

CONTRIBUTIONS TO A REVIEW OF PHILIPPINE
SNAKES, XIV
THE SNAKES OF THE GENERA *XENOPELTIS*, *ZAOCYS*,
PSAMMODYNASTES AND *MYERSOPHIS*

ALAN E. LEVITON

California Academy of Sciences
San Francisco, California 94118

Four genera of snakes, three known from extra-Philippine localities in southeastern Asia, are treated in this report. These genera are not related to one another. They are considered together because they are small groups and can be handled conveniently at one time.

The genus *Xenopeltis* belongs to the curious family Xenopeltidae, thought to be monotypic by most workers but to which others have assigned the equally odd Mexican genus *Loxocemus*. Underwood¹ in his studies on the classification of snakes, concluded that the genus (and family) “. . . appears on the balance of characters to be a rather primitive and taxonomically rather isolated form.” Underwood places the family in the Infra-order Henophidia along with the families Aniliidae, Uropeltidae, Acrochordidae, and Boidae. These groups are not necessarily related, but they possess a number of supposedly primitive features¹ not shared with other snakes. Smith's² definition of the family and genus is followed here.

In the Philippines *Xenopeltis unicolor* is known with certainty only from the Palawan Archipelago. It has been reported from other islands, but these records need confirmation. Elsewhere it has been reported from Borneo, Java, Sumatra, Malaya, and the whole of the Indo-Chinese region as far west as Burma and north into southern China.

Zaocys and *Psammodynastes* are colubroid genera, the latter rearfanged and presumably mildly venomous, at least to small prey such as lizards, the former non-venomous but because of its size and disposition able to inflict painful bites. These genera are found on islands of both eastern and western

Philippines. Of the two Philippine species of *Zaocys*, *Z. luzonensis* is known only from Luzon and Polillo, although there is one unconfirmed report of its occurrence in Leyte. *Zaocys carinatus* has been taken in the Philippines only in Palawan, but it has a wide extra-limital distribution from western Indonesia, through the Malay Peninsula, into southern Viet Nam, Cambodia, Thailand, and Burma.

Only one of the two recognized species of *Psammodynastes* has been found within the Philippines, *P. pulverulentus*. It is a small, relatively slender brownish snake with a suffusion of dark spots that gives the snake the appearance of having been sprinkled with black pepper.

Myersophis, the newest addition to the Philippine fauna,³ is known from a single species, *M. alpestris*, and only two specimens, both from north-central Luzon. The relationships of this genus are obscure. Superficially it resembles members of the genus *Oxyrhabdium*, a sympatric and syntopic genus. Unfortunately, the type specimens of *M. alpestris* cannot now be located, and questions regarding the affinities of the genus must await the collection of new material.

TERMINOLOGY

Standard length (SL): distance (in mm) from tip of snout to anal opening.

Tail length (TaL): distance (in mm) from anal aperture to tip of undamaged tail.

Total length (TL): distance (in mm) from tip of snout to tip of tail.

Head length (HL): distance (in mm) from tip of snout to angle of jaws measured along the diagonal.

Skull length (SkL): straight-line distance (in mm) from tip of snout (premaxilla) to occipital condyle.

Head width (HW): greatest width (in mm) of skull.

Diameter of eye (DE): maximum straight-line width (in mm) of eye.

Scale reduction; 19 (3+4 [7]) 17 . . . dorsal scales in 19 longitudinal

rows anterior to ventral plate 7, reducing to 17 rows by fusion of third and fourth rows, counting upwards from ventrals, at level of seventh ventral shield. Caudal reductions indicated in a like manner except that the position of the reductions is indicated by the number of the subcaudal plate opposite which reduction takes place.

* (asterisk): following locality cited in "Range" indicates places from which specimens were seen in this study.

Genus *Xenopeltis* Reinwardt

Xenopeltis Reinwardt, in F. Boie,⁵ (type species *Xenopeltis unicolor* Reinwardt, by subsequent selection by Fitzinger 1843).

Zenopeltis Swainson, 1839:365 (type species "*Z. unicolor* Boie" by monotypy).

Definition. Teeth small, equal, closely set, numerous, 4-5 on each premaxilla, 35-45 on each maxilla; dentary bone joined to articular anteriorly, free posteriorly; coronoid absent; head not distinct from next; interparietal shield present, in contact with frontal; eye small, pupil vertically-elliptic; mental groove present; body cylindrical; scales smooth, in 15 longitudinal rows, without reductions; ventrals large; tail short; subcaudals paired; hypapophyses absent from posterior dorsal vertebrae; hemipenes forked, without spines. (Partly after Smith)².

Xenopeltis unicolor Reinwardt

Xenopeltis unicolor Reinwardt, in F. Boie⁵ (type locality: Java; type in Leiden Museum). — — Jan 1865: Livr. 9, pl. 5 (both young and adult illustrated). — — Steindachner⁶ (Sulu Islands). — — Boulenger⁷, fig. 10 (synonymy, description, distribution). — — Taylor⁸ (Sulu Islands [Bongao], Balabac); (synonymy, description, distribution)⁹. — — Bourret¹⁰, fig. 12 (synonymy, description, distribution compiled). — — Smith², fig. 31 (synonymy, description, summary of habits). — — Bergman¹¹ (anatomy, habits, growth rate, eggs). — — Leviton¹² (Balabac, Bongao, Jolo, Palawan).

Xenopeltis concolor Reinwardt, in F. Boie⁵ (type locality: Java; type in Leiden Museum).

Xenopeltis leucocephala Reinwardt, in F. Boie⁵ (type locality: Java; type in Leiden Museum).

Tortrix xenopeltis Schlegel¹³, pl. 1, figs. 8-10 (substitute name for *Xenopeltis unicolor*).

Range: (Philippine localities only.) *Balabac, Bongao, Jolo.* Palawan: Brooke's Point*, Iwahig*, Puerto Princesa*.*

Material examined (11): JOLO: CAS-SU 13324. PALAWAN: Brooke's Point— —MCZ 25603; Iwahig— —CAS 62171; Puerto Princesa— —CAS 15801. SABAH (North Borneo): CAS-SU 7278, 7338. BURMA: Rangoon— —CAS-SU 13245. INDONESIA: Java— —CAS-SU 13246. SINGAPORE: CAS 16750, 16754). DOUBTFUL LOCALITY: Southern India — — CAS 17178.

Taxonomic notes. Few specimens of this species have been collected in the Philippine Islands. Three of the four specimens reported on here were found by Taylor⁹, who included them in his monographic account of Philippine snakes; the fourth, obtained by Albert Herre in 1940, was said to have come from Jolo. Although the occurrence in Jolo would not be unexpected, Herre's record needs confirmation. This specimen had been included among a group of specimens which Herre also claimed had come from Jolo but almost assuredly did not (see Leviton¹⁴, footnote). At present, it is known with certainty that the species occurs in the Palawan Archipelago where it has been taken on several occasions, and on one of the southern-most of the Sulu Islands, Bongao.

Because this animal is infrequently encountered, museum samples are small and generally from widely scattered localities. There is no firm evidence to justify the recognition of geographically distinct races although it has been suggested that head color patterns may indeed differ among geographically isolated populations (Simon Camden-Main pers. commun.).

Diagnosis. See definition of genus.

