

# ***Pronura bidoup* n. sp. (Collembola, Neanuridae, Neanurinae, Paleonurini) from southern Vietnam**

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## **Abstract**

*Pronura bidoup* n. sp. (Collembola, Neanuridae, Neanurinae, Paleonurini) from southern Vietnam.— A new species of *Pronura* Delamare Deboutville, 1953, *Pronura bidoup* n. sp. is described from the Bi Doup massif in southern Vietnam, where it is largely distributed above 1,350 m. The new species exhibits a combination of characters unusual for the genus: shift of chaeta f towards chaeta e on labium, large central reticulate plate on head, presence of microchaetae on furcal rest, reduced chaetotaxy of legs and abdominal segment VI. It is related to *Pronura ornata* Deharveng & Bedos, 1993 from high altitude in Thailand.

Key words: *Pronura bidoup* n. sp., Collembola, Neanuridae, Vietnam.

## **Resumen**

*Pronura bidoup* sp. n. (Collembola, Neanuridae, Neanurinae, Paleonurini) del sur de Vietnam.— Se describe una nueva especie de *Pronura* Delamare Deboutville, 1953, *Pronura bidoup* sp. n., del macizo Bi Doup, situado en el sur de Vietnam, donde se distribuye ampliamente por encima de los 1.350 m de altitud. Esta nueva especie presenta una serie de caracteres poco usuales para el género: desplazamiento de la queta f hacia la queta e en el labium, placa central grande reticulada en la cabeza, presencia de microquetas en la base de la furca, quetotaxia reducida en las patas y en el segmento abdominal VI. *P. bidoup* sp. n. está relacionada con *P. ornata* Deharveng y Bedos, 1993, que se encuentra a gran altitud en Tailandia.

Palabras clave: *Pronura bidoup* sp. n., Collembola, Neanuridae, Vietnam.

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## Introduction

The Bi Doup massif above Dalat in southern Vietnam has retained large patches of undisturbed primary forest, which host a very rich Neanurinae fauna including more than 25 species, all new to science (Deharveng & Le Cong Kiet, pers. com.). In this paper, we describe *Pronura bidoup* n. sp., a morphologically remarkable species of the genus *Pronura* Delamare Debouteville, 1953, related to *Pronura ornata* Deharveng & Bedos, 1993, known from the top of Doi Inthanon, the highest mountain of Thailand.

## Material and methods

The terminology and abbreviations used in the text and the tables are standard conventions for taxonomic descriptions in the subfamily Neanurinae (DEHARVENG, 1983, modified).

### Abbreviations used in the text and tables

Types of chaetae: bms. Buried s-microchaeta; M. Macrochaeta; me. Mesochaeta; mi. Microchaeta; ms. S-microchaeta; or. Organite of antenna IV; S. S-chaeta; x. Labial papilla.

General morphology: abd. Abdominal segment; ant. Antennal segment; th. Thoracic segment.

Chaetal groups and tubercles on head: Af. Antenno-frontal; CL. Clypeal; De. Dorso-external; Di. Dorso-internal; DL. Dorso-lateral; L. Lateral; Oc. Ocular; So. Subocular; Ve. Ventro-external; Vi. Ventro-internal; VL. Ventro-lateral.

Chaetal groups and tubercles on tergites: De. Dorso-external; Di. Dorso-internal; DL. Dorso-lateral; L. Lateral.

Chaetal groups and tubercles of sternites: Ag. Ante-genital; An. Anal; Fu. Furcal; Ve. Ventral; VL. Ventro-lateral.

Appendages: Cx. Coxa; Fe. Femur; Scx2. Subcoxa 2; Tr. Trochanter; Ti. Tibiotarsus; VT. Ventral tube.

Types are deposited in the Museum National d'Histoire Naturelle de Paris.

