Zootaxa 3702 (3): 233–246
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3702.3.2
http://zoobank.org/urn:lsid:zoobank.org:pub:508E2367-560C-4FC5-9581-8FEB59EFDAC2

A new species of Kukri Snake (*Oligodon* Fitzinger, 1826; Squamata: Colubridae) from the Cat Tien National Park, southern Vietnam

ANNA B. VASSILIEVA[1,2,6], PETER GEISSLER[5,6], EDUARD A. GALOYAN[2,3], NIKOLAY A. POYARKOV Jr[1,2], ROBERT WAYNE VAN DEVENDER[4] & WOLFGANG BÖHME[5]

[1]*Department of Vertebrate Zoology, Biological Faculty, Lomonosov Moscow State University, Leninskiye Gory, GSP–1, Moscow 119991, Russia*

[2]*Joint Russian–Vietnamese Tropical Research and Technological Center of the A.N. Severtsov Institute of Ecology and Evolution, South Branch, 3, Street 3/2, 10 District, Ho Chi Minh City, Vietnam*

[3]*Zoological Museum, Lomonosov Moscow State University, Bolshaya Nikitskaya st. 6., Moscow 125009, Russia*

[4]*Department of Biology, Appalachian State University, Boone, NC 28608, USA*

[5]*Zoologisches Forschungsmuseum Alexander Koenig, Adenauerallee 160, 53113 Bonn, Germany. E-mail: pgeissler84@yahoo.de*

[6]*Corresponding authors. E-mail: pgeissler84@yahoo.de; vassil.anna@gmail.com*

Abstract

We describe a new species of the genus *Oligodon* from the lowland forests of Cat Tien National Park, Dong Nai Province, in southern Vietnam. *Oligodon cattienensis* **sp. nov.** is distinguished from the remaining Southeast Asian kukri snakes by the combination of the following characters: medium-sized, deeply forked hemipenes without spines, 17-17-15 dorsal scale rows, nasal entire, 2 small postoculars, almost equal in size, 167–178 ventrals, 31–35 subcaudals, 24–35 + 5 large dark-edged vertebral blotches in combination with a yellow-orange or red vertebral stripe between blotches, head pattern including ocular band, temporal bands and elongated chevron, ventrals pink or whitish (reddish in juveniles) in life, some bearing a quadrangular dark blotch on each lateral side, or ventrals being entirely dark. Based on the hemipenial morphology the new species is assigned to the *Oligodon cyclurus* species group. A comparison table for all Indochinese *Oligodon* is provided.

Key words: *Oligodon cattienensis* **sp. nov.**, Dong Nai Province, southern Indochina, taxonomy, natural history

Introduction

Being one of the most speciose snake genera in South and Southeast Asia, *Oligodon* Fitzinger, 1826 currently comprises 74 described, valid taxa (Green 2010, Green *et al.* 2010, David & Vogel 2012, David *et al.* 2011, 2012, Neang *et al.* 2012). Beside the distinctly enlarged rostral scale, the most prominent and eponymous character are the enlarged, broad and recurved kukri-shaped hind teeth. They are interpreted as an evolutionary adaptation to oophagy (Coleman *et al.* 1993). Unlike the situation in other oophagous snakes, the kukri teeth allow these snakes to feed on eggs too large to swallow, by sawing a hole into the egg-shell (Minton & Anderson 1963). Indochina, including Cambodia, Laos and Vietnam, currently houses 21 known species (see table 1), and therefore forms a center of species richness for this genus (David *et al.* 2012). The taxonomy and systematics of *Oligodon* has been under discussion for about 70 years, since Smith (1943) made the first attempt to characterize species groups reflecting phylogenetic units. Smith used hemipenial traits to diagnose seven species groups, of which four occur in Indochina (Smith 1943, David *et al.* 2008 a & b, David *et al.* 2012, Neang *et al.* 2012): *Oligodon cinereus*—group (*O. cinereus, O. albocinctus, O. inornatus, O. joynsoni,* and *O. nagao*); *Oligodon cyclurus*—group (*O. formosanus, O. ocellatus, O. fasciolatus, O. kampucheaensis, O. saintgironsi* and *O. macrurus*); *Oligodon taeniatus*—group (*O. deuvei, O. moricei, O. taeniatus, O. mouhoti* and *O. barroni*); *Oligodon dorsalis*—group (*O. lacroixi, O. eberhardti* and *O. catenatus*). These suspected species groups were mostly supported by modern phylogenetic approaches (Green *et al.* 2010). Currently only one species, *Oligodon annamensis* Leviton, 1953 is not clearly assignable to

Accepted by Z. Nagy: 1 Aug. 2013; published: 27 Aug. 2013

TABLE 1. Morphological traits (A) and pholidosis (B) of the type series of *Oligodon cattienensis* **sp. nov.**; juv. = juvenile; sad = subadult; m = male; f = female; further abbreviations are listed in the material and methods paragraph.

A

Specimen	ASR	MSR	PSR	SL	IL	Teeth	Nasal	Anal	PreOc	LOR	PstO	Temp	VEN	SC	Main dorsal pattern (body + tail)
ZMMU R-11473	17	17	15	8	8	8/9	E	E	1	1	2	1+2/1+2	173	31	31 + 5 dark blotches; light vert. line
ZMMU R-13815	17	17	15	8	8	10/9	E	E	1	1	2	2+3/2+2	170	35	35 + 5 dark blotches; light vert. line
ZMMU R-13815	17	17	15	8	7	10/8	E	E	1	1	2	1+2/1+2	168	32	24 + 5 dark blotches; light vert. line
ZMMU R-13866	17	17	15	8	8	8/9	E	E	1	1	2	1+2/1+3	178	32	31 + 5 dark blotches; light vert. line
ZFMK 88921	17	17	15	8	8	10/10	E	E	1	1	2	1+1+2/ 1+1+2	169	31	33+5 dark blotches; light vert. line
ZMMU R-13865 holotype	17	17	15	8	8	10/8	E	E	1	1	2	1+2/1+2	167	32	27 + 5 dark blotches; light vert. line

B

Specimen	Sex/age	TL	SVL	TaL	TaL/TL	HW	HL	HH	IO	ED	SnL	EN	IN	SL contacting eye
ZMMU R–11473	?/ juv	255.0	228.0	27.0	0.11	8.1	9.6	6.8	4.7	2.0	3.4	1.8	2.9	IV–V
ZMMU R–13815	m/ ad	465.0	407.5	57.5	0.12	10.3	11.6	6.7	5.5	2.4	4.4	2.4	4.1	IV–V
ZMMU R–13815	f/ sad	365.0	324.5	40.5	0.11	8.6	10.1	7.2	5.4	2.1	3.8	2.2	3.6	IV–V
ZMMU R–13866	m/ ad	590.0	525.0	65.0	0.11	10.8	13.2	9.6	6.7	2.6	4.8	2.9	4.5	IV–V
ZFMK 88921	?/ juv	170.0	152.0	18.2	0.11	6.7	9.7	4.2	4.1	1.65	3.3	1.8	2.8	IV–V
ZMMU R–13865 holotype	m/ ad	415.0	362.0	53.0	0.13	9.9	12.2	7.9	5.9	2.4	4.6	2.3	4.0	IV–V

one of these groups, but it was proposed by Leviton (1953, 1960) to be part of the "*taeniatus–cyclurus*–complex". We follow the recommendations of Kaiser *et al.* (2013) and consider the alternate names of subgroups of the genus *Oligodon* Fitzinger, 1826 proposed by Raymond T. Hoser as unscientific and invalid. During herpetological surveys in Cat Tien National Park in 2009, one reddish juvenile specimen was caught and preliminarily determined as *O. cinereus*, based on its body scale counts (Geissler *et al.* 2011). In the subsequent years several other differently colored specimens were found, which however showed similar squamation features. A second close examination of all specimens and the comparison of their morphological traits with those of all other *Oligodon* species revealed that they differ significantly from all described taxa. As a consequence we herein assign them to a new species, which is described below.