Supplemental description. Internasals very small; 4 parietal shields and a large interparietal separating them; nasal divided, rarely single; 1 preocular; 2 postoculars; temporals 1+2; 8 upper labials, 4th or 4th and 5th bordering the eye; 8 lower labials, the first 3 in contact with a pair of small chin shields; scales smooth, in 15 longitudinal rows throughout; ventrals 162-196 (162-181 for Philippine specimens only); subcaudals 24-33 (18-29 for Philippine specimens); anal plate divided; caudodorsal scales reduce 6 (2+3 [10-14]) 4 (1+2 [22-25]) 2.

Hemipenes *in situ* extend to 6th subcaudal plate, forked near end of 4th plate; sulcus spermaticus forked for about half the length of the organ; spines

absent; a few calyces present in distal portion; proximally there are two thick longitudinal pleats which extend into the distal half, and there are 4 or 5 rows of transverse flounces which are restricted to the proximal half.

Color (in alcohol) light to dark brown, and highly iridescent; outer two scale rows and venter yellowish to light tan; in young the frontal, parietal, and two or three nuchal scale rows are yellowish white, but these become darker in the adult.

Sexual dimorphism. There is no evidence of sexual dimorphism in routine scale counts (e.g. scale rows, ventrals, subcaudals) in the sample studied or based on previously published data. On the other hand, Bergman¹¹ showed a difference in body weights between sexes and concluded "This makes us reluctant to accept the verdict that there should be no sexual differences in body length because it could not be demonstrated statistically." Comparison of the Tail length/Standard length (TaL/SL) indices for the available sample of males and females are equivocal. The one Palawan male (SL=520) has an index of .132; one female of approximately the same length (SL=523), also from Palawan, has an index of .146. The index number for a second but younger female (SL=350) is .123. The average of the TaL/SL ratios for four females (range in SL=332-523) is .140. A single young male from Singapore (SL=203) has a ratio of .126. Clearly the sample is too small to resolve the question of sexual dimorphism in body proportions. It is equally apparent, however, that there is considerable overlap in the TaL/SL indices of the specimens examined, but should it be demonstrated that in any given age class the sexes differ in body proportions, those differences are likely to be slight.

Inter-island variation. So far there is no evidence of geographic variation in either the sample studied or based on data extracted from the literature.

Ecological notes. Gunther¹⁵ was the first to note that these animals are nocturnal and feed upon small mammals, which are hunted in their subterranean burrows. Boulenger¹⁶ reported the snake had fierce habits; and Pope¹⁷, quoting earlier authors, stated "It frequently bites and vibrates its tail when annoyed. . ." On the other hand, while the rapid vibration of the tail has been observed by others^{18,2}, neither Flower¹⁸, Smith², nor Bergman¹¹ could induce their animals to bite.

It seems generally agreed that this snake spends most of its time underground, emerging only at night. Wall and Evans¹⁹ secured most of their animals during rainy periods in July, August, and September. They posited that rain flooded the underground haunts, forcing the animals to the surface. Bergman¹¹ thought that the appearance of adults during July-September might be

correlated with the sexual cycle. He obtained 44 of 52 specimens during the rainy seasons. The largest number of specimens, both young and adult, were taken during the months of January through April. Adults only were collected in July, August, and September. Thus, the appearance of adults alone during the late summer might be correlated with sexual activity, copulation and fertilization taking place at this time. Young are either born or hatched in December.

The feeding behavior seems to be unusually varied. Wall and Evans¹⁹, record a mouse, a field rat, and a snake ("*Natrix stolata*") in the stomachs of their material. In 1925 Wall supplemented the list with a bird, *Uroloncha punctulata*, and a young shrew, and Brongersma (1934:197) and Pope¹⁷ respectively added a gecko (*Hemidactylus*) and a snake (*Ptyas mucosus*).

Little is known of the altitudinal distribution of *X. unicolor*. Mell²⁰ records a single individual from Wuyung, Kwangtung, China, taken at an altitude of 40 meters. This is the only record that is accompanied by a measured altitude. All other animals, including those from the Philippines, are reported as coming from "lowland" habitats at or near sea level.

Genus *Zaocys* Cope

Zaocys Cope²¹ (type species *Coluber dhumnades* Cantor, by monotypy).

Zapyrus Gunther¹⁵ (type species *Coryphodon fuscus* Gunther, by subsequent selection by Stejneger 1907).

Zaococys Sclater²² (erroneous subsequent spelling).

Definition. Maxillary teeth 20-33, subequal or increasing slightly posteriorly; head distinct from neck; canthus rostralis very distinct; eye large, pupil round; a small presubocular usually present; body elongate, slightly compressed; scales smooth, middorsal series occasionally keeled, with apical pits, in even numbered longitudinal rows at midbody, with lateral reductions; ventrals rounded; tail long; subcaudals paired; hypapophyses absent from posterior dorsal vertebrae; hemipenes unforked, sulcus spermaticus unforked, spines present.

Remarks. Except for the presence of an even number of longitudinal scale rows in *Zaocys* and an odd number in *Ptyas*, these genera are morphologically and ecologically nearly indistinguishable. Although this author believes that the two genera should be united under the name *Ptyas*, which is the

senior synonym, the conventional arrangement of two genera is preserved in this report.

Two species of *Zaocys* occur in the Philippines. Of these, *Z. carinatus*, from Palawan, is widely distributed throughout southeastern Asia. *Zaocys luzonensis*, evidently isolated on the northern islands of Luzon and Polillo (although Boettger²³ included Leyte in the range), differs from *Z. carinatus* in lacking keels on the middorsal scale rows and in having only 14 longitudinal rows of scales at midbody. Smith² pointed out that the number of midbody scale rows varies from 14 to 18 (either 18:16 or 14:12) in *Z. carinatus*. Since only a few specimens of *Z. luzonensis* have been collected, it is too early to speculate whether or not it should be united with *Z. carinatus*.

KEY TO THE PHILIPPINE SPECIES OF ZAOCYS

1. Scales on anterior 1/3 of body 16 or 18; middorsal scales keeled
Z. carinatus
- Scales on anterior 1/3 of body 14; middorsal scales smooth
Z. luzonensis

Zaocys luzonensis Gunther

Zaocys luzonensis Günther²⁴ (type locality Luzon; type in British Museum [Natural History]). — — Boulenger⁷, pl. 26, fig. 2 (Luzon; redescription of type). — — Boettger²⁵ (Central Luzon). — — Griffin²⁶ (listed in key). — — Taylor⁹, pl. 12, figs. 1 & 3; pl. 13, figs. 1-2 (Luzon [Sarai]; description quoted from Boulenger); (Luzon [Balbalan, Los Baños], Polillo; color pattern, variation, measurements & counts);²⁷ (Luzon [Mt. Makiling])²⁸. — — Leviton¹² (Leyte, Luzon, Polillo).

Range. Leyte. Luzon: Kalinga Subprovince (Balbalan*), Laguna Province (Los Baños, Mt. Makiling, Sarai), Quezon Province (Villa Aurora*). *Polillo.*

Material examined (4): LUZON: Kalinga Subprovince: Balbalan (MCZ 25712), Quezon Province: Villa Aurora (USNM 140856); without locality data (FMNH 178614). POLILLO: (CAS 62437).

Taxonomic notes. This species differs from others in the genus in the fewer number of longitudinal scale rows at midbody. The scales of the dorsum are smooth, in this character agreeing with *Z. fuscus*. The longer tail, greater number of subcaudals, and more scale rows distinguish the latter from

Z. luzonensis. *Zaocys carinatus* differs from *Z. luzonensis* in the greater number of scale rows, in having keeled middorsal scales, and in the greater number of loreals.