## Results

### *Pronura bidoup* n. sp. (tables 1, 2; figs. 1–6)

#### Studied material

Holotype female and one paratype female. Vietnam, Lam Dong province, Bi Doup massif, Nui Gia Rich, 1hr 1/2 from Klong Lanh by foot, 1,440 m, litter, Berlese extraction, 18 XII 98, leg. L. Deharveng & A. Bedos (sample VIET-689). Types mounted on slides in Marc-André II.

Additional specimens (leg. L. Deharveng & A. Bedos) Vietnam, Lam Dong province, Bi Doup massif: 1,545 m, litter, Berlese extraction, 28 II 97,

8 specimens (sample VIET-281); *ibid*: 1,900 m, litter, Berlese extraction, 1 III 97, 2 specimens (samples VIET-302, VIET-304); *ibid*: near the school of Klong Lanh, 1,410 m, litter, Berlese extraction, 18 XII 98, 8 specimens (sample VIET-675). Vietnam, Lam Dong province, near Dalat, Cam Ly area, 1,380 m, litter, Berlese extraction, 16 XII 98, 2 specimens (samples VIET-657, VIET-665).

#### Description

Length: 0.55 to 0.75 mm. Colour: white in alcohol. Dorsal tubercles weak or absent; only the tubercles of head and of abd. V and VI, and the dorso-lateral tubercles of abd. II–IV are well developed; they are constituted by stronger secondary granules, with tertiary granules and slight reticulation on head. In some specimens, secondary granules are slightly stronger on the axial area of the tergites where Di chaetae are more or less grouped. Dorso-internal tubercles of abd. V not overhanging abd. VI. Homochaetotic clothing of smooth, slender, tapering and curved mesochaetae, with frequent asymmetries. S-chaetae on abd. I–V thin, 1.5 to 3 times longer than nearby mesochaetae.

