

Les récoltes des spécimens ont été réalisées sur différentes fleurs (aubépine, ombellifère, ronce) et sur un tas de bois d'épicéas, ce qui est tout à fait en accord avec la biologie des adultes de l'espèce telle que mentionnée par VILLIERS (1978), DU CHÂTENET (2000) et SAMA (2002).

Il est également très intéressant de noter que tous les exemplaires collectés jusqu'à maintenant en Belgique présentent une coloration bleue à bleu-verdâtre (pour ceux du bois de la Borchêne) sur les élytres et un pronotum rouge au lieu de noir.

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A misunderstood instance of teratology in Belgian *Leptothorax acervorum* (FABRICIUS, 1793) (Hymenoptera, Formicidae) from the Bondroit collection

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Abstract

During a revision of the Belgian Formicidae collection at the Royal Belgian Institute of Natural Sciences, a worker labelled as type "*Mychothorax arduennensis*" was discovered in the Bondroit supplemental subcollection. This species however was never described by Bondroit. This worker has a clear different morphology compared to its most resembling species *Leptothorax acervorum* (Fabricius, 1793) and we found significant differences in some morphometric characters between this worker and specimens of *Leptothorax acervorum*. Nevertheless, further study of the specimen and comparison with other atypical *L. acervorum* specimens collected in Germany indicate that the unusually shaped specimen is not a new parasitic *Mychothorax-Leptothorax* species as assumed by Bondroit, but an instance of teratology in *L. acervorum* in Belgium.

Keywords: *Leptothorax acervorum*, teratology, type material, taxon status, synonymy

Introduction

The Bondroit collection at RBINS contains several holotypes mainly of the genera *Formica*, *Myrmica*, *Temnothorax* and *Lasius* collected in Western Europe and most of them were described between 1918 and 1920 (BONDROIT 1918; 1919; 1920). Material collected by Bondroit later than 1920 was labelled, identified, and stored in a separate collection but details on these specimens were never published. During a reorganisation of the Belgian Formicidae collection at RBINS a few boxes of supplements of the Bondroit collection were rediscovered in spring 2011. Most of the specimens were labelled and identified by Jean Bondroit later than 1920. When reviewing these supplements our attention was drawn to a *Leptothorax* worker labelled “*Mychothorax arduennensis*” type, collected by Jean Bondroit on 1.VII.1923 in Chaudfontaine (Belgium near Liège). This specimen was left a long time undiscovered because it was wrongly stored in the non-Belgian additional collection of Bondroit. As Bondroit has not described or published any new ant species later than 1920, we verified the taxonomical status of this unusually shaped worker.

In this paper we compare some morphometric data of the unusually shaped specimen with those of three *Leptothorax acervorum* workers recently collected in Belgium; to define its taxonomical status.

Material and Methods

We examined three workers of *L. acervorum* recently collected in the northern part of Belgium and the unusually shaped worker from Chaudfontaine for several morphometric characteristics. All measurements were made with an Olympus SZX12 stereomicroscope equipped with a 1.2 x PF front lens at magnifications of 96-216 times and given in μm .

Used acronyms: AL = alitrunk length, Weber's distance; CI = cephalic index: $\text{CW} \times 100/\text{CL}$; CL = cephalic length; CW = maximum cephalic width including eyes; EL = eye length; OI = ocular index: $\text{EL} \times 100/\text{CW}$; PEH = petiolus height; PPW = postpetiolus width; PSI = propodeal spine index; PW = petiolus width; SL = maximum scape length excluding articulatory condyle; SP = length of propodeal spines.

Results

Measurements and indices of the *L. acervorum* workers and the “*M. arduennensis*” worker are given in Table 1.

Table 1 Morphometric data of three *Leptothorax acervorum* workers and the unusually shaped worker; all measurements are given in μm .