Diagnosis. Scales on anterior 1/3 of body in 14 longitudinal rows, mid-dorsal scales smooth; 1 loreal; TL (maximum reported in literature) 2500 mm (SV-1850, individual unsexed [after Boulenger⁷.]).

Supplemental description. Maxillary teeth 30; 1 loreal; 1 preocular, occasionally an additional small subpreocular; 2 or 3 postoculars; temporals 2+2 or 2+3; 8 upper labials, 3rd, 4th and 5th or 4th and 5th bordering eye; dorsal scale reduction: 16 (3+4 [10-11]) 14 (-4[97-116]) 12; caudodorsal scales reduced: 6 (2+3[44]) 4 (1+2[110]) 2, ventrals 191-205; subcaudals 119-123; anal plate divided.

Hemipenes (*in situ*) extend to 14th subcaudal plate, unforked; sulcus spermaticus unforked; a few very large spines near basal end of organ; at level of 6th subcaudal plate spines become abruptly very small and extend to distal end.

Color (in alcohol) above light olive brown, each scale edged with black, some posterior scales entirely black, resulting in a series of small, dark vertebral blotches and a chain of similar blotches along the sides (most prominent in juveniles); venter light grayish yellow, darkening posteriorly to very dark olive brown.

Zaocys carinatus (Günther)

Figure 1

Coryphodon carinatus Günther²⁹ (type locality restricted to Borneo by Günther¹⁵ [see *Taxonomic Notes* below]; lectotype in British Museum [Natural History]; original description).

Zaocys carinatus: Griffin²⁶ (Palawan [Iwahig]; listed in key). — Taylor⁹, pl. 12, figs. 2 & 4 (Palawan [Iwahig]; synonymy, description, variation, material examined). — Haas³⁰ (Palawan). — Leviton¹² (Palawan).

Zaocys tenasserimensis Sclater²², pl. 6, fig. 3 (type locality Tenasserim; type in Indian Museum).

Range. (Philippine localities only.) *Palawan*: Iwahig*.

Material examined (1). PALAWAN: Iwahig (MCZ 25714).

Taxonomic notes. This species is widely distributed throughout southeastern Asia. Taylor⁹ found that his specimens of *Z. carinatus* averaged fewer ventral scutes than that for animals from Indonesia and Malaya. Temperature regime affecting embryogenesis or a combination of environmental factors may account for this difference, but samples of the several populations are too small and inadequately documented to test this idea. Otherwise, the Palawan animals do not differ in any noticeable way from animals from elsewhere in the range.

Günther²⁹ lists seven specimens under *Coryphodon carinatus*: one each from Borneo, Chusan, and Afghanistan, and two each from Khasya and Sikkim. In 1864 he restricted the name to apply to the Bornean specimen, which he then described in some detail. Acting as his own first revisor, Günther's restriction makes the Bornean specimen the lectotype of *Z. carinatus* and Borneo the type locality.

In the original description it is stated that the scales are in 14 or 16 rows. However, the Bornean specimen Günther had before him had 16 rows, the others 14 (see subsequent description of the Bornean specimen by Günther¹⁵). Günther subsequently assigned those specimens having 14 scale rows to other species (specifically *Z. dhumnades*).

Diagnosis. Scales in 16 or 18 longitudinal rows on anterior 1/3 of body; 4 to 6 median scale rows keeled; 2 or 3 loreals; subcaudals 110-118; TL 2206, SV 1628, TaL/SV index 0.355.

Supplemental description (Fig. 1a-b). Maxillary teeth 22-26; 2-4 loreals; 8-10 upper labials, 4th and 5th or 5th and 6th bordering eye; 2 preoculars; 2 postoculars; usually 2+2 temporals; dorsal scales keeled; dorsal scales reduced 16 (-4[116-119]) 14 (2+3[119-120]) 12; caudodorsal scales reduced 6 (2+3[43-44]) 4 (1+2[109-110]) 2 ventrals 199-215; subcaudals 110-118; anal divided.

Hemipenes (*in situ*) extend to 15th subcaudal plate, unforked, sulcus spermaticus unforked; proximal 1/3 with large, elongate spines followed by a series of closely set transverse flounces, which unite to form thick-walled calyces; distally, flounces form smooth longitudinal folds, which converge and meet at tip. (In part after Smith²).

Color (in alcohol) above dark gray or olive, scales with or without black edges and with or without a series of indistinct yellow reticulations

(formed when body is expanded and interstitial skin is visible); posterior part of body lighter brown, with black edges of scales forming six irregular longitudinal stripes, which are connected by an irregular reticulum of black; each scale on tail with yellowish center and heavy black edges.

Sexual dimorphism. Data are available for only three animals, two males and one female, as follows: ventrals, males 199-204, female 207. According to Taylor⁹, his female specimen lacked the tip of the tail and no accurate measurements could be obtained. The MCZ's male from Palawan, which was examined in this study, has 118 subcaudals and a TaL/SV index of 0.355.

Inter-island variation. The three specimens so far taken on Palawan average fewer ventrals than specimens from elsewhere. Smith² gives the range for Indo-Malayan specimens is 199-207.

Genus *Psammodynastes* Günther

Psammodynastes Günther²⁹ (type species *Psammodynastes pulverulentus* F. Boie)⁵.

Thammodynastes (*nec* Wagler³¹ [Reptilia]) Werner³² (erroneous subsequent spelling).

Anisodon (*nec* Lartet 1849, fossil mammals) Rosén³³ (type species *Anisodon lilljeborgi* Rosén, by monotypy).

Anisodontes Rosén³³ (substitute name for *Anisodon*).

Psalmodynastes Taylor³⁴ (erroneous subsequent spelling).

Definition. Maxillary teeth 10-15, two anterior and last two posterior abruptly and strongly enlarged, the posteriormost grooved; anterior mandibular teeth strongly enlarged; head distinct from neck; canthus rostralis distinct, angular, eye large, pupil vertically elliptic; frontal narrow, elongate; nasal single, nostril small; body cylindrical; scales smooth, in 17 longitudinal rows at midbody; ventrals rounded, without keel; tail moderate; subcaudals paired; hypapophyses present throughout vertebral column; hemipenes forked, spinose throughout.

Remarks. Two species are referred to the genus, *P. pictus*, found in Borneo and Sumatra, and the ubiquitous Indo-Malayan *P. pulverulentus*,

which has been found on nearly every major island within the Philippine Archipelago. Boulenger³⁵ (see "key" characters dichotomy "II") stated that species of *Psammodynastes* lack hypapophyses. Rosén³³ described a new genus and species of snake, obviously close to *Psammodynastes pulverulentus*, with hypapophyses on the posterior vertebrae. Later that same year, Boulenger³⁶ severely chastised Rosén for his carelessness in redescribing the well-known *P. pulverulentus*. Overlooked by Boulenger was the fact that it was his error which led Rosén to blunder inasmuch as he had earlier stated that hypapophyses were absent in this genus and species. Brongersma³⁷ showed that hypapophyses are always found in *P. pulverulentus* and *P. pictus*, of which he examined 18 specimens. In the present study at least a dozen specimens have been examined for this character, which was found to be present in each instance.

The two recognized species of *Psammodynastes* differ in one obvious external character: in *P. pictus* the third lower labials are fused to the second chin shield so that this pair of labials meet in the midline; in *P. pulverulentus* there are either two or three distinct pairs of chin shields and none of the adjacent labials fuse with them. In addition, Rasmussen³⁸ has shown that there are significant dentitional differences between these species, contrary to earlier views, thereby reinforcing their taxonomic status. In other obvious features (e.g. head scutellation, body form, hemipenial morphology), the two species are much alike.

