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***XENODON WERNERI* EISELT, A POORLY KNOWN SNAKE  
FROM GUIANA, WITH NOTES ON *WAGLEROPHIS MERREMII*  
(WAGLER) (REPTILIA: SERPENTES: COLUBRIDAE). NOTES ON THE  
HERPETOFAUNA OF SURINAM IX**

by

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Hoogmoed, M. S.: *Xenodon weneri* Eiselt, a poorly known snake from Guiana, with notes on *Waglerophis merremii* (Wagler) (Reptilia: Serpentes: Colubridae). Notes on the herpetofauna of Surinam IX.

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Key words: Serpentes; Colubridae; *Xenodon weneri*; *Waglerophis*; key; distribution; Guiana.

*Xenodon weneri* Eiselt is redescribed on the basis of new material from Surinam and French Guiana. Its distribution and the zoogeographic meaning of it are discussed. A key to the species of *Xenodon* in Guiana is presented. From the present data it appears that *Waglerophis merremii* (Wagler) is absent in Surinam, but present in the other two Guianas.

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## RESUMÉ

Se fait une rédescription de *Xenodon weneri* Eiselt, basé sur du matériel nouveau provenant du Surinam et de la Guyane française. Se fait une discussion de la distribution et des conséquences zoogéographiques. Une clé pour les espèces de *Xenodon* connus des Guianas est établie. Il paraît que *Waglerophis merremii* (Wagler) est absent du Surinam, mais est présent dans les deux autres Guianes.

## RESUMEN

Se presenta una descripción de *Xenodon weneri* Eiselt, basándose en material nuevo de la Surinam y de la Guayana francesa. Se discute la distribución y las consecuencias zoogeográficas. Un clave para las especies de *Xenodon* presente en las Guayanas esta presentada. Parece que *Waglerophis merremii* (Wagler) esta ausente de la Surinam, pero esta presente en las dos otras Guyanas.

## INTRODUCTION

Werner (1924: 48) described *Procteria viridis* from "Tsumeb, Deutsch-Südwestafrika", stating that it was closest to the Indian *Pseudoxenodon*. In his overview of the snakes known at that time (Werner, 1928) he does not include this taxon and it remained an enigma for a long period. Bogert (1940: 13) stated not to be able to place the genus and doubted whether the type locality was correct. Mertens (1955: 12) adheres to the same opinion and considered *P. viridis* as of questionable occurrence in Southwest Africa. Eiselt (1963) re-studied the holotype and on the basis of the morphology of the vertebrae reached the conclusion that it was a member of the neotropical colubrid genus *Xenodon*. As the name *X. viridis* was preoccupied by *X. viridis* Duméril, Bibron & Duméril, 1854 (a synonym of *Macropisthodon plumbicolor* Cantor, 1839), Eiselt renamed the species *Xenodon weneri*.

Peters & Orejas Miranda (1970: 323) reported Eiselt's results, but did not include *X. weneri* Eiselt in either their key or the listing of species. They stated that "it appears to be very similar to *suspectus*", but did not indicate how they reached this conclusion. Probably it reflects their own interpretation of Eiselt's redescription. Mertens (1971: 7) repeated Eiselt's results and stated that *X. weneri* certainly came from the New World. Possibly the first record of this snake from a definite locality was provided by Van Lynden (1939: 860) when he reported a grey green snake chasing a large frog in a creek in southern Surinam. However, this specimen could not be captured and we will never be certain of the identification. Hoogmoed (1979: 277; 1983: 236, 253) was the first to definitely report this species from circumscribed localities in South America (Eastern Guiana) basing himself on specimens from Surinam and French Guiana accumulated in the past few years during a study of the Guianan herpetofauna. Slightly later Gasc & Rodrigues (1980: 588) reported this species from two localities in French Guiana. Böhme & Bischoff (1984: 163) mentioned a specimen of *X. weneri* from French Guiana, but did not comment on it.

