

## A New Species of *Oligodon* Fitzinger, 1826 (Serpentes, Colubridae) from Southern Peninsular Thailand

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**ABSTRACT.**—A new species of the colubrid genus *Oligodon* is described from Krabi Province, southern Peninsular Thailand. Although known from a single specimen, the new species is readily distinguished by an unusual combination of characters, like fused internasals and prefrontals, an elongated body, a high number of ventrals and subcaudals, a low number of maxillary teeth, and a unique dorsal banded pattern and immaculate ventral surface. Its possible relationships are discussed, and a key to the species of *Oligodon*, currently known from Thailand and West Malaysia, is given.

**KEY WORDS:** Thailand; West Malaysia; Serpentes; Colubridae; *Oligodon*; *Oligodon jintakunei* sp. nov.; taxonomy

### INTRODUCTION

The snake fauna of Thailand ranks as one of the richest in Southeastern Asia. However, although this kingdom was the first Asian country to be the subject of a herpetological report (Anonymous, 1688), its herpetofauna is still very far from being adequately known. Despite numerous works in the first part of 20th century by Malcom A. Smith and Edward H. Taylor (see Smith, 1943 and Taylor, 1965 for a bibliography), and subsequent studies by local Thai herpetologists, recent investigations on the herpetofauna on two provinces of Peninsular

Thailand more than doubled the number of known species in each of them (Pauwels et al., 2000a-b). This makes a symptomatic evidence of the poor knowledge of the herpetofauna of this country.

During the examination of the herpetological collection of the Queen Saovabha Memorial Institute (Thai Red Cross, Bangkok) in order to establish its catalogue (Chanhome et al., 2001), we discovered a snake specimen, which obviously represents an undescribed species of the widely ranging genus *Oligodon* Fitzinger, 1826. We thus describe a new species on the basis of this specimen, and compare it with the congeneric species known from Thailand and West Malaysia. Possible relationships of the present species are also discussed.

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## MATERIALS AND METHODS

This description is based both on external morphological characters and internal anatomical data. Hemipenes are not everted, and, unfortunately, we were not able to dissect the tail to observe them.

Measurements, except body and tail lengths, were taken with a slide-caliper to the nearest 0.1 mm; all body measurements were made to the nearest millimeter. The number of ventral scales was counted according to Dowling (1951). The terminal scute, present, is not included in the number of subcaudals. The dorsal scale row counts are given at one head length behind head, at midbody (i.e., at the level of the ventral plate corresponding to a half of the total number of ventrals), and at one head length before vent. Values for paired head characters are given in left / right order.

Descriptions of the viscera and its characters can be found in Wallach (1985, 1988, 1993). Visceral characters are morphometrically described in two ways. Organ lengths, organ mid-points (MP), gaps between two organs, and intervals including two organs are presented as a percentage of the snout-vent length (% SVL), with only the % sign following the value (i.e., 34.5%). Organ lengths are typically followed parenthetically by the midpoint value; these two values describe the size of the organ and pinpoint its location within the body cavity. When two visceral characters are compared with each other, their ratio is presented in decimal form to two decimal places (i.e., 0.45). Although both figures represent a ratio of two characters, the % figure indicates an organ length divided by the body (SVL) length whereas a decimal value indicates one visceral character divided by another.

Abbreviations of measures and other meristic characters used in the text are:

SVL: snout-vent length. - TaL: tail length. - TL: total length. - TaL / TL: ratio tail length / total length. - HL: head length. - Ven: number of ventrals. - SC: number of subcaudals. - SL: number of supralabials. - InfL: number of infralabials.

Museum abbreviations are as follows:

