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On the genera *Acanthobythus* Normand, 1930 and *Ceratobythus* Normand, 1932 (Coleoptera: Staphylinidae: Pselaphinae)

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On the genera *Acanthobythus* Normand, 1930 and *Ceratobythus* Normand, 1932 (Coleoptera: Staphylinidae: Pselaphinae) - The types species of the monotypic North Algerian Bythinines genera *Acanthobythus* Normand, 1930 and *Ceratobythus* Normand, 1932 are revised, with their aedeagi illustrated for the first time. The lectotype of *Bythoxenus (Acanthobythus) araneipes* Normand, 1930 is designated. These two genera are synonyms with *Tychobythinus* Ganglbauer, 1896 (*Acanthobythus* Normand, 1930 and *Ceratobythus* Normand, 1932 **syn. nov.**), and the type species of the latter is consequently recombined *Tychobythinus monoceros* (Normand, 1932) **comb. nov.**

Keywords: Taxonomy - Bythinini - Algeria - *Ceratobythus* - *Acanthobythus* - *Tychobythinus*.

INTRODUCTION

In the catalogues of Newton & Chandler (1989) and Löbl & Besuchet (2004), the pselaphine tribe Bythinini appears represented in North Africa only by the genera *Bryaxis* Kugelann, 1794, *Ceratobythus* Normand, 1932 and *Tychobythinus* Ganglbauer, 1896, with *Acanthobythus* Normand, 1930 listed as a synonym of *Tychobythinus* Ganglbauer, 1896. The latter synonymy (Newton & Chandler, 1989: 48; Löbl & Besuchet, 2004: 314) has however never been adequately argued.

In this study, we examined the types (and only material available so far) of the types species of the monotypic genera *Acanthobythus* and *Ceratobythus*, i.e. *A. araneipes* (Normand, 1930) and *C. monoceros* (Normand, 1932). These species are redescribed with their aedeagi illustrated for the first time. The lectotype of *A. araneipes* is designated. We reassess their taxonomic placement and consider both, *Acanthobythus* and *Ceratobythus*, as synonyms of *Tychobythinus*.

MATERIAL AND METHODS

The study is based on material loaned half a century ago from H. Normand directly to the first author; it will remain housed in MHNG.

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The body length is measured from the anterior clypeal margin to the posterior margin of the last visible abdominal tergite. The length and width of body parts were measured in dorsal view between points of maximum extension, e.g. the head length is measured between the anterior clypeal margin and the posterior margin of the neck; the head width includes eyes, the elytral length is along the suture, and the elytral width is that of both elytra combined. The abdominal segments are numbered from the first visible segment onwards, i.e. from the 1st tergite (fourth morphological segment) and 1st sternite (third morphological segment). The terminology for the external morphology follows otherwise that proposed by Chandler (2001).

TAXONOMY

Tychobythinus Ganglbauer, 1896

Tychobythinus Ganglbauer, 1896: 170; type species: *Bythinus ottonis* Ganglbauer, 1896 (subsequent designation).

Acanthobythus Normand, 1930: 163; type species: *Bythoxenus araneipes* Normand, 1930 (monotypy).

Ceratobythus Normand, 1932: 15; type species: *Bythoxenus monoceros* Normand, 1932 (monotypy) **syn. nov.**

COMMENTS: Normand in 1930 and 1932, described respectively *Acanthobythus* and *Ceratobythus* as new subgenera of *Bythoxenus* Motschulsky, 1860. Jeannel (1956) raised *Acanthobythus* to genus rank, arguing that it was certainly a distinct lineage from both his *Anopsibythus* Jeannel, 1956 (erected to accommodate five anophthalmous Algerian species and presently a synonym of *Tychobythinus*) and *Ceratobythus*, and « also completely unrelated » to *Bythoxenus*.

In both, the World catalogue of the genera of Pselaphinae (Newton & Chandler, 1989) and Pselaphinae in the Catalogue of Palaearctic Coleoptera (Löbl & Besuchet, 2004), *Ceratobythus* is listed as a valid while *Acanthobythus* is a synonym of *Tychobythinus*. The latter placement has however never been discussed, neither *A. araneipes* explicitly transferred.

