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CHIROLAVIA, A NEW GENUS OF NEANURINE COLLEMBOLA FROM THAILAND WITH UNUSUAL ANTENNAL SENSILLAE

Louis Deharveng

ABSTRACT. - A new genus *Chirolavia* (Collembola, Neanuridae) with two new species, *C. murphyi* and *C. gabaudei*, is described in this paper. The genus presents unusual chaetotaxic patterns on tibiotarsus and antenna. In this last organ, a sensory bridge can be observed, resulting from the apical fusion of two setae of the fourth antennal segment. Such a structure is unique among Collembola, and the question of its formation during ontogeny remains puzzling.

INTRODUCTION

The antennal chaetotaxy of the Neanurinae is remarkably stable and has been shown to be the best differential character for the subfamily (Deharveng, 1983). The pattern of the s-setae is constant, but their morphology can be rather variable. We discovered in Thailand a new genus where the s6 and s7 setae of antenna IV are fused together at their apex, forming a kind of bridge, an unusual structure among known Collembola.

As far as we know, sensory bridges have also been described in the diptera *Diplosis buxi* (Berlese, 1909: fig. 762) which has an even more unusual pattern, made of successive linked bridges. The formation process of such a kind of structure remains enigmatic.

In this paper, descriptions will be provided of the new genus *Chirolavia* and the two new species.

For the abbreviations and characters used in the text and tables, see Deharveng (1983) and Deharveng and Weiner (1984). The material is deposited in the collection of the Laboratoire d'Ecologie des Invertébrés Terrestres, Université Paul Sabatier, Toulouse (France).

Louis Deharveng - Laboratoire de Zoologie, Ecologie des Invertébrés Terrestres, Université Paul Sabatier, 118 Route de Narbonne, 31062 Toulouse Cedex, France.

TAXONOMY

Chirolavia, new genus

Type species - *Chirolavia murphyi*, new species

Diagnosis. - Small size Paleonurini. No postantennal. No eyes. No pigment. No reticulations. Abd. VI bilobed. No cryptopygy. Tubercles mainly developed on lateral part of body and on abd. V-VI tergites, indicated by larger secondary granules and integument swelling. Buccal cone short. Labral chaetotaxy /2,4. Maxilla styliform. Mandible reduced. On ant. IV, s-setae short, thick, subequal, with s6 and s7 fused together at apical part. Apical vesicle not developed. Di setae of abd.V joint with De and DL setae on same tubercle. Tibiotarsal chaetotaxy reduced. Claw untoothed.

Etymology. - From the Greek "ceirolabh" for handle, in reference to the apical fusion of s6-s7 setae of ant. IV.

Remarks. - By the external migration of its Di setae on abd. V, *Chirolavia* comes near the large and highly diverse African and western tropical Asian genus *Pronura* Delamare-Debouttevile, 1953 (many of the species remain undescribed). It however, possesses two characters unique among the Neanurinae:

1. the reduced chaetotaxy of the tibiotarsus (maximum of 16, 16, 15 setae on TI, II, III instead of 19, 19, 18 or 18, 18, 17). Only *Paranura sexpunctata* from Arctic Europe has such a reduced chaetotaxy, but the missing setae are different; in particular, the ventro-distal a4 and a5 setae are absent in *P. sexpunctata* (Deharveng, 1983) but present in *Chirolavia* (Figs. 6-7).

2. the apical fusion of s6 and s7 on ant. IV. We first thought this might have been an abnormal condition, but it is now clear that all specimens, otherwise recognised by their tiobiotarsal and general chaetotaxy, display such a character. As the s7 seta of ant. IV appears only from the second or third instar in the Neanurinae whereas s6 is present since the first instar (Deharveng, 1983), it would have been very interesting to examine first instars of *Chirolavia*, but none were present in our material.

Chirolavia murphyi, new species

(Figs. 1-6)

Materials examined. - Holotype - female (THA 71), humus in primary forest, Chiang Mai Province, Doi Inthanon, 2550 m above sea level, Thailand, leg. L. Deharveng, 2.i.1981.

Paratype - 4 paratypes (THA 73), same data as holotype.

Others - 4 specimens (THA 76), rotten wood in forest, Doi Inthanon, 2000 m above sea level, Thailand, leg. L. Deharveng, 2.i.1981. — 2 specimens (THA 85), humus in primary forest, Doi Inthanon, 2550 m above sea level, Thailand, leg. L. Deharveng, 9.i.1981.

