LIFE HISTORY NOTES ON SOME PANAMANIAN SNAKES

OWEN J. SEXTON

Dept. of Zoology, Washington University, St. Louis, Mo.

and

HAROLD HEATWOLE

Dept. of Biology, University of Puerto Rico, Río Piedras, P. R.

ABSTRACT: Incidental y collected notes on various aspects of the life history of 15 species of Panamanian snakes, primarily from Darién and Barro Colorado Island, are presented.

INTRODUCTION

Information concerning the life history of 15 species of Panamanian snakes was collected during six recent trips to the Republic of Panama. This information, gathered during the course of another investigation, is presented here because of the lack of even scattered data on the life histories of most neotropical reptiles.

Most of the snakes were collected at three localities. The first was in Darien Province, 20-25 miles upstream from the town of Yaviza, in the vicinity of the mouth of the Canclón (= River, a tributary of the Chucunaque. The Canclón area is heavily forested except on the river banks which are inhabited by Choco Amerindians; modern exploitation is beginning to be felt. The dry season usually extends from about January until May. Breder (1946), Dunn (1942, 1949), Dunn and Bailey (1939), and Sexton *et al.* (1964) have reported upon the reptiles of this area. Our party first visited the Canclón site from May 28 until July 15, 1961. A second visit was made from December 22, 1961, until January 9, 1962, and a third from March 22 until April 4, 1962. A trip up the Chucunaque to the mouth of the Mortí River was made during the December-January trip.

The second region was the Canal Zone Biological Area (Barro Colorado), a hilltop left isolated as an island when Gatun Lake was formed during the construction of the Panama Canal. This location is in the Caribbean drainage and is more moist than the Darién site. We visited Barro Colorado from June 15 until August 10, 1962, from March 15 to April 1, 1963, and from June 6 until August 25, 1963. Many herpetologists have previously worked there.

The third region was in the Province of Panama. All collections were made in the immediate vicinity of our camp on the shores of the Silugandí River (= Chulugandi), at the junction of that river and the proposed route of the Panamerican Highway, east of Cañitas and Flor de Laguna, and upstream from the Curia Amerindian village of Majé. The site was heavily forested. Members of

Carib. J. Sci. 5 (1-2). March-June 1965.

our party were at this location from May 29 until July 9, 1962.

The source of the few snakes collected elsewhere in Panama are described under the annotations. Most specimens were preserved and donated either to the University of Michigan or to the University Puerto Rico. Dr. Charles Walker and the late Dr. Norman Hartweg of the former institution kindly identified them. The facilities of the Barro Colorado laboratory were readily made available to us by Dr. Martin Moynihan. Many of the snakes were caught by the following friends: Dennis Knight, Frank Torres, Robert Dressler, Norton Nickerson, Earl Meseth, Miguel Font, Giordano San Antonio, Audry Heatwole and Edward Ortleb. The collection was made during work on a project supported by the people of the United States of America (National Science Foundation G-14427).

ANNOTATIONS

BOA HORTULANA

Three adult specimens and one juvenile were collected near the mouth of the Canclón River. An adult female was taken at 1600, June 5, 1961, about 10 m above the water's edge in a tree providing heavy shade. The snake was evidently asleep and was coiled into a tight knot near the end of small branches overhanging the water. Its stomach contained no food; the skin was almost ready to be shed. The second *B. hortulana* was collected at midday on June 23, 1961, coiled in the branches of a tree overhanging the Chucunaque River. The snake was about 3 m above the water. Its stomach contained the remnants of a gravid *Basilicus basiliscus*. A third boa, collected at 2200, July 11, 1961, in a tree over the Chucunaque and a juvenile specimen (52 cm snout to vent) captured in the same area on January 6, 1962, both had empty stomachs.

OXYBELIS AENEUS

A clutch of 4 eggs was found in a depression in the leaf litter at the upper side of a large tree on a sloping hillside on July 1, 1961. The area was one mile upstream from the mouth of the Canclón River. The dimensions of the eggs were: 37 X 14.8 mm, 35.8 X 15.2 mm, 34.1 X 15.2 mm, 37.9 X 14.6 mm. The eggs were white with irregular brown stains and adhered to each other. One was opened and found to contain a well developed embryo with a total length of 22.1 cm. The remaining 3 eggs hatched on July 13, 1961. Two of the hatchlings were measured. Both were 37.4 cm in total length (22.6 and 22.9 cm snout to vent).