Psammodynastes pulverulentus (H. Boie)

Figures 2-3

Psammophis pulverulenta H. Boie³⁹ (*Nomen nudum*); in F. Boie⁵ (type locality Java; type specimen unknown). — Schlegel¹³, pl. 8, figs. 10-11 (Java; description)⁴⁰.

Psammodynastes pulverulentus: Günther²⁹ (in part; Philippines, description). — Peters⁴¹ (Leyte, Luzon [Vulkan Ysarog], Samar [Loquilocum]). — Günther⁴² (Dinagat, Mindanao [Placer]). — Fischer⁴³ (southern Mindanao). — Müller⁴⁴ (Mindanao; color pattern). — Boettger⁴⁵ (distribution compiled; synonymy). — Boulenger¹⁶ (listed from Philippines; description). — Steindachner⁶ (Sulu Islands; *Lycodon bairdii* a synonym of *P. pulverulentus*). — Boulenger³⁵ (Balabac, Dinagat, Luzon [Albay], Mindanao [Placer]; synonymy, description, counts of material examined). — Boettger²⁵ (distribution compiled). — Flower¹⁸ (listed from "Balabac, Palawan, [and] Philippines"). — Ste-

jneger 1907:383, text-figs. 317-319 (Mindanao [Mt. Apo]; synonymy, description, variation, counts of material examined). — — Griffin 1909: 600 (Palawan); 1910:214 (Polillo)²⁶; (Balabac, Dinagat, Luzon [Albay, Sorsogon], Mindanao, Negros, Palawan, Polillo; listed in key). — — de Rooij 1917:202 (listed from Philippines; description, distribution). — — Taylor⁹, text-figs. 18a-c (Balabac, Bongao, Busuanga, Dinagat, Luzon, Mindanao [Bunawan, Port Banga, Zamboanga], Palawan, Polillo, synonymy, description, variation, counts and measurements of material examined); (Mindanao [Zamboanga], Basilan, Jolo; scutellation, variation, counts and measurements of material examined)²⁷; (Luzon [Mt. Makiling])²⁸. — — Bourret¹⁰, text-fig. 132 (synonymy, description). — — Haas³⁰ (listed from Philippines; distribution compiled). — — Rasmussen³⁸ (Balabac, Basilan, Batan, Bohol, Busuanga, Camiguin, Dinagat, Leyte, Luzon, Mindanao, Negros, Samar, Sulu Archipelago; study of variation throughout range of species, zoogeography).

Psalmodynastes pulverulentus: Taylor³⁴ (Negros [Mt. Canlaon]; color pattern); (Bongao; color pattern)⁸.

Dipsas ferruginea Cantor⁴⁶ (type locality Assam; type based on colored sketch in Bodleian Library, Oxford University).

Lycodon bairdii Steindachner⁴⁷ (type locality Philippines; type in Naturhistorisches Museum, Vienna).

Anisodon lilljeborgi Rosén³³ (type locality Java, type in Lund Museum).

Range. (Philippine localities only.) *Balabac**. *Basilan*: Abung-Abung*. *Batan Islands*: Sabtan Id. *Bohol*: Sierra Bullones [Cantaub Sitio*, Sandayong Sitio*]. *Bongao*. *Busuanga*. *Dinagat*. *Jolo*: Tumantangas Mt.* *Leyte*. *Luzon*: Albay Province (Albay); Camarines Sur Province (Mt. Isarog); Laguna Province (Mt. Makiling, Siniloan*); Quezon Province (Villa Aurora*); Sorsogon Province (Sorsogon). *Mindanao*: Agusan Province (Bunawan*); Davao Province (Mt. Apo*); Lanao Province (Lake Lanao*); Misamis Occidental Province (Kalambugan*); Surigao Province (Placer); Zamboanga del Norte Province (Port Banga, Zamboanga City). *Negros*: Negros Occidental Province (Bagtik River Valley*, Mt. Canlaon*); Negros Oriental Province (Lake Balinsasayao*, vicinity of Luzuriaga*, east slope of Cuernos de Negros*, Malyong Barrio*, Taksian*, Tanjay*). *Palawan*. *Polillo*. *Samar**.

Material examined (57). BALABAC: (CM 2178-2182). BASILAN: Abung-Abung (CAS 60327-60331; USNM 37409, 37411-37412, 37414). BATAN ISLANDS: Sabtan Id. (USNM 39958). BOHOL: *Sierra Bullones*:

Cantaub Sitio (CAS-SU 18894, 19360); Sandayong Sitio (CAS-SU 18779-18781, 18901). BONGAO: (CM 2176). JOLO: Mt. Tumantangas (CAS 60673-60674); without exact locality (CAS 62538). LUZON: *Laguna Province*: Siniloan (CAS-SU 13089); *Quezon Province*: Villa Aurora (USNM 142481-142482). MINDANAO: *Agusan Province*: Bunawan (CM 2173-2174); *Davao Province*: Mt. Apo (USNM 34707-34708, 34769); *Lanao Province*: Lake Lanao (CAS 15317); *Misamis Occidental Province*: Kalambugan (CAS 62048-62049); *Surigao Province*: Surigao River (USNM 38987); *Zamboanga del Norte Province*: Guman [Mt. Malindang] (CAS-SU 19367), Masawan [Mt. Malindang] (CAS-SU 19366); *Zamboanga Peninsula*: [without exact locality] (CAS 62032-62037). NEGROS: *Negros Occidental Province*: Bagtik River Valley (CAS-SU 21047), Mt. Canlaon (CM 2175); *Negros Oriental Province*: Lake Balinsasayao area (CAS-SU 18227-18228), ridge on north side of Maite River 4-5 km west of Luzuriaga (CAS-SU 17925-17926, 18207), ridge on south side of Maite River [east slope of Cuernos de Negros] (CAS-SU 18206), Malyong Barrio (CAS-SU 18765), Taksian [9 km west of Mayaposi] (CAS-SU 18788), 10 km west of Tanjay (CAS-SU 21078). SAMAR: (CAS-SU 13691; USNM 121738, 122214). PHILIPPINE IDS: (CAS 15318).

Taxonomic notes. This species is widely distributed throughout the whole of the Oriental Region. It has been recorded from eastern India, the entire Indo-Chinese region, southern China, Taiwan, Malaysia, the Indonesian Archipelago as far east as Flores, and the Philippine Islands. Such geographic variation as occurs is discordant, notwithstanding the fact that dentitional differences show some trend toward specialization among centrally distributed populations, while those populations found in marginal areas, such as the Philippines, retain a supposedly "primitive" dental pattern³⁸. The discordant nature of the variation points to a rather recent dispersal, perhaps as recent as the Wurm II glaciation.

Pope¹⁷ observed that the Formosan (Taiwan) population might be recognized as a distinct subspecies, based on its higher than average ventral counts. My data and those of Rasmussen³⁸ show that there is a wide range of variation in both ventral and subcaudal counts among contiguous populations, although intra-population variation is often small. For instance, the ventral counts for a small sample of animals from Zamboanga del Sur Province, Mindanao, range from 151 to 167 (both sexes); specimens from Basilan, a small island immediately to the south of the Zamboanga Peninsula, have from 156 to 178 ventrals (sexes combined); the range for the Philippine Islands is 143-178. This suggests that variations of the magnitude cited by Pope are of little importance in themselves and should not be used as a basis for naming new taxa.

Diagnosis. Third lower labial not fused with chin shields, not meeting its opposite in the midline.

