

**ADDITIONS TO THE SNAKE FAUNA OF SOUTHERN LAOS,
WITH THE SECOND LAOTIAN SPECIMEN OF *Naja siamensis* (LAURENTI, 1768)
AND THE FIRST COUNTRY RECORD OF *Oligodon taeniatus* (GÜNTHER, 1861)
(SQUAMATA, SERPENTES)**

Alexandre Teynié¹ and Patrick David²

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A small, recent collection of reptiles from Paksé and from Xépián National Biodiversity and Conservation Area, Champasak Province, southern Laos, contains the second Laotian specimen of the Indochinese spitting Cobra, *Naja siamensis* (Laurenti, 1768). This species was previously known from this country from a single specimen observed in Savannakhet Province, in the north of Central Laos. This second specimen, the first one to have been preserved for this country, is described in details. It shows a pattern slightly different from the first Laotian specimen. This new specimen confirms the occurrence of this medically important species in different parts of the Mekong valley. A juvenile specimen of *Oligodon taeniatus* (Günther, 1861) proves the first voucher specimen of this species recorded from Laos. Specimens previously cited from the Vientiane area as *Oligodon taeniatus* proved to belong either to *Oligodon mouhoti* (Boulenger, 1914) or to an unidentified taxon. The list of snake species known from Champasak Province is updated; it currently includes 37 snake species.

Keywords: Reptilia, Serpentes, Laos, Xépián National Biodiversity and Conservation Area, Champasak Province, *Naja siamensis*, *Oligodon taeniatus*, *Oligodon mouhoti*.

INTRODUCTION

A first review of the herpetofauna of Champasak Province, in southern Lao PDR (cited below as Laos) appeared in Teynié et al. (2004). In this paper, 75 species (22 amphibians, 1 chelonian, 25 lizards, and 27 snakes) were recorded, including the new species *Cyrtodactylus buchardi* David, Teynié and Ohler, 2004 (Squamata, Lacertilia) and *Leptobrachium buchardi* Ohler, Teynié and David, 2004. In this first paper, it was stressed that our knowledge of the reptile fauna of this part of South Laos was still far from complete. Especially noteworthy was the lack of record of any species of the genus *Naja*, although cobras are said to be widespread in Laos (Deuve, 1970).

In this paper, we report on a small collection of only eight specimens (2 lizards, 6 snakes) from Paksé and the Xépián National Biodiversity and Conservation Area

(referred to below as Xépián NBCA), both in Champasak Province, gathered by Mr. Alexandre Pourchon (Conseil Général du Puy-de-Dôme, Clermont-Ferrand, France) and Mr. Frédéric Durand (*Société d'Histoire Naturelle Alcide d'Orbigny, Clermont-Ferrand*) in February 2005. This highly protected forested area, which spans over 240,000 ha and lies between about 90 and 450 m above sea level, is located at the extreme south of Laos near the border with Cambodia. A description of the area appeared in Teynié et al. (2004). Nevertheless, this new collection proved to be a great importance in that it contains (1) a specimen unambiguously identified as *Naja siamensis* (Laurenti, 1768), the second known from Laos and the first one deposited in a collection, (2) a specimen of *Oligodon taeniatus* (Günther, 1861), the first one of this species recorded from Laos, and (3) *Homalopsis buccata* (Linnaeus, 1758), known from Champasak Province but not from Xépián NBCA (Stuart, 1999).

The specimens of *Naja siamensis* and *Oligodon taeniatus* are described, and the taxonomic and distributional status of these species in Laos are discussed. An updated list of reptile species known from Champasak Province is given.

¹ Société d'Histoire Naturelle Alcide d'Orbigny, 27, Route de la Tour d'Auvergne, F-63970 Aydat, France.
E-mail: ateynie@clermont.inra.fr

² Département Systématique et Evolution, USM 602 Taxonomie-collection — Reptiles et Amphibiens, CP 30, Muséum National d'Histoire Naturelle, 57 rue Cuvier, F-75231 Paris Cedex 05, France.
E-mail: pdavid@mnhn.fr



Fig. 1. *Naja siamensis* MNHN 2005.0238, dorsal view of the head and neck (freshly killed specimen). Photo by A. Pourchon.



Fig. 2. *Naja siamensis* MNHN 2005.0238, lateral view of the head and neck. Photo by P. David.

