GENERAL NOTES

An early Pleistocene avifauna from Haile XVA, Florida.—The Haile XVA site is located near Haile, Alachua Co., Florida, in R17E, T9S, Sec. 25. This small deposit, a filled fissure in the Eocene Ocala Limestone, contained a modest number of mammalian remains and a small number of avian specimens. Through the mammalian fauna (Robertson, in press, Bull. Fla. State Mus.; Webb, Pleistocene Mammals of Florida, Univ. of Florida Press, 1974; and Kinsey, *in* Webb, op. cit.) it is possible to date the deposit as early Pleistocene (late Blancan). Although the small number of avian specimens, only 10, would normally bring only passing attention, the presence of a new species of green heron makes the avifauna worth noting.

The species represented are as follows:

Podilymbus podiceps.—Complete right femur, distal end of left tibiotarsus, and distal end of left tarsometatarsus.

Casmerodius albus.—Broken fragment of proximal end of tarsometatarsus.

Egretta sp.—Proximal end of left tibiotarsus. The great osteological similarity between *E. caerulea* and *E. thula* prevents a specific determination of this incomplete specimen.

Butorides validipes, n. sp. (Fig. 1).—*Holotype.* Complete right tarsometatarsus, University of Florida/Florida State Museum No. UF 17546, from early Pleistocene (late Blancan) of Haile XVA, Haile, Florida. Collected by S. David Webb and Jesse Robertson. *Diagnosis.* Tarsometatarsus agrees with that of *Butorides* and differs from that of all other North American genera of herons by having (1) anterior face of shaft only slightly channeled; (2) distinct internal curvature of shaft with external point of inflection located approximately ⅔ the shaft length distally; (3) similar size.

Tarsometatarsus differs from that of *Butorides virescens*, *B. striatus*, and *B. sundevalli* by having (1) intercotylar prominence more rounded proximally, more robust, and less clearly demarcated posteriorly; (2) anterior lip of internal cotyla deeply undercut in medial view (prominent ridge extending distad present in *B. virescens*, *B. striatus*, and *B. sundevalli*); (3) inner calcaneal ridge of hypotarsus very short and curved (long to moderate length in *B. virescens* and *B. striatus*, long in the one *B. sundevalli* available; slightly curved in all); (4) ridge leading distad from inner calcaneal ridge of hypotarsus long and slightly curved in medial view (short and sharply curved in *B. virescens*, *B. striatus*, and *B. sundevalli*); (5) proximal foramina and tubercle for tibialus anticus located slightly more proximad; (6) shaft very broad for entire length (narrows sharply immediately distal to cotylae in *B. virescens* and *B. striatus*; narrows similarly in *B. sundevalli*, but shaft broader than in previous two species); (7) edge of shaft straight internal to tubercle for tibialus anticus (locally curved in *B. virescens* and *B. striatus*; curvature present and less localized in *B. sundevalli*); (8) curvature of shaft in anterior view less pronounced; (9) intertrochlear grooves similar to those of *B. virescens* and *B. striatus* (larger in *B. sundevalli*); (10) trochlear surfaces wide (narrower in *B. virescens* and *B. striatus*; wide in *B. sundevalli*); (11) external trochlea extend farther distad; (12) depression in lateral surface of external trochlea deep and restricted (shallow in *B. virescens* and *B. striatus*, of moderate depth in *B. sundevalli*; restricted in all). The internal trochea of the holotype tarsometatarsus of *B. validipes* has the distal end missing.

Measurements (mm) of the holotype tarsometatarsus, with those of *B. virescens* (N = 14), *B. striatus* (N = 3), and *B. sundevalli* (N = 1) in parentheses, are as follows: length, 47.8 (*virescens*, 48.4–52.8, $\bar{x} = 51.8$; *striatus*, 48.6–50.0, $\bar{x} = 49.4$; *sundevalli*, 51.3); width of proximal end, 7.1 (*virescens*, 6.4–7.0, $\bar{x} = 6.7$; *striatus*, 6.3–7.1, $\bar{x} = 6.6$;

FIG. 1. Anterior, external, and posterior views of holotype tarsometatarsus of *Butorides validipes*, n. sp. (× 1.5; actual length, 47.8 mm).

sundevalli, 7.3); width of distal end, 6.6 (*virescens*, 5.9–6.6, x̄ = 6.3; *striatus*, 6.1–6.7, x̄ = 6.4; *sundevalli*, 7.0); length of inner calcaneal ridge, 4.0 ± 0.1 (*virescens*, 4.3–5.6, x̄ = 4.9; *striatus*, 4.7–4.8, x̄ = 4.7; *sundevalli*, 5.4); least width of shaft, 3.3 (*virescens*, 2.5–3.3, x̄ = 2.9; *striatus*, 2.8–2.9, x̄ = 2.9; *sundevalli*, 3.2); shaft width at metatarsal facet, 3.5 (*virescens*, 2.9–3.6, x̄ = 3.3; *striatus*, 3.1–3.2, x̄ = 3.2; *sundevalli*, 3.8).