Supplemental description (Figs. 2a-b, 3). Diameter of eye equal to or slightly less than distance to snout; snout broadly truncate; internasals smaller than prefrontals, narrowed in front; frontal twice as long as wide, 0.75-1.00 times as wide as supraocular, slightly shorter than parietals; nasal single, nostril small; 1 or 2 loreals; 2 preoculars; 2 postoculars; temporals 2+2, rarely 1+2; 8 upper labials, rarely 7, the 3rd, 4th and 5th bordering eye; 8 lower labials, rarely 7, the 1st pair in contact behind mental, first 3 in contact with anterior chin shields; usually 3 pair of short chin shields; scales smooth, reduced 19 (-4[7-8]) 17(-4[104-109]) 15; caudodorsal scales reduced 6 (2-3 [17-25]) 4 (1-2[43-49]) 2; ventrals 143-178; subcaudals 50-69; anal plate single.

Hemipenes (*in situ*) extend to 10th subcaudal plate, forked at level of 6th to 8th plates; sulcus spermaticus forked; spinose throughout, spines subequal in size except for two basal spines which are enlarged.

Color (in alcohol) variable, brown, grayish, to black above, lighter below, with numerous very small black or dark brown spots; upper labials dark or with a whitish streak, which extends to beyond the angle of the jaw; three indistinct dark stripes on dorsum (see Fig. 3). Taylor⁹, described the colors in life.

Sexual dimorphism and ontogenetic variation. The sexes differ in ventral and subcaudal counts, males having fewer ventrals and more subcaudals than females (Tables 1 and 2). Samples from each locality must be treated separately because the range of variation in ventral counts within each sex among combined allopatric populations exceeds the range of variation for both sexes within a single deme. However, this does not seem to be true for subcaudal counts (excepting the one Busuanga female, which seems to be abnormal).

Mertens⁴⁸, has already commented upon the divergence in color and intensity of coloration between sexes. Females tend to be darker than males, almost black, especially about the supralabials. Males, although occasionally very dark, are more frequently varying shades of brown ("rotbrauner, gelbbrauner oder graubrauner. . ." [Mertens *loc. cit.*]).

Table 1. Summary of variation in ventral shields in
Psammodynastes pulverulentus

| Island | Males | | | Females | | |
|-----------------------|-------|-----------------|---------|---------|-----------------|---------|
| | N | Mean+SD/SE | Range | N | Mean+SD/SE | Range |
| Busuanga | 1 | 156.0 | | 1 | 173.0 | |
| Jolo | 1 | 146.0 | | 2 | 155.5 | 155-156 |
| Basilan | 3 | 164.7 | 156-169 | 6 | 169.8 | 165-178 |
| Mindanao ¹ | 10 | 155.3±2.94/0.85 | 151-160 | 20 | 163.7±1.82/0.41 | 160-167 |
| Samar | 3 | 154.3 | 153-156 | | | |
| Bohol | 2 | 149.5 | 148-151 | 4 | 155.3 | 150-159 |
| Negros | 5 | 148.2±0.87/0.39 | 147-149 | 7 | 150.9±2.34/0.88 | 148-155 |
| Luzon | 2 | 148.0 | 147-149 | 1 | 154.0 | |
| Polillo | | | | 1 | 158.0 | |
| Batan | | | | 1 | 167.0 | |

¹Taylor⁹ listed one supposedly male specimen (EHT 80, now CM 2173) from Bunawan, Agusan Province, Mindanao. This specimen was re-examined and found to be a female.

Table 2. Summary of variation in subcaudal shields in
Psammodynastes pulverulentus

| Island | Males | | | Females | | |
|----------|-------|----------------|-------|---------|-------------------|-------|
| | N | Mean+SD/SE | Range | N | Mean+SD/SE | Range |
| Busuanga | 1 | 66.0 | | 1 | 69.0 ² | |
| Jolo | 1 | 58.0 | | 2 | 56.0 | 55-57 |
| Basilan | 3 | 59.0 | 57-61 | 6 | 53.3±3.25/1.33 | 48-57 |
| Mindanao | 10 | 61.0±2.93/0.93 | 56-66 | 18 | 56.9±2.40/0.57 | 53-62 |
| Samar | 3 | 61.0 | 59-63 | | | |
| Bohol | 2 | 59.5 | 58-61 | 4 | 54.5 | 53-58 |
| Negros | 5 | 60.6±2.58/1.15 | 57-65 | 6 | 56.6±2.24/0.91 | 53-60 |
| Luzon | 2 | 57.0 | 54-59 | 1 | 56.0 | |
| Polillo | | | | 1 | 61.0 | |

²Specimen not examined; the datum was taken from Taylor⁹. This number seems abnormally high. Either the animal was a male or there was a typographical error.

In 1930 Mertens compared two males and two females of exactly the same total lengths and showed that males have longer tails (and consequently shorter bodies) than females. Comparison of specimens of the same SL supports Mertens' observations as does a comparison of the TaL/SV index (Table 3). There is no evidence to indicate that the TaL/SL index varies geographically, but there is a sexual component to the variation.

Table 3. Sexual dimorphism in TaL/SL indices in *Psammodynastes pulverulentus*

| Sex | N | Mean | Range |
|--------|----|-------|-------------|
| Male | 9 | 0.278 | 0.253-0.315 |
| Female | 13 | 0.258 | 0.153-0.273 |

Ontogenetic variation in color pattern exists, there being a clear trend toward melanism in the adult and a sharp delineation of ventrolateral light spots. Most obvious is the tendency for darkening of the upper labials and throat, which in many young are nearly devoid of dark pigment. There is also an increase in dark pigmentation over the entire dorsum. In adults, there are two white spots on the posterior chin shields that are usually sharply defined; these spots may or may not be apparent in young. Light spots are also found along the outer edges of the ventrals, extending onto the outer scale rows; these, too, are infrequently seen in young. In young animals, the pattern of scattered black spots and blotches on the dorsum can often be made out in the adults, especially if the specimens are wet. However, the dark line which borders the upper labials in young animals is obscured in those adults whose labial shields are dark. These ontogenetic changes in color pattern may have a geographical component (see comments below).

Inter-island variation. Apart from the variation in ventral and subcaudal counts due to sex, there also seems to be a north-south component to the variation in these counts that is not related to the isolation of populations due to insularity (see Table 1).

With respect to color pattern, while both adult and young from Mindanao and Samar may have white upper labials (a "white stripe"), in both it is often either absent or heavily suffused with dark pigment. Elsewhere in the Philippines, adults *always* have dark upper labials. It is perhaps noteworthy that animals from Mindanao, Samar, and Bohol frequently have two loreal shields rather than one, which is at variance with animals taken from other

islands. This is a point of some interest inasmuch as during the late Pleistocene there probably was no barrier to gene exchange among these populations since at times the three islands were connected by subaerial land.

Ecological notes. This snake, often described as active and vicious and capable of climbing with ease or progressing by a sort of "jumping gait", has been seen active during both day and evening hours⁹. Frequently it is found under logs or trash, but it is also seen scrawling about in the open.

Mell²⁰, Pope¹⁷, Smith² and others most often found this snake in mountainous or at least hilly locals. Most of the specimens examined in this study also come from hilly regions; for instance, those from Negros were collected at altitudes in excess of 850 meters. Taylor⁸ reported that one of his specimens was taken at an altitude of 700 meters (on Bongao); and several specimens collected in southern Mindanao by the Philippine Zoological Expedition of the Field Museum of Natural History were taken at altitudes ranging from 150 to 1150 meters. The snake has been found at sea level, too, at Brooke's Point (Palawan) and in Davao Province (Mindanao) (FMNH 53488-53492, 53495-53499 [not seen]).