OXYBELIS BREVIROSTRIS

A gravid female 64.5 cm snout to vent was collected on a road passing through the edge of a cloud forest at Cerro Campana, Province of Panama, on March 18, 1963. The elevation was approximately 3300 ft. Dimensions of the 3 contained eggs were 29 X 9 mm, 28 X 10 mm, and 29 X 9 mm. They were in an early stage of development and shell had not formed.

DRYADOPHIS MELANOLOMUS

One specimen was captured at 2000, July 5, 1961, in the flood plain forest of the Canclón River where it was coiled up on a palm leaf about 1 m above the ground. The stomach contained an *Anolis limifrons* which had been marked previously with a bird-band 25 days before in an area 30-50 m away.

Two other individuals were collected in a zone of low grasses and herbs surrounding a Choco Amerindian hut at Canclón. An area measuring 12.5 X 4.8 m within this zone had been enclosed by a fence of mosquito netting 1 m tall with the bottom buried in the sand on July 6, 1961. All vegetation within the enclosure had been cut, examined for animals, and removed during the morning. The enclosure had then been periodically examined for other animals which had hidden in holes formerly filled by poles for Choco huts. As the area dried out, many amphibians and reptiles came up to the surface and were collected. One *D. melanolomus* was caught at dusk, 1800, on July 6 and another at 1400 of July 7. The stomach of the former was empty whereas that

of the latter contained one *Anolis limifrons,* a lizard typical of forested, not open, areas.

A female, 86.5 cm in body length, was captured on Barro Colorado Island on June 7, 1963. An egg of an *Anolis limifrons* was in the stomach.

LEIMADOPHIS EPINEPHALUS

Three females were collected on Barro Colorado Island. One, 39.0 cm in snout-vent length, was pursuing a *Bufo typhonius* over the forest floor at 1130 on June 22, 1962. This snake flattened the anterior 1/3 to 1/2 of its body when captured; we have since observed this behavior a number of times in this species. She contained 5 maturing eggs whose measurements were: 11.7 X 3.9 mm, 10.9 X 3.9 mm, 10.1 X 3.6 mm, 10.7 X 3.7 mm, and 7.8 x 3.3 mm. The second snake was captured at 1630 on June 23, 1962, as it was swallowing a small *Bufo marinus (4.3* cm snout-vent). The remains of an unidentified frog were in the stomach. This snake had a body length of 41.5 cm and contained 7 eggs with the following measurements: 19.5 X 7.2 mm, 19.7 X 7.5 mm, 18.9 X 7.0 mm, 19.7 X 7.7 mm, 18.1 X 8.2 mm, 20.0 X 7.7 mm, 19.4 X 7.1 mm. A third female, with a body length of 54.8 cm had ten eggs whose measurements were: 11.0 X 5.3 mm, 12.4 X 5.3 mm, 10.8 X 5.0 mm, 11.3 X 5.1 mm, 11.8 X 5.0 mm, 11.3 X 5.2 mm, 12.0 X 5.8 mm, 10.1 X 5.0 mm, 12.3 X 5.0 mm, 10.3 X 5.2 mm. She was captured on July 29, 1962.

A male, 33 cm in snout-vent length, was captured on Barro Colorado at 0800, June 7, 1963. It contained two food items, a *Bufo typhonius* with a body length of 3.3 cm and an *Eleutherodactylus fitzingeri* with a length of 4.4 cm.

CLELIA CLELIA

One specimen was collected within the enclosure described in the *Dryadophis* section at 1030 on July 7, 1961, at the Canclón camp. It contained the remains of a teid lizard, probably *Cnemidophorus lemniscatus lemniscatus* which is the common teid found around such sites (23 were captured within the same enclosure). The snake's head was black dorsally with a broad white occipital band. The body was scarlet except that the posterior part of each scale was tipped with black .

STENORRHINA DEGENHARDTII

A snake of this species, 24.3 cm in body length, was captured in the forest at the Silugandi River site. It had one spider and one orthopteran in its stomach.

PSEUSTES POECILONOTUS

A snake of this species was caught in a bird pen on Barro Colorado Island after it had eaten seven eggs of a captive bird. A second individual, also from Barro Colorado, had an empty stomach. Color notes taken from the latter while it was living were: Labial region, throat and anterior one-fourth of venter orange with black blotches. Dorsum dark brown with broken bands of red. Iris brown.

