

## OBSERVATIONS AND COMMENTS ON THE FEEDING BEHAVIOR OF *LEPTOPHIS* (REPTILIA, SERPENTES, COLUBRIDAE)

Oliver (1948:254) examined the stomach contents of most species of the Neotropical colubrid snake genus *Leptophis*. Of 106 food items recorded, 88 (83%) were hylid frogs. Semi-arboreal and arboreal hylids are nocturnal and crepuscular and Oliver puzzled over the predator-prey relationship between them and the diurnal *Leptophis*: the prey is quiescent by day and the predator active. This note indicates how *Leptophis* located its prey and suggests an adaptive advantage of this diurnal predator feeding on nocturnal prey.

Stuart (1935:50) found a *L. mexicanus* in Guatemala six ft above ground part way down a hole in a stump trying to secure a *Tripriion petasatus*. Slevin (1939:401) found the same species apparently foraging for food on the ground. The insular *L. mexicanus hoeveri* has been observed chasing *Anolis* on the ground (Henderson, 1976). Beebe (1946:32) observed a *L. ahaetulla* on the ground after it had caught a *Hyla* and five others were observed "hunting on the ground."

One of us (LGH) made a number of observations of the feeding behavior of *L. mexicanus mexicanus* at Tower Hill in Orange Walk District, Belize. *L. m. mexicanus* is primarily a bush and tree dweller, but it was occasionally observed on the ground. It was observed actively foraging in cocoanut palms at midday and in the afternoon. On one occasion, at 1300 h, a snake was attempting to adhere to a palm leaf and extract a *Smilisca baudini* from its diurnal retreat. On another occasion, at 2000 h and after dark, a *L. m. mexicanus* was seen in a rubber tree ingesting a *S. baudini*. Several observations were also made in the late afternoon and twilight: at 1600 h a *L. m. mexicanus* was observed on the ground swallowing a *Phrynohyas venulosa* and at 1830 h another was seen, also on the ground, ingesting a small *Bufo valliceps*. A snake, *Ninia s. sebae*, was observed being swallowed by a *L. m. mexicanus* during the day in leaf litter. In captivity this species took a variety of frogs and lizards. It was capable of locating stationary prey by olfactory cues and would touch the potential prey item with its tongue several times, frequently in the cephalic region, before grasping it.

These data suggest that *Leptophis* forages for prey by day, twilight, and occasionally after dark. Indeed, it seems unlikely that a diurnal predator would be able to locate nocturnal prey by any other means. *Imantodes cenchoa*, an arboreal nocturnal colubrid, apparently feeds frequently on diurnal *Anolis* lizards, but it, too, forages (Henderson and Nickerson, 1976). *Imantodes lentiferus*, on the other hand, might feed mainly on frogs and not forage (Henderson and Nickerson, 1976). Members of the colubrid genus *Oxybelis* are diurnal and feed primarily on diurnal prey, but they apparently do not forage for prey, they ambush it (Henderson, 1974:24; Henderson and Nickerson, in press). Snakes of the genus *Leptodeira* are nocturnal and feed primarily on anurans (Duellman, 1958:121) but we do not know if they are foragers or ambushers. Thus, the trend among these arboreal snakes is for those that share the same temporal niche as their prey to be ambushers while those that occupy a temporal niche different from their prey to be active foragers.

Oliver (1948:254) suggested "there may be possible advantages to a predator in locating its prey at a time when the latter is in a quiescent state and from which it emerges under a relative disadvantage in sensory efficiency as compared with that of the active predator." Although this is a plausible explanation, we feel that there is a more logical alternative. Most or all species of arboreal and semi-arboreal species of the nocturnal genus *Leptodeira* are frog predators, and most (or all) species of the arboreal genus *Imantodes* are frog predators also. *Leptophis* are frog predators, but they are diurnal. *Imantodes*, *Leptodeira*, and *Leptophis* are the most conspicuous (and probably the most common) arboreal Neotropical anuran frog predators and one or more species of each genus might occur sympatrically. *Leptophis*, by occupying a temporal niche different from *Imantodes* and *Leptodeira*, is able to occupy their same food niche and thereby alleviate possible competition.

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