

STUDIES ON THE FAUNA OF CURAÇAO AND OTHER
CARIBBEAN ISLANDS: No. 165

A REVIEW OF THE HISPANIOLAN COLUBRID
SNAKE GENUS *IALTRIS*

by

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Of the four endemic Hispaniolan genera of colubrid snakes, the least known is *Ialtris* Cope. Two species of *Ialtris* are recognized, each monotypic – *dorsalis* Günther and *parishi* Cochran. Neither has been commonly collected. COCHRAN (1941: 375) listed 12 specimens of *I. dorsalis* in American collections and presented data from five specimens in the British Museum and the Hamburg Museum. *I. parishi* has been known only from the holotype.

Our interest in *Ialtris* stems from a variety of sources. First, collections made by the senior author in Haiti and the República Dominicana since 1962 and latterly under the sponsorship of National Sci-

ence Foundation grants GB-7977 and B-023603 have included a few specimens of *Ialtris*. In addition, collections at the Museum of Comparative Zoology (Harvard University) made under NSF grant GB-2444 to ERNEST E. WILLIAMS likewise have included some *Ialtris*. Thus there has been a gradual increase of specimens of the genus from these two sources. Secondly, C. RHEA WARREN has been active in the past few years on the Haitian islands of Gonâve and Tortue and at both sites he secured *Ialtris*. Most remarkably, he took a series of *I. parishi* on Ile de la Tortue, a locality far removed from the type-locality of the species on the southern Tiburon Peninsula in Haiti. Thirdly, the collections made by the senior author include two specimens of a new species of *Ialtris*. A third specimen of this species was taken in 1974 by the party of FRED G. THOMPSON of the Florida State Museum. Finally, MAGLIO (1970), in his discussion of the affinities of the Antillean "xenodontine" snakes, had relatively little to say about *Ialtris* and its relationships to other Antillean colubrids. All these facts suggested to us that perhaps this is the time to review what little is known of *Ialtris*, if for no other reason than our need for comparative data on *parishi* and *dorsalis* in respect to the description of the new taxon noted above.

Accordingly, we have borrowed all specimens of *Ialtris* of which we are aware. Although we examined 62 specimens, this number is insufficient to allow us to answer many questions which have arisen in the present study. We do feel, however, that we can now present a much more cogent picture of *Ialtris* than has been previously available.

We wish to thank the following persons for allowing us to examine material in the collections over which they have charge: RICHARD G. ZWEIFEL, American Museum of Natural History (AMNH); ALICE G. C. GRANDISON and A. F. STIMSON, British Museum (Natural History) (BMNH); HYMEN MARX, Field Museum of Natural History (FMNH); WALTER A. AUFFENBERG, Florida State Museum (UF/FSM); WERNER LÄDIGES, Universität Hamburg Zoologisches Museum (UHMZ); ERNEST E. WILLIAMS, Museum of Comparative Zoology (MCZ); CHARLES F. WALKER, Museum of Zoology, University of Michigan (UMMZ); the late JAMES A. PETERS and GEORGE R. ZUG, National Museum of Natural History (USNM). In addition, we have examined specimens taken by the senior author and his parties and now in the Albert Schwartz Field Series (ASFS) and the Louisiana State University Museum of Zoology (LSUMZ). Through the courtesy of Drs. LÄDIGES, PETERS, WILLIAMS, and ZUG, and Miss GRANDISON and Mr. STIMSON, we have examined the types of all

names associated with *Ialtris*, and we are especially grateful to these curators for allowing us to borrow such valuable material.

We wish to acknowledge with gratitude the assistance offered the senior author by the National Science Foundation to allow him to carry out his field work in Hispaniola. The companionship of RONALD F. KLINIKOWSKI, MARK D. LAVRICH, DAVID C. LEBER, GARY C. MOSELY, and RICHARD THOMAS made much of the field work very pleasant, and their efforts have resulted in securing what few specimens of *Ialtris* have accumulated in the ASFS. Finally, the ASFS and MCZ material of both *dorsalis* and *parishi* from Ile de la Tortue is due to the efforts of C. RHEA WARREN, and we are very grateful for his activity on our behalf. RICHARD THOMAS and FREDERICK W. WAGNER critically read portions of the manuscript and we appreciate their constructive comments. The very fine hemipenis drawings are the work of Dr. ALEXANDER VARKEY. Photographic assistance was kindly provided by Dr. RICHARD M. BLANEY and Mr. MICHAEL TURNER.

METHODOLOGY

Ventral scales were counted in the manner proposed by DOWLING (1951). Subcaudal scale counts do not include the terminal spine; the tail is incomplete in a large number of specimens. Supralabials, infralabials, loreals, preoculars, postoculars, and temporals were counted on each side of the head. Snout-vent length and tail length (where complete) were measured in millimeters. Head length constituted a straightline measurement from the most anteromedian point on the rostral to the angle of the jaw (formed internally by the posterior terminus of the compound bone). Dorsal scale rows were counted at the levels of the fifth ventral anteriorly, of the 85th ventral (*circa* midbody), and five ventrals anterior to the vent posteriorly. In *Ialtris parishi* the number of pale vertical bars or blotches was counted, and in *I. dorsalis* the number of anterior dark blotches was recorded.

TAXONOMIC HISTORY

The name *Ialtris* was proposed by COPE (1863) to include *I. vultuosa* (syntypes, MCZ 3600-2 specimens) from near Jérémie, Département du Sud, Haiti. *I. vultuosa* was later considered by BOULENGER (1896: 137) to be a synonym of *Philodryas dorsalis* Günther (1858), a name based upon a specimen from "Santo Domingo" (as

the island of Hispaniola was known at that time); the holotype is BMNH 1946.1.2.77.

GÜNTHER (1862) named *Dromicus mentalis* (holotype, BMNH 1946.1.9.34) from an unknown locality. Later, WERNER (1909) described *Dromicus w-nigrum* based on three syntypes supposedly from Port-au-Prince, Département de l'Ouest, Haiti, and Sánchez, Samaná Province, República Dominicana (*vide* COCHRAN, 1941: 375). Only two of these syntypes (UHZM 3169 and UHZM 3425) are extant; the latter specimen is labeled as having been taken at Port-au-Prince, but the former is labeled merely as "Westindien" without further provenance. Both *mentalis* and *w-nigrum* are currently regarded as synonyms of *dorsalis*.

COCHRAN (1932) named *Ialtris parishii* from a single specimen (USNM 80773) collected 10 miles east of Baradères, Département du Sud, Haiti. There is no question of the distinctness of *parishii* from *dorsalis*. The third species, which we name herein, occurs in extreme southwestern República Dominicana, where it is known from near Enriquillo, from near Las Mercedes, and from Barreras, in Pedernales and Azua provinces, respectively.

Ialtris Cope

Ialtris COPE, 1863, Proc. Acad. Nat. Sci. Phila. 14: 73. Type-species: *Ialtris vultuosa* Cope (= *Philodryas dorsalis* Günther) by monotypy.

DEFINITION: Moderately large (males to 905 mm, females to 990 mm snout-vent length) colubrid snakes with 19 scale rows at mid-body; 163–191 ventrals and 77–115 paired subcaudals in males, 160–192 ventrals and 57–109 subcaudals in females; dorsal scales smooth, with two apical pits; anal divided; head scutellation of the normal colubrid type; nasal entire; loreal single; one preocular, usually two postoculars; temporals 1 + 2; supralabials usually 7, infralabials usually 9; dorsal pattern variable (both between and within species), varying from unicolor brown to tan to pale olive or gray dorsally with a series of paired or single black blotches anteriorly grading into a more or less unicolor or dark-and-light speckled or mottled dor-

sum, or with a brown to reddish brown dorsum with 39 to 48 light vertical "bars" on the sides and tail; head essentially patternless but with a prominent dark-and-light vitta above the supralabials, or marked with a black W posteriorly with a median extension along the parietal suture, expanding on the frontal and supraocular scales; ventrals either essentially the same color as dorsum or lighter (at least anteriorly), with scattered black spots extending onto the throat and chin, or with a series of black blotches forming a pair of ventral lines, or patternless; pupil circular; hemipenes bilobed with divided sulcus, flounced apically, spinose proximally; postdiastemal maxillary teeth enlarged and grooved. Other osteological data are discussed in detail elsewhere in this paper.

