Flickers searched specific sections of the transect more than once during the 2-week feeding period. Attacks in these regions were focused predominantly on undisturbed holes. In five cases, however, strikes were made on damaged burrows that had shown signs of renewed larval activity.

Flicker capture rates varied from 0 to 100% among cicindelid larval classes (Table 1). The number of captures in each size category did not differ from the expected value ($\chi^2 = 4.64$, 3 df, $0.1 < P < 0.25$). Burrow depth was probably a major factor affecting the birds' foraging success. Average bill length, gape to tip, for four male and two female *Colaptes auratus* from the Pennsylvania State University collection was 3.73 cm. The flicker's range of feeding effectiveness may be increased as much as 5 cm beyond this point as a result of its extensible tongue (Short 1971). The mean depths of 1–1.5-mm and 2–2.5-mm diameter burrows placed larvae well within this attack distance (Table 1). The accuracy of the flickers on larvae in the 3-mm class is more difficult to explain but may have been related to sluggishness on the part of the insects, most of which had just reopened their holes following a period of summer diapause.

Birds have previously been noted as occasional predators on both ground-dwelling and arboreal tiger beetle larvae (Zikan 1929). The incidents described above marked the only period of woodpecker predation of cicindelid immatures at my study site from March 1977 to July 1980, although flickers were regularly seen in the area throughout the larval activity season. Perhaps increasing larval densities (two to three times as high in 1979 as in 1978) attracted the attention of the predators.

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Nocturnal Activities of Brazilian Hummingbirds and Flycatchers at Artificial Illumination

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Although twilight activities are common in Trochilidae, as in the Brazilian Ruby (*Clytolaema rubricauda*) and the Swallow-tailed Hummingbird (*Eupetomena macroura*), little is known about their nocturnal activities. Decker (1936, Aspectos biológicos da flora brasileira, São Leopoldo, Rotermund) reported (probably at São Paulo, Brazil) that flowers of the trumpetlily (*Datura suaveolens*), which blossom

mainly at night and are adapted for pollination by large moths, are also visited by hummingbirds between 2000 and 2200; the identity of the species and the presence of an artificial illumination are not mentioned.

Ruschi (1976, A necessidade de criação de novas áreas para a preservação de espécies raras e ameaçadas de extinção. Bol. Mus. Biol. Prof. Mello Leitão, Ser. Proteção No. 48; pers. comm.) observed that Sombre Hummingbirds (*Aphantochroa cirrhochloris*) came to feeders at the beginning of twilight when the common house lamps are lighted in Santa Teresa, Espirito Santo, Brazil (19°55′S, 40°36′W), but they did not touch the *Malvaviscus* flowers found in the same place. It must be remembered that twilight is very short in that latitude. Ruschi further reported that in the Parque Anhembi hummingbird aviary in São Paulo (23°32′S, 46°37′W), some species, such as the Planalto Hermit (*Phaethornis pretrei*), the Violet-capped Woodnymph (*Thalurania glaucopis*), and the Glittering-throated Emerald (*Amazilia fimbriata*), visited flowers of *Malvaviscus penduliflorum, Salvia splendens,* and various Acanthaceae that were exposed to fluorescent illumination.

We observed several cases of nocturnal activities of hummingbirds in Rio de Janeiro, Brazil (22°54′S, 43°15′W). In a garden at Ilha Governador, a Reddish Hermit (*Phaethornis ruber*) was seen visiting Liliaceae flowers at 2000 on 15 October 1972. It was already dark (sunset 1757), and the flowers were illuminated by the common lamps of the nearby house. Our other records are of Swallow-tailed Hummingbirds. Two individuals were seen at 0200 on 30 April (sunrise 0612) and one individual at 0120 on 20 November 1978 (sunrise 0500) in one of the least arborized districts of Rio (Leblon). The hummingbirds hovered around a mercury street lamp, alighting on the electric wires from which they called, thus attracting our attention. The birds then circled around the lamps, chasing each other and sometimes vocalizing.

At the same place we recorded two Swallow-tailed Hummingbirds on 11 April 1980 between 0145 and 0152 (sunrise 0605). The night was hot and dry. Perched on electric wires on both sides of the street, roughly 200 m from each other, they sang indefatigably. One of them visited the conspicuous red-and-white flowers of a *Pseudobombax* sp., the nectar of which was so abundant that it dropped plentifully when touched by hand. Some people working in the garages nearby told us that the hummingbirds appear there often between 0100 and 0230. Therefore, it was a regular phenomenon.

Finally, we report some incidental observations of the nocturnal activities of two flycatchers. In February 1967 at Barbacena, Minas Gerais, Brazil (21°14′S, 43°46′W, 1,200 m, cool climate), a Great Kiskadee (*Pitangus sulphuratus*) was hunting from 0330 to sunrise (approximately 0615) around a light post that had attracted insects. On several occasions in 1978, 1979, and 1980 in Rio (Lagoa Rodrigues de Freitas) we observed a Tropical Kingbird (*Tyrannus melancholicus*) that hunted insects in a brilliantly illuminated area between 2300 and 2400. The bird alighted on nearby trees, occasionally delivering its "siriri" call (not the morning song). Similar observations of Tropical Kingbirds were made by Nigel Smith (in litt.) in Amazonia.

The observations show how birds in the tropics (where in nature the daylength is constantly limited) can extend their feeding activities and even territory defense into a human-altered environment that provides strong artificial light. Calder (1975, Auk 92: 81) has recently shown that hummingbirds initiate and end their diurnal activities at a given light intensity, rather than at a given time, as might be expected. For the hummingbirds, which were already so much benefited by the feeders, artificial illumination may therefore extend their activity period significantly, especially in tropical areas.—*Received 3 October 1979, accepted 5 July 1980.*