For the most part *P. pulverulentus* feeds on frogs and lizards; among the latter skinks predominate, although some of the scale and teeth fragments found in the stomachs which were examined in this study suggest they do eat a variety of small lizards. Wall^{49, 50} wrote an excellent account of this species, which includes a good colored plate and text-figures (see also Mocquard^{51, 52}).

Genus *Myersophis* Taylor

Myersophis Taylor³ (type species *Myersophis alpestris*, by monotypy; whereabouts of type unknown [see comments below]).

Remarks. In 1963 Taylor described the monotypic genus *Myersophis* based on *M. alpestris*, a new species of Philippine colubrid snake. The type specimens (one adult and one juvenile) were collected in an alpine habitat near Banaue, Ifugao Subprovince, Mountain Province, Luzon Island, probably by Taylor himself, although this is not entirely clear from his text. Taylor loaned the type material to this writer several years ago, at which time three drawings of the head were executed. Unfortunately time did not permit a critical examination of the specimens before they had to be returned. Superficially the animals resembled *Oxyrhabdium leporinum*, a crepuscular and syntopic species, but on close examination they were found to be quite different

(see Taylor³ for details). The types were returned to Taylor in mid-1974 and presumably were transferred to the Field Museum of Natural History in Chicago along with the bulk of Taylor's Asian collections, which had been purchased by that institution. A recent attempt to locate the specimens at the Field Museum was unsuccessful, as was a similar search at the Museum of Natural History at the University of Kansas. As of this writing, the whereabouts of the holotype and paratype of *M. alpestris* is unknown, but it is presumed that they have been temporarily misplaced rather than lost. Because the specimens are not now available for study, Taylor's diagnoses of the genus and species are quoted. Little can be added to either at this time save that this writer did examine the posterior vertebrae and found hypapophyses to be present, a feature not noted by Taylor. The three figures reproduced here (Fig. 4a-c) were prepared by Ms. Betsy Hutchings while a student at San Francisco State University in 1974. No figures accompanied the original description.

Diagnosis. "Maxillary teeth 14 to 15, strong, elongate, bending somewhat backwards at their bases, smaller at anterior and posterior ends of series; rostral about one and one-half times as wide as high; nasal very small, equal to or a little smaller than first supralabial; internasals much broader than long, touching second labial behind nasal; prefrontal separated from orbit by contact of supraocular with loreal; prefrontals not twice size of internasals; no primary temporals; fifth supralabial bordering parietal; eye very small with round pupil; one postocular; first infralabials small, widely separated; large anterior chin shields, a small second pair.

"Scale rows 15 throughout body; tail very short, about one eleventh of body length³."

Myersophis alpestris Taylor

Figure 4

Myersophis alpestris Taylor³ (type locality in mountains near Banaue, Mountain Province, Luzon; whereabouts of type uncertain).

Diagnosis. "Head slightly distinct from neck; no preocular; elongate loreal nearly thrice as long as high, entering orbit; one elongate postocular; nasal divided; mental wider than rostral; first infralabials not in contact; anterior chin shields relatively very wide, the infralabials small. No anterior temporal³."

Remarks. According to Taylor³ the genus *Myersophis* differs from the endemic Philippine genus *Oxyrhabdium* "in the arrangements of the scales on the upper surface of the snout and the side of the head. The internasals are much broader than long, touching the second supralabial laterally behind the nasals; prefrontals longer than the internasals but of near equal width or a little narrower; loreal separated from the posterior nasal; postocular elongate; the fifth supralabial in contact with the parietal, separating the first temporal from the postocular. No primary temporal; the prefrontals are excluded from the orbit by the junction of the large supraocular and the elongate loreal. The mental is distinctly wider than the rostral."

Taylor supplies additional information about the two specimens he had before him in the description of the holotype and paratype.

ACKNOWLEDGMENTS

The author thanks the following individuals and institutions for permission to study materials under their care: Ernest E. Williams and Pere Alberch, Museum of Comparative Zoology, Harvard University; Ronald Heyer, George Zug and Ronald Crombie, National Museum of Natural History; C. J. McCoy, Carnegie Museum; Hymen Marx and Harold Voris, Field Museum of Natural History. The California Academy of Sciences has extensive collections, which were also utilized in the study. Museum acronyms follow the recommendations of the Joint Herpetological Resource Committee⁴.

REFERENCES

1. Underwood, Garth. 1967. A contribution to the classification of snakes. British Mus. Publ. 653. London. x+179 pp.
2. Smith, M. A. 1943. Fauna of British India, Ceylon and Burma . . . Reptilia and Amphibia. Serpentes. London. 3:xii+583., 1 map.
3. Taylor, E. H. 1963. New and rare Oriental serpents. *Copeia*. 2: 429.
4. Leviton, A. E., et al. 1980. Museum acronyms — Second edition. *Herp. Review* 11: 93.
5. Boie, Friederich. 1827. Bemerkungen ueber Merrem's Versuch eines Systems der Amphibien. *Isis* (von Oken) 20: cols. 506-566.

6. Steindachner, Franz. 1891. Ueber einiger neue and seltene Reptilien- und Amphibien- Arten. Sitzb. math.- naturw. Cl Akad. Wiss Wien **100** (Abt. 1): 291, pls. 1-2.
7. Boulenger, G. A. 1893. Catalogue of Snakes in the British Museum, London. **1**: xiii+ 448 pp., 28 pls.
8. Taylor, E. H. 1918. Reptiles of the Sulu Archipelago. *Philip. J. Sci.*, Sec. D. **13**: 233, 3 pls.
9. _____ . 1922a. The snakes of the Philippine Islands. *Bureau Sci. (Manila) Mon.* **16**. 312 pp., 37 pls.
10. Bourret, Rene. 1936. Les Serpents de l'Indochine. Tome II Catalogue systematique descriptif. Toulouse. pp. 505.
11. Bergman, R. A. M. 1955. The anatomy of *Xenopeltis unicolor*. *Zool. Meded.* **33**: 209.
12. Leviton, A. E. 1963a. Remarks on the zoogeography of Philippine snakes, *Calif. Acad. Sci. Proc.*, Ser. 4, **31**: 369.
13. Schlegel, Herman. 1837. Essai sur la physionomie des serpens. Partie descriptive. La Haye. 605 pp., 21 pls.
14. Leviton, A. E. 1963b. Contribution to a review of Philippine snakes. I. The snakes of genus *Oligodon*. *Philip. J. Sci.* **91**: 459.
15. Günther, A. C. 1864. The Reptiles of British India. London xxvii+452 pp., 26 pls.
16. Boulenger, G. A. 1890. The Fauna of British India, including Ceylon and Burma. Reptilia and Batrachia. London, 541 pp.
17. Pope, C. H. 1935. The reptiles of China. *In* Natural History of Central Asia, New York. **10**: x+ 604 pp., 27 pls.
18. Flower, S. S. 1899. Notes on a second collection of reptiles made in the Malay Peninsula and Siam, from November 1896 to September 1898, with a list of species recorded from those countries. *Zool. Soc. London Proc.* p. 600. pls. 36-37.