Ialtris dorsalis Günther

Philodryas dorsalis GÜNTHER, 1858. Cat. colubrine snakes Brit. Mus.: 126.

Dromicus mentalis GÜNTHER, 1862. Annals Mag. Nat. Hist. (3) 9: 128.

Ialtris vultuosa COPE, 1863. Proc. Acad. Nat. Sci. Philadelphia 14: 73.

Dromicus w-nigrum WERNER, 1909. Jahrb. Hamburg. Wiss. Anst. 26: 222.

HOLOTYPE: BMNH 1946.1.2.77. "Santo Domingo" (= Hispaniola); here restricted to the vicinity of Port-au-Prince, Dépt. de l'Ouest, Haiti.

DEFINITION: A species of *Ialtris* characterized by having 179–191 ventrals and 99–115 subcaudals in males, 180–192 ventrals and 98–109 subcaudals in females (no sexual dimorphism in scutellation); an extremely variable dorsal pattern, ranging from a very dark dorsum because of extensive black pigmentation, to an olive or gray dorsum with prominent single or paired black blotches anteriorly and salt-and-pepper black and yellow posteriorly; the head with a prominent black W, the arms of the W beginning behind the eyes and extending onto the neck, the angulate central portion of the W extending anteriorly between the parietal scales and with an accessory transverse bar on the frontal and supraoculars (see Fig. 22); the venter varying from bluish gray to gray or brown, with or without dark markings on the anterior portion, chin, and throat.

DISTRIBUTION: Hispaniola, including the satellite islands of Ile-à-Vache, Ile de la Tortue, and Ile de la Gonâve. The species apparently is most abundant on the

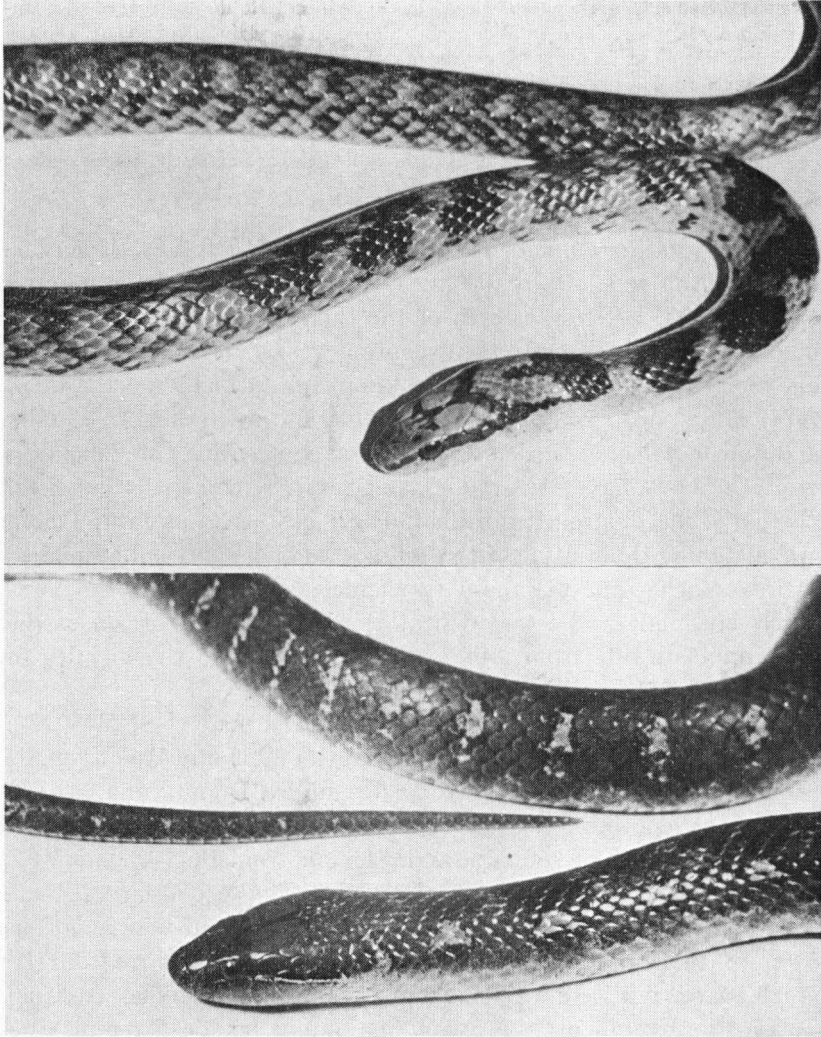


Fig. 22. Comparison of head shape and dorsal pattern of living specimens of *Ialtris*; above - *I. dorsalis* (LSUMZ 22072), below - *I. parishi* (ASFS V15073). Photographs from kodachromes by R. M. BLANEY.

Tiburon Peninsula in Haiti and Ile de la Gonâve and Ile de la Tortue; it is unaccountably rare north of the Cul de Sac - Valle de Neiba plain in both Haiti and the República Dominicana, where it is known only from near Limbé and Cap-Haïtien, Dépt. du Nord, Haiti, and only from Sánchez, Samaná Province, near Jayaco, La Vega Province, and near Tenares, Duarte Province, in the República Dominicana. Altitudinal distribution is from sea level at many localities to about 3000 feet (1000 meters) at Thiotte in the Massif de la Selle and Tardieu in the Massif de la Hotte, both in Haiti.

VARIATION. For convenience, the sample of *Ialtris dorsalis* may be divided into seven lots: 1) specimens from the historical north island (*sensu* WILLIAMS, 1961; north of the Cul de Sac - Valle de Neiba plain); all from Haiti with the exception of one snake from Sánchez, one from Jayaco, four from near Tenares, and including the holotypes and syntypes of *dorsalis*, *mentalis*, and *w-nigrum*; five males and nine females; 2) Ile de la Tortue; three males and three females; 3) Ile de la Gonâve; two males and seven females; 4) the distal portion of the Tiburon Peninsula in Haiti, east as far as Camp Perrin and including the syntypes of *vultuosa*; two males and eight females; 5) Ile-à-Vache; one male and two females; 6) Península de Barahona; one male and two females; 7) the proximal portion of the Tiburon Peninsula from Miragoâne in the west to the vicinity of Saltrou in the east; four males and one female.

Size. The largest snakes of each sex are a male (USNM 80837) from Ile-à-Vache with a snout-vent length of 905 mm, and a female (ASFS V20470) from near Jayaco, República Dominicana, with a snout-vent length of 990 mm. A Gonâve female (MCZ 86285) has a snout-vent length of 950 mm, and a female from Ile-à-Vache (MCZ 37682) has a snout-vent length of 920 mm. The second largest male is a north island specimen (FMNH 5961) with a snout-vent length of 840 mm. In general, the largest specimens of both sexes are from the north island and Ile-à-Vache, whereas the smallest snakes are from Tortue (maximum male 715 mm, maximum female 558 mm) and from the Península de Barahona (maximum male 685 mm, maximum female 780 mm), although in the latter instance and in other samples relatively few specimens are available.

There are three juveniles available. MCZ 38279 from Tardieu has a snout-vent length of 167 mm and a tail length of 70 mm; it is a female, and the umbilicus lies on ventrals 158 to 161. MCZ 86286

from Gonâve has a snout-vent length of 225 mm and a tail length of 88 mm; it, too, is a female with the umbilicus on ventrals 158 to 161. ASFS V25293 from Castillon has a snout-vent length of 320 mm and the tail is incomplete; it is a female with the umbilicus on ventrals 160 to 162.