Material and methods

Visual herpetological surveys were undertaken in May 2009 by Wayne Van Devender, from December 2010 to January 2011, from July 2011 to July 2012, and from December 2012 to January 2013 by A.B.V. and E.A.G. in semideciduous forests in the Nam Cat Tien part of Cat Tien National Park. Specimens were photographed after capture and subsequently fixed and stored in 70% ethanol. For determination, morphological characters and morphometric ratios regarded as of taxonomic importance within *Oligodon* (see Smith 1943, Wagner 1975, David *et al.* 2008 a & b, David & Vogel 2012, David *et al.* 2012) were used. Scale counts and measurements were taken under an Olympus SZ30 or Leica EZ4 microscopes using a digital caliper. Scale count methodology follows Dowling (1951). Maxillary teeth were counted by slightly pushing back the soft tissue with a preparation pin. The hemipenes in one preserved adult male were extracted from their sheaths, the left one was dissected and turned inside out (everted) for morphological analysis. The following measurements and counts were taken: head length (HL, from snout tip to jaw angles); head width (HW); head height (HH); interorbital distance (IO); eye–nostril distance (EN, from anterior edge of orbit to posterior edge of nostril); internarial distance (IN); eye diameter (ED, horizontal); snout length (SnL, from the tip of rostral to the anterior margin of eye); snout-vent length (SVL); tail length (TaL); ratio of tail length / total length (TaL/TL); total length (TL); number of dorsal scale rows at neck (ASR, about one HL behind head); dorsal scale rows (DSR); supralabial scales (SL); infralabial scales (IL); loreal scale(s) (LOR); number of dorsal scales at midbody (MSR, at number of VEN/2); preocular scales (PreOC); postocular scales (PosOc); number of dorsal scale rows before vent (PSR); subcaudal scales (SC); ventral scales (VEN), temporal scales (Temp). Symmetric characters are given in left / right order. Numbers of pattern–units (like crossbars or vertebral blotches) are provided as number on body + numbers on tail. Types and referred material are stored in the herpetological collections of the Institute for Ecology and Biological Research (IEBR) in Hanoi, Vietnam, the Zoological Research Museum Alexander Koenig (ZFMK) in Bonn, Germany, and the Zoological Museum of Moscow State University (ZMMU) in Moscow, Russia.

Species description

Oligodon cattienensis sp. nov.

Oligodon cinereus (non *O. cinereus* Günther, 1864)—Geissler, Nguyen, Poyarkov, Böhme, 2011

Holotype. ZMMU R–13865 (field ID ZMMU NAP–02281), adult male from the environs of Ben Cu forest station, Nam Cat Tien sector, Cat Tien National Park, Dong Nai Province, southern Vietnam (11°26' 03" N, 107° 25' 42" E, 130 m a.s.l.), collected by Anna B. Vassilieva on 20 January 2011.

Paratypes. ZMMU R–13815 (field ID ZMMU NAP–02165), adult male (roadkill) from type locality: Nam Cat Tien sector, Cat Tien National Park, Dong Nai Province, southern Vietnam (11°25' 43" N, 107° 25' 38" E, 148 m a.s.l.) collected on 13 March 2012 by Eduard A. Galoyan; ZMMU R–13815 (field ID ZMMU NAP–02189), subadult female from type locality (11°27' 03" N, 107° 21' 52" E, 167 m a.s.l.) collected on 04 April 2012 by Eduard A. Galoyan; ZMMU R–13866 (field ID ZMMU NAP–02240), adult male from type locality (11°26' 23" N, 107°25' 33" E; 143 m a.s.l.), collected on 17 December 2012 by Anna B. Vassilieva; ZMMU R–11473, juvenile of undetermined gender from type locality, collected on 16 March 2003 by Vladimir V. Bobrov (preliminarily identified as *Oligodon* sp.); ZFMK 88921 (preliminarily identified as *O. cinereus* (Geissler *et al.* 2011), juvenile of unknown gender, from type locality (11°25' 43" N, 107° 25' 38" E, 148 m a.s.l.) collected by Robert Wayne Van Devender on 27 May 2009.

Diagnosis. A medium-sized *Oligodon* species, a member of the *O. cyclurus* group (fide Smith 1943, David *et al.* 2008b, Green *et al.* 2010) on the basis of the following morphological attributes: (1) deeply forked hemipenes without spines, (2) 17-17-15 dorsal scale rows, (3) 8–10 maxillary teeth, the posterior three being enlarged, (4) a complete head scalation complement, including a loreal but no presubocular, (5) an entire anal plate; and (6) a spotted and striped dorsal pattern. *Oligodon cattienensis* sp. nov. differs from all other members of the *O. cyclurus* group by the combination of the following morphological characters: (7) nasal entire; (8) 2 small postoculars, almost equal in size; (9) 167–178 ventrals; (10) 31–35 subcaudals; (11) tail relatively short (TaL/TL = 0.11–0.13); (12) 24–35 + 5 large dark-edged vertebral blotches in combination with a yellow-orange or red vertebral stripe between blotches; (13) head pattern including ocular band, temporal bands and elongated chevron; (14) ventrals pink or whitish (reddish in juveniles) in life, some bearing a quadrangular dark blotch on each lateral side, or ventrals being entirely dark.

Description of holotype. Body robust and cylindrical (362 mm SVL; 415 mm TL); head short (12.2 mm HL; HL/SVL = 0.03), broad and ovoid in dorsal view, faintly distinct from neck, somewhat depressed dorsoventrally; snout narrowed, triangle with blunt tip (4.6 mm SNL); mouth subterminal; large oval nostril piercing the central part of nasal; eye rather large (2.4 mm ED), about 0.2 times the head length; pupil rounded; tail rather short (53.0 mm TaL; TaL/TL = 0.13), ending in an acuminated tail cap.

Dentition. Maxillary teeth: 10 functional teeth on the right and 8 on the left side; two loci on left maxilla bear young, non-ankylosed teeth. The posterior three teeth are strongly enlarged, blade-like. Palatine dentition well developed.

Body scalation. DSR: 17-17-15, all smooth; outermost dorsal scale row enlarged; 167 VEN, strongly angulated; anal plate entire; 32 SC, all paired; terminal caudal scale forming an acuminated tail cap.

Head scalation. Head scalation (*in dorsal view*) comprising 1 rostral, 2 internasals, 2 prefrontals, 2 supraoculars, 1 frontal, and 2 parietals. Rostral large, wider than high, extending on to the dorsal surface of the snout and inserting deeply between internasals; internasals much wider than long, narrowing and slightly curving back towards the short median suture, about half as long as prefrontals; prefrontals large, pentagonal, wider than long, supraoculars pentagonal, elongated, about half as wide as long; frontal large, hexagonal, about 1.3 times longer than wide, posterior angle rather acute; parietals irregularly trapeziform, about twice larger than frontal, bordered posteriorly by 6 scales (including the third temporals); no enlarged nuchal scales present; (*in lateral view*) 1/1 entire elongated and waisted nasal (1.7 times longer than wide), pierced by a large nostril and subdivided medially in its lower half by a thin shallow suture; 1/1 squarish loreal scale; 8/8 supralabials: I. in contact with nasal, II. in contact with nasal and loreal, III. in contact with loreal and preocular, IV. and V. in contact with eye, VI. in contact with lower postocular and anterior temporal, VII. in contact with anterior temporal, VIII. in contact with lower posterior temporal, VI. and VII. being strongly enlarged; 1/1 narrow subrectangular preocular, in contact with eye, supraocular, prefrontal, loreal, III. and IV. supralabials; no presubocular; 2 small postoculars, almost equal in size; 1+2 temporals, anterior one pentagonal, elongated and narrow, upper posterior approximately equal to the anterior, elongated, lower posterior the smallest, rhomboid; (*in ventral view*) 8/8 infralabials, I. in contact with each other and with mental, I. toV. in contact with 2/2 enlarged chin shields; mental small, triangular; 2/2 enlarged, elongated chin shields, anterior pair being twice longer than posterior pair. For head scalation see Figure 1.