BMNH: British Museum of Natural History, now the Natural History Museum, London

CAS: California Academy of Sciences, San Francisco

FMNH: Field Museum of Natural History, Chicago

IRSNB: Institut Royal des Sciences Naturelles de Belgique, Brussels

LSUMZ: Louisiana State University Museum of Natural Science, Baton Rouge

MCZ: Museum of Comparative Zoology, Harvard University, Cambridge

MNHN: Muséum National d'Histoire Naturelle, Paris

QSMI: Queen Saovabha Memorial Institute, Thai Red Cross Society, Bangkok

SDSU: San Diego State University, San Diego

## RESULTS

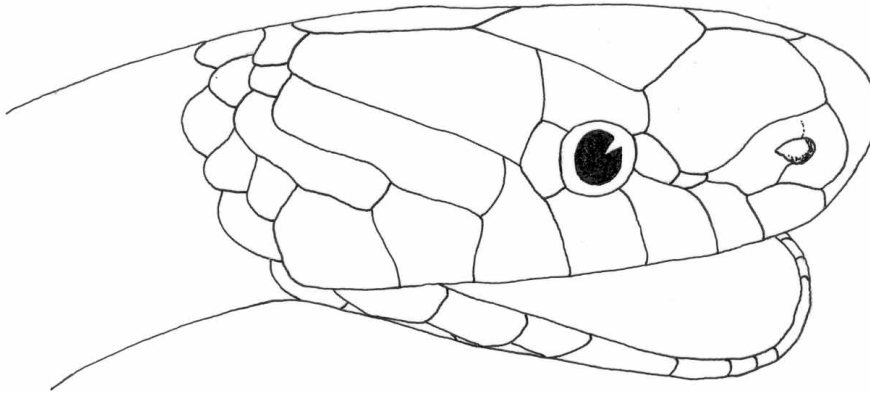
The unnamed colubrid snake specimen, although presenting the typical characters of the genus *Oligodon* on the basis of its dentition (see below), head coloration pattern and meristical data, could not fit with any key published for the snakes of Thailand, West Malaysia nor Indonesia (De Rooij, 1917, Smith, 1943, Taylor, 1965, Tweedie, 1983), nor did it agree with published descriptions of other species of the genus. We regard it as representing a new species, which we describe as:

*Oligodon jintakunei* sp. nov.  
(Figs. 1-5)

*Oligodon* sp.: Chanhome et al., 2001: 56.

Holotype.—QSMI 385, adult male, from Krabi Province, Thailand. Collected by Mr. Piboon Jintakune, 1990.

Diagnosis.—A species of the genus *Oligodon*, characterized by (1) a gracile and much elongate body with the head clearly distinct from the neck; (2) a dorsal body pattern consisting of 11 regularly spaced narrow whitish rings touching the ventrals on a dark brown background color;



*OLIGODON JANTAKUNEI - holotype*  
QSMI 385

FIGURE 1. Dorsolateral view of the right side of the head of the holotype QSMI 385 (drawing by O.S.G. Pauwels). On the left side, the loreal does not reach the nasal.

(3) 6 maxillary teeth, the last three ones much enlarged and laterally compressed; (4) internasals and prefrontals fused with one another on each side of the head; (5) high numbers of ventrals (189) and subcaudals (46 pairs); (6) 15 dorsal scale rows at midbody.

This species differs from all other members of the genus by the combination of the six characters cited above. These and further characters are detailed below and in the Discussion, where a comparison with other species is given.

#### *Description of the holotype*

**Habitus.** Very gracile and elongate body, with a head clearly distinct from the neck. Snout moderate, blunt in dorsal view, rounded in lateral profile. Eye moderate, its horizontal diameter 12.5 % of head length, pupil rounded. Tail comparatively long for the genus, rounded.

SVL: 370 mm; TaL: 78 mm; TL: 448 mm; HL: 9.8 mm; ratio TaL/TL: 0.174.

**Body scalation.** 189 Ven, laterally angulate (+1 preventral, wider than long but not in contact with the first row of dorsals); 46 SC, all paired and slightly laterally angulate, plus one terminal scale; anal divided. Dorsals in 15-15-15 rows, all smooth, with two apical pits along the posterior midlateral region of the body.

**Head scalation.** Rostral large, distinctly visible from above, pointed posteriorly; nasals divided, with the nostril lateral, linked to the first supralabial by a suture and to the internasal-prefrontal by a weak crease; internasals and prefrontals fused with one another on each side of head; frontal large, roughly triangular, with apex directed posteriorly, 3.9 mm long, 1.2 times longer than wide, 3.1 times longer than suture between fused internasals-prefrontals, much longer than its distance from tip of snout, slightly shorter than parietals; 1/1 undivided supraocular; 1/1 single loreal, tiny, horizontally elongate, separated from nasal by 2nd SL at left, contacting nasal by a point at right; 1/1 small preocular not reaching frontal;



FIGURE 2. Dorsal view of the head of the holotype QSMI 385 (photograph by Renaud Boistel).



FIGURE 3. Right side of the head of the holotype QSMI 385 (photograph by Renaud Boistel).



FIGURE 4. Dorsal view of the body of the holotype QSMI 385 (photograph by Renaud Boistel).



FIGURE 5. Ventral view of the body of the holotype QSMI 385 (photograph by Renaud Boistel).

1/1 postocular; no subocular; 7/7 SL; 1st SL small, 2nd and 3rd in contact with loreal, 3rd and 4th SL in contact with orbit, 5th to 7th SL large, 6th and 7th SL the largest; 1 long anterior temporal, with a smaller second one under its posterior part; 7/7 IL, first pair widely in contact behind mental, the four first ones are in contact with the chin shields on each side; single pair of chin shields, followed by three subequal small pairs of gulars directly preceding the preventral.