Dixon (1983) synonymised *X. suspectus* Cope with *X. rabdocephalus* (Wied). From his drawings and meristic data it is clearly evident that his decision is well founded and that *X. suspectus* is quite different from *X. weneri*, thus refuting Peters' & Orejas Miranda's (1970: 323) alleged similarity between the two taxa.

Since Eiselt's (1963) redescription of the holotype I have found new material in several collections and it seems justified to present a redescription of the species based on this new material and on the material reported by Gasc & Rodrigues (1980), and thus provide an idea of the variation. At the same time a key to the species of *Xenodon* present in Surinam will be presented.

**Xenodon werneri** Eiselt

figs. 1-4

*Procteria viridis* Werner, 1924: 48; Mertens, 1955: 12; Eiselt, 1963: 279; Mertens, 1971: 7; Gasc & Rodrigues, 1980: 588.

? "vrij groote, grijsgroene slang" Van Lynden, 1939: 860.

*Xenodon werneri* Eiselt, 1963: 280; Peters & Orejas Miranda, 1970: 323; Mertens, 1971: 7; Hoogmoed, 1979: 277; Gasc & Rodrigues, 1980: 588; Hoogmoed, 1983: 236, 253; Böhme & Bischoff, 1984: 163.

Material. — "Tsumeb, Southwest Africa": 1 ♀, NMW 17119 (holotype), 1910, Rolle.

Suriname. Marowijne District. Nassau Mountains: 1 ♂, RMNH 13535, 23-II-1949, km 3.4, leg. Suriname Expedition 1948-49. Nickerie District. Lucie Camp: 1 ♂, RMNH 13536, 13-VIII-1963, leg. S. Ligorie.<sup>1)</sup>

French Guiana: 1 ♂, MNHNP 8395. Matarony River: 1 ♀, LACM 44500, 17-VIII-1968, leg. P. A. Silverstone. Maripasoula: 1 ♂, ZMFK 38267, leg. M. Rauschert.

No locality: 1 ♀, RMNH 247.

Diagnosis. — A medium-sized *Xenodon*, not exceeding a total length of 757 mm. Tail 12.4-13.6% of the total length in females, 14.4-15.8% in males. Head wider than body, distinctly depressed, snout rounded. Scales in 19-19-17 (or 15) oblique rows, vertebral scales not enlarged. Ventrals 130-145, anal entire, subcaudals in 33-41 pairs. Preoculars mostly two, postoculars 2-4, temporals 1 + 2 or 1 + 3 (table 1).

Back green with a speckling of minute black dots, upper lips yellowish with black scale borders. Belly creamish to yellow with or without (rarely) brownish dots.

Description. — Rostral 1.5 – 1.7 times as wide as deep, well visible from above. Nostril large, round, between a pre- and a postnasal; nasal slit rather narrow, vertical, at the anterior rim of the nostril; greater part of nostril closed by a round flap which is free at its anterior rim and which has a small opening in its posterior attachment to the nasal tube. Loreal pentagonal, about as long as deep. Preoculars mostly two (RMNH 13535 has three preoculars), upper one largest. Postoculars two (ten times), three (three times), or four (once) (only considering the seven specimens directly examined by me). Temporals 1 + 2 (six times) or 1 + 3 (eighth times), the anterior one very much larger than the posterior ones. Parietal bordered by 2-4 temporal scales, the first always much larger than the posterior ones. Frontal hexagonal, wider anteriorly than posteriorly, sides concave, longer than wide, slightly shorter than its distance to the tip of the snout, as long as or shorter than the parietals. Internasals

1) RMNH = Rijksmuseum van Natuurlijke Historie, Leiden.