Coloration. *In life*. Body (see Figure 2) is dull brownish gray; all dorsal scales scattered with minute dark brown spots; the three medial dorsal scale rows significantly less spotted, orange in color, with vertebral row slightly lighter, yellow-orange; 27 large transverse blotches on median dorsum, anterior six strongly waisted, butterfly-shaped, all posterior blotches have slight medial notch on the anterior and posterior ends; each blotch bluish-gray in its center, getting darker toward the edges, forming a thin dark-brown to black margin; those blotches continue (5) on tail; very faint dark reticulated crossbar between each pair of dorsal spots, up to the 13th spot; some lateral dorsal scales dark brown, forming scarce speckling on flanks; gular and anterior ventral scales white, posterior ventrals with light pinkish tint; some ventrals bearing a subrectangular, diffuse gray spot on each lateral margin; on the posterior third of venter, this darker spotting becomes denser; subcaudals white, with few tiny grayish marginal spots present on the proximal quarter of the tail; sharp edge between white tail underside and dark gray lateral dorsals; tail cap cream.

The head is rusty-orange dorsally, with paler snout sides and dark-edged olive-gray markings with maroon tint on upper surface of the head; an U-shaped interocular bar, being as wide as long, covering prefrontals as well as parts of frontal, supraoculars, preoculars and internasals and extending to the upper angle of rostral; supraoculars with an irregular, diffuse rounded blotch posteriorly; tear-shaped marking connected with the large arrow-shaped chevron extending from rear of frontal and medial part of parietals to the occiput and nape; 1/1 temporal bar with sharp, dark-edged anterior end and diffuse posterior one, starting on lateral parietals and running down towards the neck behind the jaw angle; two short dark gray, oblique subocular stripes extend backwards from the lower margin of each orbit, the anterior being more prominent and covering the parts of IV., V. and VI. supralabials, the posterior being paler and covering the parts of VI. and VII. supralabials.

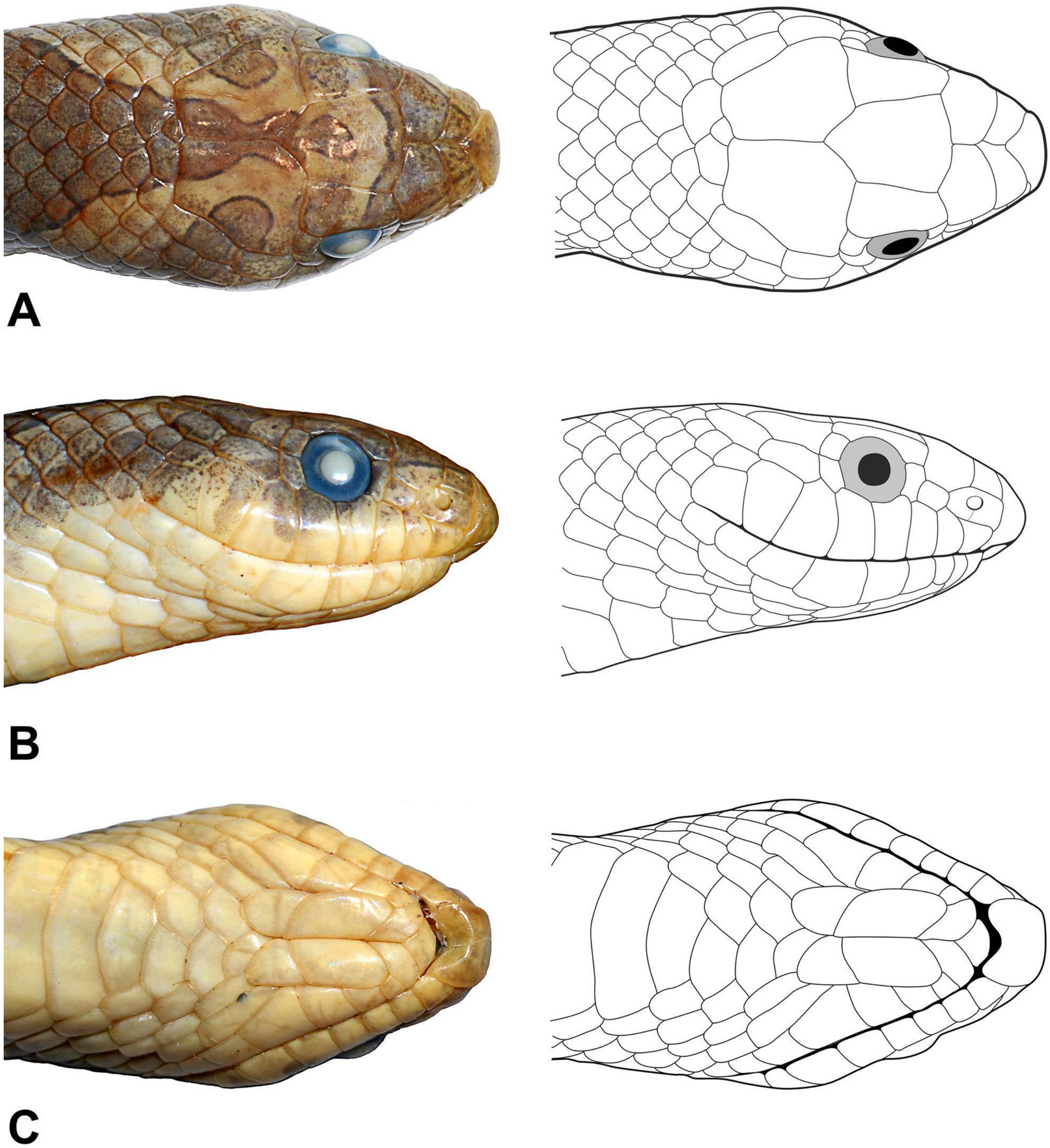

FIGURE 1. Holotype (ZMMU R-13865) portraits and head scalation in dorsal (A), lateral (B), and ventral views (C). Photographs and drawings by Anna B. Vassilieva and Vitaly L. Trounov.

FIGURE 2. Holotype (ZMMU R-13865) in life, dorsal (A) and ventral view (B). Photos by Anna B. Vassilieva.