Coloration in ethanol. Dorsal surface of body and tail dark brown, with regularly spaced narrow whitish yellow rings, about one dorsal scale-length wide, at the numbers of 11 on body, 3 on tail, joining ventrals and subcaudals. Head beige with symmetrical brown marks including the crescent-shaped lupus typical of the *Oligodon*, crossing over the snout and the

eyes, joining the lip at the level of the 3rd to 5th SL; a typical abrupt transition between head color and dorsum color.

Ventral surface of head whitish with roughly symmetrical small brown spots on mental, infralabials and chin shields; ventral surface of body and tail uniformly whitish, of the same color of the dorsal rings.

Tooth morphology. The maxilla, barely bent, bears 6 teeth, two anterior ones, very small and subequal (first tooth is missing, but its small size can be inferred by the small size of its socket), followed, after a long diastema, by a third small tooth, barely longer than anterior ones, then, without diastema, by three greatly enlarged teeth. Only one of these teeth is still present, but the sizes of others can be inferred by the size of their sockets. The sole large remaining tooth, fang-like, is at least four times

and twice as broad as a small tooth, sharply curved at mid-length at about 80° (making its posterior part nearly horizontal behind the tip of the maxilla) and strongly laterally compressed, blade-like or “kukri-shaped” as recognized as typical of the genus *Oligodon* (Smith, 1943).

Visceral anatomy. Posterior tip of sternohyoideus muscle 10.7%, thyroid gland spherical 0.4% (MP = 19.6%), anterior to heart, bordered on each side by a thymus gland, right thymus (0.5%, MP = 20.0%) triangular and caudal of thyroid, left thymus (0.8%, MP = 19.4%) elongate and mostly cranial of thyroid, heart 2.6% (MP = 21.8%), right systemic arch 0.25 diameter of left systemic arch, systemic arch junction 0.32 heart length caudal of anterior tip of heart, heart-liver gap 5.6%, liver 26.8% (MP = 2.1%), right lobe single but left lobe with two segments, anterior liver asymmetry on left (0.11 liver length), posterior liver tail on right (0.03 liver length), liver-gall bladder gap 14.2%, large gall bladder 1.9% (MP = 70.6%) cranial of small pancreas (1.1%) and spleen (0.4%), testes multipartite, each with 8 segments, right testis 3.6% (MP = 82.4%), left testis 3.6% (MP = 85.5%), gonad overlap 0.08, elongate adrenals adjacent to posterior end of gonads (gonadal morphology suggesting a fully mature male), right adrenal 0.8% (MP = 83.7%), left adrenal 0.8% (MP = 86.9%), kidneys multipartite, each with 6 segments, right kidney 5.5% (MP = 90.0%), left kidney 5.9% (MP = 93.2%), kidney overlap 0.29, kidney-vent interval 12.7%, kidney-vent gap 3.9%, ilioocolic caecum absent. Tracheal lung absent, left lung and left bronchus absent, small left orifice present (MP = 23.1%) along midline of right bronchus near terminus, trachea 21.7% (MP = 12.2%), tracheal membrane width 0.85 tracheal ring width, right bronchus 0.5%, estimated number of tracheal rings 152 (or 31.6/10% SVL), narrow and lacking free tips, tracheal curving to left side of body, lateral to heart, parenchyma extending along tracheal membrane adjacent to heart (2.7%), tracheal entry into right lung subterminal, anterior lobe of right lung triangular and minute (0.3%), with small orifice

(23.2%) and inflatable free cavity within, right lung 57.1% (MP = 51.6%) with vascular parenchyma cranially, anterior 4.4% with two tiers of thick-walled faveoli, followed by thin-walled ediculae (3.8%), and avascular or saccular lung (48.8%) caudally, the terminus (80.2%) ending in a constricted “tail” (0.3%), vascular lung 0.14 right lung.

Etymology.—We are pleased to name this new species in honor of the Thai herpetologist Mr Piboon Jintakune (QSMI, Bangkok), in recognition to his valuable contributions to the knowledge of Thai snakes.

We suggest the following common names: Ngoo ngawt Jintakune (Thai), Jintakune’s Kukri Snake (English), Jintakunes Kukrinatter (German), *Oligodon de Jintakune* (French), Jintakune’s kukrislang (Dutch).

Distribution.—*Oligodon jintakunei* is currently known only by its holotype, from Krabi Province, southern Thailand.

We have no information on the ecological conditions of the type locality nor on the biology of this species. Krabi Province is still largely covered with rainforests.

## DISCUSSION

### *Morphological comparisons with other species*

Although the body of this specimen is more elongated than in most other species of the genus *Oligodon*, we refer it to this genus on the basis of: (1) a short, barely bent maxillary; (2) the dentition, combining a low number of teeth and the presence of posterior teeth distinctly enlarged and strongly compressed laterally; (3) a large rostral, distinctly visible from above, with pointed apex posteriorly; and (4) a head pattern typical of the genus *Oligodon*, as described in Smith (1943: 203).