Ventrals. The ventrals range from 179–191 in males and 180–192 in females. The low extreme in males occurs in a specimen presumably from the north island (BMNH 1946.1.2.77, holotype of *dorsalis*) and in the single Ile-à-Vache male (USNM 80837). The male upper extreme is from a proximal Tiburon specimen (MCZ 25561) from Miragoâne. The low female ventral count is from a Gonâve snake (MCZ 61038) and the high female count occurs on two snakes: one from Gonâve (MCZ 61039) and one from Ile-à-Vache (ASFS X3583).

The range of variation in ventral scales is so small (13 scales in each sex) and the sample sizes are so restricted, that no meaningful generalizations can be made about interpopulation variation in this feature. The fact that Gonâve specimens set both parameters for female ventral counts probably indicates that no significant geographic variation in ventral number exists.

Subcaudals. So many specimens of *Ialtris dorsalis* have incomplete tails that this character is even less useful as far as interpopulation variation is concerned than is the ventral count. Subcaudals in males (11 specimens) vary from 99–115, in females (13 specimens) from 98–109. The low male subcaudal count is from a north island specimen (USNM 9829) from "Santo Domingo," and the high subcaudal male count is that of a snake (MCZ 66348) from the proximal portion of the Tiburon Peninsula near Miragoâne. The low female subcaudal count is that of a snake (ASFS X3583) from Ile-à-Vache, and the high female count is from a specimen (MCZ 38279) from Tardieu on the south island.

Labials. Except for two snakes from Ile de la Tortue, which have 8 scales unilaterally (MCZ 126216, MCZ 126220), supralabials number 7 to a side. Infralabials almost always number 9; exceptions include 8 scales bilaterally in one snake (MCZ 25561 from the proximal Tiburon Peninsula), 8 scales unilaterally in three (BMNH 1946.1.2.77 – holotype of *dorsalis*; FMNH 5961 from Sánchez; MCZ

3600 – syntype of *vultuosa*), and 10 scales unilaterally in one (MCZ 86284 from Gonâve).

Other head scales. There usually are 2 postoculars bilaterally, but only 1 scale bilaterally in two snakes from Gonâve (MCZ 61029, MCZ 86284), and 1 scale unilaterally in one snake from Gonâve (MCZ 82585) and one snake from the south island (MCZ 3600 – syntype of *vultuosa*). Temporals are regularly 1 + 2 bilaterally; one snake (ASFS V28205) has 1 + 3 bilaterally.

Pattern. It is in pattern that the various populations of *Ialtris dorsalis* show the most marked variation. We originally thought that several of the populations discussed herein were sufficiently distinctive to warrant formal subspecific status, but the variation apparent within some of the populations and the paucity of material from critical areas renders unwise the recognition of subspecies at this time. The pattern of each population sample is described below.

1) *South island.* In general, specimens from the distal portion of the Tiburon Peninsula in Haiti from Camp Perrin westward to the tip of the peninsula show a reduction of pattern, both dorsally and ventrally. The cephalic W is narrow, and there is at most one distinct black neck blotch, which is narrowly joined laterally to the cephalic W; the remainder of the anterior black neck-and-body pattern is reduced to a more or less zigzag irregular middorsal band. This anterior pattern becomes increasingly obscured posteriorly to yield a faintly mottled or salt-and-pepper pattern, although the mottling is relatively fine and faint. Most snakes have no anterior ventral markings; at most there are some scattered dark flecks on the chin and throat and on the most anterior ventrals. The venter is dusky in preserved specimens. One snake (USNM 60605) has a middorsal dark stripe for about one-half the length of the body posteriorly and extending almost the total length of the tail. The tail in this specimen is distinctive in having broad lateral stripes involving the lowermost two scale rows. Another snake (ASFS X3021) has the same general pattern. The single juvenile (MCZ 38279) is dark brown dorsally and pale tan laterally, with a series of narrow dorsal extensions of the lateral color, which give an alternating chain-like effect for about the anterior one-half of the body; the chin and throat of this small snake are heavily dotted and flecked with black.

2) *Ile-à-Vache.* In contrast to adjacent Tiburon Peninsula snakes, the three specimens from Ile-à-Vache are very distinctive. The cephalic W is large, dark, and bold. The dorsum is black anteriorly (this feature representing the fusion of the anterior black blotches into a very irregular black stripe) and scale rows 1–4 or 5 are grayish-brown. The area between the cephalic W and the anteriormost portion of the black dorsal color is sharply set off from both in two snakes as a pale, more or less triangular, blotch; this is not the case in the third individual (USNM 80837). The black dorsal color continues posteriorly and gradually fades into a vaguely reticulated pattern, with the scales dark-edged and their centers pale. Chins and throats are moderately heavily marked with black flecks or spots, but these do not extend far

posteriorly. The general impression of Ile-à-Vache specimens is that they are very dark snakes without a dorsal pattern except for the bold and prominent cephalic W. Color notes in life for ASFS X3583 state the following details: "Head brown with black W; dorsum very dark anteriorly, grading to brown posteriorly. Lips tan above, creamy below along with throat scales. Ventral ground color cream anteriorly for the first 20 scales, grading to gray posteriorly, underside of tail buffy. A faint dark lateral line on posterior two-thirds of body."

3) *Península de Barahona*. The three specimens from the Península de Barahona differ from all other *Ialtris dorsalis*. The head and dorsum are uniformly dark, and the cephalic W and the dorsal black blotches are barely discernible anteriorly. The dorsal pattern is at best a series of obscure pale vertical markings, most clearly expressed posteriorly and on the tail, to give a vague dark chain-like effect. One snake (AMNH 51763) has a more reticulate dorsal pattern posteriorly, but anteriorly it is uniformly dark. Two snakes (AMNH 51763, ASFS V2646) have very prominent black spots on the chin, throat, and anterior ventrals, but these markings are obscure on the third snake. In AMNH 51763, the black ventral markings continue posteriorly, expanding to form irregular dark edges to the ventral scales, which are increasingly dark posteriorly. Color notes in life on ASFS V2646 state: "Dorsal ground color grayish tan, markings black, posterior light-colored scales yellowish. Venter bluish anteriorly, becoming gray, then brown with cream-yellow centers posteriorly." The dark dorsal color with a subsequent obfuscation of the dorsal pattern elements is characteristic of the Península de Barahona snakes.

4) *Proximal Tiburon Peninsula*. The series of five snakes may be divided geographically, two specimens coming from the vicinity of Saltrou near the Dominican-Haitian border, and three snakes from Miragoâne and its vicinity, some 120 kilometers to the west on the northern coast of the Tiburon Peninsula. The Saltrou snakes are rather like the specimens from the adjacent Península de Barahona, in that they have dark dorsa and rather obscure patterning, although MCZ 68585 is more distinctly patterned than Barahona snakes. The cephalic W is prominent in one snake and less so in the other; the more prominently marked snake (MCZ 68585) also has about four or five dorsal blotches on the neck, but these are somewhat obscured due to the dark ground color.

Of the three Miragoâne snakes, two fresh specimens (MCZ 66347-48) from Butête (which is unlocatable) are pale above with very bold cephalic W's, and from 7 to 10 alternating dorsal blotches; the remainder of the dorsum is prominently blotched or marked with black to form a reticulate pattern. The third Miragoâne snake (MCZ 25561) is less vividly marked dorsally, but remnants of at least 4 or 5 blotches and the cephalic W are present.

The entire lot shows extreme variation in ventral pattern. The Miragoâne snake (MCZ 25561) has a few scattered dark markings on the chin and throat, whereas the Butête specimens have these markings continued posteriorly onto the venter. The Saltrou snakes are also variable, in that one has limited dark markings far posteriorly on the belly.

Of these five snakes, the two from Saltrou are similar in most pattern details to the Península de Barahona snakes, except that they have the cephalic W and the anterior blotches somewhat more conspicuous than the uniformly dark snakes from the Península de Barahona. On the other hand, the two Butête specimens are similar to some north island snakes (see below) in having vivid black markings on a pale background. The third Miragoâne snake is like specimens from further west on the

Tiburon Peninsula. One problem here is that Butête is unlocatable on modern maps. These Butête specimens might more properly be associated with north island snakes (which they more closely resemble than either distal Tiburon or Barahona snakes); if so, then north island snakes must penetrate along the northern coast of the Tiburon Peninsula to the vicinity of Miragoâne.

