

***Amphiesma optatum* (Hu & Djao, 1966) (Serpentes, Colubridae): an addition to the snake fauna of Vietnam, with a list of the species of the genus *Amphiesma* and a note on its type species**

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Patrick David, Gernot Vogel & Olivier Pauwels 越南的新記錄種蛇類：麗紋游蛇 *Amphiesma optatum* (Hu & Djao, 1966) 臺灣省立博物館半年刊 51(2): 83-92

摘 要

麗紋游蛇的分布記錄以前只局限在中國大陸。我們在越南河內市北邊，永富省(Vinh Phù Province) 的三島(Tam Dao)附近採獲一隻麗紋游蛇，顯示這種蛇也分布在越南。我們比較了越南和中國大陸的麗紋游蛇標本，並首次呈現牠們存活時的彩色照片，而且提供一份包涵 37 種游蛇屬的最新記錄。依據原始文獻的描述，花浪蛇(*Coluber stolatus* Linnaeus, 1758)應是本屬的模式種。

關鍵詞：蛇亞目、系統分類、黃頰蛇科、游蛇屬、麗紋游蛇、模式種。

Abstract

The colubrid snake, *Amphiesma optatum* (Hu & Djao 1966), previously known only from China, is added to the snake fauna of Vietnam based on one specimen collected near Tam Dao, Vinh Phù Province, northern Vietnam. The specimen is described and compared with Chinese specimens. For the first time, a living specimen of this species is illustrated in colour. We also include a list of the 37 species of the genus *Amphiesma* as currently defined. The type species of the genus is discussed, and, based on the text of the original description, we show that it is *Coluber stolatus* Linnaeus, 1758, by original designation.

Key words: Serpents, Systematics, Colubridae, *Amphiesma*, *Amphiesma optatum*, type species.

Introduction

Malnate (1960) resurrected the Asian genus *Amphiesma* Duméril, Bibron & Duméril, 1854 to

accommodate a group of species long placed in the cosmopolitan genus *Natrix* (see Smith, 1943). As currently defined, the genus is composed of 37 species distributed in the whole of

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southern, eastern and southeastern Asia from Pakistan and India, eastward to eastern China (including Taiwan) up to extreme southern Russia and Japan in the North, to Sumatra in the south and to Sulawesi in the east. These relatively small, terrestrial or semiaquatic snakes are found in lowlands and especially in rugged and hilly areas covered with wet tropical forests, tropical and subtropical montane forests, also among rice paddies, in grasslands and in the vegetation bordering streams, rivers, ditches and ponds. Some species, such as *Amphiesma stolatum*, are common in parts of their range.

During a recent trip to Vietnam in the region of Tam Dao, Vinh Phú Province, one of us (GV) collected a colubrid snake that proved to be the first specimen recorded in Vietnam of the Chinese species *Amphiesma optatum* (Hu & Djao, 1966) (*Natrix optata* Hu & Djao, 1966: 160, pl. 1: figs. 2-3; pl. 2: fig. 3. Type locality: Liang Feng kang, at present Liang Feng Gang, Mt. Omei, at present Mt. Emei [Emei Shan], Sichuan Province, People's Republic of China, altitude 700 m).

The Vietnamese specimen is described below and illustrated in colour, being the first pub-

lished colour pictures of a living specimen of this species, and compared with characters of Chinese specimens as reported in the literature. Ventrals are counted according to Dowling (1951). We also provide a summary of the currently known biology of *Amphiesma optatum* as reported in the Chinese literature, supplemented by our notes on the Vietnamese specimen. Lastly, in an appendix, we list the currently recognized species of the genus *Amphiesma*, which have undergone several taxonomic changes during recent years.

Results

The specimen, MNHN 1997. 3305 (Muséum National d'Histoire Naturelle, Paris), an adult male, was collected on March 17th, 1997 at about 5 km from the Tam Dao Hill Station (Tram Tam Dao), north of the city of Tam Dao, Province of Vinh Phú. It was found in a forest area, but the exact elevation and biotope were not recorded.