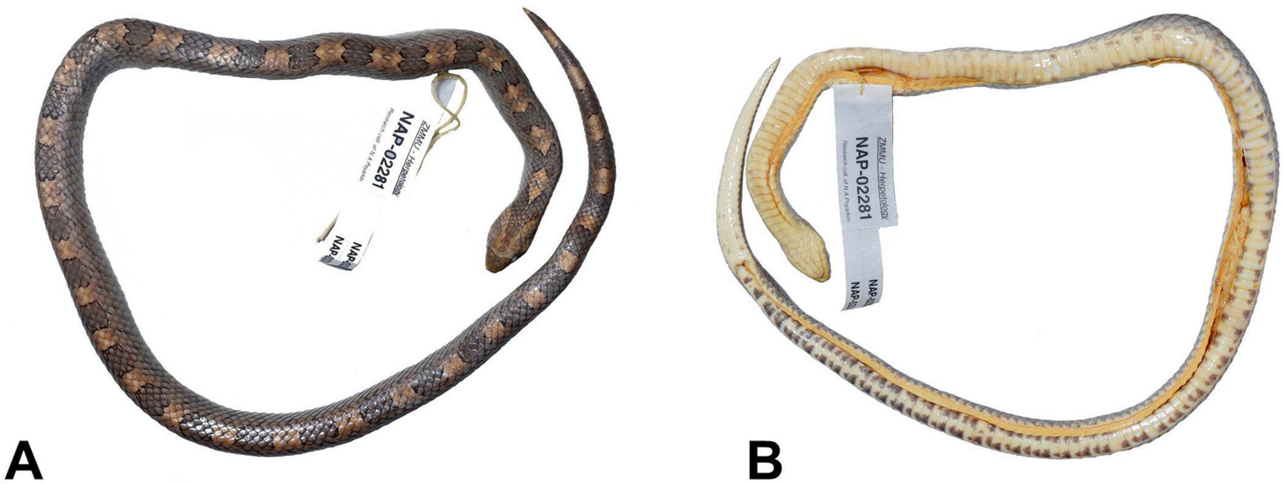

FIGURE 3. Holotype (ZMMU R-13865) in preservative, dorsal (A) and ventral view (B). Photos by Anna B. Vassilieva and Vitaly L. Trounov.

In preservative. See Figure 3. Body brownish-gray, vertebral region somewhat yellowish-beige; dorsal blotches and head markings dark gray, with a blackish margins; lateral speckling dark brown; throat, venter and tail undersides yellowish-cream, dark spots on ventral scales gray.

Description and variation of the paratype series (Figures 4, 5, 6). *External morphology*. The most important characters of the available specimens, all belonging to the type series, appear in table 1 (Appendix). All other morphological characters agree with those described for the holotype.

Dentition. 8–10 functional maxillary teeth in all specimens, the final three being strongly enlarged and blade-like; developed palatine dentition.

Body scalation. All scales are smooth, small, ovoid; first and second rows slightly enlarged, the vertebral row does not differ in size from other median dorsal rows. DSR: 17-17-15. Ventrals: 167–178, plus 1 (in one case 2) preventrals, strongly angulate; SC: 31–35, all paired; anal plate entire.

Head scalation. Generally as for holotype; in all specimens the entire nasal is subdivided below nostril by a thin shallow suture; single loreal and preocular, two postoculars, supralabials VI and V contacting eye; supralabials 8/8, infralabials 8/8 with one exception (7/7). Some variability observed in temporal scales, 1+2/1+2 being the most common condition (3 specimens), with primary (anterior) temporal being elongated subrectangular, secondary (posterior) upper temporal being elongated subrectangular approximately equal to the primary one, and lower secondary temporal being squarish, about half in length of the upper secondary temporal; the condition 1+1+2/1+1+2, with the two strongly elongated primary temporals being situated consecutively, observed in one specimen (ZFMK 88921); asymmetrical condition 2+3/2+2 in one specimen, with the upper primary (anterior) temporal representing elongated triangular scale shifted slightly anteriorly to the elongated subrectangular lower primary temporal, and the upper secondary (posterior) temporal on the right side of the skull divided on two smaller scales, anterior rounded and posterior triangular; asymmetrical condition 1+2/1+3 observed in one specimen, with the right side of skull similar to holotype and, on the left, with a small squarish scale between primary and upper secondary temporals.

FIGURE 4. Variation in life coloration of *Oligodon cattienensis* **sp. nov.** : (A) ZFMK 88921 (juvenile paratype); (B) ZMMU R-13866 adult male paratype; (C) ZMMU R-13815 adult male paratype; (D) uncollected adult specimen from Cat Tien National Park. Photos by Anna B. Vassilieva, Vitaly L. Trounov, Eduard A. Galoyan, Peter Geissler and Robert Wayne Van Devender.

Coloration in life. Ground coloration varies from lighter and darker grey or brown in adults and subadults to light reddish-brown in young juveniles (see Figure 4); the pattern is more or less consistent with the holotype, with some variations in dorsal blotch number (24–35 on trunk, and always 5 on tail), and in the width of light vertebral stripe from one to three middorsal scale rows. Dorsal spots are dark bluish-gray in adults or subadults usually with little contrast (hardly distinguishable) with ground coloration of dorsum to dark brownish brick red, with a contrasting blackish margin in one juvenile (ZFMK 88921). Head marking is more contrasty in juvenile and subadult and includes a rounded spot on frontal separated from chevron in four individuals. Head markings are dark grey or olive-brown with maroon or rusty tint in adults and contrasty brownish-red in juveniles. Vertebral stripe varies from orange-yellow to red. Dark speckles on flanks may form oblique reticulated rows orientated back- and downwards. Ventral coloration varies from white with faint pinkish tint in adults to more saturated pink in subadults and bright red in juveniles (see Figure 5); ventral pattern varies from few squarish dark-grey spots on lateral edges of some ventrals to almost continuous dark grey spotting on most posterior ventrals; the throat and most anterior ventrals are without dark spots; and at most a few tiny dark speckle in the proximal part of the tail.

Hemipenis (dissected in preserved specimen—adult male ZMMU R-13866). The hemipenis is moderately long (reaching SC 11–12) and bifurcated opposite to SC 7–8. Proximal part of the unforked part is covered with deep calyces and few longitudinal folds, while distal part is smooth with thin and delicate longitudinal folds. Forks have faintly cellular surface. No spines or papillae are evident (see Figure 6).