MATERIAL AND METHODS

Specimens of this collection are deposited in the collections of the *Muséum national d'Histoire naturelle*, Paris, France.

Measurements were taken to the nearest millimeter. Ventral scales were counted according to Dowling (1951). The terminal scute is excluded from the number of subcaudals. The number of dorsal scale rows at mid-body is counted at the level of the ventral plate corresponding to half of the total ventral number. Values for symmetric head characters are given in left/right order.

Abbreviations. Measurements and morphometry: SVL, snout-vent length; TaL, tail length; TaL/TL, ratio tail length/total length; TL, total length. Scalation characters: DSR, dorsal scale rows; IL, infralabials; Lor, loreal scale; MSR, number of dorsal scale rows at mid-body; PreOc, preocular scales; PosOc, postocular scales; SC, subcaudal scales; SL, supralabials; VEN, ventral scales; Tem, temporal scales. Other: a.s.l., above sea level.

Museum abbreviations. BMNH, The Natural History Museum, London, UK; MNHN, Muséum National d'Histoire Naturelle, Paris, France.

RESULTS

Naja siamensis (Laurenti, 1768) (Figs. 1–3)

Material examined. MNHN 2005.0238 (subadult female), vicinity of Ban Kiatnong (14°34' N 106°12' E), 95 m a.s.l., Xépián NBCA, Champasak Province, Laos. Collected by Alexandre Pourchon, 25.02.2005.

Description. TL 722 mm (SVL 607 mm, TaL 115 mm), ratio TaL/TL 0.159. DSR: 27-21-15, all smooth; 162 VEN (+ 2 preventrals), 49 SC, all divided but the 3rd one; anal entire. SL 7/7 (3-4/3-4 in contact with orbit); PreOc 1/1; PosOc 3/3; Tem 2 + 4/2 + 3; IL 9/9.

In life, dorsal ground color pale brownish-gray, rather subdued, with narrow and intricate pale, poorly contrasting zigzag-like crossbands. Hood mark U-shaped, partly connected to the lateral mark but not connected to the pale color of the venter. Head uniformly grayish brown; a ventrolateral lateral black blotch on the neck at level of VEN 9–10. Venter uniformly very pale brownish-gray, with a faint dark gray mark covering VEN 14–19.

Biology. The sole specimen was collected at dusk (19:30) at the border between the forest and a large marsh near Ban Kiatgong, towards it was actively crawling. The weather of this dry season evening was clear and windless. The biotope and its vegetation (Fig. 3) have been described in Teynié et al. (2004) and Thebaud (2004).

This specimen displayed a great amount of aggression when collected and spat venom profusely and then went on spitting when carried in a snake bag.

Taxonomic comments. This specimen agrees well with characters of *Naja siamensis* given in Wüster et al. (1997). Its low number of ventral scales and the shape of the hood mark are diagnostic.

Oligodon taeniatus (Günther, 1861) (Fig. 4)

Material examined. MNHN 2005.0239 (juvenile, not sexed but probably female), Paksé, Champasak Province. Collected by Frédéric Durand, 20.02.2005.

Description. TL 134 mm (SVL 118 mm, TaL 17 mm), ratio TaL/TL 0.126. DSR: 19-19-15, all smooth; 157 VEN (+ 2 preventrals), 35 SC, all divided; anal entire. SL 8/8 (4-5/4-5 in contact with orbit); Lor 1/1; PreOc 1/1; PosOc 2/2; Tem 1 + 1/1 + 1; IL 8/8.

In life, the upper surface is brownish-gray; a wide dark tan vertebral stripe, edged with irregular black dots



Fig. 3. Border of Kiatnong marsh, biotope of *Naja siamensis* in Xépi-an NBCA. Photo by Thomas Calame.

forming on each side a dark dorsolateral line, and including in its middle a narrow, conspicuous longitudinal light orange-tan line, extends from the nape mark up to about the level of the vent; at this point, the central line widens and is only edged on each side with a dark brown line; another lateral black stripe on each side, on DSR 3 – 4, extends from the neck to the vent.

The head is brownish-gray, with a transversal dark-brown marking in front of eyes above, extending downwards and backwards across the eye down to the 3rd – 4th SL, a sagittal mark on frontal and anterior part of parietals, a wide heart-shaped nuchal blotch, and, lastly, on each side an oblique crossbar extending from the level of the sagittal mark downwards and backwards across the temporal down to the corner of the mouth.