Description (Fig. 1-3)

Body rather slender, subcylindrical; head elongate, subrectangular, rather narrow but

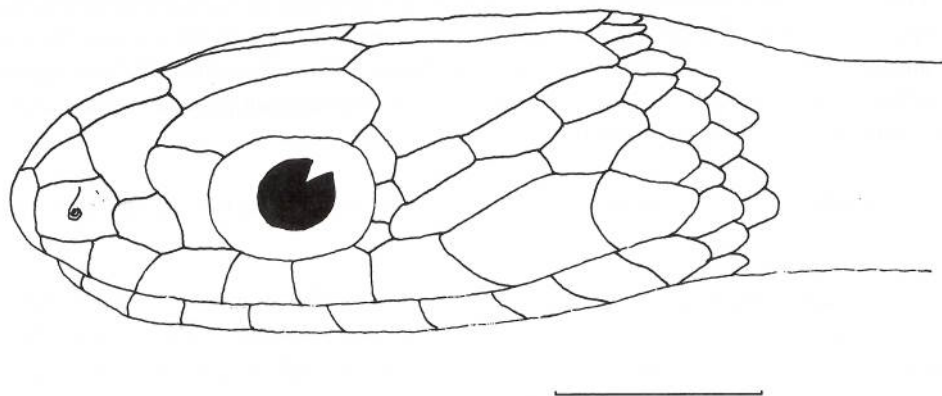


Fig. 1. Lateral view of head (left side) of *Amphiesma optatum* (MNHN 1997. 3305). Scale bar represents 5 mm (Drawing by O. Pauwels).



Fig. 2. *Amphiesma optatum* (MNHN 1997. 3305), general view (in life) (Photograph by G. Vogel).



Fig. 3. *Amphiesma optatum* (MNHN 1997. 3305), ventral view (in life) (Photograph by G. Vogel).

clearly distinct from the neck, slightly flattened in front of the eye; snout rather short (4.20 ± 0.05 mm), accounting for 23.7% of total head length, barely longer than the horizontal diameter of the eye (ratio: 1.08), slightly flattened, narrowing up at its tip which is nearly blunt when seen from above, rounded seen from the side, with a defined canthus rostralis; nostril lateral, not valvular nor especially enlarged; eye very large, its diameter much greater than the distance between its inferior margin and upper lip edge; pupil round; tail incomplete, cylindrical and clearly progressively tapering.

Snout-vent length: 404 mm, tail length: >89 mm; total length: >493 mm.

Head length: 17.75 mm; eye horizontal diameter: $3.90 (\pm 0.05)$ mm.

Maxillary teeth: 25, gradually enlarged, the last two distinctly enlarged.

Ventrals: 165 (+2 preventrals); subcaudals: 43+ pairs; anal divided.

Dorsal scale rows: 19-19-17, mostly smooth, some feebly keeled on the 9-15 upper dorsal scale rows, keels more distinct on the middle of the body; scales of the 1st dorsal row enlarged.

Dorsal scale rows reduction:

left: 3rd+4th \rightarrow 3rd (V88)

right: 3rd+4th \rightarrow 3rd (V84)

Rostral rectangular, twice as wide as high, its upper tip visible from above; internasals subrectangular, as wide as long, not anteriorly narrowed; prefrontals only slightly larger than internasals, about 1.5 time as wide as long, clearly visible from the side, reaching the loreal; frontal hexagonal, elongate, twice as long as wide, pointing backwards; one large, undivided supracocular on each side; parietals long and wide, in contact for a length greater than the frontal length; nasal rectangular, much longer than high, divided into two parts of which the anterior one is slightly larger

than the posterior one, with a round nostril piercing the anterior edge of the posterior part; one small, subrectangular loreal between the nasal and the preocular, 8 supralabials on both sides, 1st small, 2nd and 3rd in contact with the loreal, 3rd (barely, at a point), 4th and 5th entering orbit, 6th and 7th large, 7th the largest; 1/1 preocular; no subocular; 3/3 postoculars, decreasing in size from the top to the bottom; temporals: at left 2 consecutive upper and 1 lower anterior temporals + 1 upper and 1 lower posterior temporals, and at right 1 lower and 1 upper anterior temporals + 1 lower and 1 upper posterior temporals; 10/10 infralabials, the five first in contact with the anterior shin shield.

In preservative, dorsal and upper tail surfaces black, marked on each side with about 14 white thin vertical bars, about 1 dorsal scale wide on anterior part of body, thinner backwards and becoming very faint, indistinct on the posterior part of the body, extending from the outer tip of the ventrals up to upper dorsal scale row, with those on each side of the body slightly offset from each other, not in contact on the vertebral scale row, each bar being separated from the others by about 10-13 ventrals; a thinner white bar between the 3rd and 6th main bars, giving a total number of white bars of about 18 vertical bars.