Morphometric data for *Xenodon werner* Eiseit

Reg.no.	sex	s-v	l	tail	l	V	A	C	Sc	Supra-labials	Infra-labials	Temporals	Post-oculars	Pre-oculars	Maxillary teeth
MMW 17119	♀	475	67	138	1	33/33+1	19	8(4.5)	9(4)	1+2	2-3	2	12+2		
RMNH 247	♀	553	86	143	1	39/39+1	19-19-17	8(4.5)	9(4)	1+2/1+3	2-2	2	12+2		
RMNH 13535	♂	455	80	132.5	1	41/41+1	19-19-17	8(4.5)	10(4)-10(5)	1+3	2-3	3	13+2		
RMNH 13536	♀	365	55	145+(?3)	1	40/40+1	19-19-17	9(5.6)-8(4.5)	10(5)	1+3	2-2	2	13+2		
MNHNP 8395	♂	374	63	130	1	38/38+1	19-19-17	8(4.5)	10(5)	1+2/1+3	2-2	2	14+2		
LACM 44500	♀	451	71	138	1	35/35+1	19-19-17	8(4.5)	10(5)-9(4)	1+2	2-4	2	13+2		
ZFMK 38267	♂	526	90	134	1	41/41+1	19-19-15	8(4.5)	10(6)-10(5)	1+3	2-3	2	12+2		
MNHNP H 1978-2563	♀	409	62	143	1	39	19	8	9	1+3	2	2			
MNHNP H 1978-2564	♂	465	87	132		40									
MNHNP H 1978-2565	♀	662	95	145		37									
MNHNP AC 1978-90	♀	492	77	135		39		8-9	9-10						

Table 1. Morphometric data for *Xenodon werner* Eiseit. The last four specimens from MNHNP were not examined by me, the data were taken from Gasc & Rodrigues (1980). Numbers between brackets under supralabials indicate the supralabials touching the eye, under infralabials the infralabials in contact with the first pair of chin shields.

small, pentagonal, as long as wide or slightly longer, forming a median suture which is  $2/3$ - $3/4$  as long as the suture between the prefrontals. Prefrontals much larger than the internasals, irregularly hexa- or heptagonal, wider than long. Mostly eight supralabials, fourth and fifth entering the orbit, seventh largest. RMNH 13536 has nine supralabials (fifth and sixth entering the orbit, eighth largest) on its left side. Eye large, with a round pupil. Nine (five times) or ten (nine times) infralabials, the anterior four, five or six in contact with the anterior pair of chin-shields. Anterior pair of chin-shields distinctly longer than the second pair, separated from the mental by the first pair of infralabials. Three gulars between chin-shields and first ventral.

