

inhabited its current range for many years, undiscovered until the Trans-Amazonian highway made these upland habitats easily accessible.

The Tapajós National Park, Brazil's only national park in Pará state, covers over 1,000,000 ha in the region of these new records (Fig. 1). Although the Golden Parakeet is threatened by continued hunting in the area, both by local subsistence farmers and weekend and holiday intruders, the Brazilian Forestry Institute is currently training new guards for the Park, which should improve the situation. Thus, the population of this parakeet in the Tapajós National Park may be the best protected in the range of the species. Elsewhere, the Golden Parakeet remains threatened by hunting for food, capture for the pet trade, and habitat destruction.

LITERATURE CITED

- FORSHAW, J. M. 1973. Parrots of the world. Melbourne, Lansdowne Press.
- HAEMIG, P. D. 1978. Aztec Emperor Auitzotl and the Great-Tailed Grackle. *Biotropica* 10: 11–17.
- . 1979. Secret of the Painted Jay. *Biotropica* 11: 81–87.
- HAFER, J. 1974. Avian speciation in tropical South America. *Publ. Nuttall Ornithol. Club* 14: 1–390.
- MARCGRAF, G. 1648. *Historia naturalis Brasiliae*. Amsterdam.
- MEYER DE SCHAUENSEE, R. 1970. A guide to the birds of South America. Wynnewood, Pennsylvania, Livingston.
- PETERS, J. L. 1937. Check-list of birds of the world, vol. 3. Cambridge, Massachusetts, Mus. Comp. Zool.
- PINTO, OLIVÉRIO M. DE O. 1978. Novo catálogo das aves do Brasil, 1ª parte. São Paulo.
- SNETHLAGE, E. 1914. Catálogo das aves amazônicas. *Bol. Mus. Goeldi*, 8: 1–530.
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Field Notes on Winter Flocks of the Ocellated Turkey (*Agriocharis ocellata*)

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Although the Ocellated Turkey (*Agriocharis ocellata*) (= *Meleagris ocellata*, cf. Steadman 1980) is one of the most conspicuous members of the avifauna in the Peten region, relatively little is known about its natural history. Recently, Steadman et al. (1979) have provided careful documentation of the activities of this species during the breeding season; no substantial first-hand records are available, however, on the prebreeding winter flocks of *Agriocharis*. This note aims to help bridge this gap by supplying details from 25 h of observation made between 14 and 25 January 1979 on the same flocks that Steadman and his colleagues studied at Tikal National Park, Guatemala.

Ocellated Turkeys are extreme generalists in their feeding habits, eating a wide variety of plant materials as well as insects (Gauger 1883, Leopold 1948, Steadman et al. 1979). Items that we observed taken in January included leaves of *Ambrosia artimisiifolia*, *Zebrina* spp., *Vitis* spp., and *Paspalum* spp. (Poaceae), as well as grass seed heads of *Paspalum conjugatum*, nuts of Arecoïd palms, and the fleshy mesocarps and seeds of *Brosimum alicastrum* (Moraceae) that had been dropped from the trees by parrots and spider monkeys. Insects, such as leaf cutter ants (*Atta cephalotes*), moths, and beetles, constituted only a minor fraction of the diet in January, with the bulk of the feeding activity being focused upon browsing vegetation and upon stripping seed heads from grasses. On one occasion, however, we observed two adult males feeding intensively on a column of leaf cutter ants carrying flower parts.

Individuals tended to alternate their choice of food types, typically spending from less than 30 s to 1 min on a specific food item, even if it was an abundant one. For example, during one 40-min span of observation, a solitary male followed a fixed sequence of stripping grass seed heads, browsing, and then pecking, spending approximately 33, 17, and 41 s in each activity (average of four counts). This pattern was repeated 11 consecutive times with intervening periods of walking or standing still. Although such extreme uniformity in the spacing of food choices may not be typical, alternating the food items was. This alteration may be an adaptation to protect against the deleterious effects of consuming poisonous plants, either by diluting possible toxins or by providing a lag time for the induction of detoxifying enzymes. Such mechanisms may be important to an unselective generalist and have been found in insects

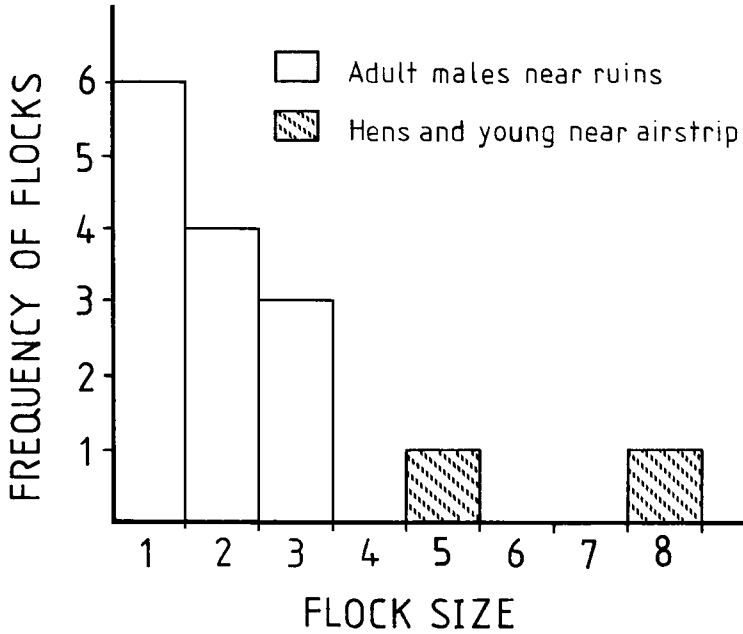


Fig. 1. Distribution of flock sizes, 14–25 January 1979. All flocks of size 3 or less were composed solely of adult males. No gobblers were found in the larger groups. The flock with 8 individuals consisted of 4 yearling males, 3 yearling females, and 1 hen.