Head very dark brown above and on its sides, with two small and faint yellowish white spots on the parietals; a very faint whitish brown sagittal line just behind the parietals; a white, thin but well defined temporal streak running backwards and downwards from the upper postocular across the upper anterior temporal and the lower posterior temporal down to the 8th supralabial and the corner of the mouth, and from this point again upwards on the neck side toward the vertebral scale row, where temporal streaks of both sides meet on the 7th vertebral

scale row, at half the distance between the posterior limit of the head and the first pair of lateral white bars, producing a figure like a V pointing backwards; a short but wider white streak running from the anterior lower edge of the eye downward to the bottom of the lip on the edge between the 3rd and 4th supralabial, and another one, parallel to the upper streak, from the rearward lower edge of the eye downward across the 6th supralabial.

Venter uniformly creamy pale yellow (after only a few weeks in preservative), except the outer tip of the ventrals which is black and separated from the black colour of the dorsum by a pale line; lower surface of head and neck creamy white, with well-defined black blotches on infra-labials (except the last one, entirely white, looking like a large white area just below the lower corner of the mouth); a complete black bar across the first ventral; black spots similar to the previous ones on outer margins of the first 8 ventrals. Underside of tail like the venter, without any marking, the white area quickly narrowing, giving probably a tail that is completely black for its posterior half.

In life (Fig. 2 & 3), dorsal and upper tail surfaces deep bluish black, marked on each side with bright yellowish vertical bars as described above; head colour dark brown, with a pattern of bright white, well-defined white streaks; venter very bright coral red; lower head and neck surface pure white marked with the black blotches described above.

The vivid colours and pattern of this specimen lead us to regard this species as one of the most colourful natricines in Asia. Unfortunately, the natural venter colour vanished after about six weeks in preservative.

Discussion

Beside the original description (Hu & Djao,

1966), based on 13 specimens from the Chinese Sichuan Province, a description of *Amphiesma optatum* may be found in Hu *et al.* (1980) and especially in Wu *et al.* (1985), who reported on a good series of 30 specimens from Guizhou Province (south central China). In Table 1, we give a summary of meristic characters drawn from these authors, then mixed altogether (as "Chinese material") and compared with the Vietnamese specimen. Exceptional or seldom found values are mentioned in brackets.

According to Hu & Djao (1966), the diagnostic characters used to define *A. optatum* are the rather smooth dorsal scales, 156-162 ventrals, the temporal white streaks uniting on the 7th-9th vertebral scale in a V-like pattern pointing backwards, and the dorsal pattern made of regular vertical lateral yellow bars extending from the edges of the ventral up to the vertebral scale row.

Our specimen from Tam Dao agrees very well with the morphological and meristical characters reported for Chinese specimens, with the exception of the number of lateral vertical bars, which are notably fewer than in Chinese specimens, and, especially, the colour of the venter. The first difference may be explained by a rather obscured pattern on the posterior part of the body and the tail. In the literature, this species is invariably given as having a yellow venter. However, and unfortunately, it is not clear whether the venter colour mentioned by Chinese authors must be referred to living or preserved specimens. We could not find any information on this subject, even in Wu *et al.* (1985), who probably saw living specimens. The holotype and paratypes of *A. optatum* were collected between 1940 and 1960, so the original description refers to long-preserved specimens. In alcohol, the venter of our specimen turned from bright coral red to pale creamy yellow in just a few weeks.

Table 1. Comparison of Chinese and Vietnamese specimens

CHARACTERS	Hu & Djao (1966) (n=13)	Hu <i>et al.</i> (1980)	Wu <i>et al.</i> (1985) (n=30)	Chinese material (literature)	Vietnamese material (n=1)
Maxillary teeth	18-22+2	—	—	20	23+2
Maximal snout-vent length (mm)	430	430	530	530	440
Ventrals	156-162	156-169	152-169	152-169	165
Subcaudals	95-110	95-112	87-105	87-112	—
Anal	divided	divided	divided	divided	divided
Dorsal scale rows	19-19-17	19-19-17	19-19-17	19-19-17	19-19-17
Dorsal scale keeling	feebly on rows 9-15	feebly on rows 9-17	feebly on rows 7-15	feebly on rows 9-17	feebly on rows 9-15
Contact of parietals/ frontal length	shorter	—	—	shorter (?)	longer
Supralabials	(7) 8	(6) 7-8	8	(6) 7-8	8
Number of supralabials entering orbit	3-4-5/3-4	3-4/3-4-5/4-5	3-4-5/4-5	3-4/3-4-5/4-5	3-4-5
Preocular	1	1 (2)	1 (2)	1 (2)	1
Postocular	(2) 3	(2) 3 (4)	(2) 3	(2) 3 (4)	3
Anterior temporals	(1) 2	1(2)	(1) 2	(1) 2	2 & 2/1
Posterior temporals	(1) 2	(1) 2	(1) 2 (3)	(1) 2 (3)	2
Infralabials	(8) 9-10 (11)	—	9-10	(8) 9-10 (11)	10
Colour of dorsum	blackish brown (alcohol)	blackish brown (alcohol)	blackish brown (alcohol)	blackish brown (alcohol)	bluish black (life)/black (alcohol)
White or yellow vertical bars on body	25-30	25-30	yes	25-30	about 18
White or yellow vertical bars on tail	faint	yes	yes	yes	no
Colour of top and sides of head	reddish brown	brown	brown	brown	dark brown
White V-like streak	yes	yes	yes	yes	yes
Spots on parietals	yes	yes	yes	yes	yes
Colour of supralabials	white with black spots	white with black spots	white with black spots	white with black spots	dark brown, white spots
Colour of venter	yellow	yellow	yellow	yellow	coral red/ creamy whit