Etymology. From Latin *validus*, strong, and *pes*, foot.

Anas crecca.—Complete left carpometacarpus. Additionally, a badly broken proximal end of a left humerus may be referred to *Anas*, but not to species because of its condition.

Colinus cf. *suilium*.—One right scapula. The variability found in scapulae make them very unsatisfactory elements upon which to base the identification of a species. The specimen referred to here is insignificantly larger than the scapulae referred to *C. suilium* from Reddick (Brodkorb, Bull. Florida State Mus. 4:269–291, 1959; Holman, Bull. Florida State Mus. 6:131–233, 1961), and for this reason it is not referred to the larger *C. hibbardi* (Wetmore, Univ. Kansas Sci. Bull. 30(pt. 1):88–105).

Meleagris gallopavo.—Distal end of one left tibiotarsus.

The geology, age, paleoecology, and zoogeographic affinities of the Haile XVA site are well discussed elsewhere (Robertson, in press). The combination of aquatic (*Podilymbus*, *Anas*, *Casmerodius*, *Egretta*, and *Butorides*) and forest, or forest edge, species (*Colinus*, *Meleagris*) supports the conclusions drawn from the mammalian evidence (Robertson, in press) that the deposit represents a stream passing through a forested area.

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An unusual clutch size of the Black-bellied Whistling Duck.—The phenomenon of compound or dump nests in the whistling or tree ducks (*Dendrocygna* spp.) has been reported by several investigators (e.g., Cottam and Glazener, Trans. N. Am. Wildl. Nat. Resour. Conf. 24:382–395, 1959; Weller, Ecol. Monogr. 29:333–365, 1959).

While studying the nesting biology of the Black-bellied Whistling Duck (*D. autumnalis*) in nest boxes described by Bolen (J. Wildl. Manage. 31:794–797, 1967), we discovered a nest box containing 17 eggs on 14 June 1971 at 11:55. This box was subsequently rechecked at 11:27 on 16 June 1971 and then contained 50 eggs. Since Black-bellied Whistling Ducks lay their eggs in late afternoon (Bolen, Ph.D. thesis, Utah State Univ., Logan, 1967), this nest received 33 eggs in the 2 days, indicating that at least 17 different females contributed to the clutch based on the premise that these waterfowl lay 1 egg daily.

At 12:35 21 June 1971 a Black-bellied Whistling Duck adult flushed from the nest box which then contained 90 eggs. The incubating female and male were captured at the nest box on 23 June and 24 June 1971 and were banded with U.S. Fish and Wildlife Service leg bands. When the male was banded the nest contained 101 eggs. The nest was observed thereafter on 14 occasions at 1 to 4 day intervals until 38 eggs hatched on 26 July 1971. At the time of hatching the nest contained 99 eggs.

These observations raise the following points of interest concerning Black-bellied Whistling Duck nesting biology. First, Black-bellied Whistling Ducks apparently remove broken eggs from their nests. The eggs were counted on 24 July 1971, 2 days before hatching and no shell fragments of the 2 missing eggs, presumably broken, were observed in the nest. Sowls (Prairie ducks, Stackpole, Harrisburg, Pa., 1959) described the removal of broken egg shells for several species of surface feeding ducks (*Anas* spp.).

Second, at least 11 additional eggs were deposited in the clutch after incubation began. It is generally accepted that waterfowl initiate incubation after the deposition of the final egg in clutches originating from a single hen.

Third, this nest took at least 36 days to hatch assuming incubation began on 21 June 1971 when the adult was flushed from the nest box at mid-day. Bolen (Ph.D. thesis, op. cit.) found a mean incubation period of 27.5 days for the species. Stotts and Davis (Chesapeake Sci. 1:127–154, 1960) indicated that the number of times a sitting bird is interrupted during incubation is related to the duration of the incubation period. Kendeigh (Auk 57:499–513, 1940) has shown that a narrow temperature range exists for optimum incubation so that interruptions may indeed lengthen the period required for embryonic growth. Accordingly, the temporary abandonment of the nest by the incubating birds during our inspections may have contributed to the lengthening of the incubation period for this clutch.

Fourth, although productive from the standpoint of numbers of young produced, only 38 of 99 of the eggs hatched. Reasons for the low hatchability include (a) the interval between the laying of the earliest eggs to the start of incubation may have been long enough to incur reduced viability in the older eggs (i.e. those laid first), and (b) the