TABLE 1

DESERTION AND RENESTING RATES AND INTERVALS TO RENESTING OF HOUSE SPARROWS AND EUROPEAN TREE SPARROWS AFTER INTERRUPTION OF ACTIVE NESTS, ACCORDING TO STAGE OF NESTING CYCLE AT TIME OF INTERRUPTION

Species	Nesting stage	N	% deserted	% continued	% renested	Intervals in days ($s_{\bar{x}}$)
European Tree Sparrow	Laying	37	35.1	5.4	59.5	7.4(0.64)
	Incubation	14	35.7		64.3	6.3(0.17)
	Nestling	23	65.2		34.8	5.6(0.32)
	Total	74	44.6	2.7	52.7	6.8(0.38)
House Sparrow	Laying	16	12.5	50.0	37.5	5.5(1.36)
	Incubation	24	62.5		37.5	7.0(0.71)
	Nestling	26	46.1		53.8	7.6(0.60)
	Total	66	43.9	12.1	43.9	7.0(0.47)

be successfully used in a number of experimental situations where synchronization of breeding in free-living sparrow populations is desirable.

The applicability of the technique to other bird species is questionable. Most open-nesting species desert their nest after a nest failure and, if they renest, construct a new nest at a different site. Other hole-nesting species, which use a nest-site that affords more protection than an open site (Nice, Auk 74:305–321, 1957) and that is frequently in short supply (von Haartman, pp. 391–459 *in* Avian Biology, Vol. I, D. S. Farner and J. R. King, eds., Academic Press, New York, 1971), may be less prone to desert their nest-site after a failure, although I have no data to support this suggestion. The response of the 2 sparrow species may represent an adaptation to their commensal relationship with man. Persistence in attempting to nest in a favorable site in spite of active interference by man may be selectively advantageous.

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Sexual differences in feeding territoriality of the Crowned Woodnymph, *Thalurania colombica*.—We observed territorial behavior of an adult male and female Crowned Woodnymph (*Thalurania colombica*) on 27, 28, 29 June and 2 July 1977, near the Limbo Hunt Club on Pipeline Road, Gamboa, Canal Zone. Sexing and aging followed Ridgway (U.S. Natl. Mus. Bull. 50, Pt. V, 1911). The female defended a smaller, higher quality territory than did the male and was more aggressive in defense, unlike other species of hummingbirds (Wolf and Hainsworth, Ecology 52:980–988, 1971; Linhart, Am. Nat. 107:511–523, 1973; Stiles, Univ. California Publ. Zool. 97:1–109, 1973).

The female defended a large *Hamelia patens* (Rubiaceae) bush 16 m^2 in cross section, bearing 280–325 open flowers per day. The male's territory of roughly 200 m^2 included an *Hamelia* bush with about 30 flowers, several flowering *Heliconia* (Musaceae) and 1 or 2 flowering *Gustavia* sp. (Lecythidaceae). Both birds occasionally visited small *Hamelia* plants outside their territories, which were about 200 m apart.

More intruders visited the female's territory than the male's. The female made 30 chases in 345 min of observation (1 per 12 min) while the male made 3 chases in 325 min (1 per 108 min). Chases by the female were more aggressive than those by the male, often involving rapid pursuit and high-pitched calling. Chases by the male mostly involved displacement, with the intruder leaving when approached. Intruders sometimes fed unmolested in the male's territory, probably because the male did not see them due to the territory's large size. Intruders in the female's territory were usually chased before they could feed, or fed only for a few sec before being discovered. The female often chased butterflies (yellow-orange pierids and *Heliconius* sp.) which appeared to be feeding from *Hamelia* flowers, while the male chased only 1 butterfly. Hummingbird intruders in the male's territory included Long-tailed Hermits (*Phaethornis superciliosus*), male Crowned Woodnymphs and a Blue-chested Hummingbird (*Amazilia amabilis*), and in the female's territory Blue-chested Hummingbirds and at least 1 female Crowned Woodnymph.

