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wards the fleeing lizard and attempted bite by the snake. Both animals paused, the lizard fled again, and this time the snake successfully bit and held the lizard and a struggle ensued. The snake then responded to my movements by retreating, but it always remained within the thicket. At distances greater than one meter, the snake did not attempt to escape and I could freely photograph the animals.

Figure 1. Striped whipsnake attempting to subdue an Arizona alligator lizard. The lizard is in a "loop" position, biting its tail.

During the first successful bite or ensuing struggle, the snake bit the lizard's neck, the lizard coiled and bit his own tail (ca. 1 cm from the vent) and maintained this 'loop' position (Fig. 1) during the 15 min observation period. Since my presence clearly disturbed the snake and sacrificing my marked lizard would eliminate a lizard from my study population, I terminated the interaction. After releasing the lizard, both animals remained motionless within 50 cm of each other. A few seconds later, the snake tongue-flicked and moved away. The lizard did not move until disturbed again.

This introduction demonstrated two behaviors: 1) striped whipsnakes will attack and attempt to eat Arizona alligator lizards; and 2) *E. kingi* use a 'loop' posture when attacked by a snake. Carpenter (1977. *In.:* C. Gans and D. W. Tinkle (eds.), Biology of the Reptilia, Vol 7, Ecology and Behavior A. pp 335-554. Academic Press, New York) has used literature references to identify the 'loop' posture in four lizard families: Gekkonidae *(Tarentola delalandi);* Cordylidae, *(Cordylus cataphractus* and *C. cordylus);* Varanidae, *(Varanus* sp.); and Anguidae, *(Ophisaurus* sp.). Compton (1933. Copeia 1933:225) also identified this behavior in the anguid *E. multicarinata.*

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EUMECES SEPTENTRIONALIS OBTUSIROSTRIS (Southern Prairie Skink). **REPRODUCTION.** Breckenridge (1943. Amer. Midl. Nat. 29:591-606), Clarke (1955. Herpetologica 11:161-164) and Gehlbach and Collette (1959. Herpetologica 15:141-143) provided information on aspects of the reproductive biology of the northern prairie skink (*E. s. septentrionalis*) from Texas. Here I report data on a clutch and hatchlings of this taxon from the state.

On 16 May 1987 an adult female (SVL = 61 mm) was excavated while guarding a clutch of 10 eggs from a shallow burrow under a decomposing pile of *Juniperus ashei* in Hood County, 18.5 km SE Granbury off FM 2174 (Hinton-Parker Ranch). At necropsy, she was found to contain an additional egg in the oviduct which suggests recent clutch deposition. While transferring eggs, two were damaged and the remainder (N=8) were measured (L x W; range 10.1-10.2 x 7.4-8.1, $\overline{X} \pm$ SEM = $10.12 \pm 0.02 \times 7.72 \pm 0.06$ mm) and placed in a small container of damp vermiculite and incubated at room temperature (ca. 23° C). Hatchlings emerged following an incubation period lasting 37-38 days on 21 and 22 June 1987 and measured 24-26 (25.6 ± 1.8) mm SVL. In addition, there was evidence of post-natal molting. Tail coloration was similar to other species of *Eumeces* in being bright violet-blue. The dorsum was uniformly dark brown to black with a light middorsal and two dorsolateral stripes. Head pattern consisted of light lines and orange-red coloration bordering the labial scales. The gular region was light cream and the venter was light grayish brown.

Sabath and Worthington (1959, op. cit.) collected a female skink (SVL = 60 mm) in Harris County that deposited a clutch of nine eggs in late May with average measurements of 11.1 x 6.4 mm. I collected another female *E. s. obtusirostris* (SVL = 69 mm) on 6 June 1987 from the same locale reported herein which did not contain eggs and evidently had previously deposited a clutch.

In conclusion, depending upon geographic locality, *E. septentrionalis* may deposit clutches from mid-May through mid-July with number of eggs/clutch varying from six (usually 10) to rarely as high as 18 (Fitch 1970. Univ. Kansas Mus. Nat. Hist. Misc. Publ. 52:1-247). Incubation period is variable with temperature and can last from 37 to 52 ($\overline{X}$ = 44.3) days in captivity (Breckenridge 1943, op. cit.; McAllister, this report).

Voucher specimens are deposited in the Arkansas State University Museum of Zoology (ASUMZ 8181-adult, 8182-8189-hatchlings).

I thank C. Russell, E. W. Lewis, W. Parker and J. Hinton for allowing me to collect on their properties and the Texas Parks and Wildlife Department for Scientific Collecting Permit SP044-1.