According to Wagner (1975), Cox (1991), Manthey and Grossmann (1997) and Chan-ard et al. (1999) and the present description, 13 or 14 species of *Oligodon* Fitzinger, 1826 are recognized from Thailand and Peninsular Malaysia: *O. barroni* (Smith, 1916), *O. cinereus* (Günther, 1864), *O. dorsalis* (Gray, 1834), *O.*

TABLE 1. Comparison of *Oligodon* species with fused internasals and prefrontals.

Species	DSR	Ven	SC	L	SL	PO	AP	DP	VP	T	HP
<i>O. jintakunei</i>	15-15-15	189	46	+	7	1	2	0	0	6	?
<i>O. catenata</i>	13-13-13	179-212	34-43	0	6	2	2	+	+	7	S-7
<i>O. brevicauda</i>	15-15-15	158-173	25-29	0	7	2	2	+	+	?	?
<i>O. hamptoni</i>	15-15-15	160-175	30-32	+/0	5	2	2	+	+	?	S-11
<i>O. lacroixi</i>	15-15-15	162-178	25+ - 33+	0	5	2	2	+	+	8	?
<i>O. durheimi</i>	17-17-15	171-174	40-41	++	7	2	2	+	+	7-8	?
<i>O. pulcherrimus</i>	15	179	30	+	7	2	2	+	+	?	?
<i>O. praefrontalis</i>	15	193	37	0	7	1	2	+	+	?	?

Abbreviations: DSR: dorsal scale rows. - Ven: number of ventrals. - SC: number of subcaudals. - L: loreal. - SL: number of supralabials. - PO: postoculars. - AP: anal plate. - DP: dorsal pattern with stripes. - VP: ventral pattern with bars or spots. - T: maxillary teeth. - HP: hemipenis length in subcaudals.

*dorsolateralis* (Wall, 1910), *O. fasciolatus* (Günther, 1864) (see below), *O. inornatus* (Boulenger, 1914), *O. jintakunei* spec. nov., *O. joynsoni* (Smith, 1917), *O. mouhoti* (Boulenger, 1914), *O. octolineatus* (Schneider, 1801), *O. purpurascens* (Schlegel, 1837), *O. signatus* (Günther, 1864) and *O. taeniatus* (Günther, 1861; including *O. quadrilineatus* (Jan, 1866), see Campden-Main [1969]). An additional species, *O. theobaldi* (Günther, 1868), was listed by Anonymous (1999).

In this list, we follow Wagner (1975) in regarding *Oligodon fasciolatus* as the correct name to be used for populations with 21 or 23 scale rows at midbody from southeastern Myanmar, Thailand, Cambodia, Laos and Vietnam, a taxon often identified as *O. cyclurus* (Cantor, 1839). This latter taxon, with 19 scale rows, is restricted to India, Bangladesh, and western, central and northern Myanmar.

*Oligodon jintakunei* is immediately distinguished from all the Thai and Malayan species by its fused internasals and prefrontals, its coloration (compare with pictures in Cox et al., 1998 and Taylor, 1965, in which all species but *O. dorsolateralis* and *O. theobaldi* were illustrated), 15 dorsal scale rows at midbody (except *O. dorsalis* and *O. inornatus*), divided

anal (except *O. dorsalis* and *O. purpurascens* according to Cox, 1991, although Taylor, 1965 said the anal of this latter species to be single, and *O. theobaldi*), paired apical pits (except *O. cinereus* and *O. inornatus* according to Taylor, 1965, who otherwise did not mention *O. dorsalis*, *O. mouhoti* and *O. theobaldi*), one postocular (all other species having two; see Cox, 1991 and Günther, 1868) and six maxillary teeth, a condition also met in *O. dorsalis* (6-7 teeth, according to Smith, 1943), whereas *O. barroni*, *O. cinereus*, *O. cyclurus*, *O. inornatus*, *O. joynsoni*, *O. mouhoti*, *O. ocellatus*, *O. purpurascens*, *O. taeniatus* and *O. theobaldi* all have at least nine (eight in *O. fasciolatus*) teeth according to Wall (1923), Smith (1943), Wagner (1975) and examined specimens. Data on the teeth number are lacking for *O. dorsolateralis*.

Besides *O. jintakunei*, seven *Oligodon* species have fused internasals and prefrontals. A comparison between these species appears in Table 1. Although morphometric (relative length of tail) and meristic characters (ventral and subcaudal counts) are known to be sexually related, we did not separate respective values of males and females, as data for *O. jintakunei* are out of the general ranges of most species. None

TABLE 2. Comparison of *Oligodon jintakunei* with congeneric species with 15 midbody scale rows and low maxillary tooth counts.