19. Wall, Frank and G. H. Evans. 1900. Notes on *Ophidia* collected in Burman from May to December, 1899. *Bombay Nat. Hist. Soc. J.* 13: 343.
20. Mell, Rudolf. 1922. Beitrage zur Fauna sinica. I. Die Vertebraten Sudchinas; Feldlisten und Feldnoten der Sauger, Vogel, Reptilien Batrachier. *Arch. Naturg.* 88(Abt. A): 1-134, pls. 1-4.
21. Cope, E. D. 1860. Catalogue of Colubridae in the Museum of the Academy of Natural Sciences of Philadelphia. Part 3. *Acad. Nat. Sci. Phila. Proc.* 12: 553.
22. Sclater, W. T. 1891. Notes on a collection of snakes in the Indian Museum with description of several new species. *Asiatic Soc. Bengal J.* 60: 230, pl. 6.
23. Boettger, Oskar. 1890. (List of reptiles and batrachians from Leyte, Philippine Islands, sent in by Dr. Fr. von Moellendorf) *Ber. Senck. Naturf. Ges.* 1xiii.
24. Günther, A. A. 1873. Notes on some reptiles and batrachians obtained by Aldolf Bernhard Meyer in Celebes and the Philippine Islands. *Zool Soc. London Proc.* p. 165, pl. 18.
25. Boettger, Oskar. 1898. Katalog der Reptilien Sammlung in Museum der Senckenbergischen Naturforschenden Gesellschaft in Frankfurt am Main. 2 Teil. Schlangen. Frankfurt-am-Main ix+160 pp.
26. Griffin, L. C. 1911. A checklist and key of Philippine snakes. *Philip J. Sci.*, Sec. D, 6: 253.
27. Taylor, E. H. 1922b. Additions to the herpetological fauna of the Philippine Islands. II. *Philip. J. Sci.*, Sec. D, 21: 257.
28. ————. 1922c. Herpetological fauna of Mount Makiling. *Philip. Agric.* 11: 127.
29. Günther, A. C. 1858. Catalogue of the Colubrine Snakes in the Collection of the British Museum. London. xvi+281 pp.
30. Haas, C. P. J. de. 1950. Checklist of the snakes of the Indo-Australian Archipelago (Reptiles, Ophidia). *Treubia* 20: 511.

31. Wagler, J. G. 1830. *Natürliches System der amphibiën, mit vorangehender Classification der Saugthiere und Vogel.* Munchen. vi+354 pp., 1 pl.
32. Werner, Franz. 1903. *Ueber Reptilien and Batrachier aus Guatemala und China in der zoologischen Staats – Sammlung in Munchen nebst einem Anhang Uber seltene Formen aus Gegenden.* K. Bayerischen Akad. Wiss. Abh. , Kl. 2, 22: 343, 1 pl.
33. Rosén, Nils. 1905a. List of the snakes in the Zoological Museums of Lund and Malmo, with descriptions of new species and a new genus. *Ann. Mag. Nat. Hist.*, Ser. 7, 15: 168, pls. 9-10.
34. Taylor, E. H. 1917. Snakes and lizards known from Negros, with descriptions of new species and new subspecies. *Philip. J. Sci.*, Sec. D. 12: 353, 2 pls.
35. Boulenger, G. A. 1896. *Catalogue of snakes in the British Museum,* London. 3: xiv+ 727 pp., 25 pls.
36. _____. 1905. Remarks on Mr. N. Rosén's list of the snakes in the zoological museums of Lund and Malmo. *Ann. Mag. Nat. Hist.*, Ser. 7, 15: 283.
37. Brongersma, L. D. 1938. On the presence or absence of hypapophyses under the posterior precaudal vertebrae in some snakes. *Zool. Meded.* 20: 240.
38. Rasmussen, J. B. 1975. Geographical variation, including an evolutionary trend, in *Psammodynastes pulverulentus* (Boie, 1827) Boiginae, Homalopsidae, Serpentes). *Vidensk. Medd. Dansk Naturh. For.* 138: 39.
39. Boie, Heinrich. 1826. Notice sur l'herpetologie de l'île de Java. *Bull. Sci. Nat. Geol.* (12th sect. Bull. Universel des Sci. et de l'Industrie, M. le Bon de Ferrussac, ed.) 9: 233.
40. Schlegel, Herman. 1844. *Abbildungen neuer oder unvollständig bekannter Amphibien, nach der Natur oder dem Leben entworfen.* Dusseldorf. Pl. 43, figs. 1-4.
41. Peters, W. C. H. 1861. Eine zweiter Uebersicht (vergl. Monatsberichte 1859, pl 269) der von Hrn. F. Jagor auf Malacca, Java, Borneo und den Philippinen gesammelten und dem Kgl. zoologischen Museum überstandten Schlangen. *Akad. Wiss. Berlin Monatsb.* p. 683.

42. Günther, A. C. 1879. List of the mammals, reptiles, and batrachians sent by Mr. Everett from the Philippine Islands. *Zool. Soc. London Proc.* p. 74.
43. Fischer, J. G. 1885. Ichthyologische and Herpetologische Bemerkungen. Part IV: Ueber eine Kollektion von Amphibien und Reptilien von Mindanao. *Jahrb. Hamburg wiss. Anst.* 2: 80.
44. Muller, Fritz. 1883. Dritter Nachtrag zum Katalog der herpetologischen Sammlung der Basler Museums. *Naturf. Ges. Basel Verhandl.* 7: 274.
45. Boettger, Oskar. 1886. Aufzählung der von den Philippinen bekannten Reptilien und Batrachier. *Ber. Senck. Naturf. Ges.* 91.
46. Cantor, T. E. 1839. Spicilegium Serpentium Indicorum. *Zool. Soc. London Proc.* 31: 49.
47. Steindachner, Franz. 1867. Reptilien. *In* Reise der osterreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859. *Zool. Theil.* Wien. 1: 1, pls. 1-3.
48. Mertens, Robert. 1930. Die Amphibien und Reptilien der Insel Bali, Lombok, Sumbawa und Flores. (Beitrage zur Fauna der Kleinen Sunda-Inseln, 1). *Senckberg. Naturf. Ges. Abh.* 42: 115, 8 pls.
49. Wall, Frank. 1910. A popular treatise on the common Indian snakes. Part 13 (*Ancistrodon himalayanus*, *Psammodynastes pulverulentus*). *Bombay Nat. Hist. Soc. J.* 20: 65, 1 pl.
50. _____. 1912. The breeding of the false Himalayan viper (*Psammodynastes pulverulentus*). *Bombay Nat. Hist. Soc. J.* 21: 686.
51. Mocquard, F. 1887. Contribution a l'histoire du genre *Psammodynastes*. *Soc. Philom. Paris Bull.* 11: 172, pls. 3-4.
52. _____. 1888. Seconde contributions a l'histoire du genre *Psammodynastes*. *Soc. Philom. Paris Bull.* 12: 104.
53. Rosén, Nils. 1905b. Reply to Mr. G. A. Boulenger. *Ann. Mag. Nat. Hist. Ser. 7*, 16: 126.
54. Jan, Georg. 1860, 1881. Iconographie generale des ophidiens. Milan. Livr. 1-52. (Livr. 9 published in 1865.)