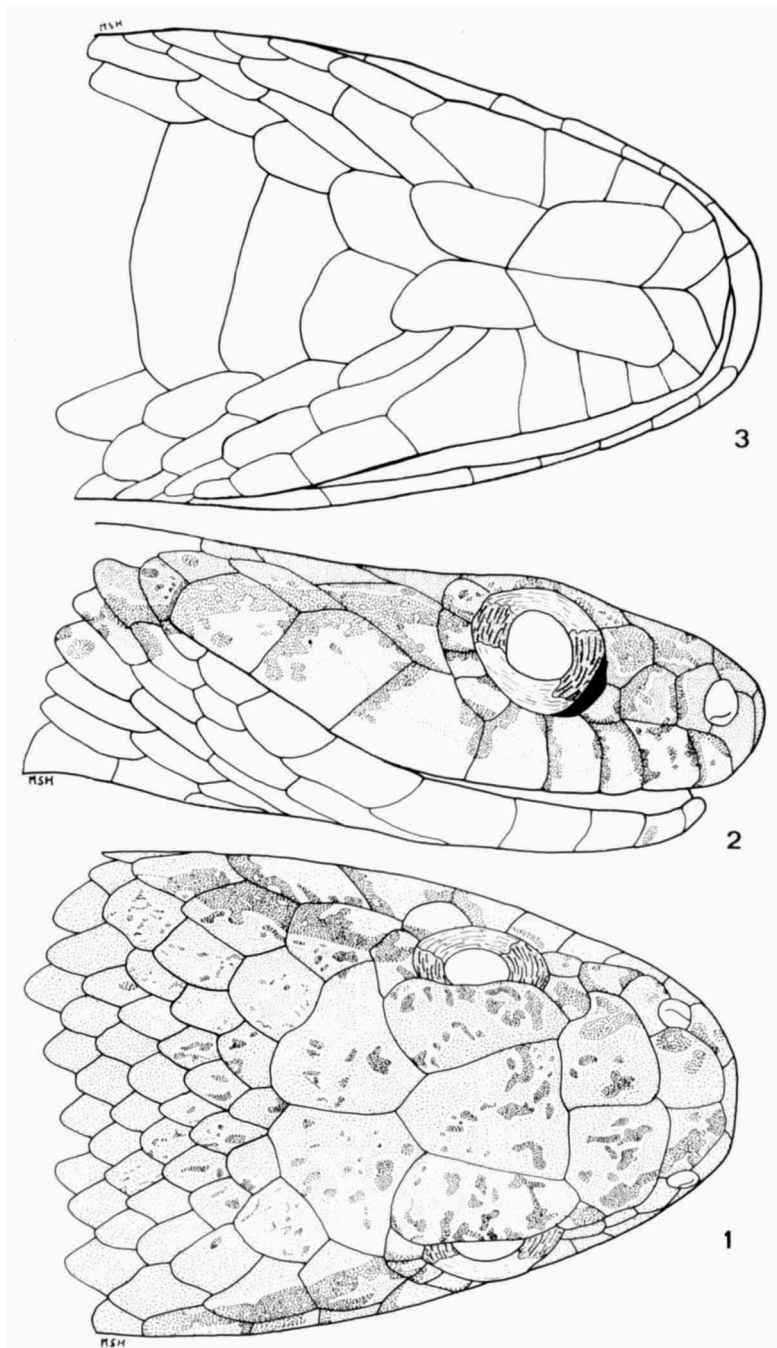
Dorsal scales in 19-19-17 (once 15) oblique rows, no enlarged vertebral row; smooth, without apical pits. Ventrals 135-145 ( $\bar{x}$  = 140.3,  $n$  = 6) in females, 130-134 ( $\bar{x}$  = 132.1,  $n$  = 4) in males; anal entire; subcaudals in 33-40 pairs ( $\bar{x}$  = 37.4,  $n$  = 7) in females, in 38-41 pairs ( $\bar{x}$  = 40,  $n$  = 4) in males (here data from the literature (Gasc & Rodrigues, 1980) have also been taken into account).

Maximum recorded total length in females 757 mm, (Gasc & Rodrigues, 1980: 588, H 1978-2565), in males 616 mm (ZFMK 38267). Tail 12.4-13.6% ( $\bar{x}$  = 13.1,  $n$  = 7) of the total length in females, 14.4-15.8% ( $\bar{x}$  = 14.9,  $n$  = 4) in males. Head wider than body, distinctly depressed, snout rounded in dorsal and lateral profile, only slightly projecting beyond the mouth. Body more or less triangular in cross-section.

Hemipenis (inverted organ) extending to the level of the 14th subcaudal, bilobed, the bilobation occurring at the level of the seventh subcaudal. Sulcus spermaticus at the medial side. Basal part of hemipenis with few, very large, slightly recurved spines. Central portion with more, medium-sized spines and both lobes densely covered with small, straight spines, diminishing in size to the tip. Gasc & Rodrigues (1980: 589) also provide a description of the hemipenis, which essentially is identical to my observations.

In preservative the colour of the back ranges from greyish-blue to greenish, with a dense mottling of black lines and dots, which are larger on the head shields (figs. 1, 2). Sides of head yellowish to creamish, with a black stripe (not massive) from the eye to the corner of the mouth, separating the green and creamish parts. Ventral parts creamish to yellowish; chin, throat and anterior part of belly immaculate, remainder of belly and underside of tail with a light peppering of greyish to brownish spots.

The colour in life is described by P. A. Silverstone (letter dated March 5, 1970, backed up by colour slides) as follows: "Iris of gold with dull black horizontal bar and thin gold ring around pupil. Upper lip yellow-orange with black scale borders. Dorsal border of yellow-orange colour is black. Venter



Figs. 1-3. Dorsal, lateral and ventral views of the head of *Xenodon wernerii* Eiselt (♀, LACM 44500) (The four postoculars are abnormal).

yellow with gray spots. Dorsum very pretty dull blue-green, really a turquoise, but not bright. All dorsal scales have tiny black dots and marks. Anteriorly, first row of dorsal scales is yellow; further back, first two rows are yellow; then on tail, first three rows of dorsals are yellow."

