

THE SNAKES OF SURINAM, PART XXI (END); FAMILY VI-
PERIDAE, SUBFAMILY CROTALINAE (THE GENUS BOTHROPS).

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THE GENUS *BOTHROPS* WAGLER, 1824

There are about 59 species. In Central and South America about 51 species, of which two have two subspecies, three have three subspecies and one has twelve subspecies (Grzimek). In Surinam four species have been found so far.

General data and features of the genus.

Head: Heart- or arrow-shaped. The snout has a sharp upper edge. The shape of the snout combined with the broad back of the head and the sudden transition to the thin neck, gives the whole a shape that leads to the name 'Fer de lance' (lance-head snake).

In *Bothrops* the top of the head possesses a number of large headshields. In this genus however the intranasals only touch each other at the front, while the prefrontals lie completely separate from each other, separated by a small number of scales. Supraoculars protrude to form a roof shielding the eye from above. The eyes have elliptic or slit pupils. In this genus the pit lies partially in the 2nd supralabial.

Body: Fairly stout, but more slender than the rattlesnakes. The scales are keeled.

Tail: Short and thin; in the arboreal species it is developed as a prehensile tail and can be coloured red at the tip.

Behaviour: Most species are terrestrial; some

species are arboreal. In Surinam two terrestrial and two arboreal species appear. Hunting for prey usually occurs during the night, but exceptionally also during the day.

Food: For the terrestrial species the food consists mainly of small mammals, birds, lizards, frogs, fish and even small snakes.

Habitat: For the Surinam species wooded areas are preferred. The terrestrial species are mostly found in the neighbourhood of brooks or streams. Here they are sometimes found looking on the shore or on sand banks (Emsley, 1977). The terrestrial species *Bothrops atrox*, is regularly found on arable land in the neighbourhood of small villages, but even in the suburbs of Paramaribo it is no rarity. The arboreal species are only found in the forests from which they stray from time to time into adjacent plantations.

Amongst the other species that appear outside the Guyanas there are a number that appear in the mountainous areas, in mountain forests as well as in mountain savannahs, but also in barren, rocky areas (including areas of the Andes mountains). A high level of air humidity is a requirement in all cases.

Reproduction: Ovoviviparous. Depending on size, species and age, the number of young varies from 8 to about 70, with an average length of 25 cm (Dixon, 1977; Grzimek, 1973). Copulation takes place in May, June or July, and the young are born between September and January. The young of terrestrial species are often found in the undergrowth of high bushes and low trees (Dixon, 1977).

Remarks: The venom of the genus *Bothrops* has a strong haemotoxic effect (this means that it has a destruction effect on the blood and the vascular system). The quantity of venom collected during the so called 'milking' varies, de-



Foto 1. *Bothrops atrox*. Foto: A. Abuys.



Foto 2. *Bothrops atrox*. Foto: A. Abuys.

pending on the size and the species, from 35 mg to 320 mg in dried form (Engelman & Obst, 1981). From the venom of a certain species (*Bothrops jararaca*) the styptic elements are filtered and made into medicines by the pharmaceutical industry. These medicines affect the coagulation process of blood in humans.

When they feel threatened the representatives of the genus *Bothrops* will vibrate their tail very fast. The lower body is partly coiled, whilst the front end, a little raised in an S-shape, is ready to strike. On a substrate of dry leaves this vibrating makes a clearly audible warning signal. The number of bites made by a specific species (*Bothrops jararaca*), registered in a period of 42 years, is 3600. In the same period 837 bites were registered from *Crotalus durissus* (South American rattlesnake) (Grzimek, 1973).

Bothrops atrox (Linnaeus, 1758).

Dutch name: Gewone lanspuntslang.

English name: Fer-de-lance.

Surinam name: Owroekoekoe or Labaria.

Maximum length: About 2 m.

Scalation: Dorsals in 23-29 rows (keeled); 187-209 ventrals; 57-75 subcaudals (in two rows); anal scale single; 2 preoculars (sometimes plus a very small one); 1-3 suboculars; 2 or 3 postoculars; no loreal; 7 (sometimes 8) supralabials; 8-11 sublabials.

