

A REMARKABLE TROGLOBITIC TETRABLEMMID SPIDER FROM A CAVE IN THAILAND (ARACHNIDA: ARANEAE: TETRABLEMMIDAE)

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ABSTRACT

Bacillemma leclerci new genus, new species is described for an enigmatic eyeless tetrablemmid spider from a cave in Khao Sam Roi Yot National Park, Thailand. The long and streamlined cephalothorax, rod-shaped abdomen and the very long, thin legs give the spider a habitus that is very dissimilar to any other tetrablemmid spider. Only females are known. Its relationships are assessed; the species belongs in the Brignoliellini, with affinities to *Chavia* and *Indicoblemma*.

The cave Kaeo also harbours four other highly specialised cave arachnids and thus ranks among the biologically most important and interesting caves in Southeast Asia. The habitat is endangered by hydrological activities in connection with the breeding of prawn.

INTRODUCTION

In the family Tetrablemmidae, apart from 2-, 4- or 6-eyed species, several microphthalmic and anophthalmic species are known; this reduction in eye size is believed to be an adaptation to living in a lightless environment. Thus, the genus *Ablemma* Roewer was erected to accommodate an allegedly eyeless species, *A. baso* Roewer, from Baso Cave in Sumatra (ablemma is Greek for eyeless). However, according to LEHTINEN (1981: 44) and at variance with the original description, the type specimen is provided with two large eyes. Since then, one species with reduced eyes, *A. shimojanai* (Komatsu) from a cave in Okinawa and many new species with 4 or 6 normal eyes have been added to this genus. In this genus, as in other tetrablemmid genera, the basic eye number is 6; in some species of *Ablemma* this number is reduced to 4 or 2 eyes, but as this phenomenon has occurred in species which are not living in caves and the eye size is normal, it is not considered to be an adaptation to the underground. In the New World, two allegedly troglobitic species of Tetrablemmidae are known: *Matta mckenziei* Shear and *Caramatta sbordonii* (Brignoli), both from Mexican caves, displaying an array of different degrees of reduction in eye size; some specimens are said to be eyeless. In none of these species, other adaptations to subterranean habitats such as loss of pigment, increase in size or lengthening of appendages have been reported.

During several expeditions of L. Deharveng and P. Leclerc to Thailand with the

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objective of collecting cave fauna, some highly interesting material on spiders was brought together. Several eyeless tetrablemmids and specimens with reduced eyes belonging unequivocally to the genus *Ablemma* feature in this collection. They are closely related to the mostly undescribed surface species. Another species in this collection is not only remarkable, but unique in this family of spiders, as the general shape of the spider has undergone considerable transformation so as to become very different from any known tetrablemmid spider. Whereas all Tetrablemmidae are squat, short-legged, mite-like spiders, this species has a cylindrical body form and an elongated, streamlined cephalothorax. This species, found only in a single cave in the northern part of peninsular Thailand, is known only from female specimens. It is placed in a new genus which, according to LEHTINEN's (1981) classification, should be placed in the Brignoliellini.

In the following description, LEHTINEN's (1981) terminology is partly followed.

SYSTEMATICS

Bacillemma new genus

Type species: *Bacillemma leclerci* new species

Diagnosis. Spiders with brignolielline affinities and morphological adaptations to the subterranean habitat. Head elongate, dorsally rounded, a little higher than thorax, gradually sloping down to thorax, smooth; carapace regularly oval. Abdomen cylindrical. Lateral plates four, plate I thin, posteriorly ending with preanal plate. Plates II-IV continuous with corresponding posterior plates. Preanal plate without impression. Epigynal opening large, well removed from the margin of the pulmonary plate; vulva with funnel-like vulval stem and large pore. Male unknown.

Etymology. *bacil* (Latin) for rod-shaped; *emma*: phonetic association with other tetrablemmid genera.

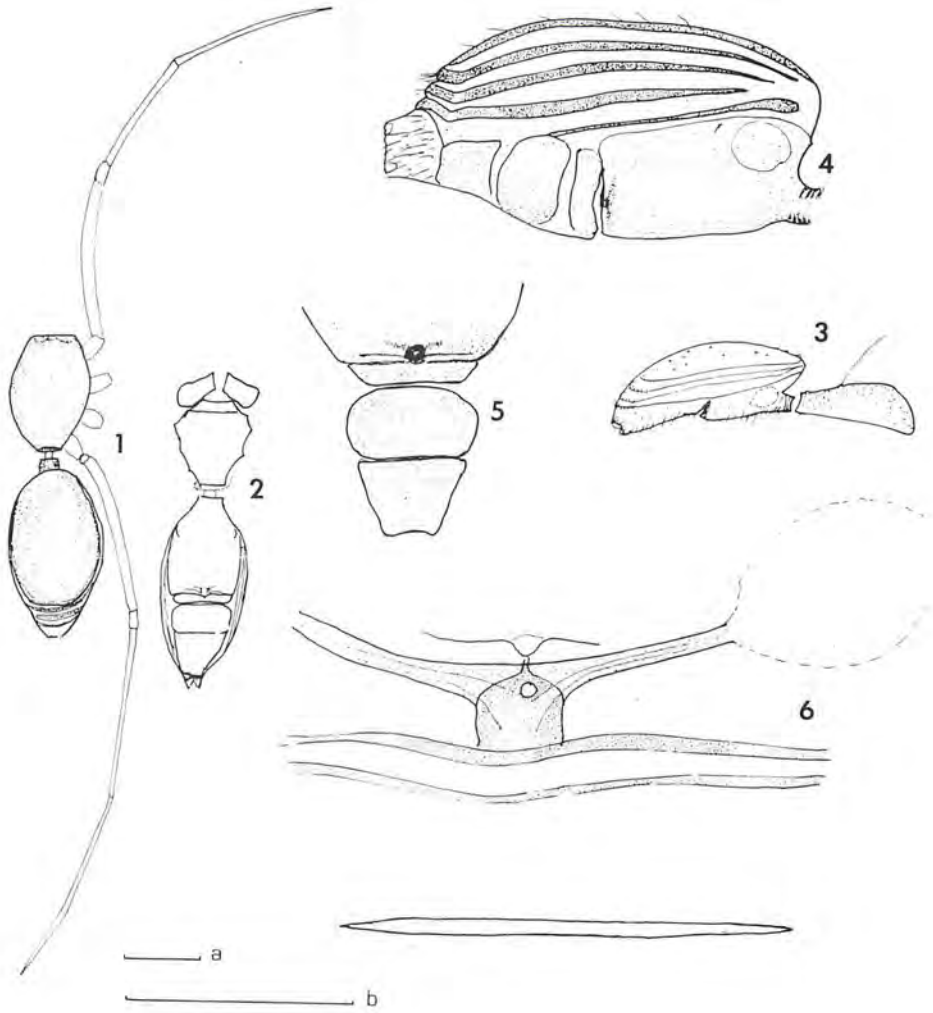
Bacillemma leclerci n. sp.