5) *North island*. We include with the specimens from known north island localities those specimens without data (AMNH 58063), as well as the holotypes and syntypes of *dorsalis*, *mentalis*, and *w-nigrum*. There are thus only ten of 16 specimens from the north island with definite localities, and these are from scattered sites from Damien and Port-au-Prince in the southwest to Limbé and Cap-Haïtien in the north, and Tenares and Sánchez in the east. Obviously, our remarks on the north island population have only the most limited value. As a group, they are generally well patterned (and the holotype of *mentalis* and the "Westindien" syntype of *w-nigrum* fall into this category). The cephalic W is boldly marked, and the anterior body pattern consists of from two (ASFS V10767) to 15 (USNM 9829) black dorsal blotches. Other specimens (like the Port-au-Prince syntype of *w-nigrum*) are blotched anteriorly but are much less contrastingly marked. Posteriorly, the usual condition is a strong salt-and-pepper pattern with randomly placed dark and light scales, but there may be an irregular middorsal dark line or zone. The ventral black markings are somewhat variable but they usually are present and conspicuous, not only on the chin and throat but posteriorly onto the ventral scales. One snake (USNM 73924) has dark blotches on the rostral and the first six supralabials. Although north island snakes are quite variable, our impression of them is that they are boldly marked dorsally and ventrally, and that they possess more than one dorsal blotch on the neck.

6) *Ile de la Gonâve*. The Gonâve series is relatively uniform in color, since all are dark snakes (but usually less dark than Peninsula de Barahona snakes). The cephalic W is present but generally inconspicuous, and there are from two to six neck blotches, which may be paired and alternating (MCZ 61038) or single (MCZ 86285). Posteriorly, the dorsum is not salt-and-pepper patterned but rather is fairly uniformly dark without scattered pale scales or dark scale edgings. The chin and throat are moderately to heavily spotted with black, but these spots quickly become obscure posteriorly on the venter. The largest snake (MCZ 86285) has the cephalic pattern present but much fragmented, a condition seen in no other snake. The Gonâve juvenile (MCZ 86286) is patterned very much like the juvenile from Tardieu, with a series of pale lateral "bars" that intrude into a dark middorsal zone anteriorly to give a chain-like pattern, and become less distinct posteriorly. The supralabials, as well as the infralabials, chin and throat scales, and the first 20 ventrals, are heavily flecked with very dark gray.

7) *Ile de la Tortue*. Specimens of *Ialtris dorsalis* from Tortue are characterized by the presence of a dark middorsal line, a feature which elsewhere occurs but rarely. The line is conspicuous in some snakes (MCZ 126217) as far anteriorly as about mid-body and also extends onto the tail. In others (MCZ 126216), the line is very much obscured by additional dark pigment, and it can be ascertained only with some difficulty. The cephalic W is broad and conspicuous against the gray dorsum, and there are about five neck blotches, usually single but occasionally paired and alternating. The ground color of the posterior dorsum is not strongly salt-and-pepper patterned but is more or less uniformly gray or brown. With the middorsal line and dark (brown) lower sides the Tortue snakes appear, in general, to be longitudinally

striped. Black chin and throat markings are present but variable in development; in some specimens (MCZ 126220) they are restricted to the most anterior ventrals, whereas in others (MCZ 126217) they extend far posteriorly on the ventral scales.

Since the present manuscript was completed, a female *I. dorsalis* (Univ. of Florida/Florida State Museum 21569) was secured by FRED. G. THOMPSON at a locality 3 km NE Boca de Yuma, La Altagracia Province, Rep. Dominicana. This spot is far removed from all previous records, in the extreme southeastern portion of Hispaniola. The snake was collected under a rock in mesic forest on a karst substrate.

The snout-vent length is 870 mm, and the tail length 253 mm (tail 22.5 per cent of total length). Scale counts are: 182 ventrals, 97 paired subcaudals; 7/7 supralabials, 9/9 infralabials, 1/1 loreals, 1/1 preoculars, 2/2 postoculars, 1 + 2/1 + 2 temporals; dorsal scale row formula 19 — 19 — 17. The snake is interestingly patterned in that the upper surface of the head is black except for a pale snout and pale blotching on the supraorbital areas; there is a pale inverted nuchal V, followed by a very dark brown dorsum for the anterior quarter of the body, this dark color blending quickly into tan. In this posterior paler area there is a series of vertical pale and dark-edged blotches, each encompassing about 6 scales; the total number of these blotches cannot now be counted with accuracy but there are at least 23 pairs. The upper surface of the tail has a vaguely "braided" aspect. The upper labials are very pale and sharply set off from the coloration of the upper surface of the head; the anterior ventrals are pale but have some pale gray pigment along their free edges; this gray pigment, as one proceeds posteriorly, becomes darker and in addition becomes more extensive so that the posterior ventrals are mottled or blotched with dark gray. The subcaudals are outlined with dark gray to black. In many ways the dorsum combines the characteristic patterns of *I. dorsalis* and *I. parishi*; however, the locality for this snake is far removed from any *I. parishi* locality, and the lack of a pale vitta from the eye to the angle of the jaws and of the contrastingly patterned venter of *I. parishi* militate against hybridization. The fact remains that this snake is very distinctively patterned dorsally, and it may represent a population characteristic of the extreme eastern portion of Hispaniola.

HABITAT: We have habitat data for only a few *Ialtris dorsalis*. ASFS V2646 was secured by DAVID C. LEBER under a rock in a coffee grove at an elevation of 1300 feet (397 meters) on the southern slopes of the Massif de la Selle southwest of Los Arroyos. A second specimen was taken by the senior author in a pile of moist palm trash in a *cafetal* near Tenares, and three others were secured at the same locality by native collectors. Since the species occurs at Etroits on Ile de la Gonâve, *I. dorsalis* must be tolerant of a wide variety of ecological situations; Etroits is located in an extremely bleak and xeric coastal region, in contrast to the more mesic uplands of the Massif de la Selle and the Massif de la Hotte, from which the species is also known.

SPECIMENS EXAMINED: *Haiti, Dépt. du Sud*, Moron (USNM 60605, USNM 92204); near Jérémie (MCZ 3600 — two syntypes of *vultuosa*); Tardieu, northern foothills of Pic Macaya (MCZ 38279); Camp Perrin (ASFS X3021); Miragoâne (MCZ 25561); *Dépt. du Sud?*, Butête, near Miragoâne (MCZ 66347-48); *Dépt. de l'Ouest*, Thiotte, near Saltrou (MCZ 68585); Marmirade, near Saltrou (MCZ 68586); Damien (USNM

73924); Port-au-Prince (UHZM 3425 – syntype of *w-nigrum*); *Dépt. du Nord*, 3 mi. (4.8 km) E Limbé (ASFS V10767); Cap-Haïtien (USNM 59922); “Haïti?” (AMNH 22732); *Ile-à-Vache*, western end (ASFS X3583); no further locality (USNM 80837, MCZ 37612); *Ile de la Gonâve*, Nan Café (MCZ 61038–39); Mouri Corps (MCZ 86283–84); Degoute (MCZ 86285–86); Etroits (ASFS V11213–14); vicinity of Etroits (LSUMZ 17997); *Ile de la Tortue*, near Palmiste (MCZ 126216–20, ASFS V14999); *República Dominicana*, *Pedernales Province*, 11 km SW Los Arroyos, 1300 feet (397 meters) (ASFS V 2646); *Barahona Province*, Paraíso (AMNH 51763–64); *Duarte Province*, 6.4 mi. (10.4 km) SE Tenares, 700 feet (214 meters) (ASFS V28105, ASFS V28204–05, ASFS V33518); *La Vega Province*, 1 km W Jayaco, 900 feet (275 meters) (ASFS V20470); *Samaná Province*, Sánchez (FMNH 5961); no data other than “Santo Domingo” (BMNH 1946.1.2.77 – holotype of *dorsalis*; USNM 9829); “West-indien” (UHZM 3169 – syntype of *w-nigrum*); no locality (AMNH 58063; BMNH 1946.1.9.34 – holotype of *mentalis*).