(Scalation data from Gasc & Rodrigues, 1980; Dixon, 1977).

The suboculars are separated from the supralabials by a row of small scales.

The pit (thermoreceptor) lays in the upper part of the 2nd supralabial.

Features: See also 'General data and features of the genus'.

In many cases the sides of the head bear a remarkable black stripe, that runs from the eye to the back of the upper jaw. In other cases there is no stripe, but an oblong brown or dark-brown spot. Amongst the specimens that I caught or obtained in a period of five years, I could distinguish colour varieties in which the post-ocular spot or stripe played a part.

There follow the descriptions of two colour varieties: The one variety, a brown, appears in colour nuances between brown, red-brown and dark grey-brown. On the sides of this variety run beige-coloured transverse stripes, alternately running obliquely towards each other and obliquely away from each other, producing a V-shaped motif. These narrow (about one scale-length broad) transverse stripes, start at the belly edge and end on the vertebral line. They end on the vertebral line straight against each other, or staggered so that they are not touching each other. In this brown variety there is no stripe behind the eye, but an oblong, dark brown spot.

The other variety can, in overall colour, appear between olive-brown and dark olive-brown. Here we also find the beige transverse stripes, but this variety has a distinct postocular stripe. The belly of all above mentioned varieties is dirty-white and completely covered with small base-coloured spots.

Young and halfgrown specimens I saw were in general much darker than adult specimens. The stripe pattern is not developed in juveniles. Instead of this we find paired spots, of which one half is dark brown and the other half beige. These beige halves form the beginning of the oblique, narrow stripes that are features of adult specimens. The spots are arranged in such

a way that the total image shows a pattern of dark saddle-shaped or butterfly-shaped transverse spots.

Specific details: The owroekoekoe or labaria is apparently the most dangerous snake in Surinam. On the basis of my experience, acquired by a regular confrontation with this animal in the wild and the handling of a number of specimens in captivity, I can state that *Bothrops atrox* is not aggressive. Of course you must not depend on this when you are handling this species. To illustrate this, I offer the following note: One evening (about 21.00 hours) I walked in the neighbourhood of the Amskreek along the road, looking for *Corallus* species (Tree boas) along the wood margin. There was an embankment in the high left side of the road, so the wood edge made a curve, away from the road. Because I wanted to look in that part of the wood margin, I walked up the embankment. The rainwater had rinsed out a sort of ditch in the incline. The structure of this ditch invited me, as it were, to use it. Halfway up the ditch I suddenly heard the familiar sound made by a vibrating tail on the bottom of the ditch in front of me. I stood still immediately and shone with my searchlight on the ground, about one meter obliquely in front of me, but I saw nothing. When I again started to proceed carefully, I heard the sound again. Now I shone directly in front of my feet and I saw, about 30 cm away from my leg, a stout *Bothrops atrox* (about 1 m) in the well-known crotaline defence posture. By rights the snake should have bitten me. My jungleboots would not have been thick enough to protect from the fangs which can penetrate about 15 mm. Luckily for me the snake did not bite, but warned me on two occasions, whilst the threat to itself was very nearby. With my catching stick I was able to push the snake



Foto 3. *Bothrops bilineatus bilineatus*. Foto: A. Abuys.

carefully aside, after which I could catch it easily. I kept it captive in a snake bag until the next morning, so I was able to observe and photograph it in daylight. After the snake had been photographed I brought it back to the exact place where I had caught it, and thanked it, in my mind, for its sporting behaviour the evening before!

Another confrontation, 'man to fer de lance' with a good end, happened to Tineke Renkema-Bos. She was, as a member of the "Lacerta-werkgroep Het Noorden", with a number of fellow-members, under my guidance on a herpetological safari in Surinam (April 1980). On a dark forest path at the Raleigh falls she stepped over a *Bothrops atrox*, with her bare feet in gym shoes. The animal hardly reacted and was still calm after we had picked it up to take it to a place where there was sunlight, so the others could

observe and photograph it.

