

## NOTES ON *TRIMERESURUS BRONGERSMAI* HOGE 1969 (SERPENTES, VIPERIDAE, CROTALINAE)\*

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**ABSTRACT** — Redescription of *Trimeresurus brongersmai* Hoge 1969, and relationship with: *T. puniceus* (Boie) 1827; *T. cornutus* Smith 1930; *T. kanburiensis* Smith 1943 and *T. borneensis* Peters 1872 which is considered a valid species.

**UNITERMS** — *Trimeresurus brongersmai* Hoge 1969; *T. puniceus* (Boie) 1827; *T. cornutus* Smith 1930; *T. kanburiensis* Smith 1943 and *T. borneensis* (Peters) 1872.

This paper deals with a full description of *Trimeresurus brongersmai* Hoge 1969, first described in an abstract of the annual meeting of the "Sociedade Brasileira para o Progresso da Ciência" in "Ciência e Cultura" 21 (2), 1969, and notes on related species.

### Abbreviations used in reference to specimens:

British Museum (Natural History) London (BMNH); Rijks Museum v. Natuurlijke Historie Leiden (RMNH); United States National Museum, Washington D.C. (USNM); Museum National d'Histoire Naturelle, Paris (MNHN); Instituto Butantan, São Paulo (IB); Naturhistoriska Riksmuseum Stockholm (NHRS).

### KEY TO THE SPECIES OF THE *PUNICEUS* GROUP

- I — Ventrals more than 190; caudals more than 71; supraoculars broken up in 3-4 scales; strongly erected and convergent forming a horn-like appendage (Fig. 4); Dorsal pattern (see Fig. 6); Dorsals 21-21-17 ..... *cornutus*
- II — Ventrals fewer than 177; caudals fewer than 58;
  - A — 8 scales between the supraoculars which are large and divided on their inner margins; dorsals in 19-19-15 rows ..... *kanburiensis*
  - B — 10-14 scales between the supraoculars
    - 1 — Snout strongly projected, and squarish (Fig. 2); ventrals 136-150; supraoculars divided and divergent (Fig. 2); single elongate dorsal blotches, fused, opposite

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or alternated; 2<sup>nd</sup> upper labial forming the anterior border of the loreal pit (Fig. 1) dorsal pattern (see Fig. 3 and 11). Dorsals (21-20) -19-15 ..... *brongersmai*

2 — Snout not strongly projected

a — 2<sup>nd</sup> upper labial usually not forming the anterior border of the loreal pit (Fig. 7); dorsals in 21-23 rows; 12-15 series of scales between the supraoculars which are narrow or broken up in erected scales; snout rounded (Fig. 8) Dorsal pattern see fig. 9 and 12 *puniceus*

b — 2<sup>nd</sup> upper labial forming the anterior border of the loreal pit (Fig. 13); dorsals in 19 — (exceptionally 21) rows; 10-11 series of scales between the supraoculars which are generally divided and knoblike (Fig. 13); snout prominent, raised above the nostrils (Fig. 13); Dorsal pattern (Fig. 10 and 14) ..... *borneensis*

*Trimeresurus brongersmai* Hoge Fig. 1, 2, 3 and 11.

1969 — *Trimeresurus brongersmai* Hoge, *Ciência e Cultura*, 21 (2) :459.  
*Type locality*: Lugu, Simalur, west coast of Sumatra.  
Holotype, RMNH Nr. 5654 A; from Lugu, Simalur, Sumatra; 4-1913; E. Jacobson col.

*Diagnosis.* A *Trimeresurus* (fig. 1, 2 and 3) with the second upper labial forming the anterior border of loreal pit; supraoculars broken up in non convergent, strongly erected and pointed scales; snout strongly projected and laterally expanded; anterior part of nasals well visible from front and forming, together with the rostral the tip of the snout; supraoculars separated by 11-12 scales; ventrals 136-150; caudals 41-48; dorsals in [20-21] — 19-15 longitudinal smooth rows. Dorsal pattern of elongated markings, confluent or alternate, and below streaks of same length; the lateral streaks gradually fusing, with the dorsal ones, on the back of the body.

*Description of holotype* — Rostral slightly wider than high, nearly twice as broad at base as at tip; internasals large, separated by two scales, strongly projected laterally and forewards; two (left side, by fusion of 1<sup>st</sup> and 2<sup>nd</sup>) scales between internasals and upper preocular, three on the right side; nasal entire, anterior part projected and well visible from front, separated from the first upper labial; second upper