Ialtris parishi Cochran

Ialtris parishi COCHRAN, 1932. Proc. Biol. Soc. Washington 45: 189.

HOLOTYPE: USNM 80773. 10 mi. E. Baradères, Dépt. du Sud, Haïti.

DEFINITION: A species of *Ialtris* characterized by having 163–167 ventrals and 77 subcaudals (one specimen) in males, and 163–172 ventrals in females (no females have complete tails); a dorsal pattern consisting of 39 to 48 light vertical bars or blotches on a brown to reddish brown background; the head unpatterned but with a fine cream to white vitta, bordered above (and more narrowly below) by dark brown, extending from the ventrolateral portion of the eye across supralabials 4 through 7 to end at the angle of the jaws (see Fig. 22); the venter yellow to yellow-orange with gray to black squares or rectangles on each scale, the dark markings giving a basically bilineate ventral pattern that changes abruptly at the vent to form a broad unilineate pattern on the underside of the tail.

DISTRIBUTION: Known only from the type-locality on the Tiburon Peninsula in Haïti and from *Ile de la Tortue* off the northern Haïtian coast, where it is not uncommon.

VARIATION: We have examined seven specimens of *Ialtris parishi*, six of which are from *Tortue* and the other is the holotype. Data

from the holotype are as follows: adult male with a snout-vent length of 726 mm and an incomplete tail; ventrals 163, subcaudals 66+; loreal single; preocular single, postoculars 2; temporals 1 + 2; supralabials 7; infralabials 7/9. The series of two males and four females from Tortue has the following data: largest male (MCZ 126214) with a snout-vent length of 660 mm, largest female (ASFS V15045) 745 mm; ventrals in males 164 and 167, subcaudals 77 in one male; ventrals in females 163–172, no female with complete tail; loreal single; preocular single, postoculars 2 except for one snake (MCZ 126215) with 1 postocular bilaterally; temporals 1 + 2; supra-labials 7; infralabials usually 9, but one snake (MCZ 126214) has 8 scales unilaterally and another (ASFS V15045) has 10 scales unilaterally.

Color notes in life from ASFS V13723 from Tortue state: "Dorsal ground color reddish brown, darker middorsally; a series of pale reddish brown vertical "bars", blotch-like on neck, more vertical posteriorly, almost to tip of tail. Head brown above. Labial vitta white, bordered by darker brown above. Venter yellow anteriorly, yellow-orange posteriorly and on underside of tail. Ventral squares brown anteriorly, black posteriorly and on underside of tail. Chin speckled with black." ASFS V15045–46 from Tortue were noted in life as being brown dorsally with buffy spots; venter yellow or orange with brown markings.

These notes give a general statement of the color and pattern of Tortue *Ialtris parishi*. The lateral bars or blotches vary in number on the body from 39 to 48 on Tortue (42 and 43 in the holotype), and Tortue snakes from 0 to 23 spots on the tail (19 and 19 in the holotype). One specimen from Tortue (MCZ 126215) has all dorsal pattern elements very reduced (blotches no more than 1 scale long or high); this is the snake without tail blotches and the lowest number of body blotches (39 and 42). The intensity of the ventral pattern is likewise variable; it may be distinct, or faint and discerned only with difficulty.

COMPARISONS: *Ialtris parishi* is assumed to occur sympatrically with *I. dorsalis* on the Tiburon Peninsula, although the closest locality records for *dorsalis* to the west and east of Baradères are Jérémie and Miragoâne, a distance of 70 and 55 kilometers, respectively. The two species are syntopic on Tortue. There should be no difficulty in distinguishing them where they occur together, since dorsally they are quite different in both color and pattern. They differ also in ventral number (179–191 ventrals in male *dorsalis*, 163–167 in male *parishi*; 180–192 ventrals in female *dorsalis*, 163–172 in female *parishi*), subcaudal number (77 in male *parishi*, 99–115

in male *dorsalis*), and relative tail length (29.1–33.0 [mean 31.0] per cent in male *dorsalis*, 23.5–25.3 [mean 24.3] per cent in male *parishi*). The ventral colors and patterns of the two species are likewise very different, with *parishi* having much brighter ventral colors than *dorsalis*.

SPECIMENS EXAMINED: *Haiti, Dépt. du Sud*, 10 mi. (16 km) E Baradères (USNM 80773 – holotype); *Ile de la Tortue*, near Palmiste (ASFS V13723, ASFS V15045–46, ASFS V15073, MCZ 126214–15).

Ialtris agyrtes, new species

HOLOTYPE: LSUMZ 28564, an adult female from Barreras, Azua Province, República Dominicana, taken 25 July 1969 by native collector. Original number ASFS V21430.

PARATYPES: Both from Pedernales province, República Dominicana. ASFS X9997, adult female from 12 mi. (19.2 km) SW Enriquillo, 30 July 1963, native collectors; UF/FSM 21554, juvenile female from 2 km E Las Mercedes, 250 meters, 22 March 1974, R. FRANZ and S. SCUDDER.

The name *agyrtes* is from the Greek for "mountebank, cheat", in allusion to the resemblance of the species to *Ialtris parishi*.

DEFINITION: A species of *Ialtris* characterized by having a combination of 160–175 ventrals and 57–63 subcaudals in females (males unknown); the dorsum brown to tan and without pattern in adults; a cream to white line from the angle of the jaws completely around the snout, bordered above by dark brown (and less well bordered below); the venter patternless or with moderately heavy stippling, white anteriorly grading to pale buffy posteriorly and on underside of tail; the chin and throat longitudinally streaked with brown.

DESCRIPTION OF HOLOTYPE: A female having a snout-vent length of 455 mm and an incomplete tail; ventrals 160, subcaudals 45+; supralabials 7, infralabials 9; 1 loreal; 1 preocular, 2 postoculars; 1 + 2 temporals; dorsal scale rows 19–19–17. In life the dorsum was light brown to tan, the labial stripe cream, edged above with dark brown. The lower sides (first three scale rows) were paler than the dorsum, the venter still paler than sides and heavily stippled with dark gray, especially along the posterior margins of the ventral scales; the rostral and all supralabials with a central dark gray

smudge; a series of about 11 dark gray longitudinal lines on the chin and throat, of which the central three lines are most distinct; a vague gray line along the median suture of the paired subcaudals.

VARIATION: The two paratypes are both females. ASFS X9997 has a snout-vent length of 576 mm and tail length of 125 mm; ventrals 174, subcaudals 57; supralabials 7, infralabials 9; 1 loreal; 1 preocular, 2 postoculars; 1 + 2 temporals; dorsal scale rows 19–19–17.

In life, the snake was brown (Pl. 16C4; color designation from MAERZ & PAUL, 1950) with the head slightly more red. Iris reddish brown. A white line, from the angle of the jaw around entire snout, bordered above – and more or less similarly below – by dark brown. Labials, chin, and throat paler reddish brown. Venter white anteriorly, grading to pale buffy posteriorly and on underside of tail, the venter blotched irregularly with dark gray anteriorly, the blotching becoming increasingly random so that the posterior third of the belly is virtually immaculate except for very widely scattered dark blotches. Mental, first four infralabials, and both pairs of chin shields with a series of three vague dark longitudinal streaks.

The second paratype (UF/FSM 21554) is a juvenile with a snout-vent length of 233.5 mm and tail length of 57.5 mm; ventrals 175; subcaudals 63; supralabials 7, infralabials 9; 1 loreal; 1 preocular, 2 postoculars; 1 + 2 temporals; dorsal scale rows 19–19–17.