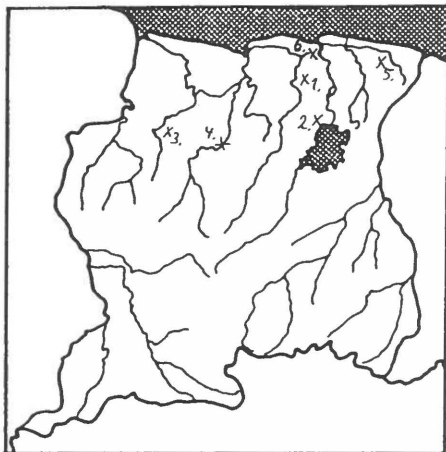
With the above I only want to demonstrate that venomous snakes are not always the most aggressive.

"Owroekoekoe" is the Surinam word for "owl".

Presumably this name is derived from the grey-brown colour of an owl. The name "labaria" is in all probability of Amerindian origin. The name "fer de lance" comes from the French-Creole.

Distribution: Brazil, Venezuela, Colombia, Ecuador, Peru, Bolivia, Argentina and the Guyanas.

Locality records in Surinam: 1. Surroundings of Bosbivak Zanderij (A. Abuys, 1972 and 1973); 2. Surroundings of the little village Brownsweg (killed) found by anon. (1974); 3. Amskreek at the Avanavero-road at km pile 219 (A. Abuys, 1975); 4. Raleigh falls (Tineke Bos, H. Renkema and J. van Duinen, 1980); 5. Along the road Paramaribo-Albina at km pile 75 (A. Abuys, 1980); 6. Boma polder (K. van Deursen, 1981).



Bothrops bilineatus bilineatus (Wied, 1825).

Dutch name: Groene boomlanspuntslang or papegaai-slang.

English name: Tree fer-de-lance or Green fer-de-lance.

Surinam name: Pokai sneki.

Maximum length: About 120 cm.

Scalation: Dorsals in 31-37 rows (keeled scales); 205-218 ventrals; 64-71 subcaudals (in two rows); single anal scale; 3 preoculars; 1 or 2 suboculars; 2 or 3 postoculars; no loreal; 7-9 supralabials; 10-12 sublabials; no temporals. The pit (thermoreceptor) is basally enclosed by the 2nd supralabial).

(Scalation data from: Cunha & Nascimento, 1978 and Gase & Rodrigues, 1980).

Features: See also 'General data and features of the genus'.

The upper body is mid-green with small widely separated black spots (one specimen from Venezuela had red-brown spots). The flanks of the body are slightly flattened, something that occurs in many tree snakes. Along the flanks runs a thin yellow line. This line runs close to the belly edge. The belly itself is also yellowish. The head is of the same colour as the body. A postocular stripe or spot is not present. The tail is short and thin, but because *Bothrops bilineatus bilineatus* lives in bushes and trees it has evolved into a prehensile tail. A remarkable feature is the reddish to light orange colour of the tail tip.

Specific details: This remarkable tail tip is used as a bait by this arboreal snake (Greene & Campbell, 1972). When the snake lies motionless in ambush on a branch, inconspicuous thanks to its protective colouration, it only moves the end of the tail. Frogs, birds and lizards are lured by this. They see it as a food item and come

