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A GIANT FLIGHTLESS BIRD FROM THE PLEISTOCENE OF FLORIDA

PIERCE BRODKORB

THE large, flightless birds of the superfamily Phorusrhacoidea have had a known history confined, until now, to Argentina and Uruguay, and, in time, to the period from the Oligocene to the early Pleistocene. This paper extends the known geographic occurrence of the group to North America and its known geologic range into the late Pleistocene. The fossil here described, from a fluvial deposit in northern Florida, is a bird of tremendous size, larger than the African ostrich and more than twice the size of the South American rhea.

Titanis, new genus

Type of Genus. *Titanis walleri*, new species.

Diagnosis. Referable to the family Phorusrhacidae, subfamily Phorusrhacinae, on the basis of: gigantic size; distal foramen of tarsometatarsus bifurcate, with foramen for extensor brevis digiti IV opening through distal end of shelf bounding outer intermetatarsal space (confluent with foramen for tibialis anticus artery on plantar surface of shaft in Brontornithidae, separate but on plantar face in Rheidae); lower end of shaft not bilaterally expanded (flaring toward roots of trochleae in Rheidae); plantar surface of shaft flat above trochleae (concave in comparable groups); trochleae nearly on a plane (strongly arched in Psilopteridae and Rheidae); posterior wings of trochleae obsolete (well developed in Psilopteridae).

Distal portion of tarsometatarsus similar to that of *Phorusrhacos* Ameghino (1887),* but middle trochlea somewhat expanded distally (without distal expansion in *Phorusrhacos*), vertical in distal view (medially inclined in *Phorusrhacos*), and with inner margin of plantar face abruptly

* This is the original spelling, although at least six emendations have been proposed, three by Lydekker, two by Ameghino himself, and one by Sclater. The family-group names are here accordingly altered to conform with the spelling *Phorusrhacos*.



Figure 1. *Titanis walleri*, right tarsometatarsus (approximately $\times \frac{1}{2}$). Upper left, acrotarsial view; upper right, plantar view; lower left, lateral view; lower right, medial view; center, distal view.

inflected proximally (angulation gentle and near middle of length in *Phorusrhacos*). Compared with *Devincenzia* Kraglievich (1932), distal portion of tarsometatarsus more constricted; trochleae adpressed; outer trochlea relatively narrow, little more than one-half width of middle trochlea (three-fourths width in *Devincenzia*). Compared with *Onactornis* Cabrera (1939), as exemplified by *Onactornis pozzii* (Kraglievich, 1931), distal portion more constricted; trochleae adpressed; middle trochlea expanded distally; outer trochlea with distal end transverse.

Pedal phalanx 1, digit III, agrees with *Phorusrhacos* in having outer edge proximally expanded, but bone more robust and shaft thicker; proximal end with lower lip reduced; proximal height greater than width. Differs from *Onactornis* in having outer edge expanded proximally; shaft thicker; proximal end with lower lip reduced; proximal height relatively less; plantar surface ungrooved. Element unknown in *Devincenzia*.

***Titanis walleri*, new species**

Figures 1-7

Holotype. Distal portion of right tarsometatarsus, University of Florida no. 4108, with referred right pedal phalanx 1, digit III, UF 4109. From late Pleistocene deposits on the Santa Fe River, in NE $\frac{1}{4}$ of NW $\frac{1}{4}$, section 34, Township 7 South, Range 16 East, Gilchrist/Columbia county line, Florida. Collected by Benjamin I. Waller, winter 1961-62.

Shaft little expanded distally; plantar surface flat. Distal foramen with anterior opening small, round, at level of articular facet of middle trochlea; foramen for extensor brevis digiti IV round, opening through distal edge of shelf bounding intertrochlear notch. Middle trochlea longest; outer

TABLE 1
MEASUREMENTS (MM) OF PHORUSRHACIDS

	<i>Titanis walleri</i>	<i>Phorusrhacos longissimus</i>	<i>Devincenzia gallinali</i>	<i>Onactornis depressus</i>	<i>Onactornis pozzii</i>
TARSOMETATARSUS:					
Height of distal foramen	54	46-51	56 ±	—	—
Width through trochleae	76	78	—	—	—
Width at distal foramen	60.5	67	86 ±	—	85
Width of outer trochlea	20.5	17.5-21.5	29	—	28
Width of middle trochlea	36	28.5-35.9	40	—	48.2
Width of inner trochlea	18	18-20	—	—	—
DIGIT III, PHALANX 1:					
Ventral length	104.3	81.5-90	—	(125 est.)	—
Dorsal length	98.5	75	—	—	—
Proximal height	50.6	35.5-38	—	57	—
Proximal width	49.6	37.5-41	—	53	—
Distal width	38.5	28-32	—	—	—
Least width of shaft	32.7	23.5-26	—	—	—



Figure 2. *Titanis walleri*, right pedal phalanx 1, digit III (approximately $\times \frac{2}{3}$). Upper left, dorsal view; upper right, plantar view; lower left, lateral view; lower right, proximal (upper) and distal (lower) views.

trochlea reaching level of inner rim of middle trochlea; inner trochlea shortest, reaching level of center of excavation on side of middle trochlea. Trochleae nearly on a plane, with only slight thrust toward plantar surface; outer trochlea with acrotarsial edge slightly below, and plantar edge reaching level of, corresponding edges of middle trochlea; inner trochlea with acrotarsial edge slightly below level of inner border of rim of middle trochlea, and plantar wing at level of plantar edge of middle trochlea.

The Florida species is similar in size to *Phorusrhacos longissimus* Ameghino (1887), although differing in proportions (Table 1). It is smaller than *Devincenzia gallinali* Kraglievich (1932), *Onactornis depressus* Cabrera (1939), and *Onactornis pozzii* (Kraglievich, 1931), the last tentatively referred to *Onactornis* by Patterson and Kraglievich (1960).

Etymology. Generic name from Greek *Titanis*, a female Titan.

Associated Fauna. Other birds collected at the type locality by Waller and Robert Allen include a Pleistocene grebe, *Podilymbus magnus* Shufeldt, and five living species, *Phalacrocorax auritus* (Lesson), *Aythya affinis* (Eyton), *Mergus merganser* Linnaeus, *Buteo jamaicensis* (Gmelin), and *Meleagris gallopavo* Linnaeus. The preponderance of living species suggests a late Pleistocene age.

The abundant mammalian remains are being studied currently by Dr. Clayton E. Ray. They include Pleistocene "indicators" among the edentates, rodents, perissodactyls, and artiodactyls.

The possibility that the fauna is not coetaneous seems slight. The material is uniform in appearance, being well mineralized and black or dark brown in color.

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Department of Biology, University of Florida, Gainesville, Florida.