labial forming the anterior border of the loreal pit; a small scale between nasal and upper part of 2<sup>nd</sup> upper labial; third upper labial largest, separated from the elongate subocular by 1+2 scales; supraocular broken up in 4-5 strongly erected and divergent spinelike scales; scales on upper head smooth and imbricated; temporals strongly keeled or knobbed on tip; 11 scales on a line between the erected supraoculars; 1-2 postoculars and an elongate subocular; horizontal diameter of eye less than the distance between eye and mouthleft; 10 upper and 10-11 lower labials; first pair of lower labials not in contact behind the symphysial; a single pair of chin shields longer than wide, each one separated from the symphysial by a scale resulting from the transverse division of first lower labial. Color grey with elongated rectangular dark grey dorsal markings, fused, opposite or alternated with the ones of the other side; the dorsal blotches resulting from the fusion of right and left marking have a lighter center. The dorsal blotches are formed by single dorsolateral marking, not by two vertical ones, separate or fused, as in *T. puniceus* (Boie) 1827. Just below the dorsal markings there are, on the 4-5<sup>th</sup> row, longitudinal dark streaks, fused with the dorsal ones on the posterior part of the body. Belly whitish grey, heavily powdered with dark; the outer side of ventrals more densely powdered and spotted with dark. The dark color of outside of ventrals invades the paraventral row in a manner not unlike a saw; 29 dorsal blotches, 11 on tail; lower part of tail dark grey; a whitish postocular streak. Dorsals in 21-19-15 longitudinal rows of smooth scales (some scales in the vertebral region of neck are slightly knobbed on the tip). Ventrals 150; anal 1; caudals 47/48 rows. Hemipenis spinous from bifurcation at tip; bifurcation at 4<sup>th</sup> caudal; hemipenis extending to 8-9 subcaudal. Head 26.1 mm; body + head 340 mm, tail 66 mm.

*Paratypes* — RMNH 5654 B now IB 29925; male; same locality and col. as holotype; Dorsals 20-19-15; Ventrals 148; anal 1; Caudals 48/48; 9 upper labials; 11 scales between supraoculars. RMNH 5649, male, Sibogo; Simalur, Sumatra, same col. as holotype, Dorsals 20-19-15; Ventrals 150; anal 1; Caudals 48/48; 10 upper labials; 11 scales between supraoculars. RMNH 5181, female, Sinabang, Simalur, Sumatra, same col. Dorsals 20-19-15; Ventrals 136; anal 1; Caudals 41/42. USNM 30758, Simalur (Fig. 1 and 2).

**RELATIONSHIP.** *Trimeresurus brongersmai* is closest to *Trimeresurus borneensis* Peters 1872 from which it differs by: lower number of ventrals, 136-150 against 152-168; dorsal rows in 19 against 21; supraoculars long and strongly erected, against small and more knoblike ones in *borneensis* fig. 2 and 13; the greyer color, and different dorsal pattern (Fig. 11), specially the small sawlike intrusions of dark ventral color in dorsals. Easily distinguished from *T. cornutus* Smith (Fig. 4, 5 and 6), the only species besides *T. brongersmai* with strongly erected supraoculars, by the shape of the snout; and by the divergent instead of convergent supraocular spines (Fig. 1 and 2) and the lower number of ventrals 135-150 against 193-197; from *T. kanburiensis* Smith 1930 by the number of scales between supraoculars 11-12 against 8; the erected

spinelike supraoculars against large undivided and not erected in *T. kanburiensis*; possibly the higher ventral counts in *kanburiensis* (known only from type, V. 159) and dif. shape of snout. From *T. puniceus*, *T. brongersmai* can be distinguished by; Dorsals in 19 against 21-23 rows; second upper labial forming anterior border of pit; the very long erected supraoculars; the completely different shape of snout (Fig. 1, 2, 4.); different dorsal pattern as explained in Holotype description (and fig. 11); and its smaller size 516 mm.

*Material:* All specimens examined are from the island Simalur (Simeuloeé) on the West coast of Sumatra, Indonesia. RMNH 5654 A (Holotype) from Lugu; IB 29925 (former RMNH 5654 B) from Lugu; RMNH 5649 from Sibogo; RMNH 5181 from Sinabang; USNM 30758 from Simalur.

Range: known only from Simalur.

*Trimeresurus borneensis* (Peters) Fig. 10, 13 and 14

1872 — *Atropophis borneensis* Peters, Ann. Mus. Civ. Stor. Nat. Genova, 3:41.

1893 — *Bothrops sandakanensis* van Lidth de Jeude, Notes Leyden Mus. 15:256 + fig.

1896 — *Lachesis borneensis*; Boulenger, Cat. Sn. Brit. Mus. (Nat. Hist.) 3:561.

1969 — *T. [rimeresurus] borneensis*; Hoge, Ciência e Cultura, 21(2): 459.

*Type locality:* Sarawak, Borneo

*Type:* Mus. Genova

Related to *puniceus* from which it differs in having a more prominent and truncated snout; strongly raised above the nostrils (Fig. 13); 10-11 scales between the supraoculars instead of 12-14; 2<sup>nd</sup> upper labial forming the anterior border of loreal pit (Fig. 13); supraoculars generally entire or knoblike (Fig. 13). From *T. brongersmai* it is distinguished by the higher number of ventrals 152-168 against 136-150; dorsal scales in 21 rows; supraoculars small and knoblike.