The venter is coral red (rapidly turning to a creamish-yellow color in alcohol), with numerous irregular black subrectangular blotches near the tips of ventrals.

Biology. This specimen was collected while it was active at night on a lawn bordering a grassland close to human dwellings near the bank of Mekong River. It was sighted at ~19:00 during clear, hot weather (32°C).



Fig. 4. *Oligodon taeniatus* MNHN 2005.0239.
Photo by A. Pourchon.

Taxonomic comments. This specimen agrees well with characters given by Campden-Main (1969). The numbers of DSR and SL, and the pattern of the dorsum and venter are diagnostic. Our specimen is similar to that depicted in Cox et al. (1998). It does not show the diagnostic black blotches of the upper tail surface of *Oligodon mouhoti* (Boulenger, 1914).

DISCUSSION

The genus *Naja* Laurenti, 1768 in Laos

The taxonomy of Asian cobras of the genus *Naja* Laurenti, 1768 has long remained controversial. Investigations undertaken by Wüster and Thorpe (1987, 1989, 1991, 1992a, 1992b, 1994), Wüster et al. (1995), Wüster (1996), and Slowinski and Wüster (2000), based on multivariate and molecular analyses, have shown that 11 species of the genus *Naja* can be currently recognized in Asia (see David and Ineich, 1999, for a summary, and Slowinski and Wüster, 2000). Among these species, four are well known for being spitting cobras, namely the Burmese spitting cobra *Naja mandalayensis*, the Indochinese spitting cobra *N. siamensis*, the Javanese spitting cobra *N. sputatrix*, and the Equatorial spitting cobra *N. sumatrana*.

In the Indochinese Peninsula and Thailand, four species are currently known: *Naja atra* Cantor, 1842, *Naja kaouthia* Lesson, 1831, *Naja sumatrana* Müller, 1887, and *Naja siamensis* Laurenti, 1768 [type locality: restricted by Wüster et al. (1997) to Ban Phai District, Khon Kaen Province, Thailand, through a neotype selection]. This latter species was long misidentified as *Naja kaouthia*. On the basis on a morphological study of Indochinese cobras, *N. siamensis* was first recognized as a separate form under the name *Naja* cf. *atra* by Wüster and Thorpe (1992b). This position was later confirmed by genetic studies which allowed the attribution of the revalidated specific name *Naja siamensis* by Wüster and

Thorpe (1994). A more detailed description was provided in Wüster et al. (1997).

For long, namely up to the 1990's, Laotian specimens of the genus *Naja* Laurenti, 1768 were referred to in the literature as *Naja naja* (Linnaeus, 1758) or as *Naja naja kaouthia* Lesson, 1831 (see, for example, Smith [1943]). Deuve (1970) added to this confusion by implicitly assigning Laotian specimens to *Naja naja atra* Cantor, 1842, now *Naja atra*, a taxon currently known only from China and northern Vietnam. Nevertheless, according to the literature, only one species was known with some confidence from Laos, *Naja kaouthia*. It is noteworthy to mention that, although cobras are said to be widespread in Laos (Deuve, 1970), a casual examination of the catalogs of major collections showed that voucher specimens are scarce (see also Wüster et al., 1997; Chan-ard et al., 2000). The BMNH does not include any specimen from this country (C. J. McCarthy, personal communication, May 2005), and two Laotian *Naja* specimens are listed in the on-line collection database of the Field Museum (Chicago). Only one specimen from Laos traceable to Deuve (MNHN 1985.0408) is held in the collections of the MNHN, although, as shown below, this author examined in detail at least 11 other specimens.

Chan-ard et al. (2000) provided the first authenticated record of *Naja siamensis* in Laos. An adult specimen of this species was photographed in captivity in Ban Tad Hai Village, near the Dong Phou Vieng National Conservation Area, Muang Phin District, Savannakhet Province, Central Laos. This specimen exhibited the well known “black and white” pattern of the species, previously known only from a restricted part of Thailand (see Wüster et al., 1997). Unfortunately, for some reason, the animal was not preserved and biological data about it was nearly absent. Our specimen is hence the second known specimen of *Naja siamensis* from Laos and the first one to be deposited in a collection.