Acanthobythus and *Ceratobythus* share with the 89 species-rich Holarctic genus *Tychobythinus* the pronotal and elytral foveal systems, as well as most other external characters, such as the antennal scape much longer than wide, narrowed and flattened at basal third and widest at distal third, the maxillary palpi with segments II and III bearing many prominent tubercles and the apical segment distinctly longer than wide and widest at basal third, and prominent tubercles on the anterior margin of protrochanters and profemora. In fact *Acanthobythus* and *Ceratobythus* differ from each other and from members of *Tychobythinus* only by head features. The conformation of their aedeagi also fits within the variation observed in *Tychobythinus*. Therefore, we consider that there is no justification to maintain them as distinct genera.

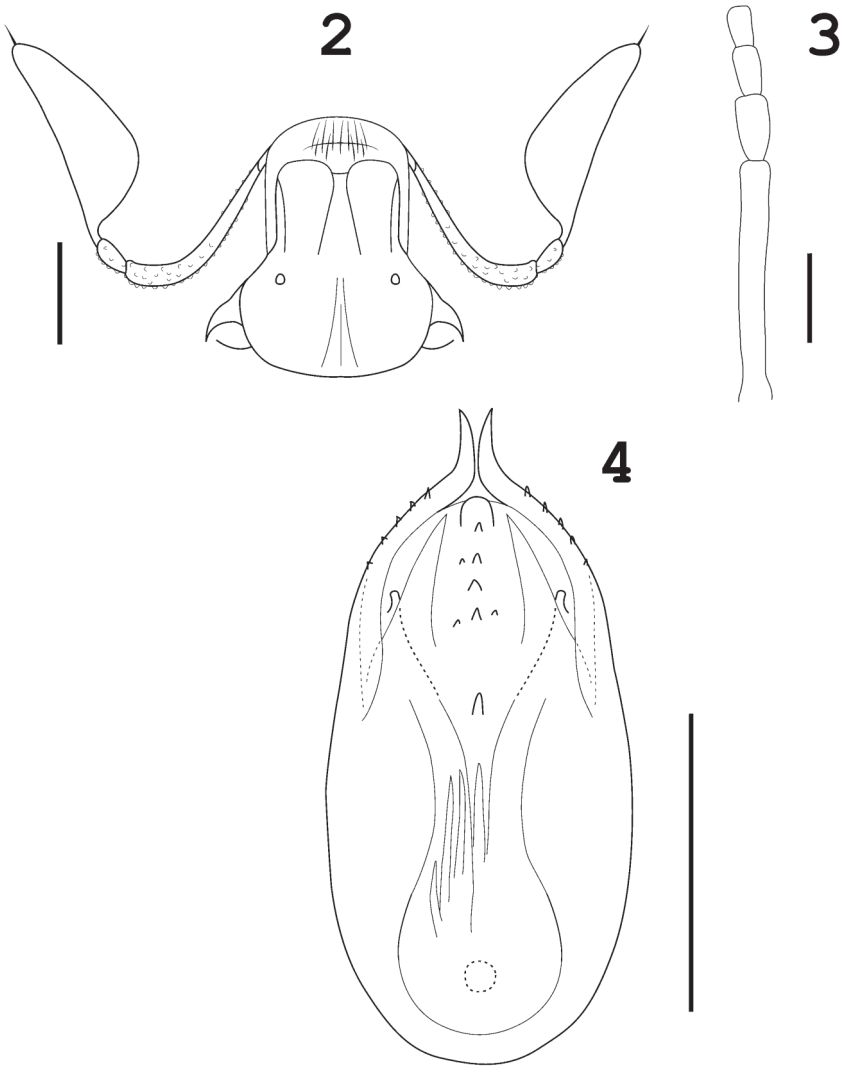
Tychobythinus araneipes (Normand, 1930) Figs 1-4

Bythoxenus (*Acanthobythus*) *araneipes* Normand, 1930: 163, figs 1 (habitus) and 2 (head, lateral view);

Acanthobythus araneipes. – Jeannel, 1956: 65, figs 59 (habitus) and 60 (maxillary palpus).