*Range:* Known only from Borneo (see notes under *T. puniceus* l. c.).

*Specimens examined:* All specimens are from Borneo. RMNH 8405 (F 101) and 8405 (F 44) from Kenepai pass; RMNH 8407 from Nanga Raoen, RMNH 8253 from above Mahakkam; RMNH 8406 from Siniai river; RMNH 4338 (without label) from Sandakan bay; RMNH 4338 (713) same locality as 4338 (Types of *B. sandakanensis* (van Lidth de Jeude 1893); BMNH 91-8-29-38 from M<sup>t</sup> Dulit Sarawak; BMNH 1900-7-18-6 from Gunong Merch Perak, 3000 ft; BMNH 94-6-30-67 from Paitan North Borneo; BMNH 1911-1-30-29.30 (two specimens) from Kidi district, Sarawak; BMNH 92-10-7-16 and 94-8-37 from Baram Sarawak; BMNH 92-6-3-10 M<sup>t</sup> Dulit; BMNH 151 1 a juvenile mentioned as *puniceus* from Java, but which is really a *borneensis* (see notes under *T. puniceus*).

*Trimeresurus cornutus* Smith

- 1930 — *Trimeresurus cornutus* Smith, *Ann. Mag. Nat. Hist.* 6(10):682.  
*Type locality*: Fan-si-pan M<sup>ts</sup>, Tong King.  
*Type*: BMNH 1930-11-16-2- London.  
*Range*: Known only by type specimen and a specimen in MNHNP from Tong-King without further information.

Different from related forms by the strongly erected and convergent supraoculars (Fig. 4 and 5) and high number of ventrals 193-197.

Specimens examined: BMNH 1930-11-16-2 from Fan-si-pan M<sup>ts</sup>, Tong-King; MNHNP 1935-35- from Tong-King.

*Trimeresurus kanburiensis* Smith

- 1943 — *Trimeresurus kanburiensis* Smith, *Fauna Brit. India* 3 (Serp.): 519.  
*Type locality*: Near Kanburi, Thailand.  
*Type*: In BMNH London.  
*Range*: Known only from type locality.

*Trimeresurus puniceus* (Boie) Fig. 7, 8, 9 and 12.

- 1827 — *Cophias punicea* Boie, *Isis v. Oken* 20:561.  
1837 — *Trigonocephalus puniceus*; Schlegel *Phys. Serp.* 2:545-pl. XIX, fig. 10 and 11.  
1854 — *Atropos puniceus*; Duméril, Bibron et Duméril, *Erpet. Gén.* 7:1519.  
1872 — *Atropohis puniceus*; Peters, *Ann. Mus. Civ. Stor. Nat. Genova* 3(2):41.  
1892 — *Trimeresurus puniceus*; Boettger, *Ber. Offenb. Ver. Naturk.* 136.  
1896 — *Lachesis puniceus*; Boulenger, *Cat. Sn. Brit. Mus.* 3:560.  
1968 — *Trimeresurus puniceus*; [partim] Leviton, *Ven. An. & Their Venoms* 1:570.  
*Type locality*: Java.  
*Type*: In RMNH Leyden.  
*Range*: Sumatra, Java and Natuna Islands.

*Specimens examined*: Two specimens in the BMNH 44-2-22-6 a male and a female from Borneo collected by Sir Low, are the same mentioned by Boulenger in his catalogue (3:561 specimens e and f), and are true *T. puniceus*. They are the only known specimens of *puniceus* from Borneo. On an old label on the container of these specimens can be read Java! There is also a label in the jar with Gray's writing "*Atropos*

*acontia*". Originally Gray (Zool. Miscel.: 49) had only a single specimen. Another jar labeled as *puniceus*, Java contain a single specimen who is obviously a *T. borneensis*, also the only specimen of *T. borneensis* known outside of Borneo.

It is highly probable that an exchange of specimens has occurred before Boulenger's time.