Description. - Length 0.5-0.6 mm. Secondary granules very strong, thicker at the level of setae groups. Ordinary dorsal setae subequal, rather long, smooth, acuminated, strongly bent; dorsal s-setae 1.2 to 1.7 times longer than ordinary setae. Buccal cone short. Ventro-distal sclerifications of labium rounded at apex. Antennae short and wide. Ant. III organ: s4 1.5 times longer than sl, sinuous. Setae sl to s8 thick on ant.IV. Chaetotaxy as in Table 1 and Fig. 1.

Etymology. - We are pleased to name this species in honour of Professor D. H. Murphy of the National University of Singapore, for his fundamental contributions to the study of the Southeast Asian Collembolan fauna.

Chirolavia gabaudei, new species
(Fig. 7)

Materials examined. - Holotype female (THA 47), humus and rotten wood in primary forest, Chiang Mai province, Amphoe Chiang Dao, above Tham Chiang Dao, 700 m above sea level, Thailand, leg. L. Deharveng, 27.xii.1980.

Paratypes. - 5 paratypes, same data as holotype.

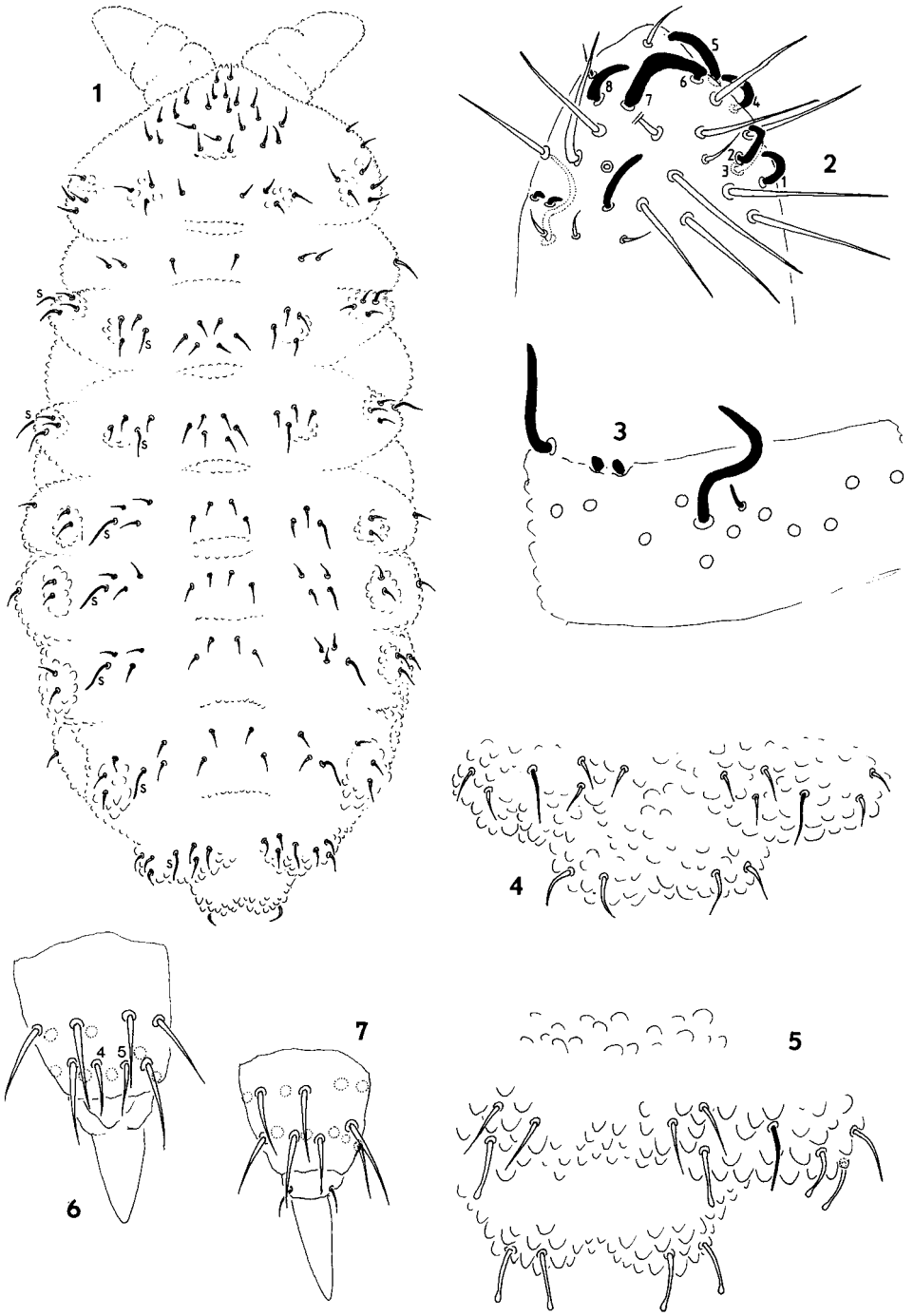
Others - 3 specimens (THA 9), soil in forest, near Tham Chiang Dao, 500 m above sea level, Thailand, leg. L. Deharveng, 17.xii.1980. — 2 specimens (DC 27 and DC 30), soil and humus in forest, near Tham Chiang Dao, 500-700 m above sea level, Thailand, leg. L. Deharveng, 3.vii.1985.