TYPE MATERIAL: Lectotype (present designation); Northeastern Algeria, Skikda province; male, Philippeville, route de Collo, X.1929 (H. Normand) (MHNG). Paralectotypes, 2 females, same data as lectotype (MHNG).

FIG. 1
Dorsal habitus of *Acanthobythus araneipes*, lectotype. Scale bar 1 mm.



FIGS 2-4
Acanthobythus araneipes, lectotype. (2) Head and maxillary palpi, dorsal view. (3) Base of antenna. (4) Aedeagus, dorsal view. Scale bar 0.1 mm.

REDESCRIPTION: Body (Fig. 1) 1.40-1.45 mm long, uniformly pale brown-reddish; wingless and anophthalmous. Pubescence fairly uniform, slightly longer on anterior portion of elytra and denser on pronotum, consisting of setae distant from each other by approximately their length, slightly arcuate and semi-erect to recumbent, predominantly about as long as apical width of metafemora (0.06 mm).

Head (Fig. 2) with frontal lobe moderately depressed medially. Tempora bearing each a conspicuous, acute spine (length 0.06-0.07 mm) obliquely oriented dorsally and slightly curved posteriorly, sharp clypeal ridge extended posteriorly to tip of each temporal spine. Occipital region slightly convex, with short medial occipital carina. Antennae (Fig. 3) 0.80 mm long with scapus more than 5 times as long (0.27 mm) as wide (0.05 mm), antennomere II oval (length 0.07 mm; width 0.04 mm). Maxillary palpi (Fig. 2) with segment I almost indistinct; II (length 0.22 mm; width 0.02-0.04 mm) distinctly curved on apical half and gradually enlarged until apical third, with posterior surface covered with tubercles distant from each other by slightly more that their diameter; III (0.07 mm/0.04 mm) fairly oval, bearing a few tubercles; IV (0.25 mm/0.09 mm) securiform and finely pubescent, its lateral margin slightly concave.

Pronotum wider (0.33 mm) than long (0.30 mm), almost spherical, narrower anteriorly than posteriorly with maximal width at anterior third; antebasal sulcus well-marked, joining lateral foveae. Disc covered in middle with shallow areolate punctation and laterally with tubercles separated from each other by 3-4 times their diameter.

Elytra wider (0.56 mm) than long (0.50 mm), more convex transversely than longitudinally; pair of deep basal elytral foveae, internal fovea joint to complete sutural stria and external fovea extended by rather wide and deep depression reaching elytral mid-length at most; subhumeral elytral fovea extended dorsally by short vertical carina and ventrally by entire lateral carina.

Metasternum with lateral mesocoxal and lateral metasternal foveae deep and tomentose.

Abdomen rather long (0.52 mm) with first tergite 0.15 mm long; each tergite with a pair of long discal setae.

Legs with trochanters simples; anterior edge of protrochanters with 3-4 small prominent tubercles; metatrochanters much longer than mesotrochanters. Profemora relatively robust (0.38 mm/0.09 mm) bearing on anterior margin row of 14 tubercles, first 4-5 more prominent than others; mesofemora (0.42 mm/0.07 mm) and metafemora (0.51 mm/0.06 mm) more slender. Protibiae (0.39 mm/0.02-0.04 mm) and mesotibiae (0.40 mm/0.02-0.04 mm) straight; metatibiae (0.55 mm/0.02-0.05 mm) somewhat curved subapically. Metatarsi very thin (length I: 0.03 mm; II: 0.19 mm and III: 0.11 mm) with single claw (length 0.02 mm).