BMNH 85.12.3.32-33 (three specimens) from Willis M<sup>ts</sup>, Kediri Java, 5000 ft; BMNH 1915-12-2-43 from Sungai Kumbang, Sumatra 4700 ft; RMNH 8986, 8988 and 8907 from Nong Kodjajar Genger M<sup>ts</sup> ± 1200 m Eastern Java; RMNH 11408 Botanical garden, Buitenzorg, Java; RMNH 14250 A and 14250 B from Poentjakpass, Western Java ± 1000 m; RMNH 8991 from Poentjakpass, Western Java ± 1400m; RMNH 8990 near Bandoeng, Western Java; RMNH 14251 (A through J) from Apoeran, Wonosobo, above 600 m, Java; RMNH 6981 from near Soekaboemi, Java; RMNH 8613 from near Modjotengrak ± 1100 m Wonosobo; RMNH 14253, through 14258, 14259, 14259 A, 14259 B, 15259 C and 11260 from Tjikadjang, Western Java 900 m; RMNH 14262 Poentjakpass ± 1400 m, Western Java; RMNH 14263 through 14265 Poentjakpass 1500 m, Western Java; RMNH 14261 from Sapoeran, Wonosoba ± 600 m; RMNH 1557 Java (labeled as "cotype"); RMNH 1558 (two specimens, a large female and a juvenile also labeled as cotypes); RMNH 8504 Wonosoba, Java ± 1000 m; RMNH 7259 A, 7259 B and 7259 C from Kali Baroe Bandjoe-wang, Java; RMNH 14266 A and 14266 B from Wonosoba, Java ± 600 m; RMNH 8416 A, 8416 B, 8416 C and 8416 D, from top of Megamindoeng, Java; RMNH 14267 from below Ardjoena, South of Goenoeng Papadjan, east Priangan, Western Java ± 1000m; RMNH 14269 through 14274 from Tjikadjang, Western Java; NHRS 3174 (21); 3174 (56); 3174 (44); 3174 (58); 3174 (52); 3174 (59); 3174 (1); 3174 (3); 3174 (57); 3174 (55) and 3174 (50) from Pagilaroe, Java; NHRS 2926 from Siti Ardao, Java; RMNH 14275 (1118), 14276 (925), 14277 (812) and 14278 (552) from Tjikadjang 900 m, Western Java; RMNH 14279 and 14280 from Soemba Doerer near Malang; RMNH 14281 Padang; 14282 from Poespo; RMNH 14283, 14284, 14285 and 14286 from Poentjak Gedeh M<sup>ts</sup>, Western Java; RMNH 14287 through 14299 (embr.) from Garoet, Western Java ± 1500 m; RMNH 14300 and 14301 from Garoet, Western Java ± 1500 m; NHRS 2926 from Siti Ardao Java.

RESUMO — Redescricao de *Trimeresurus brongersmai* Hoge 1969 e comparacao com: *T. puniceus* (Boie) 1827; *T. cornutus* Smith 1930; *T. kanburiensis* Smith 1943 e *T. borneensis* (Peters) 1872 que é considerado como uma espécie válida.

UNITERMOS — *Trimeresurus brongersmai* Hoge 1969; *T. puniceus* (Boie) 1827; *T. cornutus* Smith 1930; *T. kanburiensis* Smith 1943 e *T. borneensis* (Peters) 1872.

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HOGGE, A. R. & ROMANO, S. A. L. — Notes on *Trimeresurus brongersmai* Hoge 1969.  
*Mem. Inst. Butantan*, 38: 147-158, 1974.

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Rijksmuseum v. Natuurlijke Historie, Leiden; the late Doris M. Cochran and James A. Peters, United States National Museum, Washington DC.; Jean Guibé, Museum d'Histoire Naturelle, Paris; Hjalmar Rendahl and Greta Vestergren, Naturhistoriska Riksmuseum Stockholm: Ralph Grant-san for fig. 1, 2, 3, 7, 8 and 9.