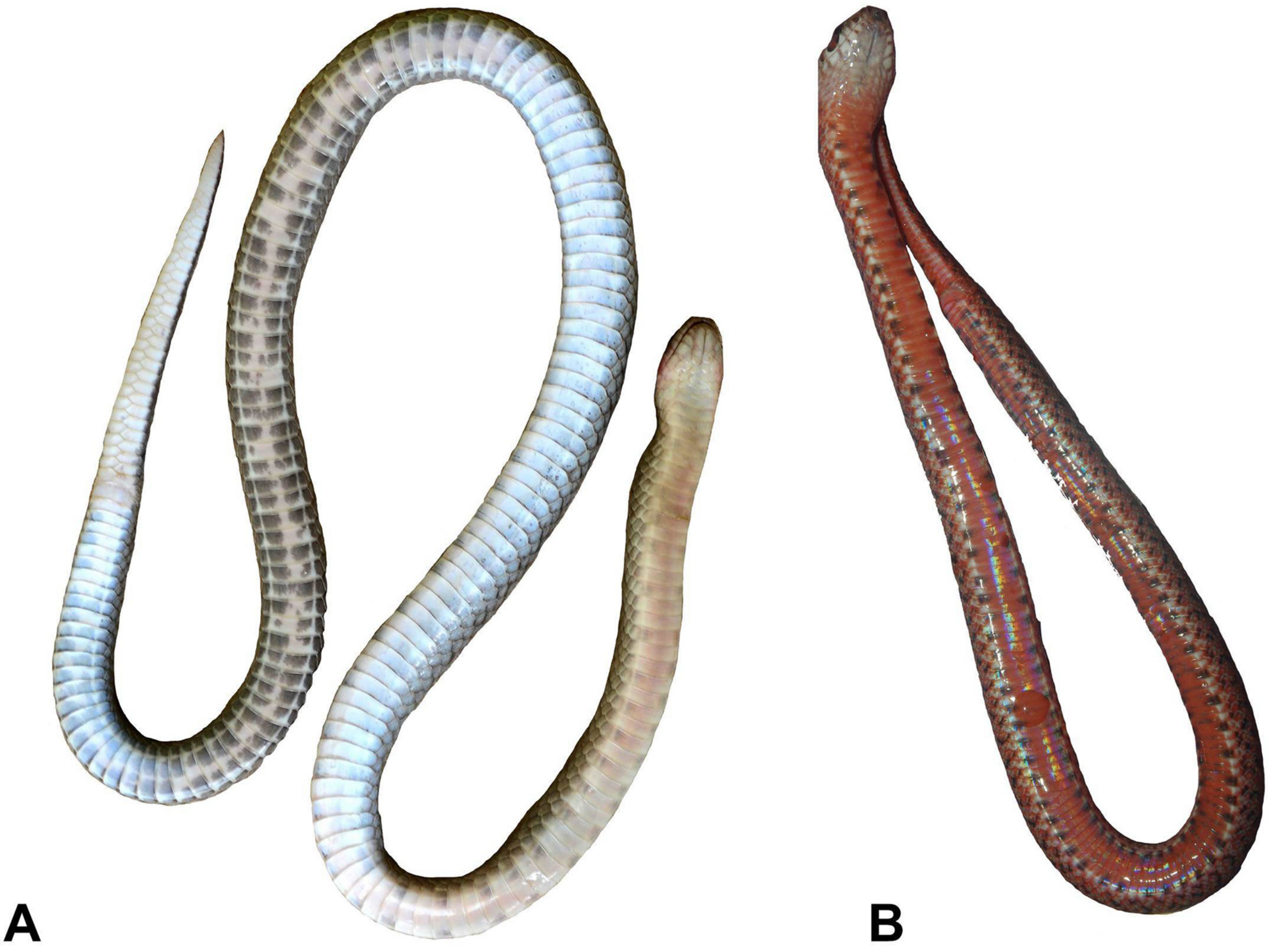

FIGURE 5. Ventral coloration of *Oligodon cattienensis* **sp. nov.** in life: (A) adult male paratype (ZMMU R-13866); juvenile paratype (ZFMK 88921). Photos by Anna B. Vassilieva, Vitaly L. Trounov and Peter Geissler.

Distribution. Known only from the type locality (Cat Tien National Park).

Habitat and natural history. Specimens ZMMU R-13865, R-13866 and R-13815 were collected on a country road running through highly disturbed lowland monsoon semideciduous, polydominant, partially submersible forest with the predominance of *Lagerstroemia calyculata* (Lythraceae), *Tetrameles nudiflora* (Datiscaceae), *Dipterocarpus alatus* (Dipterocarpaceae), *Ficus* spp. (Moraceae) and *Afzelia xylocarpa* (Fabaceae), and with a canopy formed by different arboreal species of Anacardiaceae, Lauraceae, Irvingiaceae, Meliaceae, Myrtaceae, Moraceae and Euphorbiaceae. Forest edges along the road are formed by bamboo (*Dendrocalamus* sp.; Poaceae), rattan (*Calamus* sp., Arecaceae), trees (*Terminalia calamansanai*, Combretaceae; *Hibiscus* sp., Malvaceae; *Grewia* sp., Tiliaceae; etc.), lianas (Acanthaceae, Mimosaceae, Verbenaceae, etc.) and herbaceous plants (*Zingiber* sp., Zingiberaceae; *Saccharum* sp., Poaceae; etc.). One specimen (ZMMU R-13815) was collected on the forest trail in an almost undisturbed area of monsoon semideciduous forest with a strong predominance of *Lagerstroemia calyculata* and *Tetrameles nudiflora*.

Three living specimens were collected on the ground, being active during day time.

FIGURE 6. Intact (left on photograph) and dissected (right) hemipenes in preserved paratype ZMMU R-13866. Photo by Anna B. Vassilieva and Vitaly L. Trounov.

The digestive tracts of specimens ZMMU R-13866 and R-13815 contained chitinous remains of digested insects, presumably coleopterans and blattodeans.

Etymology. The new species is named after its type locality, the Cat Tien National Park. Established in 1978, and covering about 72.000 hectares, CTNP is one of the most important areas for the conservation of biodiversity of the lowland forests in southern Indochina.

Comparisons. In addition to hemipenial characters, which are unavailable in some species (Green 2010), we use the number of dorsal scale rows at midbody (MSR) as a major diagnostic character for comparison (fide David *et al.* 2008 a & b). We compare *Oligodon cattienensis* **sp. nov.** (MSR = 17) with all (distributional notes are provided for species not known from the Indochinese biogeographical region fide Bain & Hurley 2011) congeners having 15 to 17 MSR, as the number of MSR may vary between these two values due to the position of the dorsal scale row reduction (David *et al.* 2012). Among those, *Oligodon cattienensis* **sp. nov.** differs from the other members of the *Oligodon cyclurus*—group (*sensu* Smith 1943, David *et al.* 2008 a, and Neang *et al.* 2012) from: *O. chinensis* by an entire nasal, the presence of temporal bars, 24–35+5 large transverse blotches instead of 10–15+3–4 black crossbands, and the red ventral color in juveniles (greyish white in *O. chinensis*); *O. formosanus* by an entire nasal, a reddish ventral coloration in juveniles (yellowish with a white ventrolateral line in *O. formosanus*), and the presence of dark transverse vertebral blotches; *O. kampucheaensis* by an entire nasal, and 24–35+5 large vertebral blotches instead of 17 thin whitish transverse bands; *O. kheriensis* from India by a lower number of VEN (167–178 vs. 196), the presence of a chevron as well as the presence of vertebral blotches (dorsum being uniformly colored in *O. kheriensis*); *O. macrurus* by an entire nasal, a higher number of VEN (167–178 vs. 139–162), and a lower number of SC (31–35 vs. 45–94); *O. saintgironsi* by an entire nasal, 1 vs. 2 PreOc, 31–35 vs. 53–59 SC, and 24–35+5 vs. 10–13+2–4 large transverse blotches on dorsum. Further species assigned to the *O.cyclurus*–group are differing by having 19 or more MSR: *O. cyclurus* (19 MSR); *O. fasciolatus* (21–23 MSR); *O. juglandifer* from Northeast India (19 MSR); *O. ocellatus* (19 MSR). Beyond its own species group, *O. cattienensis* **sp. nov.** differs from: *O. affinis* from India by a higher number of ventrals (167–178 vs. 129–145) and an undivided nasal; *O. ancorus* from the Philippines by a higher number of vertebral blotches (24–35 +5 vs. 14–22), and a red ventral coloration in juveniles (yellowish cream in *O. ancorus*); *O. annulifer* from Borneo by an entire nasal, a higher number of VEN (167–178 vs. 151–162), a lower number of SC (31–35 vs. 44–50), and 8 (rarely 7 IL) instead of 7 SL and IL; *O. arnensis* from the Indian Subcontinent by an entire nasal, 8 (rarely 7 IL) instead of 7 SL and IL, and an entire anal plate; *O. barroni* by an entire nasal, a higher number of VEN (167–178 vs. 135–160), 24–35+5 vs. 10–14 transverse paravertebral blotches; *O. bitorquatus* from Indonesia by an entire nasal, 8 (rarely 7 IL) instead of 7 SL and IL, and the absence of a bright yellow collar between the temporal bars and the chevron; *O. booliati* from Pulau Tioman by an entire nasal, 2 instead of 1 PosOc, a higher number of VEN (167–178 vs. 143–153), and a lower number of SC (31–35 vs. 54–60); *O. brevicauda* from India by an entire nasal, the presence of a loreal, 8 (rarely 7 IL) instead of 7 SL and IL, and the presence of dark vertebral blotches; *O. cinereus* by an entire nasal, by a head bearing prominent dark markings (temporal bars, chevron, interocular bar), and a red ventral coloration in juveniles (white to yellowish cream in *O. cinereus*) [Bourret (1934) described *Simotes violaceus pallidocinctus* from Saigon. This name "pallidocinctus" is currently recognized as a color form of *O. cinereus* (see Green 2010, David *et al.* 2012). This color form occurs syntopically with *Oligodon cattienensis* **sp. nov.** and is distinguishable by its characteristic 27–34+3–4 light, black edged, thin crossbars and unspotted ventrals]; *O. cruentatus* from Southern Myanmar by an entire nasal, and a divided anal plate; *O. deuvei* by an entire nasal, 1 instead of 2 PreOc, absence of a light vertebral line edged by two darker dorsolateral lines, and a reddish ventral color in juveniles (only ventral tail being red in *O. deuvei*); *O. dorsalis* from Assam, Bhutan, Bangladesh and Myanmar by 2 instead of 1 PosOc, 8 (rarely 7 IL) instead of 7 SL and IL, and an undivided anal plate; *O. erythrogaster* from India and Nepal by the presence of a loreal, 8 (rarely 7 IL) instead of 7 SL and IL, an entire anal plate, and the presence of transverse vertebral blotches; *O. erythrorhachis* from India by the presence of a loreal, an entire anal plate, a higher number of VEN (167–178 vs. 154), and a lower number of SC (31–35 vs. 46); *O. everetti* from Borneo by an entire nasal, 8 (rarely 7 IL) instead of 7 SL and IL, a higher number of VEN (167–178 vs. 132–154), and a lower number of SC (31–35 vs. 46–72); *O. forbesi* from Indonesia by an entire nasal, a lower number of SC (31–35 vs. 43–51), the presence of an ocular bar and a reddish ventral color in juveniles (yellowish in *O. forbesi*); *O. hamptoni* from Myanmar by the presence of two internasals, 8 instead of 5 SL, 8 (rarely 7) IL instead of 6 IL, and an entire anal plate; *O. inornatus* by an entire nasal, the presence of prominent head markings (chevron, temporal bars and ocular bar), and the presence of 24–35+5 large vertebral blotches (head and body uniformly pale brown in *O. inornatus*); *O. jintakunei* from Thailand by an entire nasal, presence of 2 internasals, 2 instead of 1 PosOc, and an entire anal plate; *O. joynsoni* by an entire nasal, a lower number of VEN (167–178 vs. 187–195) and of SC (31–35 vs. 40–50); *O. kunmingensis* from China by an entire nasal, the presence of a loreal, 8 instead of 5 SL, 8 (rarely 7) IL instead of 6 IL, and a higher number of VEN (167–178 vs. 108–121); *O. lacroixi* by the presence of 2 internasals, the presence of a loreal, 8 instead of 5 SL, 8 (rarely 7) IL instead of 6 IL, and an entire anal plate; *O. lungshenensis* from China by the presence of two intranasals, the presence of a loreal, 8 (rarely 7 IL) instead of 6 SL and IL, and an entire anal plate; *O. maculatus* from the Philippines by 8 (rarely 7 IL) instead of 7