We are aware of only two colour plates depicting *Amphiesma optatum*. In Hu & Djao (1966: pl. 1), the venter is yellow; on the plate of Hu *et al.* (1980: pl. 41), the belly of the depicted animal seems to be rather orange. This matter will be settled when living or freshly preserved specimens from China are described.

The differences between *Amphiesma* species are usually slim, and largely expressed by variations in pattern and background coloration. If the venter colour of Vietnamese specimens is really and constantly different from their Chinese congeners, Vietnamese populations might be regarded as a different subspecies. However, we currently regard this variation in a single specimen as not conclusive enough on a taxonomic basis.

Lastly, after a close examination of the literature, it appears that no specimen described by Bourret (1935, 1936, 1940) can be referred to *Amphiesma optatum*. The present specimen thus represents an addition to the fauna of Vietnam, and the first specimen found outside of China. In this latter country, *Amphiesma optatum* has been recorded from the southwestern provinces of Sichuan, Guizhou, Hunan and Guangxi Zhuang Autonomous Region (Zhao & Adler, 1993). The Tam Dao Hill Station is about 120 kilometers airline from the Vietnam/Guangxi border. In the Guangxi Province, according to Lu & Wen (1988), this species has been recorded only in the regions of Guilin and Liuzhou, which are quite distant from the Vietnamese border. The Vietnamese specimen thus represents a major range extension for the species.

The genus *Amphiesma* was until now represented in Vietnam by seven species (Dào, 1981; Tran *et al.*, 1981; Welch, 1988; Nguyễn & Hô, 1996), occurring mainly in the north of the country. According to Nguyễn *et al.* (1995), the following species were known from the region

of Tam Dao: *A. atemporale*, *A. khasiense*, *A. modestum*, *A. sauteri*, and *A. stolatum*.

We have no ecological data about the Tam Dao specimen in the wild. This snake was kept in captivity for three months. It was a fast moving animal, mainly active at dawn and at night, spending daytime hidden under a shelter. This specimen seldom entered water. It refused fish, geckoes and pink mice, and was force-fed with pink mice.

This species is rather poorly known, but some general ecological data can be obtained in the Chinese literature. According to Hu *et al.* (1980), Wu *et al.* (1984) and Wu *et al.* (1985), it occurs in mountainous areas (ca 400-1000 m). It inhabits wet meadows, the vicinity of streams, road sides and paddy fields. Only fishes have been found in stomach contents. This snake is oviparous; females from Guizhou contained 12-19 eggs in the oviducts.

Concluding remark: note on the type species of the genus *Amphiesma*

Williams & Wallach (1989: 7) stated that the type species of the genus *Amphiesma* Duméril, Bibron & Duméril (1854: 724) is "*Coleuber stolatus* Linnaeus by subsequent designation, Stejneger, 1907: 264". In the text of the original description, Duméril *et al.* (1854: 725) wrote (verbatim): "*Il y a six espèces du genre Amphiesme. Celle qui a servi, pour ainsi dire de type, et dont nous avons emprunté, par celà-même, le nom, pour en former celui qui les réunit génériquement, est le Serpent que la plupart des auteurs ont appelé le Chayque en français (...)*". This sentence may be translated as: "the genus *Amphiesme* [although their work is based on binominal Latin nomenclature, Duméril *et al.* used to designate taxa by their French name] includes six species. The one which was used, so to speak, as the type, and on the name of which we

consequently created the generic name, is the snake that most authors called in French the *Chayque* ". This latter name was unequivocally applied to Linnaeus' *Coluber stolatus*, as mentioned in the synonymy of this species, and there is no doubt that Duméril *et al.* (1854) regarded *Coluber stolatus* as the type species of their new genus *Amphiesma*. More explicitly, these authors wrote in the footnote of page 724, on the etymology of the generic epithet, that the generic name *Amphiesma* directly stemmed from the Greek word meaning "a cloth" or "a robe", in Latin *vestimentum*, equivalent to the Latin word *stolatum*, specific epithet of the type species of this genus that means "wearing a stola", the long robe worn by women of ancient Roma.