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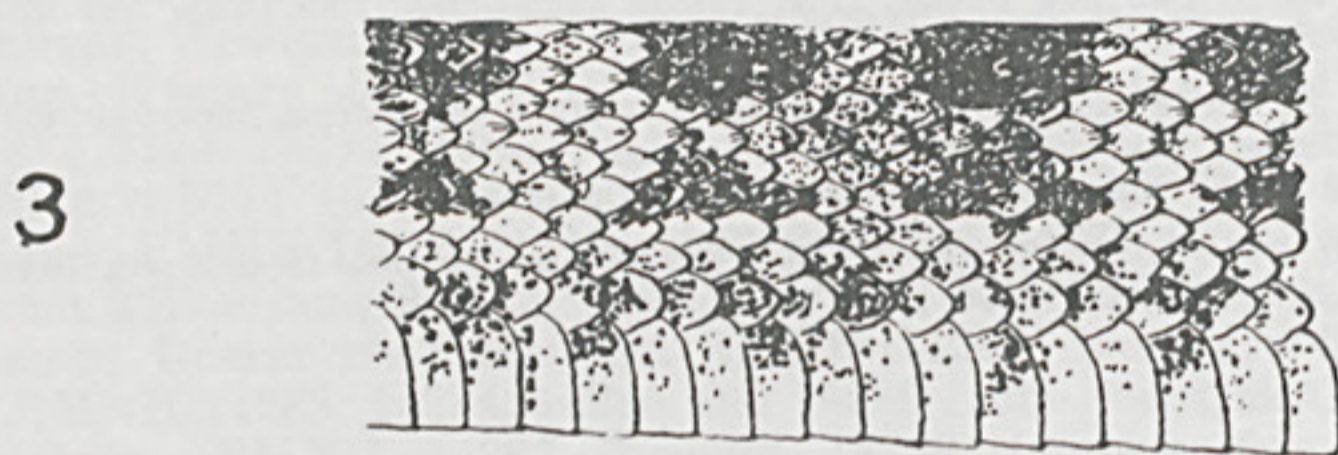
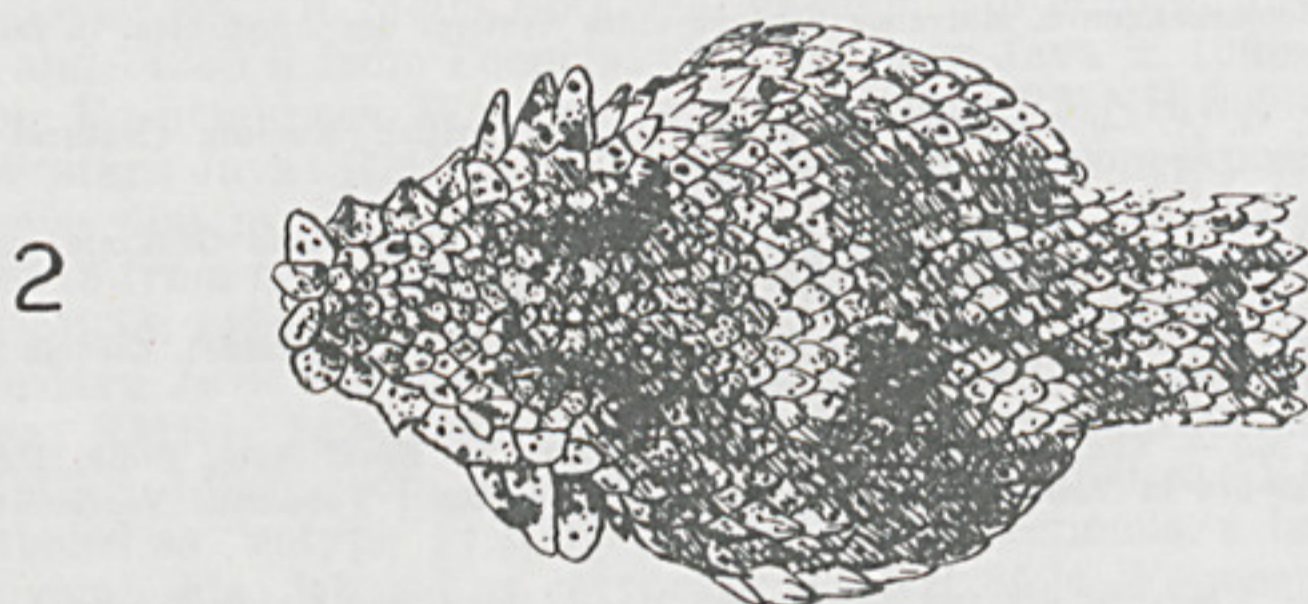


Fig. 1 — *Trimeresurus brongersmai* USNM 30758  
Fig. 2 — *Trimeresurus brongersmai* USNM 30758  
Fig. 3 — *Trimeresurus brongersmai* IB 29925