However, Deuves' unpublished notes (Deuve, 1985) contain the detailed descriptions of 11 specimens of *Naja*. These animals were collected in 1960 – 1962 and deposited in four local collections, as follows: P, Private author's collection; SRL, Collection of the “*Société royale des Sciences naturelles du Laos*,” Vientiane, Laos; SRL/Agri, Collection of the “*Service de l'Agriculture du Royaume du Laos*,” Vientiane, Laos; CNE, Collection du “*Centre national de l'Education*.” According to Deuve (1985), these collections were subsequently entirely destroyed. Among the 11 specimens, 10 are from Vientiane and its vicinity and one from Thakhek, Khammuan Province. These specimens are described in the unpublished notes of the author and the most important of their scalation features are reproduced in Table 1. Data provided by this author show that on the basis of Wüster et al. (1997), at least five specimens can be identified as *Naja siamensis*. This latter species can be separated from the sympatric *Naja kaouthia* mostly by a lower number of ventral scales (153 – 174 vs. 170 – 197 in *N. kaouthia*) and a different hood mark (spectacle-, U-, V-, or H-shaped in *N. siamensis* vs. monocellate or irregular in *N. kaouthia*).

Naja siamensis is widespread throughout northern, central and eastern Thailand, Cambodia and South Vietnam (Wüster et al., 1995, 1997; Wüster, 1996; Nabhitabhata et al., 2004). As far as Laos is concerned, before the Chan-ard et al. (2000) paper, the occurrence of *Naja siamensis* in this country (and in Myanmar too), mapped by Wüster and Thorpe (1994) and Wüster et al. (1995, 1997) was based on inference. No specimen was definitely known from those countries [see Stuart (1999) and Wüster in David and Ineich (1999)], although the species was considered likely to occur in both of them.

Whereas the first Laotian specimen was obtained in Savannakhet Province, our specimen comes from Champasak Province, about 250 airline kilometers southeastwards from the first known locality. In taking

TABLE 1. Scalation Data of 11 Laotian Specimens of the Genus *Naja* Examined by J. Deuve

Number	Locality	VEN	SC	ASR	MSR	Dorsum color	Identification
SRL 230	Vientiane	158	50	27	—	Pale grayish-olive	<i>N. siamensis</i>
P 307	35 km E of Vientiane	168	46	25	19	Pale brownish-gray	<i>N. siamensis</i> ?
SRL 149	Vientiane	183	59	27	25	Black	<i>N. kaouthia</i>
CNE 7	Vientiane	160	50	—	—	—	<i>N. siamensis</i>
SRL 108	Thakhek, Khammuan	158	51	27	21	Grayish-brown, faint bands	<i>N. siamensis</i>
SRL 106	25 km N of Vientiane	158	52	27	21	Brown, white bands	<i>N. siamensis</i>
SRL 67	20 km SE of Vientiane	155	51	27	21	Brown, yellow blotches	<i>N. siamensis</i>
SRL 37	Vientiane	—	—	27	23	Pale brownish-grey	?
SRL 25	Vientiane	—	—	27	23	—	?
SRL 27	Vientiane	184	52	27	23	—	<i>N. kaouthia</i>
P 84	16 km SE of Vientiane	180	42	23	21	Brownish-black	<i>N. kaouthia</i>

into account Deuve's specimens, *Naja siamensis* is now known from at least four localities in Laos (from north to south: Vientiane and its vicinity; Thakhek, Khammuan Province; Muang Phin District, Savannakhet Province; and Xépián NBCA, Champasak Province. One may suspect that *Naja siamensis* occurs throughout the lowlands of the Mekong Valley. However, it is unclear to us why a snake species as conspicuous as can be a cobra remains so rarely observed. This spitting species is potentially highly dangerous and of considerable medical importance in Thailand (Wüster et al., 1997), and more data are needed to ascertain its distribution in Laos.