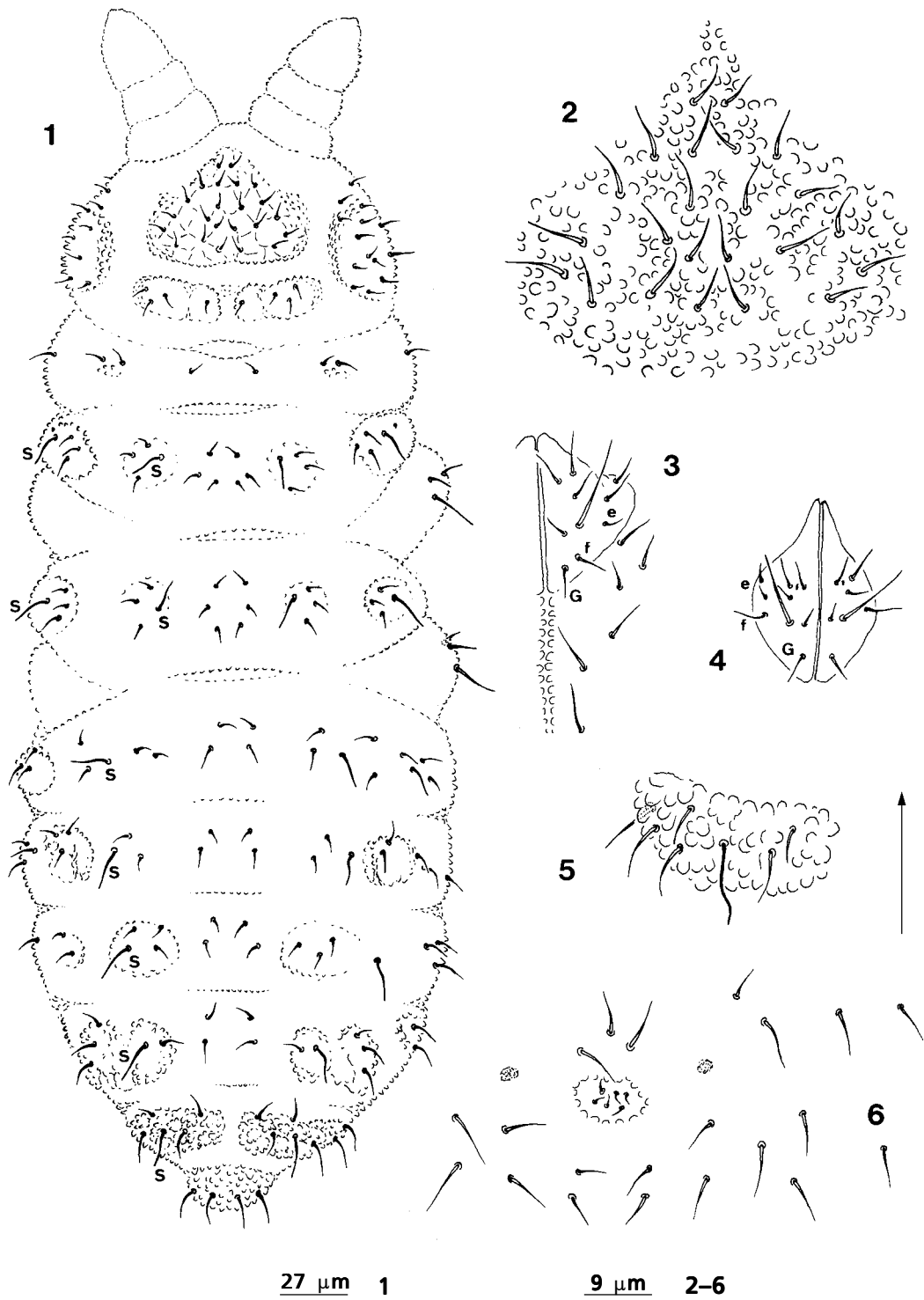
Head (table 1, figs. 1, 2, 4). S-chaetae of ant. IV thick and rather short, like in *P. ornata* (figured in DEHARVENG & BEDOS, 1993); apical vesicle of ant. IV fused to the apex, hardly distinct. Buccal cone rather elongate compared to that of *P. ornata*; labrum rounded at the apex; labium with chaetae A, C, D, E, F, G, d, e and f, with f closer to e than to G, and a minute x papilla (fig. 4); chaeta c (or possibly d) not observed. Maxilla styliform, mandible tridentate. Ocelli either absent, or possibly 2+2 covered with primary granules and not clearly distinct from secondary granules. The clypeal, antennal, frontal and ocular tubercles are fused in a single central plate, with a complete set of chaetae (A, B, C, D, E, F, O, Oca, Ocm, Ocp), and 2 to 4 additional chaetae between A and B, often asymmetrically arranged. Laterally, the tubercles DL, L and So are fused in a unique plate.

Tergites (table 2, figs. 1, 5). No plurichaetosis nor additional S-chaetae. Strong and irregular integument bumps on abd. IV and sometimes on abd. II between and behind the dorso-external and dorso-lateral chaetal groups. Dorso-internal chaetae shift towards dorso-external ones on abd. V. One lateral chaeta L on abd. V, without tubercle. Abd. VI not bilobed, with an uneven chaeta and a reduced chaetotaxy.

Sternites and appendages. Chaeta M absent on tibiotarsi. Vestigial furcal microchaetae of the sternites of abd. III–IV very distinct, on a small smooth plate (fig. 6). Genital plate with 4–5 (female) or 6 (male) circumgenital chaetae, and 2 (female) or 4+4 (male) genital chaetae; no modified chaetae in the male (male specimen from VIET-281).

#### Derivatio nominis

The new species is named after its type locality.



Figs. 1–6. 1, 2, 4–6. *Pronura bidoup* n. sp.: 1. Dorsal view; 2. Central plate on head; 4. Labium; 5. Tubercle (Di + De + DL) on abd. V; 6. Furcal rest with its 6 microchaetae. 3. *Pronura ornata* Deharveng & Bedos, 1993, labium.