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SERPENTES

DRYMOBIUS MARGARITIFERUS (Speckled Racer). **REPRODUCTION.** This species is distributed from the United States to South America (Peters and Orejas-Miranda 1970. Catalogue of Neotropical Squamata. Part I: Snakes. Bull. U.S. Natl. Mus. 297:(1)397). It is one of the most abundant snakes in Costa Rica, and is usually found in regions below 1200 m.

Two clutches of eggs from two *D. margaritiferus* were collected by the authors at San José Province, Dulce Nombre de Coronado (Female No. 1) and San José Province, Salitrales de Puriscal (Female No. 2). Female No. 1 was taken on 27 March 1983 and female No. 2 on 10 February 1985. The specimens had TLs of 639 mm and 738 mm and SVLs of 447.3 mm and 516.6 mm, respectively. Both have been deposited in the collection of the Instituto Clodomiro Picado, Universidad de Costa Rica and have museum numbers MICP-772 and MICP-773.

The snakes were kept in plastic boxes and provided with water. A clutch of 5 non-adherent eggs from Female No. 1 was found on 29 March 1983 and a clutch of 4 non-adherent eggs from female No. 2 was found on 19 February 1985. Measurements and masses of the two clutches are shown in Table 1. Eggs were incubated on moist cotton in a 500 ml beaker. Ambient humidity was 70%. Incubation temperatures for clutch No. 1 ranged from 23.5-28.0° C daytime to 19.0-22.5° C nighttime. Incubation temperatures for clutch No. 2 ranged from 22.0° C daytime to 20.5-24.0° C nighttime.

Clutch No. 1 hatching began on 31 May 1983 and ended on 2 June 1983 for an incubation period of 64-66 days. Clutch No. 2 hatched on 28 April 1985 after incubating 68 days. Neonate sex ratio for clutch No. 1 was 4.1. Sex ratio for clutch No. 2 was 2.2. Lengths and masses for all neonates are listed in Table 1. All neonates had similar diffuse color pat-

Table 1. Reproductive Data of *Drymobius margaritiferus**

Oviposition	**Clutch #1 (5 eggs) (29 March 1983)**	**Clutch #2 (4 eggs) (19 February 1985)**
Incubation Period	64 - 66 days	68 days
Hatching Date	1 - 3 June 1983	28 April 1985
Egg Lengths (mm)	36.2 ± 2.1 (34.1-38.2)	35 ± 2.5 (32.0-37.8)
Egg Diameters (mm)	54.4 ± 0.2 (51-56)	52.2 ± 0.9 (51-53)
Egg Masses (g)	5.08 ± 1.7 (3.4-7.2)	6.1 ± 0.2 (5.8-6.3)
Neonates SVL (mm)	171.2 ± 1.3 (150-183)	161.5 ± 1.7 (140-180)
Neonate TL (mm)	258.8 ± 1.7 (230-273)	248 ± 2.4 (225-275)
Neonate masses (g)	4.98 ± 0.3 (4.5-5.4)	4.85 ± 0.4 (4.3-5.1)

* Results are presented as mean ± 1 S.D.; range.

terns characterized by irregular yellow bands on a dark background in the anterior dorsal region and a vertebral line and bands, posteriorly. There was no evidence of sexual dichromatism.

Fitch (1970. Reproductive cycles of lizards and snakes. Univ. Kansas Mus. Nat. Hist. Misc. Publ. 52:1-247.) noted gravid females in April, July and August whereas we have observed them in February-May. The largest clutch observed by us was 8. We have also observed neonates in March-July and September. These data indicate that reproductive activity in this species may be aseasonal.

We thank José María Gutiérrez for this assistance in the writing of this article.

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TYPHLOPS MONENSIS (Mona Island Blind Snake). **PREDATION.** An adult *Typhlops monensis* (ca. 2.4 g; ca. 175 mm SVL) was recovered from the bill of a snowy egret, *Egretta thula*, at Sardinera Beach, an altered portion of southern Mona Island, Puerto Rico. The snake was recovered after I pursued the bird for two minutes; the bird then dropped the specimen to the grass. This beach has more mesic and introduced vegetation than the rest of the island. The bird was discovered on 21 July 1986 at 1544 h at a shady location covered sparsely with grass, elevation ca. 5 m, on a partially cloudy day. The snake showed evidence of being bitten at both ends. The head was crushed, and portions of the body had lacerations probably caused by bites. The specimen has been deposited in the Museum of Biology of the University of Puerto Rico at Rio Piedras, receiving the catalog number UPR-5739.

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BOOK REVIEWS

Introduction to the Herpetofauna of Costa Rica/Introduccion a la Herpetofauna de Costa Rica, by Jay M. Savage and Jaime Villa R. 1986. Society for the Study of Amphibians and Reptiles, Contributions to Herpetology, Number 3, viii + 207 pp., 15 figs. color frontispiece, dedicatee photograph; clothbound. $30.00, including shipping charges.