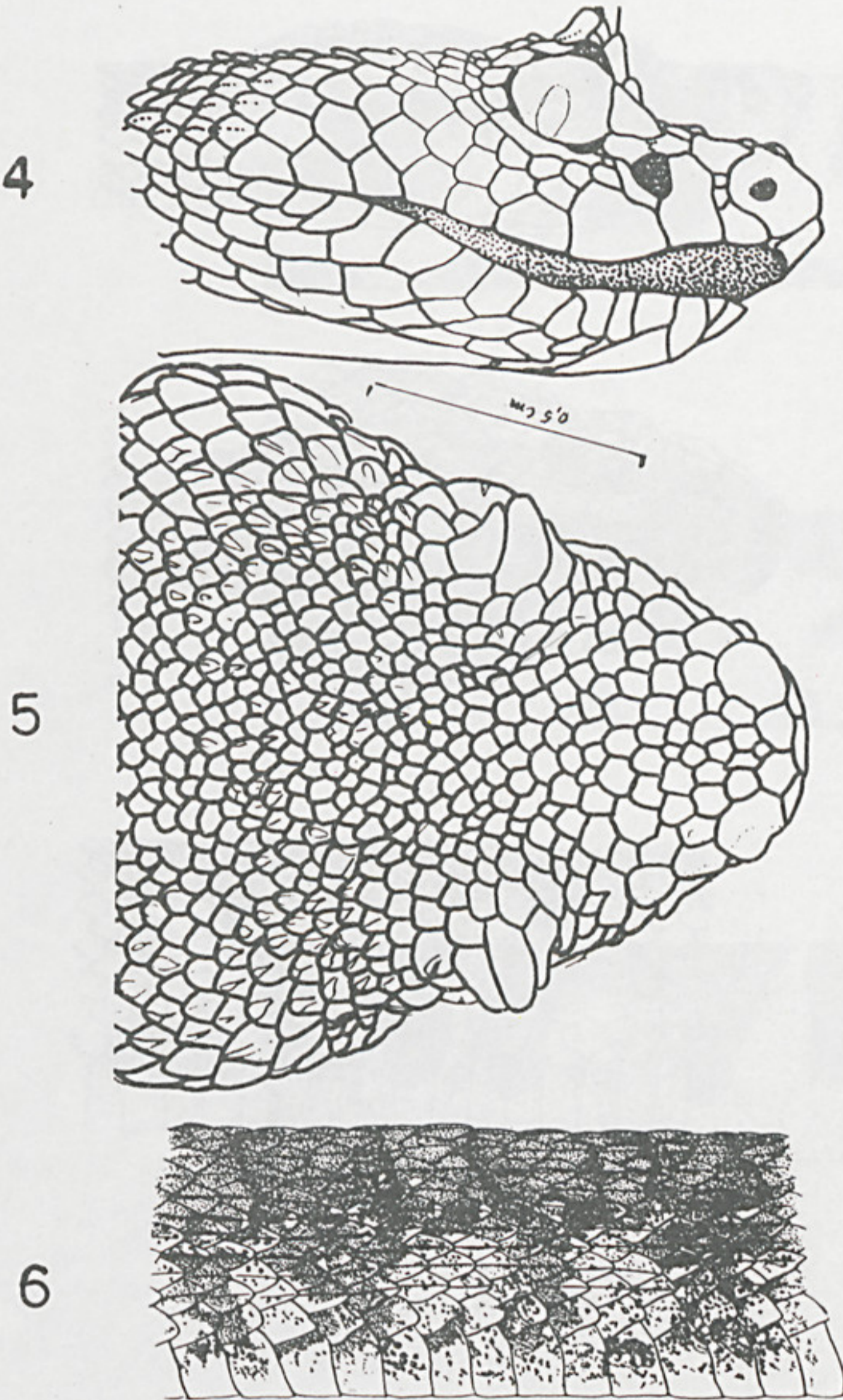


Fig. 4, 5 e 6 — *Trimeresurus cornutus* MNHNP 1937-35

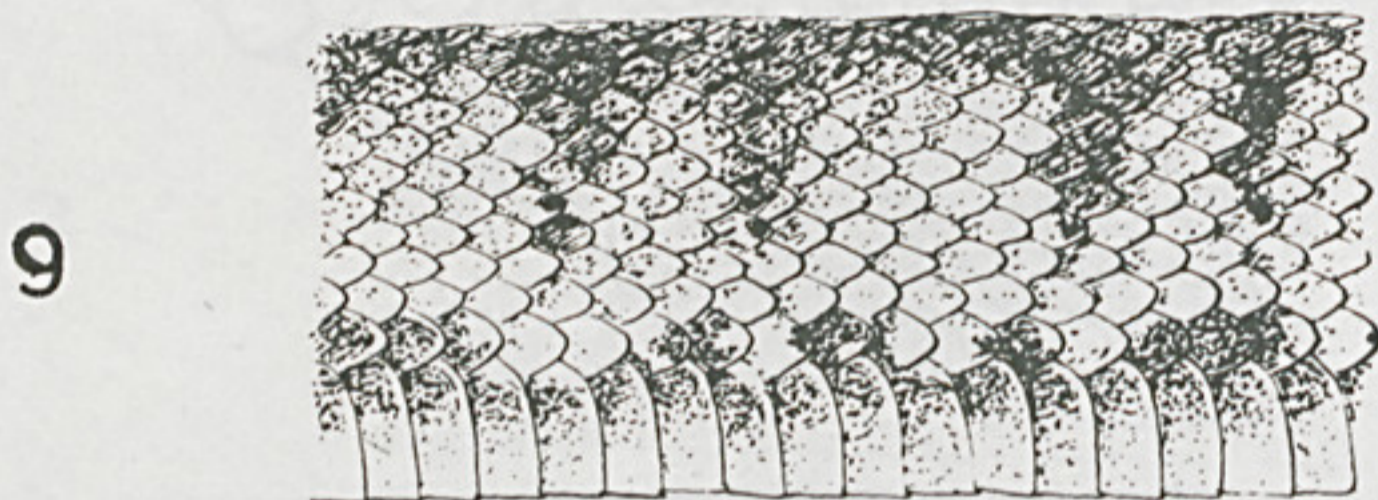