Figs. 1–6. 1, 2, 4–6. *Pronura bidoup* sp. n.: 1. Vista dorsal; 2. Placa central de la cabeza; 4. Labium; 5. Tubérculo (Di + De + DL) del segmento abdominal V; 6. Base de la furca con 6 microquetas. 3. *Pronura ornata* Deharveng & Bedos, 1993, labium.

Table 1. Cephalic chaetotaxy of *Pronura bidoup* n. sp.: G. Group of chaetae; Tu. Tubercle; N. Number of chaetae; Ty. Type of chaetae; \* other chaetae not analysed on ant. IV.

*Tabla 1. Quetotaxia cefálica de Pronura bidoup sp. n.: G. Grupo de quetas; Tu. Tubérculo; N. Número de quetas; Ty. Tipo de queta; \* en antena IV no se analizaron otras quetas.*

G	Tu	N	Ty	Chaetae
CL + Af + 2Oc	yes	23–25	me	A, B, C, D, E, F, O, Oca, Ocm, Ocp and 2–4 additional chaetae
Di	(yes)	1	me	Di1
De	yes	3	me	De1, Di2, De2
DL + L + So	yes	2	M	
		14	me	
Vi		5	me	
Ve		6–7	me	
Prelabral		?	?	
Labrum basal		2	me	
Labrum distal		2	me	
		2	M	
Labium		1	M	F
		8	me	A, C, D, E, G, d, e, f
		1	x	
Ant. I		7	me	
Ant. II		11	me	
Ant. III		16	me	
		2	S	S2, S5
		3	ms	s1, s3, s4
Ant. IV*		8	S	S1 to S8
		1	bms	or

Table 2. Post-cephalic chaetotaxy of *Pronura bidoup* n. sp.: \* 1 mi on the upper valve and ?2 mi on the lateral valves.

*Tabla 2. Quetotaxia postcefálica de Pronura bidoup sp. n.: \* 1 mi en la valva superior y ?2 mi en las valvas laterales.*

	Di	De	DL	L	Scx2	Cx	Tr	Fe	Ti
Th. I	1	2	1	–	0	3	5	12	18
Th. II	3	3+S	3+S+ms	3	2	7	5	11	18
Th. III	3	3+S	3+S	3	2	8	5	10	17
Abd. I	2	2+S	2	3–(4)	VT: 4				
Abd. II	2	2+S	2	3–(4)	Ve: 4–5 (Ve1 present)				
Abd. III	2	2–(3)+S	2	3	Ve: 4			Fu: 3 me, 6 mi	
Abd. IV	2	— (1+S, 3)	—	5	Ve: 8			VL: 4	
Abd. V	—	(S+4–5)	—	1	Ag: 3			VL: 1	
Abd. VI	(6+6+1)	—	—		Ve: 11			An: 1–2 mi*	

## Discussion

With its clothing of subequal chaetae, its strong ocular reduction, its large central plate and supernumerary chaetae on head and its reduced chaetotaxy on legs and abd. VI, *Pronura bidoup* n. sp. is close to *Pronura ornata* Deharveng & Bedos, 1993 from Doi Inthanon in northern Thailand. Both are limited to mountain forest habitats in their respective region. They differ in their labial chaetotaxy (chaeta f much closer to G than to e in *ornata*, closer to e than to G in *bidoup*), their furcal remnant (microchaetae present in *bidoup*, absent in *ornata*), and a number of chaetotaxic details. The labium of *P. ornata* is quite unusual among Neanurini, with the chaeta f shift towards G like in several other unrelated species of Neanurinae with short buccal cones (like *Coecoloba* sp., figured in DEHARVENG, 1983).

As the two species share a number of singular characters among Paleonurini, we do not however consider this striking difference in labial chaetotaxy to be phylogenetically meaningful, though it would deserve deeper investigation.

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