As preserved, the dorsum is dull tan, the upper surface of the head rich brown; the dorsum has 40 (on each side) vertically elongate bars, each about three scales high and one scale long, more or less symmetrically arranged (occasionally alternating or slightly asymmetrical), and continuing onto the upper surface of the tail. The lower three scale rows are grayish and paler than the rest of the dorsum. On each side of the head there is a narrow white postocular line, beginning at the upper postocular and extending onto the nuchal scales; the first pair of bars is almost fused on the neck to form a pale collar. A white vitta is complete around the snout and is bordered above by the rich brown of the head. The supralabials and infralabials are brown, the chin and throat longitudinally streaked with dark brown and six white stripes, these features continuing posteriorly, but becoming rather abruptly less distinct and fading into a vague pattern of two or three rows of darker longitudinal semicircles on each ventral, these in turn becoming increasingly more vague but continuing to the vent. The underside of the tail is immaculate pale gray.

COMPARISONS: *Ialtris agyrtes* is at once distinguishable from *I. dorsalis* in that the former lacks distinct dorsal and ventral patterns (as an adult) and the dark W-shaped cephalic blotch of the latter. Juvenile *I. dorsalis* lack the vertically barred pattern of juvenile *I. agyrtes*. The two species are completely separable on the basis of

ventral and subcaudal counts in females (the only sex of *agyrtes* known), as follows: *dorsalis*, ventrals 180–192, subcaudals 98–109; *agyrtes*, ventrals 160–175, subcaudals 57–63. The much shorter tail (T/TL 25.5–29.9 [mean 28.4] per cent in *dorsalis* females, 17.8–19.8 [mean 18.8] per cent in *agyrtes*) and presence of the pale vitta on the head of *agyrtes* also serve to distinguish these two taxa.

From *Ialtris parishi*, *I. agyrtes* differs in having the pale vitta completely encircling the snout rather than stopping at the region of the eye, an obscurely patterned venter rather than a distinct ventral pattern, a streaked chin and throat, and paler ventral coloration (white to pale buffy rather than yellow to yellow-orange). Ventral scale counts overlap in the two species (*parishi* females 163–172, *agyrtes* 160–175). No female *parishi* has a complete tail, but the incomplete subcaudal counts in the four female *parishi* range from 25 to 75, the latter well in excess of the counts for the two *agyrtes* having a complete tail.

In terms of color pattern there is little doubt that *Ialtris parishi* and *I. agyrtes* are more closely related to each other than either is to *I. dorsalis*. The former two species possess at least one feature in common (a light supralabial vitta – incomplete in *parishi*, complete in *agyrtes*) that is absent in *dorsalis*. The dorsal pattern of *dorsalis* is totally unlike that of either *parishi* or *agyrtes*; however, the juvenile *agyrtes* pattern is very similar to the adult pattern of *parishi*. The patternless adult dorsum in *agyrtes*, as well as the reduced ventral pattern (in comparison to *parishi*), seems easily derivable from the *parishi* condition.

REMARKS: Considering the localities of the three *Ialtris agyrtes*, there is a possibility that they represent two distinctive populations. The two paratypes are from far down on the Península de Barahona and the lower southern slopes of the Sierra de Baoruco, an area which has become increasingly well known as a region of local endemism, both at the specific and subspecific levels. On the other hand, the holotype is from the north island, separated from the Península de Barahona by the intervening Valle de Neiba. The two adult specimens differ from each other in details of color and of ventral pattern (namely, the stippled ventrals and heavily streaked

throat in the Barreras specimen), and it may well be that they represent samples from two isolated populations. The difference in number of ventrals of the two samples of *agyrtes* (14 scales) is greater than that between the two extremes of all female *dorsalis* (13 scales) or all female *parishi* (10 scales).

HABITAT: The two adult *Ialtris agyrtes* were native-collected, and there are no habitat data on the Las Mercedes juvenile; thus we have no detailed information on the circumstances where any of the snakes were encountered. The habitat at the Enriquillo locality is one of xeric forest, whereas that at Barreras is somewhat more mesic but nonetheless xeric in general aspect. The Las Mercedes locality is on the southern slopes of the Sierra de Baoruco, but these, too, are xeric, although slightly more shaded and less harsh at least than at Barreras. The Barreras snake contained two *Typhlops pusilla*; the presence of these snakes in the stomach of *I. agyrtes* suggests that it is a cryptic or semifossorial species with ophiophagus habits.

INTERSPECIFIC RELATIONSHIPS

In attempting to determine the relationships among the three species of *Ialtris*, we have considered a variety of characters. Data on scutellation and color pattern have been presented in the preceding section; significant aspects of proportions, hemipenis, and osteology are treated below.

PROPORTIONS (Table 9). — The three species are similar in relative head length, although the head is slightly shorter in *Ialtris dorsalis*. On the other hand, the eye of *I. dorsalis* is of moderate size for a colubrid whereas those of *I. agyrtes* and *I. parishi* are reduced. The muzzle has nearly the same relative length in *I. dorsalis* and *I. agyrtes*; it is somewhat longer in *I. parishi*. The muzzle is broad in all three species, especially in *I. parishi* and *I. agyrtes*; in the latter two species the combined contact of both internasals with the rostral (InR) is more than 3 times greater than the nasal-rostral contact (NR). In this case, however, the InR/NR ratio is somewhat misleading because it not only reflects muzzle breadth, but muzzle height as well. Treating InR and NR separately (with head length as the constant), we find that where the InR/NR ratio would lead us to conclude that *I. agyrtes* has the broadest muzzle, the muzzle is

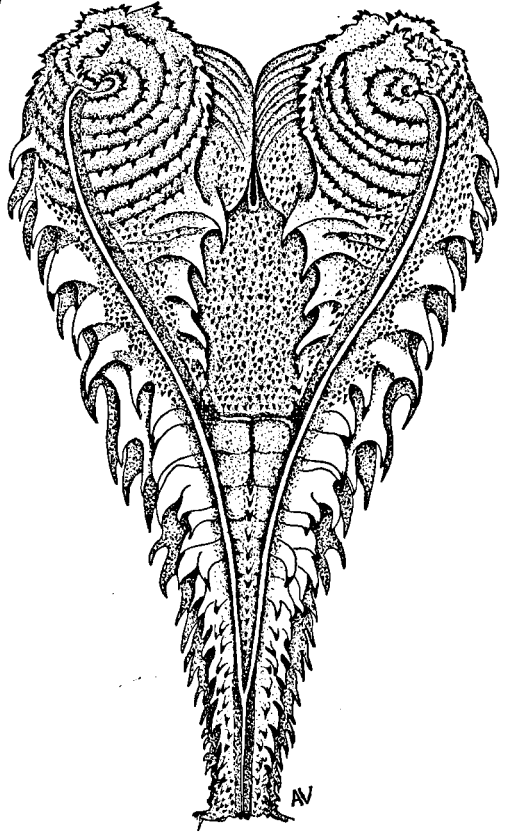
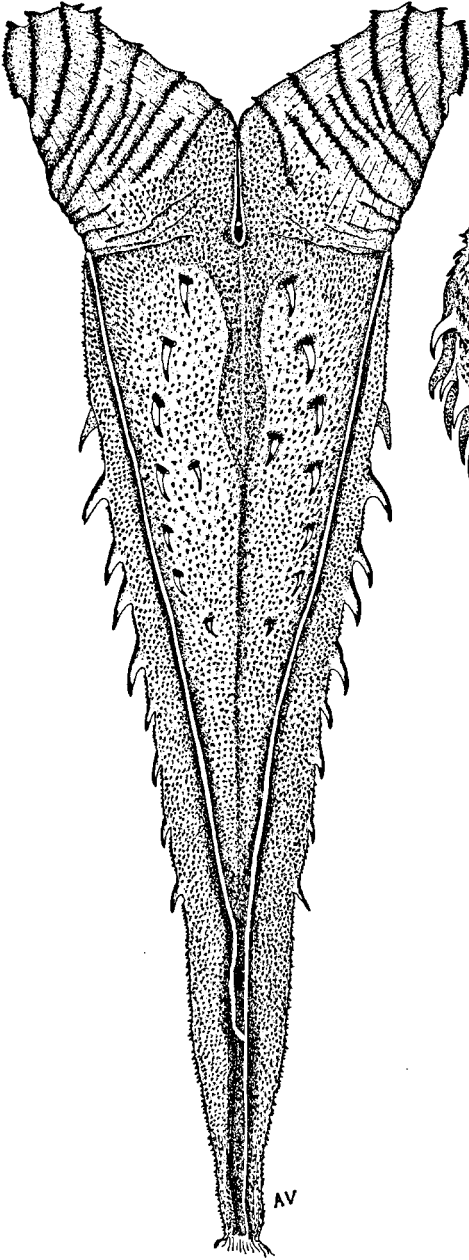


