

**First Puerto Rican record of the Antillean Palm Swift.**—The Antillean Palm Swift (*Tachornis phoenicobia*) is an endemic Antillean species that ranges from Cuba and the Isle of Pines eastward to Jamaica and Hispaniola and its southern islands of Beata and Ile-a-Vache (Bond, *Birds of the West Indies*, 1961). It is common and widespread within its range and normally occurs at low elevations. Although it is found on three of the Greater Antilles, including several offshore islands, it has never been reported from Mona Island (Bond, *Notulae Naturae*, 176:1-10, 1946; Barnes, *Auk*, 63: 318-327, 1946) or from Puerto Rico (Danforth, *Los Pajaros de Puerto Rico*, 1936; Bond, 1961; Leopold, *Univ. Puerto Rico Agr. Exp. Sta. Bull.*, 168:1-119, 1963; Biaggi, *Las Aves de Puerto Rico*, 1970), islands lying, respectively, 50 and 110 km east of its range in the Dominican Republic.

At 14:30 on 12 July 1969 I saw a single Antillean Palm Swift flying over the coast in Guánica Forest, southwestern Puerto Rico, at a point approximately 38 km east of Cabo Rojo, the southwesternmost point on the island. With me at the time were Mr. and Mrs. Del Buerge, who are also quite familiar with Puerto Rican birds. The sighting was made by the three of us with  $7 \times 35$ ,  $7 \times 50$ , and  $10 \times 40$  binoculars. We were located on the edge of a cliff that dropped vertically 10 m to the sea below, and were watching Caribbean Martins (*Progne dominicensis*) and Cave Swallows (*Petrochelidon fulva*) flying to and from a large cave in which the martins were nesting. Flying in association with them was the palm swift. For two minutes the swift flew in wide circles over the water below, approaching us at times to within 15 to 20 m before arcing inland above us and out of view. Thus we had the opportunity to see well both its dorsal and ventral surfaces, and to compare its size with the two swallows. The swift was smaller than either the martin or the Cave Swallow, and clearly showed the following marks: wings, crown, and tail, including undertail coverts, black; tail slightly notched; rump with a large white patch; underparts white, with a clear black horizontal band between the throat and the belly. We could not discern a thin black line from the lower flanks to the vent, but did notice that the area appeared dark.

The Antillean Palm Swift is so strikingly marked and of such small size that it is not easily confused with any other Caribbean swift. Other black and white swifts, such as the White-throated Swift (*Aeronautes saxatalis*) and the Lesser Swallow-tailed Swift (*Panyptila cayennensis*), are larger and differently marked, and have not been reported in the northeastern Caribbean. I have seen them both within their ranges, and know *Tachornis* from both Jamaica and Haiti, and am thus convinced that the bird sighted at Guánica was *Tachornis*: it thus represents the first record of this species for Puerto Rico.

Since *Tachornis* is a lowland swift and occurs in numbers only 110 km from Puerto Rico, it is perhaps surprising that it has not been sighted previously on the island. Such a water barrier should theoretically pose little problem to a strong-flying species with a range spanning several major and minor islands. It is possible that it occurs infrequently and has been overlooked in the past.

This sighting raises interesting questions in zoogeography and ecology: Why does only one species of swift occur regularly in Puerto Rico? Cuba, Jamaica, and Hispaniola, the three other Greater Antillean islands, each have three swifts (*Tachornis*, *Cypseloides niger*, and *Streptoprocne zonaris*). Moreover, six of the Lesser Antillean islands, all much smaller than Puerto Rico, each have two swifts. One large species (*Cypseloides niger*) occurs as a summer resident on each of the six islands, and one small species of South American origin occurs as a year-round resident on each, as follows: Guadeloupe, Dominica, Martinique, and St. Lucia (*Chaetura martinica*); St. Vincent (*Chaetura brachyura*); and Grenada (*Chaetura cinereiventris*) (Bond, *Wilson Bull.*, 60:207-229,

1948). In Puerto Rico only *Cypseloides niger* occurs; it is primarily a summer resident, being very rare in winter (Leopold, op. cit.; personal observation). Thus Puerto Rico is the only major island in the West Indies that lacks a substantial year-round swift population. Puerto Rico's location near the terminus of the normal routes of dispersion from either South, Central, or North America (see Lanyon, Bull. Amer. Mus. Nat. Hist. 136: 329-370, 1967) has certainly reduced the numbers of birds reaching it. Although Bond (1948, op. cit.) suggests that the dry islands of the northern Lesser Antilles, which are too small to maintain swifts, cannot act as stepping stones for the northward dispersal of these birds, one specimen of *Chaetura brachyura* exists from St. Croix (Leopold, op. cit.). Thus occasional dispersal may occur from the east. The present sighting documents dispersion from the west, and suggests that some ecological limitation may exist in addition to the island's isolation. Throughout its range *Tachornis* is closely associated with Royal Palms (*Roystonea* spp.), and an endemic species (*R. borinquena*) is widely distributed in Puerto Rico. Although it would appear to offer similar ecological conditions, important differences between this and other species could pass unnoticed. Unfortunately ecological studies of *Tachornis* and the other West Indian swifts are particularly lacking, so I can only speculate at this point that Puerto Rico lacks suitable ecological conditions for the birds once they do arrive.

I thank James Bond for his comments on the manuscript.—CAMERON B. KEPLER, Patuxent Wildlife Research Center, Puerto Rico Field Station, P.O. Box 442, Palmer, Puerto Rico 00721, 31 October 1970.

**Some spatial and temporal dimensions of kingbird foraging-flights.**—The Eastern Kingbird (*Tyrannus tyrannus*) characteristically feeds on flying insects, and remains perched until a potential prey is sighted. In the late summer and winter berries are added to the diet, but they too are taken in flight. This note describes some of the dimensions of foraging-flights in relation to prey categories. Birds were observed on open-habitat study plots in the southwest corner of Middlesex County, New Jersey, during July, 1970.

Only flights associated with feeding or attempted prey capture were considered (eliminating territorial pursuits, escapes, and flights related to maintenance behaviors). Foraging-flights were noted to comprise two distance sets—those greater than 40 feet (hereafter termed "Long Flights") and those less than 30 feet ("Short Flights"). All but a few of the 300 recorded flights could be assigned to one of the sets. A stopwatch analysis showed the Short Flight ( $n = 11$ ,  $\bar{x} = 2.82$ ,  $s = 1.17$ ) to be less than 5 seconds in duration and the Long Flight ( $n = 11$ ,  $\bar{x} = 10.02$ ,  $s = 3.39$ ) to be greater than 5 seconds. Further, Short Flights would end at the original (same) perch or a new perch with similar frequencies ( $n = 51$  and  $n = 69$  respectively, from a sample of 120), but Long Flights greatly increased the adoption of new perches ( $n = 68$  from a sample of 75). The feeding behaviors associated with different flight characteristics are described below. It will be seen that these foraging patterns can reflect relative prey sizes and distributions.

**New Perch-Long Flight.**—Most commonly it appeared that this flight pattern resulted from the pursuit of larger insects. The large prey size permitted distant sighting, and made the pursuit energetically worthwhile. After the capture there was not sufficient advantage in returning to the original perch. The pattern was also noted when adult birds made a capture and then continued in flight to their young (which were still being fed). Less frequently, the pattern occurred as a bird continued to pursue a missed prey, or made multiple captures on a single flight.