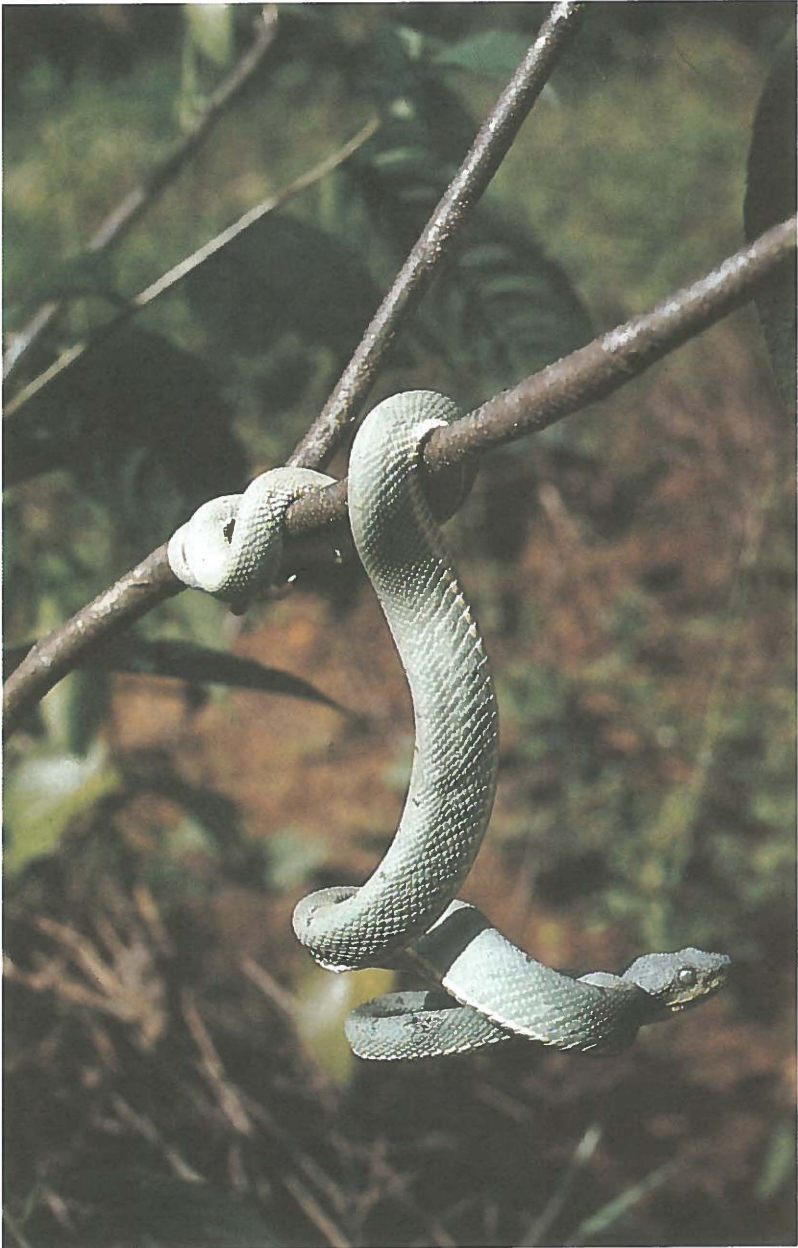
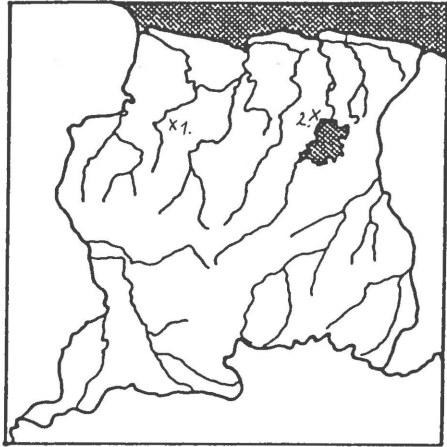


Foto 4. *Bothrops bilineatus bilineatus*. Foto: A. Abuys.



within the reach of the waiting snake.
 Distribution: Venezuela, Brazil and the Guyanas.
 Locality records in Surinam: 1. Amskreek at the
 Avanavero road at km pile 219 (Ewout Eriks,
 1980); 2. Brownsberg (?).

Bothrops brazili Hoge, 1953.

Dutch name: Braziliaanse lanspuntslang.

Maximum length: About 120 cm.

Scalation: Dorsals in 23-29 rows (keeled scales);
 151-190 ventrals; 44-62 subcaudals (in two
 rows); single anal scale; 2 preoculars; no sub-
 oculars; 2 (sometimes 3) postoculars; no loreal;
 8 to 9 supralabials; 9-12 sublabials; no tempo-
 rals; the 2nd supralabial borders the 'pit'.
 (Scalation data from Cunha & Nascimento, 1978
 and Gasc & Rodrigues, 1980).