TABLE 9

INTERSPECIFIC VARIATION IN PROPORTIONAL FEATURES OF *Ialtris*

	Head/Snout-Vent ¹⁾	Eye/Head	Muzzle ⁴⁾ /Head
<i>dorsalis</i>	4.3(3.6-4.7)29 ² 3)	13.9(12.5-15.8)30 ³⁾	16.9(14.3-18.6)28
<i>agyrtes</i>	4.7(4.4-5.0) 2	11.6(11.4-11.8) 2	17.4(16.2-18.4) 3
<i>parishi</i>	4.6(4.4-4.8) 3	10.2(9.8-10.7) 4	18.9(18.3-19.8) 4
	Internasal-Rostral	Internasal-Rostral/Head	Nasal-Rostral/Head
	Nasal-Rostral		
<i>dorsalis</i>	170.0(133.3-206.7)29	9.3(8.6-11.3)29	5.5(4.4-6.9)29
<i>agyrtes</i>	370.2(335.7-400.0) 3	10.8(10.3-11.0) 3	2.9(2.8-3.1) 3
<i>parishi</i>	304.9(264.5-328.0) 4	12.5(12.2-13.1) 4	4.1(3.9-4.7) 4
	Parietal/Head	Frontal/Head	Anterior/Posterior Genial
<i>dorsalis</i>	31.9(29.0-34.0)31	24.9(22.0-27.4)31	76.3(64.2-89.1)31
<i>agyrtes</i>	34.3(32.5-36.1) 3	25.1(23.2-27.6) 3	85.3(85.2-85.3) 2
<i>parishi</i>	33.3(32.1-33.9) 4	21.3(20.2-22.4) 4	84.8(82.5-86.3) 4

1) All values expressed as a per cent.

2) Mean (range of variation) number of specimens.

3) Only adults included because of ontogenetic decrease in relative head and eye lengths.

4) Muzzle length equals the length of the median suture extending from frontal to rostral.

actually widest in *I. parishi*. This discrepancy is explained when we look at the NR/H ratio; clearly the muzzle becomes progressively more acuminate dorsoventrally from *I. dorsalis* through *I. parishi* to *I. agyrtes*.

The parietal scale is about one-third as long as the head in all three species, but the frontal is substantially shorter in *I. parishi* than in *I. dorsalis* or *I. agyrtes*. The posterior genials, although shorter than the anterior ones in all cases, average longer in *I. parishi* and *I. agyrtes*. This feature may reflect the slightly longer head in these two species, but the AG/PG ratio is highly variable in

Fig. 23. Comparison of hemipenes of *Ialtris*; left - *I. dorsalis* (ASFS V11213), $2\frac{1}{2} \times$ nat. size; right - *I. parishi* (ASFS V15073), $4 \times$ nat. size.

I. dorsalis and the character is of doubtful value in analyzing this particular genus.

HEMIPENIS. – The three known specimens of *Ialtris agyrtes* are females, hence the following discussion is confined to the other two species. In both *I. dorsalis* and *I. parishi* the everted hemipenis is bilobed, the organ bifurcating at a point approximately 15% of the distance from the apex toward the base. The sulcus is divided, the division occurring less than 25% of the distance from the base toward the apex, and each branch terminates apically on the lateral surface of one lobe. The lobes themselves are traversed by a series of low fleshy folds, more or less obliquely oriented and bearing very tiny papillae; proximal to the lobes the organ is spinose. The hemipenes of the two species differ primarily in shape of the lobes (Fig. 23), in degree of spinosity (much more spinose in *I. parishi*), and in length (longer in *I. dorsalis*). Hemipenis length in *I. dorsalis* is somewhat enigmatic, since the everted organ usually extends at least to the level of the 20th subcaudal, but that of ASFS V25002 reaches only to subcaudal 11. In the single *I. parishi* available for determination of this feature (ASFS V13723), the everted hemipenis extends to the level of subcaudal 9.

OSTEOLOGY. – The following discussion of osteological variation in the genus *Ialtris* is based on detailed examination of the skulls of six *I. dorsalis*, two *I. parishi*, and one *I. agyrtes*. Only those characters in which some interspecific variation was evident are included.

TABLE 10
INTERSPECIFIC VARIATION IN THE DENTITION OF *Ialtris*

	Maxilla	Palatine	Pterygoid	Dentary
<i>dorsalis</i>	15.5(15–18) ⁸ + II ²	16.6(15–18) ¹⁰ ³	31.6(29–34) ¹⁰ ³	21.1(20–22)9
<i>agyrtes</i>	11.0(11)2 + II	11.0(11)2	18.5(18–19)2	17.5(17–18)2
<i>parishi</i>	10.7(10–11)3 + II	9.3(9–10)4	17.0(16–18)4	16.8(16–17)4

¹) mean (range of variation) number of bones – not individual snakes.

²) Roman numeral represents the number of postdiastemal fangs.

³) The palatine and pterygoid counts presented by MAGLIO (1970: 53) for *I. dorsalis* are in error.

Ialtris dorsalis has a markedly higher number of teeth on each of the dentigerous bones than do the other species (Table 10). In *I. dorsalis* and *I. agyrtes* the last two ungrooved maxillary teeth preceding the diastema are nearly as large as the grooved fangs; they are enlarged but much smaller than the fangs in *I. parishi*. The arrangement of the dentary teeth in *Ialtris* is very peculiar and perhaps unique among New World colubrids. The most extreme condition (Fig. 24) occurs in *I. dorsalis* in which the anteriormost 5 or 6 teeth are more or less subequal (increasing slightly in size posteriorly), the next 2 or 3 teeth are much enlarged and followed by a diastema, and the remaining 11–14 teeth are more or less subequal (decreasing slightly in size posteriorly). The dentary dentition of the one available *I. agyrtes* is generally similar, but the two enlarged teeth are not so large as in *I. dorsalis*, nor is the diastema that follows them as long as its counterpart in that species. The 5th, 6th, and 7th dentary teeth are enlarged in *I. parishi*, but not to the degree observed in the other two species, nor is there a diastema (Fig. 24).

Relative to the overall length of the entire palatamaxillary complex, the maxilla is rather short in all three species; it is longest in *Ialtris dorsalis* (Table 11). *I. dorsalis* also tends to have a somewhat longer quadrate and longer supratemporal than either of the other

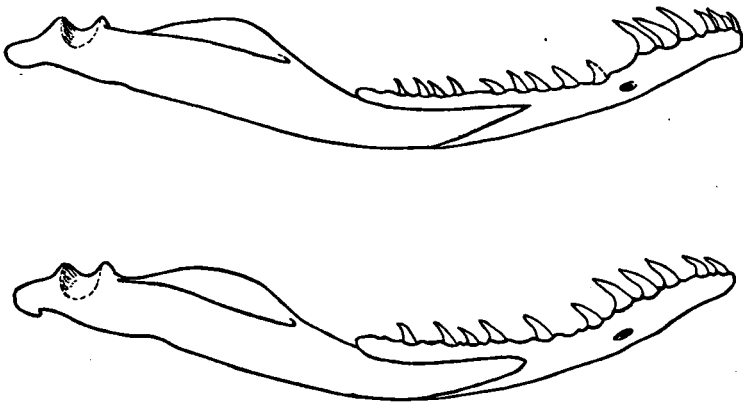


Fig. 24. Comparison of right mandibles of *Ialtris*; above - *I. dorsalis* (ASFS V11213), below - *I. parishi* (ASFS V15073).