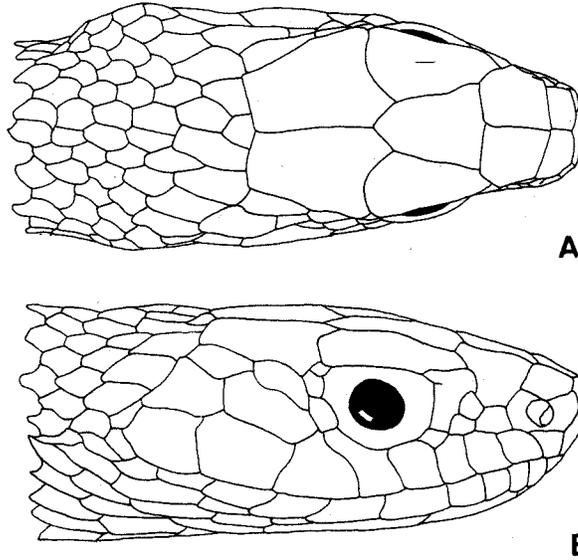


FIGURE 1a-b. *Zaocys carinatus* Günther: a) Dorsal and b) Lateral views of head showing typical scutellation patterns (CAS 62564). Drawings by Linette Sabre.

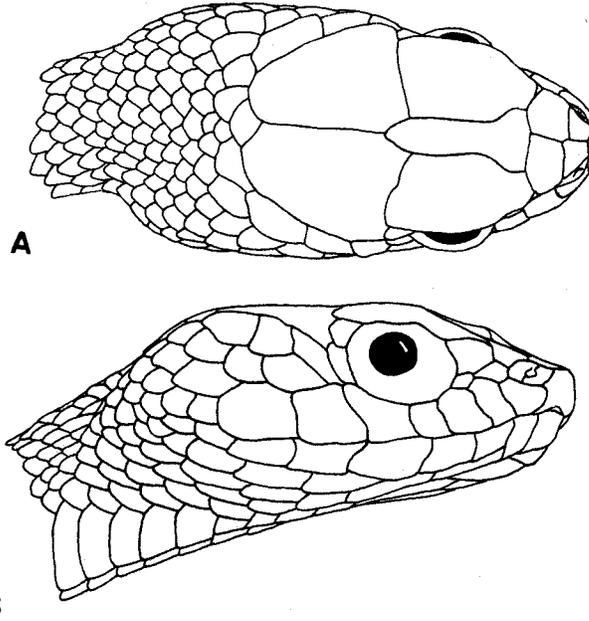


FIGURE 2a-b. *Psammodynastes pulverulentus* (H. Boie): a) Dorsal and b) lateral views of head showing typical scutellation patterns (CAS 2 3454). Drawings by Linette Sabre.

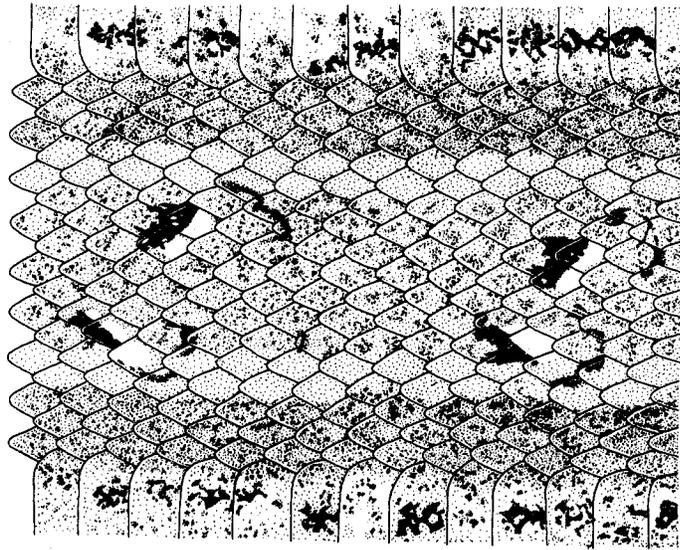


FIGURE 3. *Psammodynastes pulverulentus* (H. Boie): color pattern of CASU 18765 from Negros Oriental Province. Drawings by Linette Sabre.

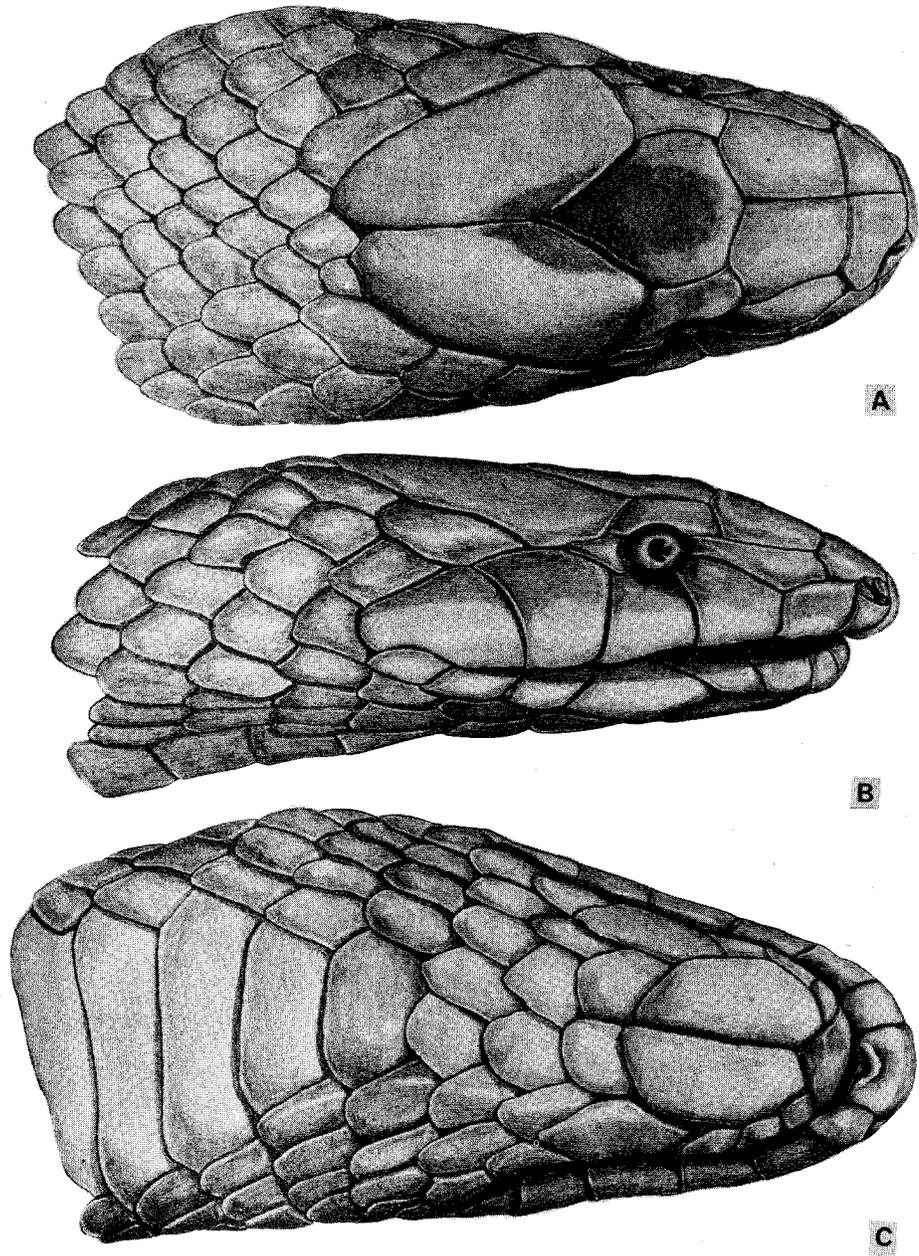


FIGURE 4a-c. *Myersophis alpestris* Taylor: a) Dorsal, b) lateral and c) ventral views of head scutellation of holotype (formerly in the Edward Harrison Taylor collection, present whereabouts unknown). Drawings by Betsy Hutchings.