Male: Gular region behind labium with deep and broad depression margined posteriorly by conspicuous transversely compressed acute medial process projecting ventrally, latter medially sulcate and bearing two tufts of modified setae grouped at tip; gular region behind that process vertical, laterally with two deep longitudinal sulci bearing each a long semi-erect seta apically arcuate anteriorly. Aedeagus (Fig. 4), 0.22 mm long, with parameres apically acuminate and straight, each bearing with four small denticles on outer margin; internal sac with 7 thin and slender sclerites.

Female: Gular region behind labium shallowly depressed; posterior portion convex, with a medial ridge, and laterally with two shallow longitudinal sulci bearing each couple of long semi-erect setae apically arcuate anteriorly.

COMMENTS: *Tychobythinus araneipes* is the only member of the genus to possess conspicuous temporal spines.

The species is known only by the types, which were collected in October by soil washing at base of oaks and around roots of *Asphodelus* sp. The statement of Jeannel (1956) that the species was known only from female sex was erroneous.

In box 67 of the collection the "Afrique du Nord" in MNHN we found a mounting card bearing remnants of glue and with attached label "*Acantobythus araneipes* Philippeville X.1929 Normand"; these may have belonged to the second male and 4th type mentioned by Normand in the original description (probably examined by Jeannel).

Tychobythinus monoceros (Normand, 1932) **comb. nov.** Figs 5-7

Bythoxenus (*Ceratobythus*) *monoceros* Normand, 1932: 16, figs 2-3 (head dorsal and lateral view).

Ceratobythus monoceros. – Jeannel, 1956: 64, fig. 58 (habitus).

TYPE MATERIAL: Holotype, Northeastern Algeria, Bejaia province; male, Adekar (Soummam), X.1931 (H. Normand) (MHNG).

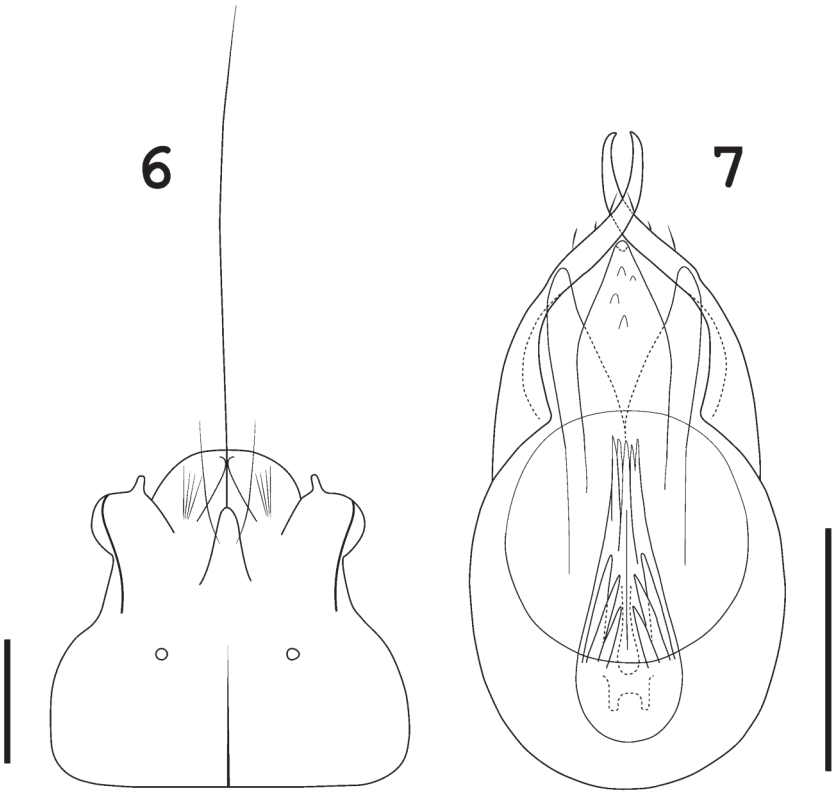
REDESCRIPTION: Body (Fig. 5) 1.50 mm long, uniformly pale brown-reddish; wingless and anophthalmous. Pubescence fairly uniform, slightly longer on anterior portion of elytra and denser on pronotum, consisting of setae distant from each other by slightly less than their length, slightly arcuate and semi-erect to recumbent, predominantly slightly longer than apical width of metafemora (0.06 mm); presence of several much longer setae on head, pronotum and elytra; each tergite with a pair of long discal setae.