Species	T	DSR	Ven	SC	IN	SL	PO	L	TrL	TE	LL	LB	LO	AP	RTL
<i>O. jintakunei</i>	6	15-15-15	189	46	0	7	1	v	0	s	0	0	+	2	17.5
<i>O. brevicauda</i>	7-8	15-15-15	158-173	25-29	0	7	2	0	0	s	+	+	+	0	9.6-11.0
<i>O. lacroixi</i>	8-12	17-15-15	162-178	25-33	0	5	2	0	0	s	0	0	0	0	10.5-11.5
<i>O. hamptoni</i>	7	15	160-175	30-32	0	5	?	v-0	?	?	?	?	?	?	12.7
<i>O. dorsalis</i>	6-7	15-15-13	162-188	27-51	+	7	1	+	+	t	0	+	+	0	16.1-19.3
<i>O. ornatus</i>	6-8	15-15-15	156-182	27-44	+	6	1-2	0	0	s	+	+	+	0	15.6
<i>O. taeniolatus</i>	6-9	17-15-15	158-218	29-59	+	7	2	+	+	s	0	0	0	1	10.7-16.9
<i>O. sublineatus</i>	6-8	17-15-15	130-161	23-39	+	7	2	+	+	s	+	0	+	0	11.4-16.7

Abbreviations: T: maxillary teeth. - DSR: dorsal scale rows. - Ven: number of ventrals. - SC: number of subcaudals. - IN: internasals (+ = discrete, 0 = fused with prefrontals). - SL: number of supralabials. - PO: postoculars. - L: loreal (+ = present, v = vestigial, 0 = absent). - TrL: tracheal lung (0 = absent, + = weak). - TE: tracheal entry (s = subterminal, t = terminal). - LL: left lung. - LB: left bronchus. - LO: left orifice. - AP: apical scale pits. - RTL: relative tail length (% total length).

of these seven *Oligodon* species is known from Thailand nor Peninsular Malaysia. These species are: *O. catenata* (Blyth, 1854) (from Myanmar, Vietnam, Kampuchea and southern China), *O. brevicauda* Günther, 1862 (southwestern India), *O. hamptoni* Boulenger, 1918 (Myanmar), *O. lacroixi* Angel & Bourret, 1933 (Vietnam), and *O. durheimi* Baumann, 1913, *O. praefrontalis* Werner, 1913 and *O. pulcherrimus* Werner, 1909, from Sumatra and the adjacent island of Pulau Weh. These seven species all show dorsal patterns with longitudinal stripes and ventral patterns with bars or spots (see De Rooij, 1917; Smith, 1943), contrary to *O. jintakunei*. Among them, *O. catenata* possesses only 13 rows at midbody, and *O. durheimi* (Sumatra) has 17 scale rows at midbody, vs. 15 for *O. jintakunei*. *O. catenata* possesses only six supralabials (Smith, 1943; Zhao et al., 1998: 196), *O. hamptoni* and *O. lacroixi* only five (Smith, 1943). *O. jintakunei* can also be distinguished from these species by its higher number of ventrals (except *O. catenata* and *O. praefrontalis*), higher number of subcaudals (see De Rooij, 1917; Smith, 1943), one postocular (except *O. praefrontalis*). Interestingly, all three species from Sumatra and Pulau Weh are known only by their holotypes.

*Oligodon jintakunei* shows a very elongated body, whereas many species of the genus are quite stout, and a relative tail length of 17.4 %, while most *Oligodon* species have tails which are 10 to 15 % of their total length (Wallach and Bauer, 1996: 16). Relative tail shortness is positively linked with a fossorial way of life. In this respect, as well as by the possession of a head well distinct from its neck and by its apical pits, *O. jintakunei* seems to be a poorly achieved fossorial member of the genus.

In Table 2, we compare major characters of all *Oligodon* species having 15 midbody scale rows and low maxillary tooth counts. This table shows that *O. jintakunei*, if correctly allocated to the genus *Oligodon*, appears to have its greatest affinity with an informal group composed of *O. brevicauda*, *O. hamptoni* and *O. lacroixi*, which shares the following characteristics: internasals fused to prefrontals, low

number of maxillary teeth, 15 midbody scale rows, loreal small or absent, no tracheal lung, and subterminal tracheal entry. In a comparison of 30 visceral characters in the available specimens, it appears that *O. jintakunei* is closest to *O. lacroixi*, significantly differing only in the following 10 characters (*jintakunei* data first, followed by that of *lacroixi*): anterior lobe of right lung (0.3% vs. 1.5%), orifice of left lung (present vs. absent), systemic arch junction-heart posterior tip (0.8% vs. 1.7%), anterior liver asymmetry (0.11 vs. 0.04), liver-gall bladder gap and interval (14.2% vs. 7.3% and 42.9 vs. 34.7%, respectively), gall bladder-kidney gap and interval (15.7% vs. 22.2% and 26.4% vs. 36.0%, respectively), and right kidney length (5.5% vs. 10.9%), left kidney length (5.9% vs. 10.0%).

