38,3)	7	42,3–47,9	(45,4)
Proximal width	3	7,0– 8,1	(7,5)	4	7,9– 8,7	(8,3)	7	9,2–10,5	(9,8)
Shaft width[2]	3	2,2– 2,4	(2,3)	2	2,8– 2,8	(2,8)	7	2,9– 3,4	(3,1)
Distal width	3	5,1– 5,5	(5,3)	6	5,3– 6,4	(5,8)	7	6,5– 7,3	(6,9)
CARPOMETACARPUS									
Length	3	20,7–21,6	(21,3)	1		(23,4)	7	26,0–29,6	(27,8)
TARSOMETATARSUS									
Length	3	35,9–39,0	(37,4)	1		(39,2)[3]	7	41,7–47,6	(43,8)
Distal width	3	4,0– 4,5	(4,2)	2	4,9– 5,1	(5,0)	7	5,0– 6,5	(5,8)

[1] Measured with sternal end flat on calipers.
[2] At midpoint.
[3] The specimen lacks the intercotylar knob, so this measurement is too short by a slight amount.

on plumage differences. The size differences between *R. minator* and *R. benghalensis* are considerable, suggesting that *R. minator* may represent an endemic African lineage that has become extinct, rather than a direct ancestor of *R. benghalensis*.

The living painted snipes occur in wet, marshy or swampy areas, usually with rather dense vegetation (Johnsgard 1981). They may at times be rather nomadic. *Rostratula benghalensis* is generally absent from the dry western portions of southern Africa except as a rare vagrant (Maclean 1985), although it is considered to be a "rare resident, probably breeding" on the lower Berg River (P. A. R. Hockey & J. C. Sinclair, MS, *fide* P. Haarhoff). Because *R. minator* is represented in the Langebaanweg fossil deposits by 17 specimens from no fewer than four individuals, it can hardly have been a casual vagrant. Freshwater habitats were present in the early Pliocene at Langebaanweg (Hendey 1981), including swamps or marshes. Nevertheless, such habitats were probably restricted and ephemeral in nature as suggested by the complete absence so far of fossils of herons, flamingos, spoonbills, pelicans, anhingas, and other aquatic brids commonly met with in the southwestern Cape region at present.

ACKNOWLEDGMENTS

We are most grateful to Q. Brett Hendey and Philippa Haarhoff, South African Museum, Cape Town, for access to the fossil material. Comparative material is from the collections of the National Museum of Natural History, Smithsonian Institution (U.S.N.M.), with the exception of two skeletons of *R. semicollaris* kindly lent by the University of Michigan Museum of Zoology (U.M.M.Z.). The photographs are by Victor E. Krantz, Smithsonian Institution. For commenting on the manuscript we thank Jonathan Becker, Philippa Haarhoff, and Q. Brett Hendey.

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