LEPTOPHIS AHAETULLA

A gravid female, 74.5 cm in body length and captured on the laboratory grounds at Barro Colorado Island on July 27, 1962, contained 3 eggs (23.9 X 6.8 mm, 23.2 X 7.0 mm, and 27.6 X 7.0 mm). When disturbed this snake opened its mouth widely, showing the pinkish lining, and struck in the direction of the offender. Upon further disturbance it either closed its mouth and started to crawl away, or continued striking with widely opened mouth but without actually biting. At most it struck the target with its chin or snout. A second specimen was seen about 1.8 m up in vegetation as it was stalking an *Anolis limifrons.*

DENDROPHIDION PERCARINATUS

Four individuals were captured near the Canclón site. Two had empty stomachs and were taken at 1930, June 11, 1961, and on January 7, 1962, respectively. A third was captured at 1100, June 16, 1961, under a pile of debris and contained a few unidentifiable bones. The stomach of the fourth one,

collected at 1700 on July 12, 1961, contained a frog of the genus *Leptodactylus*.

Three snakes were collected on Barro Colorado. One, collected on June 19, 1963, at 1100, was 19.5 cm in length and had an *Eleutherodactylus diastema* 1.6 cm long in its stomach. The second snake contained an *Eleutherodactylus* sp. The prey was 0.5 cm long and the snake 21.5 cm. The third individual had an unidentified frog in its stomach when captured on March 27, 1963. The body length of the snake was 28.5 cm, that of the frog 3.5 cm.

CHIRONIUS CARINATUS

Two were collected at the mouth of the Canclon River, one at 0830 on June 4, 1961, and the other on December 29, 1961. A third specimen was taken by the edge of a porch in the village of Yaviza, Darién, at 1400, May 23, 1961. The stomachs of the first and last were examined and were both empty. The notes from the June specimen on colors subject to fading in preservative were: bottom two rows of dorsal scales and lateral edges of ventrals golden, fading to yellow on tail. A broken pale yellow mid-dorsal stripe.

SPILOTES PULLATUS

Workmen on Barro Colorado killed a small specimen with a snout-vent length of 42 cm. Within its stomach was a small rodent with a body length of approximately 7.0 cm.

LEPTODEIRA SEPTENTRIONALIS

A male, captured on vegetation overhanging a pond on Barro Colorado Island at 2230, June 6, 1963, had the remains of a *Hyla rufitela* in its stomach; the snake was 44.5 cm long in body length.

BOTHROPS ATROX

A small, inactive fer-de-lance was collected where it was coiled on the leaf litter beneath a shrub about 8 m from the Chucunaque River at the Canclón site at 0830 on June 4, 1961. On December 23, 1961, a female containing 32 ova was taken near the mouth of the Canc1on River. Hair was found in the stomach. Another individual taken near the same site on December 22, 1961, had an empty stomach. At 1300 on March 24, 1962, in the Canclón valley, an inactive *B. atrox* was found 0.3 m above the ground, coiled up in dead leaves accumulated at the base of some sprouts cm a large tree. Although accidentally touched by one of us, the snake did not strike. On June 18, 1962, at Barro Colorado Island a small fer-de-lance, 34.7 cm in body length was found at 1425 coiled up under a log measuring 120 X 18 cm. The tip of the tail was yellow. The snake was inactive; its stomach contained one *Anolis limifrons*. Another specimen, 160 cm snout to vent was taken at 1700, January 3, 1962, swimming in the Chucunaque just below the mouth of the Tuquesa River. Its stomach was empty.

The inactivity of individuals collected in the daytime support the general impression obtained by other investigators, as well as by one of us (Sexton 1957) that this species is nocturnal.

It would seem worthwhile at this time to point out that in the 1957 paper mentioned above, *Bothrops atrox* and *B. venezuelae* were probably confused. It would seem most likely that *B. venezuelae* and juvenile *B. atrox* are found sleeping along the mountain streams at Rancho Grande, Venezuela, during the day and that both eat small frogs, particularly *Prostherapis trinitatis*.

MICRURUS NIGROCINCTUS

An individual was coiled up in a path through second-growth forest near the Canclón site on the morning of June 20, 1961. Its stomach was empty.

A second specimen was observed actively crawling on the ground next to a fallen log on Barro Colorado Island at 0950 on July 24, 1962. The snake was clearly visible on the forest floor.

A third *M. nigrocinctus*, 78 cm in body length, was captured on leaf litter by the edge of a path on Barro Colorado Island at 1130 on June 11, 1963. The stomach was empty.

These observations of coral snakes in the open during the day suggest that they are more

diurnal than has sometimes been supposed (Dunn 1954, Brattstrom 1955). Kaufmann's (1962) observation of coatis sniffing at a *M. nigrocinctus* and then ignoring it, also suggests that the *Micrurus* type pattern might well function as an aposematic one when these snakes are exposed on the ground during the day. However, arm chair speculations about the value of this coloration should be replaced by experiments made under day and night conditions.

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