The status of *Oligodon taeniatus* in Laos

Oligodon taeniatus (Günther, 1861) has previously been cited from Laos in the literature (Deuve, 1970). However, there has been a large amount of confusion in the literature centered on three taxa that are morphologically similar, *Simotes taeniatus* Günther, 1861, *Simotes quadrilineatus* Jan, 1865, and *Simotes taeniatus* var. *mouhoti* Boulenger, 1914. The confusion arose from a mistake made by Günther (1864) on the number of dorsal scale rows of the type of his *Simotes taeniatus*, erroneously corrected to 17 whereas the holotype had indeed 19 DSR. The matter was addressed by Campden-Main (1969), whom we follow. Nevertheless, the confusion led several authors, including Smith (1943), to use the specific nomen *taeniatus* for specimens with 17 DSR, and *quadrilineatus* for those with 19 DSR. On this basis, Deuve (1970) cited *Oligodon taeniatus* from Laos in giving a number of 17 dorsal scale rows, a value that does not refer to *Oligodon taeniatus* as presently conceived. As no specimen with 19 rows has ever been mentioned from Laos under the nomen *taeniatus*, our specimen from Champasak Province is hence the first country record of this species. Besides this latter country, *Oligodon taeniatus* is currently known from Thailand [provinces of Bangkok, Nonthaburi, Saraburi (Central); Chaiyaphum, Nakhon Ratchasima, Si Sa Ket (East), according to Nabhitabhata et al., 2004 (as *Oligodon quadrilineatus*), Cambodia (Saint Girons, 1972), and southern Vietnam (Campden-Main, 1970)].

The unpublished notes of Deuve (1985) contain the description of eight specimens from the vicinity of Vientiane that he referred to as "*Oligodon taeniatus* var. *mouhoti*," all of them with 17 MSR. Nevertheless, none of these specimens agree with *Oligodon mouhoti* as now conceived. The differences bear on the number of supralabials, the pattern, and for some, by the number of ventrals. In spite of their chequered belly, they do not agree either with *Oligodon barroni* (Smith, 1916), a species of which some of these Laotian animals are close by their scalation characters but distinct by their uniform dorsal

pattern. The status of members of the *Oligodon taeniatus* group of North Laos is currently under investigation by the second author of this paper and others, and for the present time, we will not name these specimens. Nevertheless, *O. taeniatus*, *O. mouhoti*, and *O. barroni* (see Teynié et al., 2004) are now known from this country.

The additions of *Naja siamensis* and *Oligodon taeniatus* bring to 37 the number of snake species known from Champasak Province, as established in combining the data of Stuart (1999), Teynié et al. (2004), and of this paper. The generic position of the pitvipers follows Malhotra and Thorpe (2004). The current list of snake species known from Champasak is as follows:

Typhlopidae

Ramphotyphlops braminus (Daudin, 1803)

Uropeltidae

Cylindrophis ruffus (Laurenti, 1768)

Xenopeltidae

Xenopeltis unicolor Boie, 1827

Pythonidae

Python molurus bivittatus Kuhl, 1820

Colubridae

Ahaetulla nasuta (Lacepède, 1789)

Ahaetulla prasina (Boie, 1827)

Boiga cyanea (Duméril, Bibron et Duméril, 1854)

Boiga siamensis Nootpand, 1971

Calamaria pavementata Duméril, Bibron and Duméril, 1854

Chrysopelea ornata (Shaw, 1802)

Coelognathus radiatus (Boie, 1827)

Dendrelaphis cyanochloris (Wall, 1921)

Dendrelaphis pictus (Gmelin, 1789)

Enhydryis jagorii (Peters, 1863)

Enhydryis plumbea (Boie, 1827)

Homalopsis buccata (Linnaeus, 1758)

Oligodon barroni (Smith, 1916)

Oligodon cinereus (Günther, 1864)

Oligodon inornatus (Boulenger, 1914)

Oligodon ocellatus (Morice, 1875)

Oligodon taeniatus (Günther, 1861)

Oreophis porphyraceus vaillanti (Sauvage, 1876)

Pareas hamptoni (Boulenger, 1905)

Pareas margaritophorus (Jan, 1866)

Psammodynastes pulverulentus (Boie, 1827)

Psammophis indochinensis Smith, 1943

Ptyas korros (Schlegel, 1837)

Ptyas mucosa (Linnaeus, 1758)

Rhabdophis chrysargos (Schlegel, 1837)

Rhabdophis subminiatus (Schlegel, 1837)

Xenochrophis flavipunctatus (Hallowell, 1860)

Elapidae

Bungarus candidus (Linnaeus, 1758)

Naja siamensis Laurenti, 1768

Ophiophagus hannah (Cantor, 1836)

Viperidae

Cryptelytrops albolabris (Gray, 1842)

Cryptelytrops macrops (Kramer, 1977)

Viridovipera vogeli (David, Vidal et Pauwels, 2001)

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