Head (Fig. 6) with pair of 0.07 mm long longitudinally compressed antennal lobes extended each ventrally with short spine bearing 3 tufts of short setae; antennal lobes separated by conspicuous mediodorsal conical horn-like process (length 0.10 mm) obliquely projecting anterad and bearing at tip curved seta 0.42 mm long, (broken off the holotype by dissection). Frons deeply depressed, margined with sharp ridge almost to round tempora and bearing short additional medial process with two diverging tufts of aggregated setae. Occipital region slightly convex with long medial occipital carina reaching anterior edge of vertexal foveae. Tempora each with a long seta curved anterad. Antennae 0.80 mm long with scapus 5 times as long (0.25 mm) as wide (0.05 mm) and antennomere II oval (length 0.09 mm; width 0.05 mm wide). Maxillary palpi with segment I almost indistinct; II (length 0.22 mm; width 0.02-0.04 mm) somewhat curved and gradually enlarged from base to apex, with posterior surface covered with tubercles distant from each other by slightly more that their diameter; III (0.05 mm/0.04 mm) fairly oval bearing a few tubercles; IV (0.24 mm/0.07 mm) securiform and finely pubescent. Gular region rather broad, gently convex and bearing two minute tubercles.

Pronotum wider (0.33 mm) than long (0.30 mm), almost spherical, narrower anteriorly than posteriorly, with maximal width slightly anterior middle; antebasal sulcus well-marked, joining lateral foveae. Disc almost smooth in middle and covered laterally with low tubercles separated from each other by 3-4 times their diameter.

Elytra wider (0.54 mm) than long (0.50 mm), more convex transversely than longitudinally; pair of deep basal elytral foveae, internal fovea joint to complete sutural stria, and external fovea extended by rather wide and deep depression reaching at most

FIG. 5
Dorsal habitus of *Ceratobythus monoceros*, holotype, frontal macroseta broken. Scale bar 1 mm.



FIGS 6-7
Ceratobythus monoceros, holotype. (6) Head, dorsal view. (7) Aedeagus, dorsal view. Scale bar 0.1 mm.

elytral mid-length; subhumeral elytral fovea extended dorsally by short vertical carina, ventrally by entire lateral carina.

Metasternum with lateral mesocoxal and lateral metasternal foveae deep and tomentose.

Abdomen rather short (0.45 mm).

Legs with trochanters simples; anterior edge of protrochanters with 3-4 small prominent tubercles; metatrochanters much longer than mesotrochanters. Profemora relatively robust (0.44 mm/0.10 mm), each bearing row of 8 small tubercles on basal third of anterior margin, first 3-4 much more prominent than others, larger than wide; mesofemora (0.45 mm/0.08 mm) and metafemora (0.51 mm/0.06 mm) more slender. Protibiae (0.40 mm/0.05 mm) and mesotibiae (0.40 mm/0.05 mm) straight; metatibiae (0.55 mm/0.05 mm) somewhat curved subapically.

Male: Aedeagus (Fig. 7), 0.27 mm long, with parameres slender in apical portion and inter-crossed subapically, without denticles on outer margin; internal sac with 11 thin and slender sclerites.

Female: Unknown.

FIGS 8-9

(8) Left lateral view of head and pronotum of *Acanthobythus araneipes*, lectotype. (9) *Ceratobythus monoceros*, holotype, frontal macroseta broken. Scale bar 0.5 mm.

COMMENTS: Within *Tychobythinus*, the presence of a conspicuous frontal horn is unique to *T. monoceros*.

Normand (1932) specified that he found only one specimen in a bag of clay soil at the foot of a bank. He observed that while moving, it was touching the soil with the antennae, while his long frontal sensory seta was apparently used to detect obstacles.

According to Jeannel (1956: 64) the holotype was a female.

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