For some practical reason, we were unable to dissect the tail in order to examine the hemipenes. Smith (1943) showed the great variability in hemipenial morphology of Indian and Indochinese specimens, hence demonstrating that this morphology is expected to be useful in ascertaining potential relationships between the species. In spite of this importance, we do not consider here the lack of information on hemipenes as a crucial point. Firstly, too few hemipenial structures of *Oligodon* species from Malaysia and Indonesia are known. Secondly, the morphological and anatomical characters have shown the relative isolation of *O. jintakunei* among other species of the genus *Oligodon*.

#### A Tentative Key to the Species of *Oligodon* from Thailand and Peninsular Malaysia

The following key is based on Smith (1943), Taylor (1965), Tweedie (1983), Cox (1991) and Manthey and Grossmann (1997), supplemented by the examination of the specimens listed in the Appendix. The genus *Oligodon* is notoriously difficult; the present key was constructed for specimens of Thailand and West Malaysia, and may not reflect variation of some species (especially *O. cyclurus* and *O. fasciolatus*) in other parts of their range.



- 1 A 15 midbody scale rows; internasals and prefrontals fused; body much elongated; pale rings on a dark brown body ..... *O. jintakunei*  
 B 15 to 23 midbody scale rows; internasals and prefrontals distinct; body usually rather stout; striped or marked with dark crossbands on a lighter body ..... 2
- 2 A 15 dorsal scale rows at midbody <sup>(1)</sup> ..... 3  
 B 17 or more scale rows at midbody <sup>(1)</sup> ... 4 <sup>(2)</sup>
- 3 A Anal entire; 8 supralabials; body and venter uniformly grey brown and entirely devoid of pattern; 9 or more maxillary teeth ..... *O. inornatus*  
 B Anal divided; 7 supralabials; body with one light vertebral and two black lateral stripes, belly black and yellow; 6 or 7 maxillary teeth ..... *O. dorsalis*
- 4 A 17 scale rows at midbody ..... 5 <sup>(2)</sup>  
 B 19 or more scale rows at midbody .... 11
- 5 A Body with at least two longitudinal stripes ..... 6  
 B Body patternless or with rounded or transverse markings ..... 9
- 6 A 6 supralabials; body with three or four pairs of black longitudinal stripes on a buff or pale brown background and a red vertebral line ..... *O. octolineatus*  
 B 7 or 8 supralabials; body with two pairs of longitudinal dorsal dark brown stripes, with or without transverse markings ... 7
- 7 A Usually 7 supralabials; pattern made of transverse elongated dark dorsal spots, separated by other dark spots, with one pale stripe on each flank ..... *O. barroni*  
 B 8 supralabials; pattern entirely made of longitudinal stripes ..... 8
- 8 A Anal single; 147-152 ventrals; body with two narrow, more or less faint longitudinal dorsal dark brown stripes, spotted with dark brown, and two wider ones, spotted with dark brown, bordering the paler vertebral stripe; a large dark brown spot on the dorsum of tail at its base and near its tip ..... *O. mouhoti*  
 B Anal divided; 164-180 ventrals; body with four wide longitudinal dorsal dark brown stripes on a paler background; no brown blotch on upper tail .....  
 ..... *O. theobaldi*
- 9 A More than 183 ventrals ..... *O. joynsongi*  
 B Less than 186 ventrals ..... 10
- 10 A 8 supralabials; 155-185 ventrals; dorsum patternless, reticulated, or pattern of more or less distinct transversal bands or blotches ..... *O. cinereus*  
 B 7 supralabials; 141-157 ventrals; dorsal pattern of reddish brown transversal bands or spots ..... *O. signatus* <sup>(3)</sup>
- 11 A Dorsum with longitudinal stripes, with or without another kind of pattern .... 12  
 B Dorsum without longitudinal stripes, only rounded or transversal markings ....  
 ..... 13
- 12 A 19 dorsal scale rows; fewer than 170 ventrals; four dark dorsal longitudinal stripes: two more or less faint longitudinal dorsal dark brown stripes, spotted or not with dark brown, and two wider ones, spotted with dark brown, bordering a pale yellow vertebral stripe; no transverse blotches or crossbands .....  
 ..... *O. taeniatus*  
 B 21 dorsal scale rows; more than 175 ventrals; four dark dorsal longitudinal stripes, with 10 more or less divided dark dorsal blotches ..... *O. dorsolateralis*
- 13 A Usually 21 (sometimes 23) midbody scale rows; 160-190 ventrals; dorsal pattern either reticulated, or with 13-18 transverse blotches separated by three or four irregular but wide dark crossbands, or with irregular crossbands .....  
 ..... *O. fasciolatus*  
 B Usually 19 (sometimes 21) midbody scale rows; 160-210 ventrals; dorsal pattern of wide dorsal blotches separated by three irregular, thin and faint dark crossbands ..... *O. purpurascens*

Notes: <sup>(1)</sup> at the level of the ventral plate corresponding to half number of the total number of ventrals.

