Table 1 have been determined by applying tidal corrections and calculating the minimum and maximum depths to which any of the dives *may* have been made.

Dewar suggests that the dive/pause ratio provides a measure of the diving efficiency of the bird as it represents time spent under water in relation to total time spent in diving. If the durations of the dive and pause are mainly functions of water depth, it follows that the dive/pause ratio for a species should remain approximately constant. This is suggested by comparison of the ratios here obtained with those by other workers. G. F. van Tets (pers. comm.) measured 20 dives of a wintering Pelagic Cormorant. The mean duration of the dives was 29.1 seconds, and the dive/pause ratio was 2.0 (against 2.0 here). Dewar's data yield a dive/pause ratio of 1.8 for both Common Goldeneye (2.2) and Red-breasted Merganser (1.8). From data on the Old-squaw (Gordon, *Brit. Birds*, 13: 244, 1920), I calculated the dive/pause ratio to be 4.2 (here 4.1) and for the Surf Scoter (Alford, *Brit. Birds*, 14: 106, 1920), 1.7 (here 2.2). Although I did not measure the durations of pauses in series of dives by the American Coot, they were certainly longer than the dives. For the European Coot (*Fulica atra*), Dewar calculated the dive/pause ratio to be 0.2, mean duration of dive to be 6.2 seconds, and maximum duration to be 12.8 seconds.—DOUGLAS D. DOW, *Department of Zoology, University of British Columbia, Vancouver, Canada.*

Observations on the Spotted Rail and Pinnated Bittern in Costa Rica.—In early July, 1963, we found Spotted Rails (*Pardirallus maculatus*) in a fresh water marsh 5 km (3 miles) southeast of Turrialba, Province of Cartago, on the Caribbean slope of Costa Rica. Two rails and one Pinnated Bittern (*Botaurus pinnatus*) were taken while we were making additional observations in July and August.

For Costa Rica these specimens represent the first published record of the bittern and the first published record with locality and date for the rail. Both are tropical South American species until recently known from Middle America only from a few widely scattered localities. In recent years the Spotted Rail has been recorded from Mexico (Veracruz and Chiapas), British Honduras, and Costa Rica (specimen in British Museum; no data published); the Pinnated Bittern has been recorded from Mexico (Veracruz, Tabasco, and Quintana Roo) and Nicaragua (Dickerman, *Wilson Bull.*, 73: 333–335, 1961; Dickerman and Warner, *Wilson Bull.*, 73: 336–338, 1961; Watson, *Wilson Bull.*, 74: 353, 1962). In Veracruz, as in Costa Rica, the two species have been found together in the same marsh (Dickerman and Warner, *op. cit.*). It now seems probable that these furtive species will prove to have a fairly continuous range in suitable habitat throughout the Caribbean slope of Middle America.

The marsh of our records is a wet pasture of 21 hectares (52 acres) on the grounds of the Inter-American Institute of Agricultural Sciences, at an elevation of 600 meters (1,950 feet). Forbs and bushes are cut from the field periodically to maintain the habitat for grazing. The dominant grasses which remain are *Panicum purpurescens*, which grows to a height of one meter and is found where the substrate is wet and muddy, and *Paspalum fasciculatum*, which attains a height of 2.5 meters and prevails on the small patches of dry ground. The birds were always found in the *Panicum* zone.

Eight or nine Spotted Rails occupied the marsh during July. They were found in the same parts of the marsh on each visit, and the call of a disturbed bird was usually answered by another from nearby. This suggests that, whether or not paired, the birds were maintaining territories. The call is a four-noted whistle consisting of one higher and longer first note and three shorter notes following in rapid succession. The series begins about one octave above middle C and descends one note during the

sequence. It is repeated at irregular intervals and usually is heard only after the birds are disturbed. The call of one subadult bird was harsher and resembled a cluck.

The stomach of one rail contained fragments of beetles (Coleoptera) and portions of four or five small earthworms (*Lumbricus* sp.); a second contained small stones and well digested earthworms. In the territories we found holes in the mud which appeared to have been made by the birds probing for worms. Early one morning after a heavy rain the tracks of one bird, and possibly of a pair, were found throughout an area 100 by 50 meters.

Both birds collected (12 and 18 July 1963) were females; the ovaries, respectively, measured 23 × 12 mm (largest ovum 7 mm) and 16 × 8 mm (largest ovum 3 mm).

The birds became increasingly difficult to flush as the grass grew taller. When we first visited the area the *Panicum* varied from 15 to 45 cm in height. Three or four rails were flushed each time the marsh was searched, and others called freely while running to avoid us. By mid-July the birds had become more difficult to flush. However, they still called when disturbed and ran ahead of us through the grass. By late July, when the *Panicum* had reached a height of 75 to 100 cm, the rails refused to flush or run and they rarely called. Had we visited the marsh under these later conditions, the birds undoubtedly would have escaped detection.

The most abundant bird in this habitat was the Olive-crowned Yellowthroat (*Geothlypis semiflava*). Other species were the Gray-crowned Yellowthroat (*Chamaethlypis poliocephala*), White-collared Seedeater (*Sporophila torqueola*), Variable Seedeater (*Sporophila aurita corvina*), a crake, probably the White-throated (*Laterallus albigularis*), and the Pinnated Bittern.

A bittern taken 17 July was a female with the ovary measuring 18 × 11 mm (largest ovum 4 mm). The stomach of this bittern contained two small frogs, one beetle (*Bellastoma* sp.), and one spider. A bittern was also seen 9 July, one was heard 12 July, and two were heard 18 July and 4 August. In comparison with that of the American Bittern (*Botaurus lentiginosus*), the voice was pitched one to two notes higher, and the tone was less hollow.

This work was done while we were participants in the National Science Foundation Seminar in Tropical Biology, supported by Grant 21977. The specimens are in the American Museum of Natural History.—Dale E. Birkenholz, *Department of Biological Sciences, Illinois State University, Normal, Illinois, and* Donald A. Jenni, *Department of Zoology, Eastern Illinois University, Charleston, Illinois.*

A record of the Chestnut-collared Longspur in Florida.—On 25 January 1964 I flushed a bird which appeared to be a Sprague's Pipit (*Anthus spragueii*) from an abandoned airport at the western edge of Tallahassee, Florida. Although noting the area in which it alighted, I was not able to flush it a second time that day. On the following day (26 January) I returned with John C. Ogden and my son, Jimmy. We soon put the bird up from the same area, noting that it again flew in a wide circle and alighted in the same general area from which it had flushed—a habit reminiscent of the longspurs. Only after flushing it several times was it possible to locate the bird on the ground and obtain it. This was our first definite indication that the bird was a longspur. The small size (total length, 137 mm; wing, 78 mm) and tail pattern revealed that it was a Chestnut-collared Longspur (*Calcarius ornata*). The specimen is number 7096c in the Florida State University Museum. A search through pertinent references indicated this to be the only record for the southeastern states, the closest records being for Louisiana and Maryland.—Henry M. Stevenson, *Department of Biological Sciences, Florida State University, Tallahassee, Florida.*