A specimen of *Xenodon* from Kwamalasemoetoe, which was collected for an animal dealer and subsequently shipped to the U.S.A., was photographed by Mr. J. de Bruin (Paramaribo), who kindly provided me with a colour-slide. This specimen is much more greyish, shows transverse bands on the body and distinct dark borders to the labials. It could either represent *X. werneri* or the light colour phase of *X. rabdocephalus*. Unfortunately the slide did not show enough details of the head to be able to make a positive identification.

Natural history. — Next to nothing is known about this subject. All specimens with known localities originate from areas with primary rain forest. Only LACM 44500 is accompanied by brief habitat notes: "ca. 35 m elev. Taken at 0830 on ground in forest." Of RMNH 13535 we know that the area from which it comes is covered with primary rain forest and has an elevation of 200 m. Lucie Camp (RMNH 13536) was situated at the shore of the Lucie River, and consequently we may assume that the specimen probably was caught near water (altitude 200 m).

The report of a "grey green snake chasing a large frog in a creek" (Van Lynden, 1939: 860) in southern Surinam might perhaps also refer to this species (but see introduction), and suggest aquatic habits.

Aquatic habits are suggested by the structure of the nostril, which probably can be closed off by the flap in the nasal tube.

Specimens were collected in February and August, coinciding with (normally) dry periods (Hoogmoed, 1969: 55).

Range. — So far only known from a few widely dispersed localities in Surinam and French Guiana (fig. 4), which seem to suggest that this species is endemic to the Guiana area (Hoogmoed, 1979: 277).

Biogeographic remarks. — Gasc & Rodrigues (1980: 595) considered this species to belong to their "Groupe guyanais", Hoogmoed (1979: 277; 1983: 236) considered it to be a lowland endemic of Eastern Guiana. It might have originated in the Guiana Refuge (Hoogmoed, 1979: 248) though we should bear in mind that it is rather hazardous to draw general conclusions about the distribution (and the possible underlying causes) of a species of which only 11 specimens from six localities are known at present.

Remarks. — *X. newwiedii* (Günther) is included in the following key because a specimen of this species, said to originate from Surinam (SMNS 9117c, collected by Kappler) was examined. The specimen was preserved in one bottle together with a specimen of *X. severus* (L. (SMNS 9117a) and one of *X. rabdocephalus* (SMNS 9117b), both species known to occur in Surinam.