<sup>(2)</sup> *Oligodon joynsongi* has 17 rows exactly at midbody, but 15 shortly behind middle (Taylor, 1965: 781). Nevertheless, *O. joynsongi* is easily distinguished from the

two species with 15 rows here included in the key by its pattern made of dark, irregular crossbands and a higher number of ventrals (187-195, vs. 171-174 in *O. inornatus* and 162-188 in *O. dorsalis*).

<sup>(3)</sup> incorrectly stated as being devoid of loreal by Manthey and Grossmann (1997: 308); this species has one small loreal.

### CONCLUSION

Although the distinct status of this specimen at the specific level is barely questionable, the combination of unusual morphological features places it at the margin of interspecific variation of the genus *Oligodon*. In fact, the description of this new species points out the confused taxonomy in this speciose genus presenting a great variability in characters. On the basis of its dentition, its head coloration pattern and meristic characteristics fitting with those enumerated by Wallach and Bauer (1996: 15) for *Oligodon*, we include our new taxon in this genus, although by stressing its wide heterogeneity and the urgency of its revision based both on morphological and molecular characters.

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## APPENDIX

## Specimens examined

*For morphological data*

*Oligodon annulifer*.—MNHN 1912.49, "Indes Néerlandaises" (Dutch East Indies), Indonesia.

*Oligodon barroni*.—MNHN 1938.134, Cauda, near Nha Trang, South Annam, Southern Vietnam; MNHN 1958.458, Nha Trang, Annam, Southern Vietnam; MNHN 1973.143 (specimen)-143A (skull), Choreo, Phu-Bôn, Southern Vietnam.

*Oligodon bitorquatus*.—MNHN 1975.83, Java, Indonesia.

*Oligodon catenatus*.—MNHN 1908.13, Tam Dao, elevation 300 m, Tonkin, Northern Vietnam; MNHN 1935.5-6, Tam Dao, Tonkin, Northern Vietnam; MNHN 1935.7, Ngan-Son, Tonkin, North Vietnam.

*Oligodon cinereus*.—MNHN 1893.387-88, Mts. Carin, elev. 1200-1300 m, Burma; MNHN 1897.407-408, Bac Ran, North Vietnam; MNHN 1928.14, Bac Kan, Tonkin, North Vietnam; MNHN 1928.70, Xieng Khouang, Laos; MNHN 1938.135, Cochinchina, Southern Vietnam; MNHN 1938.136, Tam Dao, Tonkin, Northern Vietnam; MNHN 1948.86, Dong Tam Ve, Annam, South Vietnam; MNHN 1958.465, Bavi, Tonkin, Northern Vietnam; MNHN 1958.466, Ngan Son, Tonkin, Northern Vietnam; MNHN 1970.437-40 (specimens), MNHN 1970.440A (skull), Trapeang-Chan, Cambodia.

*Oligodon cruentatus*.—MNHN 1893.395, Palon, Burma.

*Oligodon cyclurus*.—MNHN 1893.389, Bhamo, Burma.

*Oligodon fasciolatus*.—IRSNB 15491 (striped morph), Chiang Mai, Muang District, Chiang Mai Province, Thailand; IRSNB 15492, Ban Khao Tao, Hua Hin District, Prachuap Khiri Khan Province, Thailand; MNHN 1877.50 (5236), MNHN 1896.419, Cambodia; MNHN 1897.423, Nui Queue, Quang Nam Province, Laos; MNHN 1899.278, Annam (Indochine), South Vietnam; MNHN 1910.16, Cochinchine, South Vietnam; MNHN 1970.436, Trapeang-

Chan, Cambodia; MNHN 1974.1262-64, Annam & Saigon, South Vietnam; MNHN 1970.436A (skull), Cambodia.

*Oligodon everetti*.—MNHN 1975.103, Borneo or Deli, north of Sumatra.

*Oligodon lacroixi*.—MNHN 1933.1, MNHN 1938.137-38, MNHN 1958.464-464A, Cha Pa, Lao Kay Province, alt. 1500 m, Tonkin, North Vietnam.

*Oligodon mouhoti*.—MNHN 1991.1817-19, Bangkok, Thailand; MNHN 1998.0572, Ban Ton Kaet, Kaeng Krachan District, Phetchaburi Province, Thailand; MNHN 1999.7635, Ban Salakern, Ban Lat District, Phetchaburi Province, Thailand.