Fig. 1-6

Material. Thailand, Prov. Pranburi, Khao Sam Roi Yot National Park, Cave Kaeo; 1 female holotype, 1 female paratype, 2 July 1991; 2 paratypes, same data, 26. VII. 1987, all leg. Ph. Leclerc.

Diagnosis. Troglobitic species with low cephalothorax. *Bacillemma leclerci* is distinguished by the streamlined shape of the carapace, the loss of eyes, the considerable lengthening of the legs, the sculpture of the ventral plates and the conformation of the vulva.

Description. Measurements in mm: carapace length 0.56 mm, width 0.40, maximal height



Figures 1-6. *Bacillenma leclerci*. 1) female, dorsal; 2) female, ventral; 3) female, lateral; 4) abdomen, lateral; 5) ventral plates; 6) vulva, ventral. Scales a-b 0.5 mm. a: 1, 2, 3; b: 4, 5.

near the front 0.24; abdomen 0.84 mm.

	femur	patella + tibia	metatarsus + tarsus	total
Leg I	0.76	0.80	0.88	2.44
Leg II	0.72	0.72	0.84	2.28
Leg III	0.68	0.60	0.80	2.08
Leg IV	0.84	0.92	1.00	2.76

Whole spider orange; no trace of eyes (Fig. 1). Cephalothorax, sternum and abdomen Figs. 1, 2, 3 and 4. Sternum shiny, bearing setae, with shallow traces of reticulation. Lateral plates Fig. 4; anterior plate absent. Pulmonary plate with scarce shallow pits; ventral plates Fig. 5. Leg I 4.5 times the length of carapace. Epigastric region Fig. 5, vulva Fig. 6. Branching point of sperm ducts ventrally encased by a thick-walled vulval stem with funnel-like duct to large round anteriorly positioned pore; base of lateral branches of sperm ducts surrounded by sclerotizations. Central branch of inner vulval plate probably lacking.

Relationships. Probably related to species of *Chavia* Lehtinen and *Indicoblemma* Bourne. Apart from the strongly modified bodyform, this species differs from *Chavia* by the absence of a row of chitinous lateral spots on the abdomen. The leg length is far greater than in any known epigeal or hypogean tetrablemmid spider: leg I is more than 4 times the carapace length, whereas this ratio does not exceed 1.74 in the species hitherto described (LEHTINEN 1981 : 83).

Etymology. With sincere respect and sympathy to the collector, Philippe Leclerc.

Other tetrablemmine species, collected by Leclerc and Deharveng in caves and surface habitats in Thailand include small-eyed males and females of species of *Chavia* and an eyeless species of *Ablemma*.

The Cave Kao

This cave is situated in a small limestone outcrop interspersed with mud flats which gradually are being turned into ponds for the breeding of prawns. Unfortunately, these artificial ponds are encroaching the natural habitats, which harbour a unique fauna, legacy of millions of years of evolution (DEELEMEN-REINHOLD, 1992 and in press). The cave is essentially a vertical, U-shaped cave with two entrances about 300–500 m apart, the bottom dips into the brackish groundwater. This water is in direct connection with surface water (presence of prawns!). The species was not found in any of the other caves in and around the Sam Roi Yot Park. The Kao cave is extremely rich in arachnid species: it also harbours a blind species of *Speocera* and another, taxonomically aberrant, troglobitic species with highly specialised features, both belonging to the family Ochyroceratidae (DEELEMEN-REINHOLD, in press). Furthermore, there is a blind spider of an undescribed genus of the rare Telemidae, a new genus of the family Pholcidae, a blind false scorpion

and a schizomid species, finally another species of *Spermophora*, two species of *Ctenus* and a species of *Heteropoda*. All these, with the exception of the last four, can be expected to exist only in this and partly in surrounding caves. Such an assembly of specialised cave arachnids is at present known only in very few and much more extensive cave systems in Asia, such as the enormous Mulu caves system (Chapman, personal communication) and, as far as is known, exceeds the richness and variety of arachnids in the cave complexes of Niah and the relatively well investigated Batu caves in Malaysia. The environmental conditions in the past and the present in this very limited area evidently are very special. The biological underground community is delicate and very vulnerable; it might easily be upset by human interference, such as hydrological and possibly chemical activities in the immediate surroundings.

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