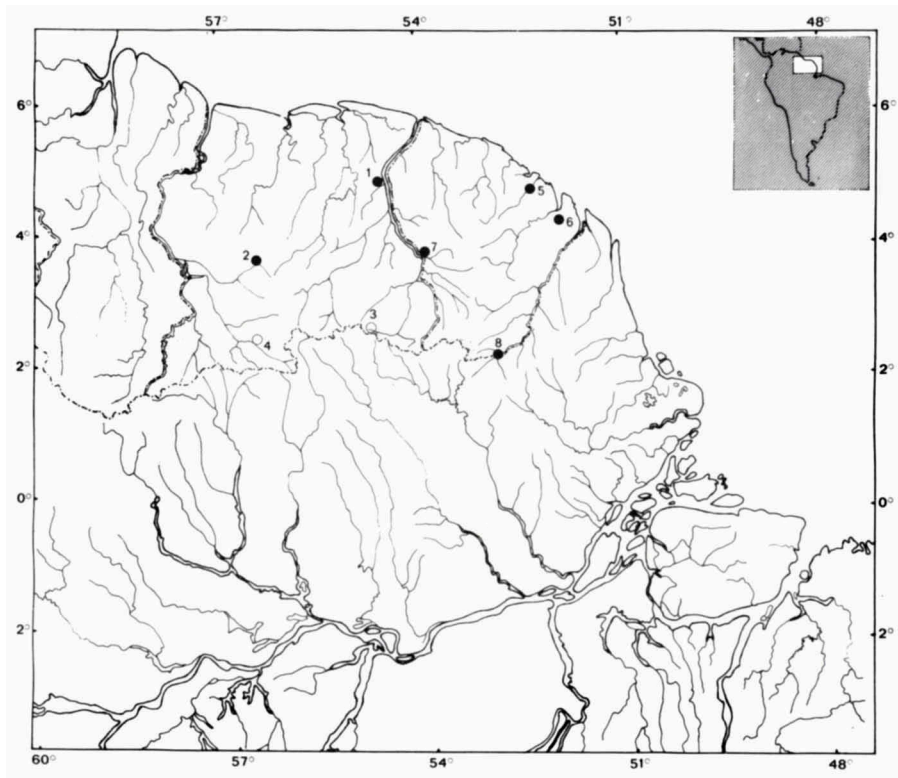


Fig. 4. Map of eastern Guiana, showing the localities where *Xenodon wernerii* Eiselt was collected or observed. Solid symbols represent material in collections, open symbols represent doubtful sightings, or are based on slides.

Surinam: 1. Nassau Mountains, km 3.4; 2. Lucie Camp; 3. Prins van Oranje Mountain, camp 21 (exp. 1937); 4. Kwamalasemoetoe.

French Guiana: 5. Route du Brésil between le Gallion and la Comté; 6. Matarony River; 7. Maripasoula; 8. Trois Sauts.

It compares well with the type specimens of this species from Rio de Janeiro (BMNH 1946.1.4.29, 1946.1.5.94-96, 1946.1.4.37-40), but its locality is far north of the known area of distribution. As Kappler only collected in Surinam and adjacent French Guiana (Kappler, 1881; Haverschmidt, 1973) and most of his material has reliable locality data, for the time being I am inclined to consider this species as part of the Guianan snake fauna, rather than considering a mix up of labels. A parallel case is known in frogs, of which I collected tadpoles in Surinam, raised them and when identifying them discovered that at least one species (*Hyla senicula melanargyrea* Cope) was much farther north than formerly known (Hoogmoed, unpublished data).



Gasc & Rodrigues (1980: 587) include *X. merremii* (Wagler) in their key to the species of *Xenodon* occurring in French Guiana. This species should properly be named *Waglerophis merremii* (Wagler) (Romano & Hoge, 1973; Hoogmoed & Gruber, 1983: 334). According to Peters & Orejas Miranda (1970: 324) its distribution would reach from the Guianas to Bolivia, Paraguay and Central and Northern Argentina. Vanzolini et al. (1980: 59) note that according to the literature it would occur from the Guianas to Argentina, but they say they never saw specimens from Amazonia. So far no specimens have been reported from Surinam, but specimens from French Guiana (Gasc & Rodrigues, 1980: 587, 588), and Guyana (Boulenger, 1894: 150) are known. Hoogmoed (1983: 237) considered this a species reaching the Guianas from Northeastern Brazil. It is readily recognised from members of *Xenodon* by its extremely low number of maxillary teeth ((6–7) + 2).

KEY TO THE SPECIES OF *XENODON* IN SURINAM (AND GUIANA IN GENERAL)

- 1. Anal undivided, 19 scales around the middle of the body ..... 2
- Anal divided, 21 scales around the middle of the body ..... 3
- 2. Preoculars 2 or (rarely) 3; subcaudals 33-41, ventrals 130-145; colour green with black spots ..... *Xenodon weneri*
- Preocular 1 (rarely 2); subcaudals 43-53, ventrals 140-156; colour brown with more or less distinct darker cross-bands ..... *Xenodon rabdocephalus*
- 3. Sublabials 9-10; subcaudals 48-66, ventrals 154-172; maxillary teeth (13-16) + 2; rostral less than twice as wide as deep ..... *Xenodon neuwiedii*
- Sublabials 10 (rarely), 11 or 12; subcaudals 35-41, ventrals 128-140; maxillary teeth (10-13) + 2; rostral about twice as wide as deep ..... *Xenodon severus*

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