*Oligodon octolineatus*.—MNHN 667, Bangkok, Thailand; MNHN 1884.83, Peral, Malacca, West Malaysia; MNHN 1975.104, Borneo or North Sumatra: Deli.

*Oligodon purpurascens*.—MNHN 3539, "Indes Orientales" (East Indies; holotype).

*Oligodon sublineatus*.—MNHN 1872.20, Ceylan, now Sri Lanka.

*Oligodon taeniatus*.—MNHN 598 (1962), Bangkok, Thailand (holotype of *O. quadrilineatus* Jan, 1865); MNHN 1865.24 (1105), Cochinchine, South Vietnam; MNHN 1885.400, Petriou, Siam; MNHN 1884.406, Sumatra, Indonesia; MNHN 1885.355-56, between Batambang and Vatana, Thailand; MNHN 1885.365, between Vatana and Kabin, Thailand; MNHN 1908.54, Cochinchine, South Vietnam; MNHN 1909.14, Bien Hoa, Annam, South Vietnam; MNHN 1910.17, Indochine; MNHN 1910.18, Cochinchine, South Vietnam; MNHN 1919.137, Nha-Trang, Annam, South Vietnam; MNHN 1970.434A (skull), Cambodia.

*Oligodon 'venustus'*.—MNHN 1873.62, Burma; MNHN 1864.189, Siam.

*Oligodon vertebralis*.—MNHN 1889.195-97, Kina Balu Mt., Borneo.

#### *For morphology and viscera anatomy*

*Oligodon affinis*.—MCZ 3839, Madras, India.

*Oligodon albocinctus*.—CAS 12408, Darjeeling, India.

*Oligodon ancorus*.—CAS 61546-47, Balbalan, Philippines; FMNH 15052, Luzon, Philippines.

*Oligodon arnensis*.—SDSU 4333, Kottayan, India.

*Oligodon barroni*.—FMNH 179277, Ang Hin, Thailand.

*Oligodon bitorquatus*.—MCZ 7501, Java, Indonesia.

*Oligodon brevicaudus*.—CAS 17229, Anamallays Mtns., India.

*Oligodon calamarius*.—MCZ 4239, Sri Lanka.

*Oligodon chinensis*.—MCZ 28825, Lan-chi, China.

*Oligodon cinereus*.—CAS 13253, Sheng Mum, China; FMNH 6696, Hainan, China, FMNH 179256-57, Chiang Dao, Thailand.

*Oligodon cruentatus*.—MCZ 3210, Pegu, Myanmar.

*Oligodon cyclurus*.—CAS 8482, 8497, Rangoon, Myanmar.

*Oligodon dorsalis*.—MCZ 44746, Pakokku, Chin Hills, Myanmar.

*Oligodon everetti*.—MCZ 43557, Kiau, Sabah, Malaysia.

*Oligodon fasciolatus*.—FMNH 180196, Amphoe Pak Thong Chai, Thailand.

*Oligodon formosanus*.—LSUMZ 19352, Neihu, Taiwan.

*Oligodon lacroixi*.—CAS 9146, Chapa, Vietnam.

*Oligodon maculatus*.—LSUMZ 41806, Baracatan, Philippines.

*Oligodon meyerinkii*.—CAS 7248, Sabah, Malaysia.

*Oligodon modestus*.—CAS 26749, 26753, Biaknabato, Philippines.

*Oligodon 'ocellatus'*.—FMNH 143301, Chong Mek, Thailand.

*Oligodon octolineatus*.—MCZ 11271, Linbang River, Sarawak, Malaysia.

*Oligodon ornatus*.—FMNH 24964, Ch'ungan Hsien, China.

*Oligodon perkinsi*.—CAS 15277, Culion, Philippines.

*Oligodon purpurascens*.—MCZ 9326, Mt. Saki-lan, Sumatra, Indonesia.

*Oligodon signatus*.—FMNH 69989, Singapore.

*Oligodon subcarinatus*.—FMNH 138590, Nanga Tekalit, Sarawak, Malaysia.

*Oligodon sublineatus*.—CAS 17234, Sri Lanka.

*Oligodon taeniatus*.—MCZ 20372, Bangkok, Thailand; LSUMZ 24684, Saigon, Vietnam.

*Oligodon taeniolatus*.—CAS 17239, Anamallays Mts., India; SDSU 4338, Kottayan, India.

*Oligodon theobaldi*.—MCZ 3910, Madras, India.

*Oligodon torquatus*.—FMNH 122255, Myitkyina, Myanmar.

*Oligodon vertebralis*.—CAS 28601, Iwahig, Palawan Island, Philippines.

*Oligodon waandersi*.—CZ 25278, Djikoro, Sulawesi, Indonesia.

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