SL and IL, a higher number of VEN (167–178 vs. 156–164) and a lower number of SC (31–35 vs. 52–55); *O. melaneus* from India by an entire anal plate, a higher number of VEN (167–178 vs. 152–160) and a lower number of SC (31–35 vs. 39–40); *O. melanozonatus* from India and China by the presence of a loreal, 8 (rarely 7 IL) instead of 6 SL and IL (7 SL present in one specimen of *O. melanozonatus*), and by an entire anal plate; *O. meyerinkii* from the Philippines and Borneo by an entire nasal, by 8 (rarely 7 IL) SL and IL (6 SL and 7 IL in *O. meyerinkii*), and by the absence of paravertebral stripes; *O. modestus* from the Philippines by 2 instead of 1 PosOc, by 8 SL and IL (6 SL and 7 IL in *O. modestus*), and by the presence of large transverse blotches on dorsum; *O. moricei* by an entire nasal, by a reddish to greyish dorsal coloration with large transverse blotches instead of a dark greyish brown color with only a lighter vertebral line, and a reddish venter (in juveniles) instead of a yellowish one in *O. moricei*; *O. mouhoti* by an entire nasal, and the absence of a light vertebral line flanked by brown lines (vertebral line interrupted by dark transverse blotches in *O. cattienensis* **sp. nov.**); *O. multizonatus* from China by an entire nasal, by a short loreal not touching the eye, a lower number of VEN (167–178 vs. 190–195) and SC (31–35 vs. 68–75), and an entire anal plate; *O. nagao* by 1 instead of 2 PreOc, a lower number of VEN (167–178 vs. 184–193) and SC (31–35 vs. 43–47), a forked hemipenes and a yellow-orange or red vertebral stripe between blotches; *O. nikhili* from India by an entire nasal, the presence of a loreal, a higher number of VEN (167–178 vs. 144), and an entire anal plate; *O. notospilus* from the Philippines by a higher number of VEN (167–178 vs. 136–140); *O. octolineatus* from Malaysia, Singapore and Indonesia by an entire nasal, the absence of alternating longitudinal stripes on dorsum, and the presence of a broad V-shaped chevron; *O. ornatus* from Taiwan and China by the presence of a loreal, 8 (rarely 7 IL) instead of 7 SL and IL, and an entire anal plate; *O. perkinsi* from the Philippines by a lower number of VEN (167–178 vs. 183–188), and by the presence of prominent head markings (ocular bar, temporal bars and chevron); *O. petronellae* from Sumatra by 8 (rarely 7 IL) instead of 7 IL and SL, a higher number of VEN (167–178 vs. 144–163), and the absence of 20–25+3–5 lighter rings; *O. praefrontalis* from Indonesia by the presence of 2 internasals and a loreal, 2 instead of 1 PosOc, a lower number of VEN (167–178 vs. 193), and an entire anal plate; *O. propinquus* from Indonesia by 8 (rarely 7 IL) instead of 7 SL and IL, 167–178 vs. 140 VEN, and the presence of distinct head markings (ocular bar, temporal bars and chevron); *O. pseudotaeniatus* from Thailand by an entire nasal, a higher number of VEN (167–178 vs. 137–156), and the presence of dark transverse blotches on dorsum; *O. pulcherrimus* from Sumatra by an entire nasal, and an entire anal plate; *O. signatus* from Malaysia, Singapore and Indonesia by an entire nasal, 2 vs. 1 PosOc, and 31–35 vs. 43–59 SC; *O. sublineatus* from Sri Lanka by an entire nasal, an entire anal plate, and 8 (rarely 7 IL) vs. 7 SL and IL; *O. taeniolatus* from the Indian Subcontinent, Iran, Afghanistan, Turkmenistan and Sri Lanka by an entire nasal, and an entire anal plate; *O. templetoni* from Sri Lanka by an entire nasal, 167–178 vs. 127–152 VEN, and an entire anal plate; *O. theobaldi* from Assam and Myanmar by an entire nasal, an entire anal plate, and the absence of longitudinal lateral lines; *O. torquatus* from Myanmar by an entire anal plate, and the absence of 4 dark longitudinal stripes on dorsum; *O. travancoricus* from India by an entire nasal, the presence of a loreal, a higher number of VEN (167–178 vs. 145–155), and an entire anal plate; *O. trilineatus* from Sumatra region by an entire nasal, 2 vs. 1 PosOc, 167–178 vs. 145–162 VEN, 31–35 vs. 39–62 SC, and the presence of dark transverse blotches on dorsum; *O. unicolor* from Indonesia by an entire nasal, 8 vs. 6 SL, and the presence of large dorsal blotches; *O. venustus* from India by an entire anal plate, and 8 (rarely 7 IL) vs. 7 SL and IL; *O. vertebralis* from Borneo and the Philippines by an entire nasal, 8 (rarely 7 IL) vs. 7 SL and IL, and by a higher number of VEN (167–178 vs. 136–154); *O. waandersi* from Sulawesi Archipelago by the absence of a prominent reddish vertebral line on tail; *O. wagneri* from Pulau Nias by an entire nasal, by 24–35+5 large transverse dorsal blotches instead of 14 narrow white crossbars, and by a reddish venter (in juveniles); *O. woodmasoni* from Andaman and Nicobar Islands by an entire nasal, 167–178 vs. 180–190 VEN, and a lower number of SC (31–35 vs. 46–57). Comparative data used in this paragraph are based on: Green (2010); Green *et al.* (2010); David *et al.* (2008 a & b); David *et al.* (2012); David & Vogel (2012); Neang *et al.* (2012); Campden-Main (1970); Saint Girons (1972); Deuve (1970); Geissler *et al.* (2011, 2012); Murthy *et al.* (1993).