Description. - Length 0.4-0.5 mm. Secondary granules very strong, thicker at level of setae groups which are also indicated by obvious integument swelling. Ordinary setae of 2 types: some are strongly clavate on tergites, head and dorsal antennal segments, others acuminated and longer; all smooth; s-setae 1.2-1.7 longer than ordinary setae. Buccal cone short. Ventro-distal sclerifications of labium rounded at apex. Antennae short and wide. Ant. III organ with s4 only slightly longer than sl, hardly sinuous. Setae sl to s8 thick on ant. IV. Chaetotaxy as in Table 2.

Etymology. - This species is named after Louis Gabaude from the "Ecole Francaise d'Extreme Orient" who provided us with invaluable help during our field researches around Chiang Mai.

Remarks. - The two northern Thai species differ in the morphology of ordinary dorsal setae, but their dorsal chaetotaxy is identical.

Another species of *Chirolavia*, related to *C. murphyi*, new species, was also collected in southern Thailand, near Phangnga. The material however, is not sufficient for a proper description.



Figs. 1-4 and 6-7. *Chirolavia murphyi*, new genus and species. 1, dorsal chaetotaxy and tubercles; 2, antennal segments III and IV, dorsal view (1 to 8: setae sl to s8); 3, Ant. III organite (circles: setae bases); 4, Abd. V-VI, dorsal view; 6, tibiotarsus and praetarsus of leg III, ventral view (4, 5: setae a4, a5); 7, tibiotarsus and praetarsus of leg III, dorsal view. Fig. 5. *Chirolavia gabaudei*, new genus and species. Abd. V-VI, dorsal view.

Table 1. *Chirolavia murphyi*, new genus and species

Cephalic chaetotaxy

Group of setae	Tubercle	No. of setae	Type of setae	Setae
Cl, An, Fr, Oc	-	21	me	A,B,C,D,E,F,G,O,Oca,Ocm,Ocp
Di	-	1	me	Di1
De	-	3	me	De1, Di2 ,De2
DL,L,So	-	11-12	me	not analysed

Vi	Ve	Labrum	Labium	Ant.I,II	Ant.III	Ant.IV
5	7	?/2,4	10,0x	7,11	?17,5s	?

Postcephalic chaetotaxy

	Di	De	DL	L	Scx2	Cx	Tr	F	T
Th.I	1	2	1	-	?	?	?5	?	16
II	3	3+s	3+s+ms	3	?	7	?	?	16
III	3	4+s	3+s	3	?	8	?	?	15
Abd.I	2	3+s	2	3	TV : 4+4				
II	2	3	2	3	Ve : 4-5 (Vel present)				
III	2	3+s	2	3	Ve : 4-5		Fu : 2me, 0mi		
IV	2	2+s	3	5-6	Ve : 8		VI : 4		
V	——— (3+(3+s)) ———			3	Ag : 3		VI : included in L		
VI	——— 6+1 uneven ———				Ve : 11		An : 1-2 mi		

Table 2. *Chirolavia gabaudei*, new genus and species

Cephalic chaetotaxy

Group of setae	Tubercle	Number of setae	Type of setae	Setae
Cl,An,Fr,0c	-	21	me	B,F,Ocm
			me	A,C,D,E,G,O,Oca,Ocp
Di,De	-	4	M	Del
			M or me	Dil
			me	Di2,De2
DL,L,So	-	(2)	M	
		(8-9)	me	not analysed

Vi	Ve	Labrum	Labium	Ant.I, II	Ant.III	Ant.IV
6	?	?/2,4		7,11	?	?

Postcephalic chaetotaxy

	Di	De	DL	L	Scx2	Cx	Tr	F	T
Th.I	1	2	1	-	?	?	5	?	14
II	3	3+s	3+s+ms	3	?	?	?	?	14
III	3	4+s	3+s	3	?	?	?	?	13
Abd.I	2	3+s	2	3	TV : 4+4				
II	2	3	2	3	Ve : 5 (Vel present)				
III	2	3+s	2	3	Ve : 4-5		Fu : 2me, 0mi		
IV	2	2+s	3	5-6	Ve : 8		VI : 4		
V	——— (3+(3+s)) ———			3	Ag : 3		VI : included in L		
VI	——————— 6+l uneven ———————				Ve : 9		An : 1-2 mi		

M: clavate seta

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