TABLE 11
 INTERSPECIFIC VARIATION IN SELECTED OSTEOLOGICAL
 FEATURES OF *Ialtris*

	Maxilla/Palato- maxillary Arch ¹⁾	Quadrate/Skull	Supratemporal/ Skull
<i>dorsalis</i>	43.8(42.1–46.5)6 ²⁾	37.8(35.0–42.2)6	38.9(36.0–43.0)6
<i>agyrtes</i>	41.7(41.7)1	34.8(34.8)1	35.0(35.0)1
<i>parishi</i>	41.7(41.0–42.3)2	34.8(34.1–35.4)2	36.1(35.6–36.6)2
	Outer Lamina/ Inner Lamina	Nasal/Skull	Frontal Length/Width
<i>dorsalis</i>	69.3(67.1–71.9)5	14.7(14.1–15.2)6	146.3(132.4–155.6)5
<i>agyrtes</i>	77.6(77.6)1	12.4(12.4)1	134.3(134.3)1
<i>parishi</i>	65.5(64.9–66.0)2	16.7(16.3–17.1)2	125.2(117.9–132.4)2
	Prefrontal Height/Length	Parasphenoid Height/Width	
<i>dorsalis</i>	190.8(180.0–197.6)5	236.0(200.0–300.0)6	
<i>agyrtes</i>	214.8(214.8)1	158.3(158.3)1	
<i>parishi</i>	189.1(185.3–192.9)2	91.2(82.4–100.0)2	

¹⁾ All values expressed as a per cent.

²⁾ mean (range of variation) number of specimens.

species; presumably these two features reflect a larger gape. The inner lamina of the mandibular fossa is higher than the outer one in all *Ialtris*, the difference in height being greatest in *I. parishi* (which has practically no development of the outer lamina above the shaft of the compound bone) and least in *I. agyrtes*.

The relative length of the nasal bone (Table 11) to some extent reflects (as might be expected) relative muzzle length, with *Ialtris parishi* having both the longest muzzle and the longest nasals of the three species. Nonetheless, the nasals are proportionately shorter in *I. agyrtes* than in *I. dorsalis* despite the fact they have nearly the same relative muzzle length.

The frontals are longer than wide in all three species (Table 11), but only to a relatively small degree in *Ialtris parishi*. In *I. dorsalis* the frontals are nearly half again as long as they are wide; the single specimen of *I. agyrtes* is intermediate in this respect. The prefrontal is slightly less than twice as high as long in *I. dorsalis* and *I. parishi*, slightly more than twice as high as long in *I. agyrtes*. The vertical

lamina of the parasphenoid process of the sphenoid is more than twice as high as the process is wide in *I. dorsalis*. The process is as wide as, or wider than, the lamina is high in *I. parishi*; the value for *I. agyrtes* is almost exactly intermediate between those of the other two species.

DISCUSSION. — On the basis of color pattern and head shape, there can be no doubt that *Ialtris parishi* and *I. agyrtes* are very closely related, or that they differ markedly from *I. dorsalis* in these characters (Fig. 22). In the absence of other taxonomic evidence, we would not hesitate to assign the first two species to one genus and the latter to another (externally *I. dorsalis* looks like an *Alsophis*). The nature of the hemipenes and the dentition clearly demonstrates, however, that these three species have a greater taxonomic affinity *inter se* than any of them does to any other known species; to separate them into two genera would obscure this relationship. The degree of differentiation would be sufficient to justify recognition of subgenera; but, considering the small size of the genus in question, we doubt the utility of such an action and choose, instead, merely to recognize the existence of two distinct species groups — the *dorsalis* Group and the *parishi* Group.

In most aspects *Ialtris dorsalis* appears to be more generalized than the members of the *parishi* Group; presumably the latter are derived from a proto-*dorsalis* or some ancestral form common to both lines. In all but two instances (relative height of the mandibular fossa laminae and relative length of the nasals) *I. dorsalis* occupies one extreme of a morphocline; lacking evidence to the contrary, we make the general assumption that this is the primitive extreme. The larger size, somewhat more massive skull, slightly larger gape, and more greatly enlarged teeth of *I. dorsalis* may indicate that this species is adapted for feeding on larger, more active prey than are members of the *parishi* Group. The very broad, dorsoventrally acuminate muzzle of the latter two species appears to be a burrowing adaptation (most highly developed in *I. agyrtes*), and leads us to believe that they seek fossorial or semifossorial prey in sand, loose soil, or leaf litter; the presence of two *Typhlops* in the stomach of the holotype of *Ialtris agyrtes* lends credence to our

hypothesis. Additional ecological data for all three species are much needed.

Within the *parishi* Group the direction of evolution is not entirely clear – the advanced extreme of any given morphocline is occupied by *Ialtris agyrtes* almost as frequently as by *I. parishi*. It may be significant that there is a graded reduction in the development of the dentition from *I. dorsalis* through *I. agyrtes* to *I. parishi*. Nevertheless, because a preponderant concordance of advanced extremes is lacking, we are forced to conclude that *I. agyrtes* and *I. parishi* were independently derived from a common ancestor, presumably no longer extant.

INTERGENERIC RELATIONSHIPS

The generic status and relationships of West Indian “xenodontine” snakes have been recently reassessed by MAGLIO (1970). With regard to *Ialtris*, MAGLIO (who examined only *I. dorsalis*) concluded that it is a distinct genus with no very close relationship to any other Antillean group, but that *Ialtris* may have been derived from *Alsophis* because it is more similar to that genus than to any other – particularly in skull characters. Comparison of our data (Table 11) with his raises serious questions about some of his conclusions.

MAGLIO characterized *Alsophis* osteologically as having a long prefrontal and a long, narrow frontal. Reference to his fig. 4, however, shows that the three species of *Ialtris* have a shorter prefrontal than any *Alsophis* and agree, instead, with *Dromicus* and *Antillophis* in this character as they do also with regard to the shape of the anterior process of the prefrontal (our Fig. 25). Examination of



Fig. 25. Comparison of left prefrontals of *Ialtris*, *Alsophis*, and *Antillophis*; left to right – *I. parishi* (ASFS V13723), *I. dorsalis* (ASFS V11213), *I. agyrtes* (ASFS X9997), *Alsophis vudii* (LSUMZ 18001), *Alsophis cantherigerus* (ASFS 16205), *Antillophis parvijfrons* (LSUMZ 28565).

MAGLIO's fig. 3 (frontal proportions) also reveals a general agreement between *Ialtris* and *Dromicus*, but *Alsophis*, *Antillophis*, and *Ialtris* show a considerable range of intrageneric variation in this feature and there is much overlap among the four genera. The grooved posterior maxillary teeth and the non-disked, non-calyculate, apically flounced hemipenis are unique to *Ialtris* among Antillean "xenodontines," so whence came MAGLIO's conclusion that in "most characters *Ialtris* shows its greatest similarity to *Alsophis* . . ."? We can only speculate that, having no familiarity with the *parishi* Group, MAGLIO was impressed by the overall resemblance of *I. dorsalis* to the species of *Alsophis* in size and external appearance. Certainly the resemblance is striking, and it provides one of those disquieting cases where the frequently reliable *Gestalt* phenomenon experienced to a greater or lesser extent by all taxonomists would prove misleading. *Ialtris* may well have been derived from *Alsophis*, but in the absence of substantiating evidence such a conclusion is premature. The general similarity of the hemipenis of *Ialtris* to that of *Helicops* (ROSSMAN, 1974) is more than a little interesting, but the dissimilarity of other characters and the zoogeographic improbability of a close relationship between these two genera indicate that the hemipenial resemblance probably reflects convergence.

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