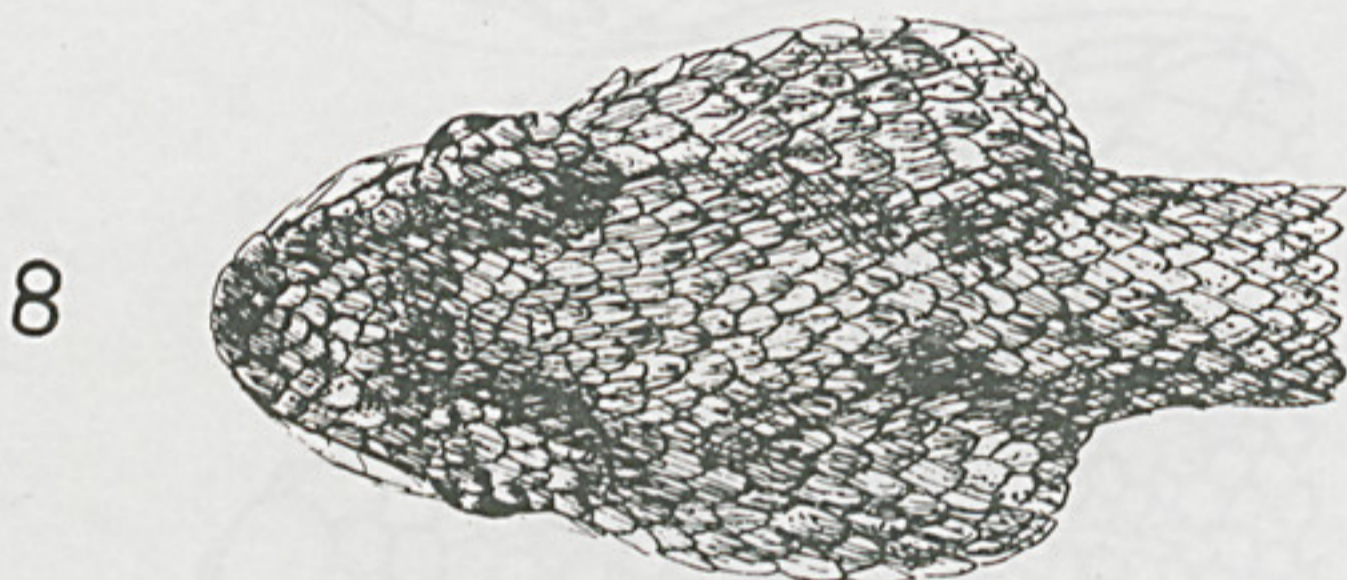
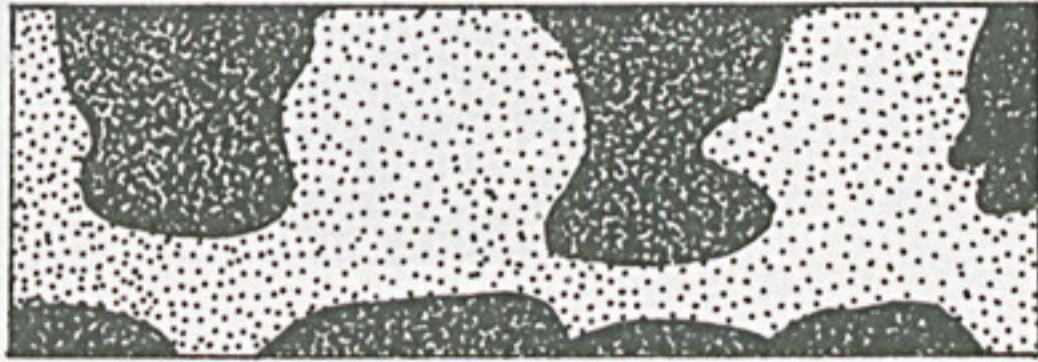
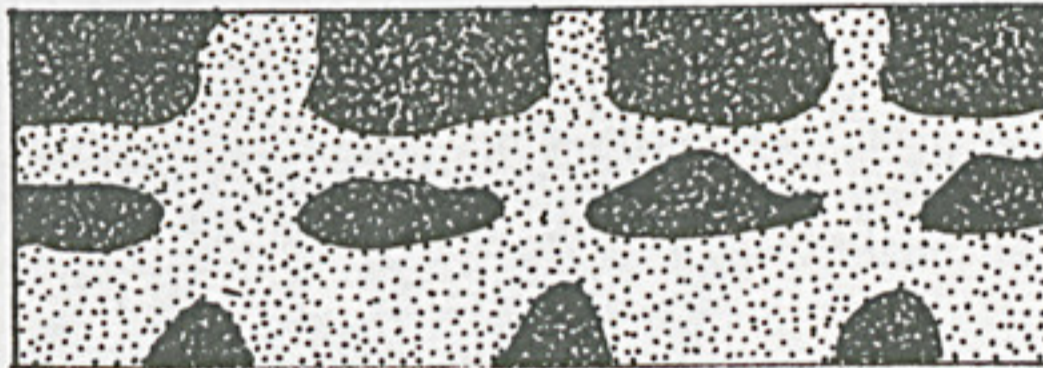