We accordingly regard as unjustified the statement made by Williams & Wallach (1989) of a type species designation made by Stejneger (1907). The type species of the genus *Amphiesma* is *Coluber stolatus* Linnaeus, 1758, by original designation.

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Appendix
List of currently recognized
***Amphiesma* species.**

Duméril et al. (1854: 724, footnote) stated that the generic name *Amphiesma* directly stemmed from the Greek word meaning "a cloth". The noun *Amphiesma* is undoubtedly neutral according to Greek-English dictionaries that we consulted, and Toriba (1994) was correct in underlining this point overlooked by most authors. In the present list, we therefore treat specific epithets in agreement with the neutral gender of the name *Amphiesma*. The epithet *monticola* (a mountain dweller) must be considered a masculine name in apposition, not an adjective. We also regard *xenura* (a strange tail) as a name in apposition. All other specific epithets are adjectives that must agree with the neutral gender.

Amphiesma pryleri concellarum Malnate, 1963 and *A. pryleri ishigakiense* (Malnate & Munsterman, 1960) were raised to specific status by Ota & Iwanaga (1997). Other taxa traditionally included in the genus *Amphiesma* following Malnate's (1960) definition have been referred by Malnate & Underwood (1988) to the genus *Tropidonophis* Jan, 1863. These species are: *Tropidonophis doriae* (Boulenger, 1898); *Tropidonophis elongatus* (Jan, 1864); *Tropidonophis mairii* (Gray, 1841); *Tropidonophis montanus* (Lidth de Jeude, 1911); *Tropidonophis novaeguineae* (Lidth de Jeude, 1911); *Tropidonophis picturatus* (Schlegel, 1837); *Tropidonophis punctiventris* (Boettger, 1895); and *Tropidonophis truncatus* (Peters, 1863). The same authors referred *Amphiesma conspicillatum* to the genus *Rhabdophis*. This leaves 37 species in the genus *Amphiesma*. However, many species are poorly defined, and a re-

vision of this genus is badly needed.

Amphiesma atemporale (Bourret, 1934)
Amphiesma beddomei (Günther, 1864)
Amphiesma bitaeniatum (Wall, 1925)
Amphiesma boulengeri (Gressitt, 1937)
Amphiesma celebicum (Peters & Doria, 1878)
Amphiesma concellarum Malnate, 1963
Amphiesma craspedogaster (Boulenger, 1899)
Amphiesma deschauensei (Taylor, 1934)
Amphiesma flavifrons (Boulenger, 1887)
Amphiesma groundwateri (Smith, 1921)
Amphiesma inas (Laidlaw, 1901)
Amphiesma ishigakiense (Malnate & Munsterman, 1960)
Amphiesma johannis (Boulenger, 1908)
Amphiesma khasiense (Boulenger, 1890)
Amphiesma metusium Inger, Zhao, Shaffer & Wu, 1990
Amphiesma miyajimae (Maki, 1931)
Amphiesma modestum (Günther, 1875)
Amphiesma monticola (Jerdon, 1853)
Amphiesma nicobarense (Sclater, 1891)
Amphiesma octolineatum (Boulenger, 1904)
Amphiesma optatum (Hu & Djao, 1966)
Amphiesma parallelum (Boulenger, 1890)
Amphiesma pealii (Sclater, 1891)
Amphiesma petersii (Boulenger, 1893)
Amphiesma platyceps (Blyth, 1854)
Amphiesma popei (Schmidt, 1925)
Amphiesma pryleri (Boulenger, 1887)
Amphiesma sanguineum (Smedley, 1932)
Amphiesma sarasinorum (Boulenger, 1896)
Amphiesma sarawacense (Günther, 1872)
Amphiesma sauteri (Boulenger, 1909)
Amphiesma sieboldii (Günther, 1860)
Amphiesma stolatum (Linnaeus, 1758)
Amphiesma venningi (Wall, 1910)
Amphiesma vibakari (Boie, 1826)
Amphiesma viperinum (Schenkel, 1901)
Amphiesma xenura (Wall, 1907)