Discussion

Beside the 21 valid species, which are known to occur in Indochina (see table 2), and from which *Oligodon cattienensis* **sp. nov.** differs in it s combination of diagnostic characters, an additional available *Oligodon* species

TABLE 2. Comparison of morphological and pattern characters of all *Oligodon* species known to occur in Indochina (Cambodia, Laos and Vietnam), according to David *et al.* (2008 a & b), Nguyen *et al.* (2009), Teynié & David (2010), David *et al.* (2012) and Neang *et al.* (2012). Data are compiled based on Bourret (1936), Smith (1943), Campden–Main (1970), Deuve (1970), Saint Girons (1972), David *et al.* (2008 a & b), Green (2010), Geissler *et al.* (2011), David *et al.* (2012), Neang *et al.* (2012), and this study. An explanation of abbreviations is provided in the Material and Methods section. Rare counts are given in brackets; D means divided; E means entire; pattern counts are divided in body + tail.

Species/characters	ASR	MSR	PSR	SL	IL	Nasal	Anal	LOR	VEN	SC	Main dorsal pattern
O. albocinctus	19	19 (21)	15(17)	7(8)	8	D	E	1	177–210	42–69	17–27 + 4–8 light crossbars
O. annamensis	13	13	13	6	6	E(D)	E	0	159–170	30–44	about 10 light crossbars
O. barroni	17	17	15	7(8)	8(9)	D	E	1	136–160	28–48	10–14 dark blotches
O. catenatus	?	13	?	6	6	E	D	0	165–212	29–43	longitudinal stripes
O. cattienensis **sp. nov.**	17	17	15	8	7–8	E	E	1	167–178	31–35	24–35+5 blotches; light vert. line
O. chinensis	17	17	15	8(7–9)	7–9	D	E	1(2)	170–206	31–65	10–15+3–4 black crossbands
O. c. cinereus	17	17	15	7(8)	8(7–9)	D	E	1	156–178	33–43	unicolored
O.c. tamdaoensis	17	17	15	7(8)	8(7–9)	D	E	1	168–184	30–42	dark crossbars
O.c. pallidocinctus	17	17	15	7(8)	8(7–9)	D	E	1	164–176	31–41	light narrow crossbars
O. deuvei	17	17	15	7(8)	8–9	D	E	1	142–163	31–47	longitudinal stripes
O. eberhardti	13	13	13	6	6	E	D	1	165–187	31–40	longitudinal stripes
O. fasciolatus	21–23	21(23)	17	8(7)	9	D	E	1	147–210	33–61	dark crossbars, or reticulation
O. formosanus	19	19(17)	17(15)	8(7)	8(9)	D	E	1	154–189	38–59	dark crossbars, light vert. line
O. inornatus	15	15	15	8	8	D	E	1	169–174	31–43	uniform
O. joynsoni	17	17	15	8	8	D	E	1	187–195	40–50	reticulations or crossbands
O. kampucheaensis	15	15	15	8	8	D	E	1	165	39	light narrow crossbars
O. lacroixi	?	15	?	5	6	E	D	0	162–178	25–33	longitudinal stripes
O. macrurus	17	17	15	7–8	9(8)	D	E	1(0)	139–162	45–94	uniform, undistinct crossbars
O. moricei	17	17	15	8	9	D	E	1	175	41	broad light vertebral line
O. mouhoti	17	17	15	8	9(10)	D	E	1	143–169	29–43	light vertebral line
O. nagao	17	17(15)	15	7–8	8(7)	D	E	1	184–193	43–47	dark blotches
O. ocellatus	19	19	15(13)	8	9	D	E	1	154–180	26–44	12+2 dark crossbands or blotches
O. saintgironsi	19	17–18	15	8	9	D	E	1	166–184	53–59	10–13+2–4 dark crossbands
O. taeniatus	19	19	15	8	9(10)	D	E	1(0)	141–169	31–49	longitudinal stripes

name for the region must be discussed. Bourret (1934) described *Simotes taeniatus caudaensis* based on three specimens collected in "Cauda" now Cau Da, near Nha Trang, Khán Hoa Province, Vietnam. Later on this species was synonymized with *Oligodon barroni* by Smith (1943: p. 210). David *et al.* (2008b) affirmed this taxonomic decision after having reexamined syntypes of both taxa (selected traits, based on David *et al.* (2008b) are shown in table 2). *Oligodon cattienensis* **sp. nov.** does share some similarities with the description of *Simotes taeniatus caudaensis* (see also Bourret (1936), like a red belly in life (in juveniles of *O. cattienensis* **sp. nov.**), and dark butterfly shaped vertebral blotches. Nevertheless *Oligodon cattienensis* **sp. nov.** differs from *Oligodon barroni* (including the traits of syntypes of *S. t. caudaensis*), as it is mentioned in the comparison paragraph and in table 2. Based on the hemipenial morphology, which is lacking spines or papillae, we suggest *O. cattienensis* sp. nov. to be a member of the *Oligodon cyclurus*—group (*sensu* Smith 1943, David *et al.* 2008 a, and Neang *et al.* 2012) along with *O. cyclurus*, *O. chinensis*, *O. kheriensis*, *O. juglandifer*, *O. formosanus, O. ocellatus, O. fasciolatus, O. kampucheaensis, O. saintgironsi* and *O. macrurus*. This systematic assignment can be evaluated by future genetic comparison.

The new species is the fifth *Oligodon* species known in Cat Tien National Park. Geissler *et al.* (2011) erroneously included one paratype (ZFMK 88921) of *Oligodon cattienensis* **sp. nov.** with other specimens under the name *Oligodon cinereus*. Currently, the five species known to occur sympatrically within the lowland forests of the Cat Tien National Park are *O. cinereus, O. saintgironsi*, *O. ocellatus*, *O. deuvei* and *O. cattienensis* **sp. nov.**. A record of *Oligodon fasciolatus* by Nguyen & Ho (2002) from Cat Tien can not be affirmed, without voucher specimens.