Fig. 7, 8 e 9 — *Trimeresurus puniceus* IB 29926

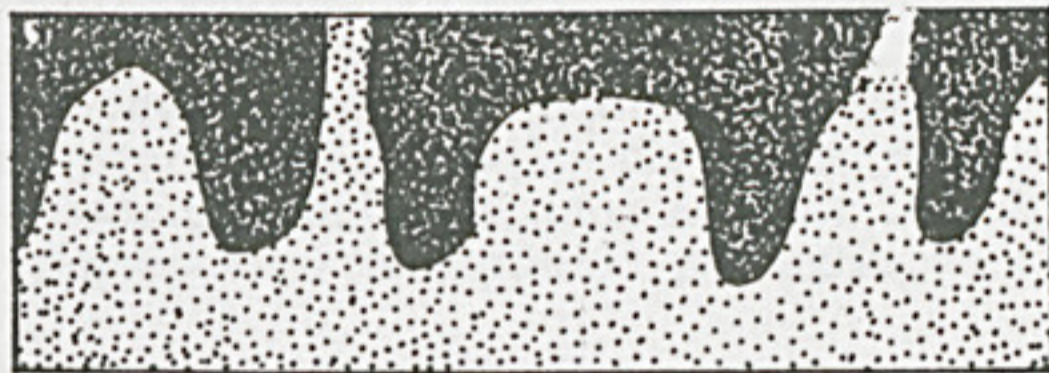
10



11



12



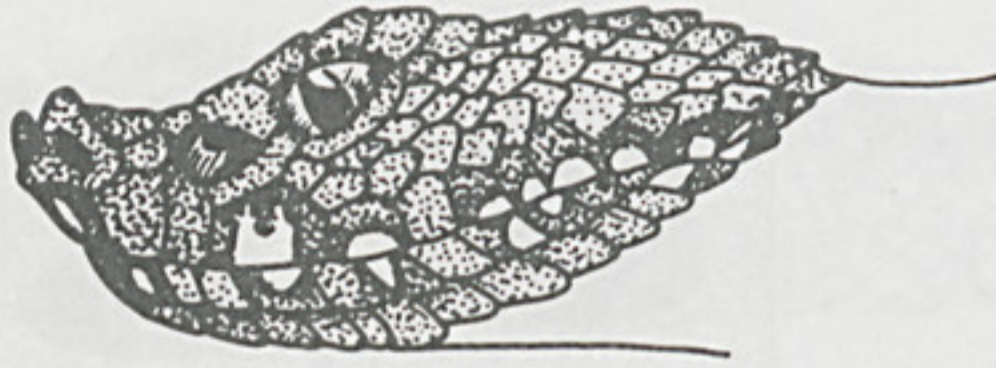
Schematic pattern of:

Fig. 10 — *T. borneensis*

Fig. 11 — *T. brongersmai*

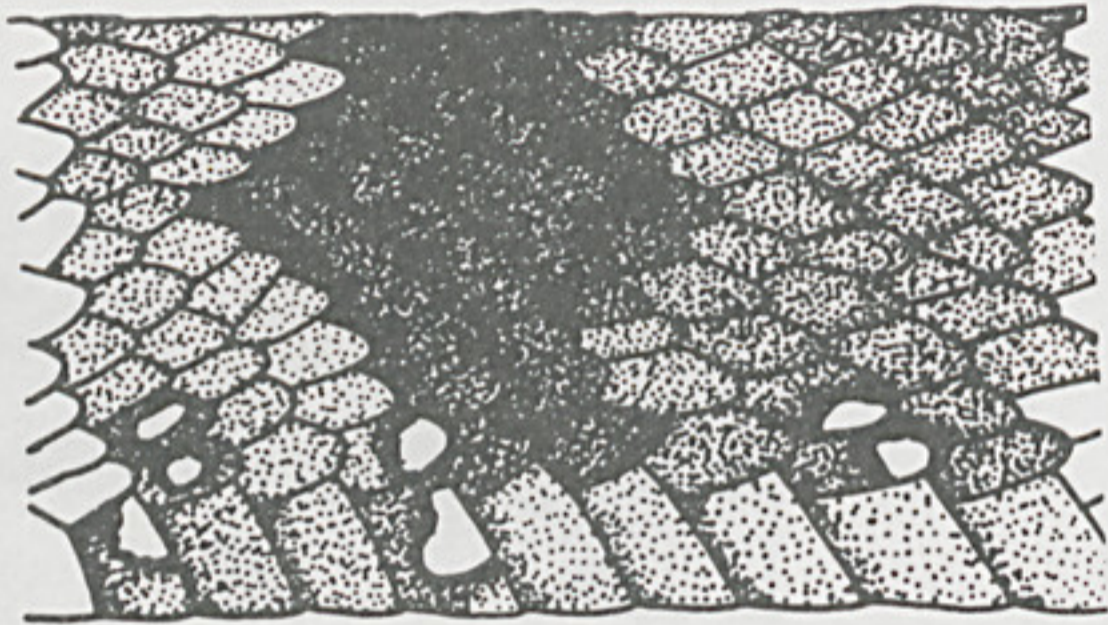
Fig. 12 — *T. puniceus*

13



1 cm.

14



1 cm.

Fig. 13 e 14 — *Trimeresurus borneensis* BMNH 92-6-3-10