This document is the latest incarnation in a series of preliminary treatments of the herpetofauna of Costa Rica. This, the fourth edition, is the first to be published in both English and Spanish and to be coauthored (the first three editions are in English and authored solely by Jay Savage). The current edition is intended to be another step leading to an eventual full-scale treatment of the Costa Rican herpetofauna by Savage.

The book consists of six major portions, viz.: (1) the introductions to the current editions and the 1980 edition; (2) a distributional checklist; (3) a bibliographic index; (4) the keys for identification; (5) an annotated bibliography; and (6) a scientific name index. These sections are preceded by an attractive photograph of the spectacular anuran *Agalychnis calcarifer* and a dedication of the book to *el sabio* ("the sage"), Rafael Rodriguez C., longtime director of the Department of Biology of the University of Costa Rica.

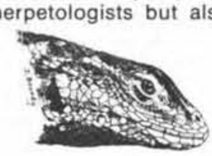
Some of the book's sections require comment. The distributional checklist utilizes a set of nine geographic areas to compartmentalize the distributions of the Costa Rican amphibians and reptiles. Any arrangement of this nature is bound to have its limitations, as the authors freely acknowledge, but it does serve to compress a mass of distributional data into a small space (15 pp.).

The bibliographic index consists of a series of recent references (since 1950) to the Costa Rican herpetofauna keyed to taxa at various levels and provides "an entry into the extensive literature" on the subject. Systematic papers are emphasized, especially those that will assist with identification.

The keys for identification, which comprise the bulk of this work (155 pp.), are written for taxa at all levels from the class to the species. Happily, the authors avoid the embranglement represented by the subspecies category. The keys are written using features not likely to be affected by injury or preservation. In most cases, where colors are diagnostic and affected by preservation, appearance both in life and in preservative are indicated. Where only color in life is given, other unaffected characteristics are accorded preference. Clear, generally effective illustrations of diagnostic features precede the groups of keys to which they apply.

The annotated bibliography consists of 238 references, including those cited in this work and other key publications. Many of the citations are annotated bilingually, especially when the title is not entirely self-explanatory of content.

This work is a welcome addition to the literature on the Central American herpetofauna for a number of reasons. First, it provides a summarization, preliminary and limited in scope though it may be, of the Costa Rican herpetofauna, as the authors note, "the richest and most diverse in Central America." Savage and Villa list 150 species of amphibians and 212 of reptiles for Costa Rica. The total figure of 362 is up 14 species from that indicated in the first (1973) edition. Summarizations such as this one provide base-line data of interest not only to professional systematic herpetologists but also to wildlife agencies and conservation organizations which are involved in developing programs of management and protection.



The bilingual text signifies the recognition that Spanish is the mother tongue of Costa Rica and that the utility and appeal of the work is considerably heightened by its presentation in two of the three most widespread languages in our hemisphere. I can only hope that the appearance of the current work will help to initiate a trend in bilingual publishing in our field, a trend which will only help to promote cooperative efforts between North- and Latin Americans and underscore our commonality of interest and purpose. The fact that Savage is from the U.S. and Villa from Nicaragua lends further felicity to the project.

An important aspect of such work which remains hidden in the published account is the immense amount of back-breaking and exhausting labor that goes on during the field work that provides the data base for such an effort. Systematic field biology has a much less glamorous reputation than does high-tech laboratory-based research. But those who meet the creatures on their own ground need to be accorded the respect due to people who, in the pursuit of knowledge, will submit themselves for weeks and months on end to the encumbrances and hazards of field work in the tropics. As one of my colleagues who works in a troubled area in Latin America recently told me, "When I'm in the field, I am often running scared."

In attempting to work with some of the keys in this work (especially the generic key to the snakes), I experienced some difficulty and confusion in running through them occasioned by the use of multiple pathways in the key to reach the same taxon. This device (as opposed to keying difficult genera out at different points) necessitates the writing of confusing couplets. For example, with couplet 15 of the snake generic key (single vs. paired prefrontals), both sides will eventually send the user to couplet 63 where once again a decision has to be made about the prefontal condition. It would have been helpful to have notified the user in the introduction to the keys that such a device is utilized or to dispense with it altogether in favor of the more traditional device of keying out the same genus at different points.

To increase the utility and appeal of the work, especially to non-herpetologists, it would have been helpful to include a glossary of technical terminology to supplement the diagrams preceding the keys.

Beyond those minor criticisms, I am pleased to see this effort made to provide information about the Costa Rican herpetofauna to the *costarricenses* and other Spanish-speaking Latin Americans. Attempts such as this one to build bridges of understanding between our two cultures represent a vital step as we struggle to salvage something of the incomparable diversity of life in the American tropics.

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