Acknowledgments

We thank the Administration of Cat Tien National Park and personally the director, Dr. Nguyen Van Dien as well as his antecessor Tran Van Thanh for allowing and facilitating this research. Fieldwork was conducted under Agreement № 37/HD about scientific cooperation between Cat Tien National Park and Joint Russian–Vietnamese Tropical Research and Technological Center for the period 2008–2012. We thank the administration of the Tropical Center and personally Dr. Nguyen Van Hue, Vu Manh and Nguyen Van Thinh for their help in organizing fieldwork. We gratefully acknowledge Le Xuan Canh, Ta Huy Thinh (IEBR, Hanoi) for their support and the loan of specimens. We are grateful to Paul Moler for providing scientific material and photographs. We thank Gernot Vogel and Patrick David for taxonomic advice. We are grateful to Dr. V.L. Trunov for the help in preparing photographic illustrations and I. Palko, Jendrian Riedel, Le Duc Khanh, Alexander Krohn, Bernd Geissler, Rike Bach and A. Borisanova for assistance in the field. The study was supported by the Russian Foundation for Basic Research (Grant No. RFFI–12-04-33150_mol_a_ved). Field work of PG was supported by the German Society for Herpetology and Herpetoculture and the Alexander Koenig Gesellschaft. PG especially thanks Thomas Ziegler and Nguyen Quang Truong for their supervision, as well as administrative and ideal support.

References

Bain, R.H. & Hurley, M.M. (2011) A biogeographic synthesis of the amphibians and reptiles of Indochina. *Bulletin of the American Museum of Natural History,* 360, 1–138.
http://dx.doi.org/10.1206/360.1

Bourret, R. (1934) Notes herpétologiques sur l'Indochine Française. IV. Sur une collection d'Ophidiens de Cochinchine et du Cambodge. V. Sur *Liopeltis major* et ses alliés. *Bulletin Général de l' Instruction Publique*, 13–30.

Bourret, R. (1936) *Les Serpents de l'Indochine.* Imprimérie Henri Basuyau & Cie., Toulouse. Vol. I, 141 pp; Vol. II, 505 pp.

Campden-Main, S.M. (1970) The identity of *Oligodon cyclurus* (Cantor, 1839) and revalidation of *Oligodon brevicauda* (Steindachner,1867) (Serpentes: Colubridae). *Proceedings of the Biological Society of Washington*, 82 (58), 763–766.

Coleman, K., Rothfuss, L.A., Ota, H. & Kardong, K.V. (1993). Kinematics of egg–eating by the specialized Taiwan snake *Oligodon formosanus* (Colubridae). *Journal of Herpetology*, 27, 320–327.
http://dx.doi.org/10.2307/1565154

David, P., Das, I. & Vogel, G. (2011) On some taxonomic and nomenclatural problems in Indian species of the genus *Oligodon* Fitzinger, 1826 (Squamata: Colubridae). *Zootaxa*, 2799, 1–14.

David, P., Nguyen, T.Q., Nguyen, T.T., Jiang, K., Chen, T., Teynié, A. & Ziegler, T. (2012) A new species of the genus *Oligodon* Fitzinger, 1826 (Squamata: Colubridae) from northern Vietnam, southern China and central Laos. *Zootaxa,* 3498, 45–62.

David, P. & Vogel, G. (2012) A new species of the genus *Oligodon* Fitzinger, 1826 (Squamata: Colubridae) from Pulau Nias, Indonesia. *Zootaxa*, 3201, 58–68.

David, P., Vogel, G. & Pauwels, O.S.G. (2008a) A new species of the genus *Oligodon* Fitzinger, 1826 (Squamata: Colubridae) from southern Vietnam and Cambodia. *Zootaxa*, 1939, 19–37.

David, P., Vogel, G. & Rooijen, J. van (2008b) A revision of the *Oligodon taeniatus* (Günther, 1861) (Squamata: Colubridae) group, with the description of three new species from the Indochinese Region. *Zootaxa*, 1965, 1–49.

Deuve, J. (1970) Serpents du Laos. *Mémoires de l'Office de la Recherche Scientifique et Technique d'Outre-Mer*, 39, 1–251. (in French).

Dowling, H.G. (1951) A proposed standard system of counting ventrals in snakes. *British Journal of Herpetology,* 1 (5), 97–99.

Fitzinger, L.J.F.J. (1826) *Neue classification der reptilien nach ihren natürlichen verwandtschaften. Nebst einer verwandtschafts–tafel und einem verzeichnisse der reptilien–sammlung des K. K. zoologischen museum's zu Wien*. J.G. Hübner, Wien. vii + 66 pp.

Geissler, P., Krohn, A.R. & Rennert, A. (2012) Herpetofaunal records in coastal dune areas, Binh Thuan Province, Southern Vietnam, with the rediscovery of *Oligodon macrurus* Angel, 1927. *Russian Journal of Herpetology*, 18 [2011] (4), 317–324.

Geissler, P., Nguyen, Q.T., Poyarkov, N.A. & Böhme, W. (2011) New records of snakes from Cat Tien National Park, Dong Nai and Lam Dong provinces, southern Vietnam. *Bonn zoological Bulletin*, 60 (1), 9–16.

Green, M.D. (2010) *Molecular phylogeny of the snake genus* Oligodon *(Serpentes:Colubridae), with an annotated checklist and key*. Unpublished Master thesis, University of Toronto, 161 pp.

Green, M.D., Orlov, N.L. & Murphy, R.W. (2010) Toward a Phylogeny of the Kukri Snakes, Genus *Oligodon*. *Asian Herpetological Research*, 1 (1), 1–21.

Kaiser, H., Crother, B., Kelly, C.M.R., Luiselli, L., Ota, H., Passos, P., Schleip, W.D. & Wüster, W. (2013) Best practices: in the 21st century, taxonomic decisions in herpetology are acceptable only when supported by a body of evidence and published via peer–review. *Herpetological Review*, 44 (1), 8–23.

Leviton, A.E. (1953) A new snake of the genus *Oligodon* from Annam. *Journal of the Washington Academy of Science*, 43 (12), 422–424.

Leviton, A.E. (1960). Notes on the second specimen of the snake *Oligodon annamensis* Leviton. *Wasaman Journal of Biology*, 18, 305–307.

Minton, S.A. & Anderson, J.A. (1963). Feeding habits of the kukri snake, *Oligodon taeniolatus*. *Herpetologica*, 19, 147.

Murthy, T.S.N., Sanyal, D.P. & Duttagupta, B. (1993). Rare snakes of India. *Snake*, 25, 135–140.

Neang, T., Grismer, L.L. & Daltry, J.C. (2012) A new species of kukri snake (Colubridae: *Oligodon* Fitzinger, 1826) from the Phnom Samkos Wildlife Sanctuary, Cardamom Mountains, southwest Cambodia. *Zootaxa,* 3388, 41–55.

Nguyen, V.S. & Ho, T.C. (2002) Species composition of the herpetofauna recorded in the Cat Tien National Park. *Journal of Biology,* 24, 2–10. (in Vietnamese).

Nguyen, V.S., Ho, T.C. & Nguyen, Q.T. (2009) *Herpetofauna of Vietnam.* Edition Chimaira, Frankfurt, 768 pp.

Saint Girons, H. (1972) Les serpents du Cambodge. *Mémoires du Muséum National d'Histoire Naturelle. Nouvelle Série A, Zoologie,* 74, 1–170. (in French).

Smith, M.A. (1943) *The Fauna of British India, Ceylon and Burma, including the whole of the Indo–chinese subregion. Reptilia and Amphibia. Vol. III, Serpentes*. Taylor & Francis, London, xii + 583 pp.

Teynié, A. & David, P. (2010)*Voyages naturalistes au Laos. Les reptiles.* Revoir Editions,Chamalières, 315 pp. (in French).

Wagner, F.W. (1975) *A revision of the Asian colubrid snakes* Oligodon cinereus *(Günther),* Oligodon joynsoni *(Smith), and* Oligodon cyclurus *(Cantor).* Unpublished Master's thesis, Baton Rouge, Louisiana State University, 97 pp.