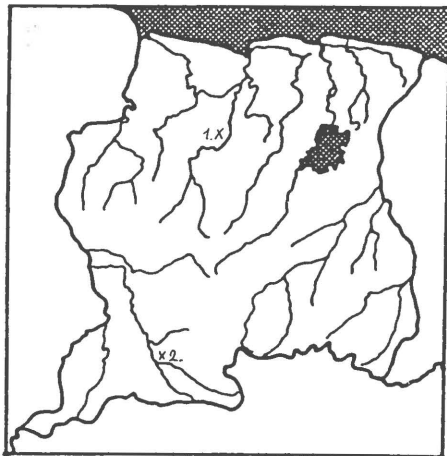
Features: See also 'General' features and data of
 the genus'.

The only specimen that I obtained was already
 dead when I wanted to photograph it. Mr. J. Wol-
 venkamp, at that time first-lieutenant in the
 Force in Surinam, brought the specimen alive
 with him from Loksi Hatti (a jungle training

camp for the Dutch military). I myself was on training for a week and had only the time to observe the animal after this period. During this period the snake had died and had already become a little decomposed by the time I first saw it. The features are: the basic colouration is reddish brown, interrupted by butterfly-shaped, dark grey-brown transverse spots. The border of these spots is beige gradually changing to the reddish brown colouration of the trunk. The number of transverse spots on the trunk (i.e. excluding tail) is 13. The head and a large part of the neck is grey-brown, and slightly lighter coloured than the transverse spots. On the sides of the head a thin post-ocular line is visible, but not well defined. The tail is almost completely grey-brown because the transverse spots lie close to each other. Just here and there you see a patch of the reddish brown. The belly is cream-coloured.

Distribution: Brazil, Venezuela, Colombia and the Guyanas.

Locality records in Surinam: 1. Loksi Hatti at the Saramacca-river between Kwakoe Gron and Brokotonko (J. Wolvenkamp, 1975); 2. Kwamalasamoetoe (Indian employee of T. Henzen, 1986).



Bothrops taeniatus taeniatus wagler, 1824.

Dutch name: Bruine boomlanspuntslang.

Surinam name: Boomowroekoeke.

Maximum length: About 140 cm.

Scalation: Dorsals in 25 rows (keeled scales);

232-246 ventrals; 68-82 subcaudals (not in two rows); single anal scale; 2 preoculars; 1 subocular; 3 postoculars; 6-8 supralabials (2nd borders on the 'pit'); 9-12 sublabials.

(Scalation data from Cunha & Nascimento, 1978).

Features: See also 'General data and features of the genus'.

In this species it is applicable to talk of a general colour rather than a ground colour. The general colour reflection is olive-brown to dark olive-brown with vague, blackish spots, of which the diameter varies from 2 to 4 scale-lengths. The whole is regularly interrupted by beige spots that are arranged vertically, so that they form light coloured transverse stripes that are about 2 scale-lengths broad. The body is divided by these uninterrupted stripes into 27 dark parts that have somewhat irregular borders and vary in breadth between 3 and 6 scale-lengths.

The head and tail have more or less the same general colouration.

The labials are dark-brown with small, triangular, white spots. This pattern of spots continues as a sort of separating band between the dorsal surface and the belly. Instead of white, these spots may alternatively be yellow or bright-green. In an accurate study of young specimens the general olive-brown colour was found to include a brilliant orgy of colours in a regular pattern of little spots, little stripes and small lines in the colours: bright green, olive-green, brown, black-beige and yellow. The belly itself is mostly grey-brown



Foto 5. *Bothrops brazili*. Foto: A. Abuys.



Foto 6. *Bothrops castelnaudi*. Foto: John de Bruin.

with small white and yellow spots, but it may sometimes be plain coloured.

Specific details: Before December 1983 this snake was described under the name *Bothrops castel-nandi*, Duméril, Bibron & Duméril, 1954 (Hoogmoed, 1983). For Surinam this is a new snake. Up to now this species has only been found in Brazil, Colombia, Ecuador, Peru and French-Guyana. In May 1982 John de Bruin found this species for the first time in Surinam, among the collection of snakes of the animal-dealer T. Henzen.

Distribution: Brazil, Colombia, Ecuador, Peru, Surinam and French-Guyana.

Locality records in Surinam: 1. Kwamalasamoetoe, south Surinam (indian employee of T. Henzen, 1982).



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