	<i>Leptothorax acervorum</i> (n=3)	“ <i>Mychothorax arduennensis</i> ”
AL	1012 \pm 5 [1008, 1020]	1116
CL	815 \pm 15 [799, 837]	837
CW	714 \pm 6 [705, 724]	724
EL	144 \pm 3 [142, 149]	175
PEH	338 \pm 18 [311, 358]	520
PPW	326 \pm 8 [317, 338]	473
PW	201 \pm 1 [199, 203]	338
SL	538 \pm 6 [533, 547]	540
SP	162 \pm 5 [155, 169]	175
CI	87.71 \pm 1.133 [86.52, 89.41]	86.50
CL / CW	1.140 \pm 0.015 [1.118, 1.156]	1.156
OI	20.16 \pm 0.241 [19.84, 20.52]	24.25
PPW / CW	0.457 \pm 0.012 [0.438, 0.472]	0.653
PSI	1.948 \pm 0.035 [1.900, 2.000]	1.6
PW / CW	0.282 \pm 0.004 [0.279, 0.287]	0.467
SL / CW	0.753 \pm 0.004 [0.746, 0.756]	0.746

General morphology of the unusually shaped worker

Head

Head long; CL / CW = 1.156. Scape short, not reaching the occiput (SL / CW = 0.746), flagellum composed of 10 annuli (or joints), the last 3 annuli forming a distinct darker club. Head mostly dark brown. Scape, clypeus as well as the other parts of the head with standing hairs. Eyes well developed; EL = 175 μm ; OI = 24.25; CI = 86.50.

Thorax

Thorax light brown with rounded shoulders. Thorax growing small towards the distinct promesonotal suture. Thorax light brown with



Fig. 1. Details of the studied unusually shaped worker: A=lateral view of the habitus, B=dorsal view of spines and petiolus, C=dorsal view of habitus, D=dorsal view of petiolus and postpetiolus, E= lateral view of antenna and head, F= lateral view of petiolus and postpetiolus

many erect hairs. Propodeal spines blunt and long (SP = 175 μm), divergent, deviated upward. Propodeal spine index, PSI = 1.6 and AL = 1116 μm .

Petiolus

Petiolus not pedunculated. Dorsal face broadly rounded and not conical, rather flat and lightly convex. Petiolus ventrally with a prominent tooth-like projecting process which is

rather acute apically. In dorsal view the anterior margin convex or rounded. Only a few standing hairs on the dorsal part, ventrally without setae.

Postpetiolus

Postpetiolus dorsally and ventrally with standing hairs. Postpetiolar node in dorsal view much broader than long, anterior and posterior corners rounded.

Gaster-abdomen

Gaster smooth and shiny without pubescence and only erect hairs on the posterior margin of the segments. Gaster with 4 well developed segments and two reduced segments.

General appearance

The entire body is covered with numerous erect hairs. The body is rather uniform light brown; only the antennal club and the head are darker.

Discussion

Although the very small sample size of the workers measured here, the unusually shaped worker has a clear different morphology compared to its most resembling species *Leptothorax acervorum*. Most distinct are the height and width of the petiolus and the postpetiolus. Such unusually thick petiolar segments have been known in social parasites such as *Polyergus* sp. and *Anergates* sp. and this may have been the reason why Bondroit assumed that he discovered a new (socially parasitic) species within the genus *Leptothorax*.

However, identical shape of petiolus and postpetiolus were also described from one teratology within the species *L. acervorum* from Germany (BUSCHINGER & STOEWESAND, 1971). The petiolus and postpetiolus of specimen 68 in this publication (figs 36 and 37) have a similar morphology. However the gaster of the unusually shaped worker is less deformed than the latter specimen. Based on this morphological deformation as described by BUSCHINGER & STOEWESAND in 1971, we here define that the “*M. arduennensis*” specimen is not a valid species but an instance of teratology within the species *L. acervorum*.

The gaster of the unusually shaped specimen lacks gastral segments and probably the first (two) segments are reduced. This is visible in picture D of Fig. 1 as two orange bulges just behind the postpetiolus. Comparable modifications of body structure are noticed in several studies of ants. Especially valuable are the comparisons of specimens with different morphology from the same colonies. One such recent study investigated the modifications in morphology by *Myrmica rubra* (Linnaeus, 1758)

workers, parasitized by mermithid nematodes (CZECHOWSKI *et al.*, 2007). A significant difference noticed between infested and non-infested individuals was the broader petiolus and postpetiolus, a feature we also observed in the unusually shaped specimen of Bondroit. However mermithid infestation usually causes a much distended gaster, and a few alterations, e.g. in thorax or petiolus width, or relations of head width/head length (KUTTER, 1958), but not the reduction of whole segments. Considering here mentioned studies we postulate the possibility that the specimen of the Bondroit collection can be a *L. acervorum* worker that suffered from mechanical lesions during embryonic or larval development causing splitting or loss of segments and malformations.

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