The mean nectar volume of *Hamelia* flowers in the female's territory was 2.4 μl ($N = 60$, $SD = 1.7$) and the mean volume in the male's territory was 0.4 μl ($N = 60$, $SD = 0.4$). Nectar volume of *Hamelia* flowers in the female's territory was significantly greater than that in the male's territory (Table 1). Nectar content of *Gustavia* and *Heliconia* was not quantified, and we assumed that nectar availability of *Hamelia* would roughly reflect its availability throughout the territory.

Intruder frequency, intensity of aggression, territory size and nectar content of *Hamelia* flowers suggest that the female's territory was of higher quality than was that of the male. Feinsinger and Chaplin (Am. Nat. 109:217–224, 1975) suggested that hummingbird food exploitation patterns are related to wing disc loading and that

TABLE 1

NECTAR VOLUMES OF *HAMELIA* FLOWERS IN TERRITORIES OF MALE AND FEMALE *THALURANIA COLOMBICA*

		Nectar volume per flower (μl)	
Date	Time	Male	Female
27 June	08:00	0.2[1]	5.8[1]
27 June	11:20	0.0	2.2
28 June	06:50	0.3	1.2
28 June	10:30	1.2	1.6
29 June	06:40	0.5	1.4
02 July	15:20	0.3	2.3
$t = 2.58$	$P < 0.05$[2]		

[1] Values are means of 10 flowers.
[2] t value determined using paired comparisons test.

sexes or species with higher loadings are usually more territorial than are those with lower loadings. A sample of 16 male and 5 female woodnymphs from nearby Barro Colorado Island showed no significant loading differences (0.030 and 0.031, respectively, $P > 0.05$), although this difference is little less than that between sexes of some territorially dimorphic species reported by Feinsinger and Chaplin (Am. Nat., op. cit.).

Further observations are needed to show whether the observed behavioral differences are typical of the species and whether there is a real difference in wing disc loading between the sexes.

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Brown-headed Cowbird parasitism on Eastern Bluebirds.—Brown-headed Cowbirds (*Molothrus ater*) infrequently lay their eggs in nests of Eastern Bluebirds (*Sialia sialis*). In the most recent compilation (Friedmann et al., Smithson. Contrib. Zool. No. 235, 1977), only 49 records are listed. Musselmann (Bird-Banding 17:60–73, 1946) recorded the highest rate of brood parasitism when, in 1945, he found cowbird eggs in 7 of 268 (2.6%) active bluebird nests in Illinois nest boxes. This note reports on a small population of Eastern Bluebirds that has been subjected to a relatively high rate of cowbird parasitism.

Since spring 1974, from 11 to 14 nest boxes have been maintained for bluebirds on the grounds of the U.S. Geological Survey National Center and adjacent residental areas in Reston, Virginia. The population has increased from 2 pairs in 1974 to 6 pairs in 1976 and 1977. During these 4 years, 6 of 27 (16.2%) bluebird nests with completed clutches were parasitized by cowbirds. Another 3 bluebird nests were almost completely built, but no eggs were laid. Of these, a cowbird laid an egg in 1 nest, giving an overall parasitism rate of 17.5%. Yearly rates were 0% in 1974, 30% in 1975, 16.9% in 1976, and 14.3% in 1977 ($\bar{x} = 15.25$).

Besides bluebirds, Carolina Chickadees (*Parus carolinensis*) nested in the boxes once and Carolina Wrens (*Thryothorus ludovicianus*) nested thrice. One of the wren nests was parasitized, and 2 cowbirds, but no wrens, fledged.

There were 2 periods of cowbird activity—1 in late April to early May and 1 in June—corresponding to the 2 main bluebird nesting periods. Five of the parasitized nests, including the 1 without bluebird eggs, were first nestings, 1 was a second nesting, and 1 in June may have been a first nesting, or possibly a renesting, but this could not be confirmed.

One or 2 ($\bar{x} = 1.43$, $N = 7$) cowbird eggs were laid in each parasitized nest. Judging from nest checks during egg-laying and incubation, the female cowbirds did not remove any bluebird eggs.

Data were sufficient to determine accurately the outcome of 4 parasitized nests. Two of these nests produced no cowbirds—1 because the cowbird laid an egg in an already deserted nest and 1 because the egg was laid 1–3 days before the bluebird eggs hatched. In the other 2 nests, 3 cowbirds but no bluebirds fledged. The cowbird eggs hatched