(Brattsten et al. 1977). Leopold (1948) reports finding leaves of the fruits of *Solanum hirtum* (nightshade) in the crop of one bird, and Gaumer (1883) mentions turkeys eating roots of the cultivated poison yucca.

As shown in Table 1, the feeding rates for adult males were considerably higher in January than those reported by Steadman et al. (1979) for the same flocks during April. This suggests that the foraging activity of gobblers is displaced by their mating behavior in the breeding season. Foraging rates for yearling males and all females in April were 9.2 and 10.8 pecks/min, respectively (Steadman et al. 1979), which is comparable to the 11.2 pecks/min that we observed for adult males in January.

Passive and active anting was observed on two separate occasions next to a colony of *Atta cephalotes*. On 18 January at 1105, three adult males were found on top of three adjacent ant hills, resting on their ventral tracts and preening with their feathers spread. They remained there for at least 20 min, occasionally flapping their wings and lowering them over the mounds. On 22 January at 1130, one of the former individuals was found standing at the same location, pecking at the mounds and preening its dorsal tract. This continued for more than 10 min. It should be noted that *Atta* is a myrmicine ant and does not produce formic acid, which can presumably be used to anoint feathers. Prior to this report, no mention of anting in *Agriocharis* has been made in the literature.

TABLE 1. Feeding rates^a (pecks/min) for adult males.

Time	14–25 January			3–12 April ^b	
	Mean	Range	<i>n</i> ^c	Mean	<i>n</i>
600–1000	10.6	5–16	6	5.8	7
1000–1400	1.5	0–6	4	1.0	3
1400–1800	21.6	8–41	9	6.0	19
Daily average	11.2			4.3	

^a Based on counts of 1–5 min each.

^b From Steadman et al. (1979).

^c *n* = number of observations.

Our daily records on the size and composition of flocks, summarized in Fig. 1, differ from those reported by Leopold (1948) for *Agriocharis* in southern México during November and by Steadman et al. (1979) for breeding flocks at Tikal in February–March. Leopold observed 12 mixed flocks of hens and gobblers, ranging in size from 3 to 10 birds, as well as several single adult males and a pair of adult males. He suggested that segregation of hens and young from old males does not occur in winter populations of Ocellated Turkeys, a situation unlike that of its northern relative, *Meleagris gallopavo*, in which marked segregation of sexes is almost universal (Bailey and Rinell 1967). Steadman et al. (1979) present results on flock composition from 24 February to 15 March that are similar to those of Leopold; there is a decline in the average flock size, however, from 10.6 birds during 6–15 March to 2.9 birds during 5–13 April. This decline is attributed to adult males becoming more solitary with the onset of strutting and gobbling and to females leaving the flock to begin egg laying. By contrast, our results for January show no mixed flocks of hens and adult males, although the average flock size (2.8 birds) is similar to that reported by Steadman et al. for 5–13 April (2.9 birds). All sightings made in the vicinity of the ruins were males, either solitary, in pairs, or trios, and the only mixed groups were two flocks of hens with young found near the airstrip. Females were never seen alone. According to local residents, adult females and their young spend most of the year deeper in the jungle, returning to open areas only during the breeding season. This account is consistent with our own observations on the sociality of the species and suggests a social system similar to that of the Common Turkey (*Meleagris gallopavo*).

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LITERATURE CITED

- BAILEY, R. W., & K. T. RINELL. 1967. Events in the turkey year. Pp. 73–91 in *The Wild Turkey and its management* (O. H. Hewitt, Ed.). Washington, D.C., Wildl. Soc.
- BRATTSTEN, L. B., C. F. WILKINSON, & T. EISNER. 1977. Herbivore-plant interactions: mixed-function oxidases and secondary plant substances. *Science* 196: 1349–1352.
- GAUMER, G. E. 1883. Notes on *Meleagris ocellata* Cuiver. *Trans. Kansas Acad. Sci.* 8: 60–62.
- LEOPOLD, A. S. 1948. The wild turkeys of Mexico. *Trans. 13th North Amer. Wildl. Conf.* 393–400.
- RUSSEL, S. M. 1964. A distributional study of the birds of British Honduras. *Ornith. Monogr.* 1: 1–195.
- STEADMAN, D. W. 1980. A review of the osteology and paleontology of turkeys (Aves: Meleagridinae). *Los Angeles County Mus. Contrib.*
- , J. Stull, & S. W. Eaton. 1979. Natural history of the Ocellated Turkey. *World Pheasant Assoc.* 4: 15–37.

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New Southerly Record for the Macaroni Penguin (*Eudyptes chrysolophus*) on the Antarctic Peninsula

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Dispersal of northern birds into the Antarctic Peninsula region has long interested biogeographers (e.g. Darlington 1965), and evidence of southerly range extensions are of note. This paper reports on the southernmost confirmed collection of a Macaroni Penguin (*Eudyptes chrysolophus*) and discusses the significance of this observation with studies from other locales.

According to Watson (1975), the breeding range of the Macaroni Penguin is confined to South Georgia Island, the South Orkney, South Sandwich, and northern South Shetland islands, with additional colonies on Bouvet, Crozet, Heard, Kerguelen, Macquarie, Marion, and Prince Edward islands. Although Hold-