

# Description of *Thienemannia corsicana* sp. n. from the upstream of the Golu River in Corsica [Diptera, Chironomidae, Orthoclaadiinae]

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Key words: Chironomidae, Orthoclaadiinae, *Thienemannia corsicana* sp. n., Golu river, Corsica, conservation.

A description of the male imago and pupal exuviae of *Thienemannia corsicana* sp. n. is given with short comments on its ecology and taxonomic position.

## Description de *Thienemannia corsicana* sp. n. du cours supérieur de la rivière Golu en Corse (Diptera, Chironomidae, Orthoclaadiinae)

Mots-Clés : Chironomidae, Orthoclaadiinae, *Thienemannia corsicana* sp. n., rivière Golu, Corse, conservation.

L'auteur donne une description de l'imago mâle et de l'exuvie nymphale de *Thienemannia corsicana* sp. n., ainsi qu'un commentaire succinct sur la position systématique et l'écologie de cette espèce.

## 1. Introduction

The present paper is based on material of adults, paratype adults and pupal exuviae belonging to five species and taxa in the genus *Thienemannia* Kieffer, 1909. Specimens examined belong to: *T. gracilis* Kieffer, 1909 (from France and Corsica); *T. fulvofasciata* Kieffer, 1921 (from France); *T. libanica* Laville & Moubayed, 1985 (from Lebanon and France); *Thienemannia* sp. A. (from Eastern Pyrenees); *T. corsicana* sp. n. (from Corsica). The new undescribed species is already reported by MOUBAYED-BREIL & ASHE (2012) as *Thienemannia* sp. 1 from Corsica (zone 4, high mountain area). The description of the male adult and the pupal exuviae of *Thienemannia corsicana* sp. n. is given on the basis of material collected in the upstream of the Golu River basin (altitude 1100-1000 m). Terminology and measurements follow SÆTHER (1980, 1985), LANGTON & PINDER (2007) for male imago, SÆTHER (1980) and LANGTON (1991) for pupal exuviae.

## 2. Description of *Thienemannia corsicana* sp. n.

### Study material

Holotype: 1 pharate adult male, upstream of the Golu River at Vergio (altitude 1100-1000 m), Corsica, 30.IV.2012, site number 26 in MOUBAYED-BREIL & ASHE (2012).

Paratypes: 1 male pupal exuviae, 2 larvae, same locality and same date as holotype.

Holotype, presently in the author's collection, will be deposited in the collections of the National Museum of Ireland, Dublin. Paratypes are deposited in the author's collection. Type material was preserved in 70% alcohol, cleared in 90% lactic acid and later mounted on one slide in polyvinyl lactophenol solution.

### Male imago

(n = 1, pharate adult male)

(Figures 1, 5-7)

*Thienemannia* sp. 1 (from Corsica): MOUBAYED-BREIL & ASHE (2012).

Etymology: The new species is named *corsicana* after the island of Corsica.

A small sized species. Total length 2.25 mm. Wing length 1.20-1.25 mm. General colouration contrasting blackish to dark brown, especially in the thorax. Head and antenna dark brown including antennal and wing sheath. Thorax black to dark brown mesonotal strips. Wing with brownish shading. Legs brown blackish; tarsus of PI, PII and PIII blackish apically.

Head. Eyes hairy between ommatidia, hairs present along entire inner eye margin (Fig. 1). Temporal setae 7 including 4 inner verticals and 3 outer verticals, postorbitals absent. Clypeus with 11 setae. Palp 5-segmented; length ( $\mu\text{m}$ ) of segments 35, 46, 53, 68, 117; apex of third palpal segment with 1 lanceolate lateral sensilla clavata. Antenna 410-415  $\mu\text{m}$  long, 12-segmented; shape pattern of segments as in Fig. 5; size from the first to the third segment is progressively increasing; segments 4-6 subequal (43-45  $\mu\text{m}$  long each), segments 7 to 11 are progressively decreasing in size; ultimate flagellomere 65  $\mu\text{m}$  long, moderately clubbed, bearing 1 long apical seta 47  $\mu\text{m}$  long, presence of sensilla chaetica on distal half. AR 0.22.

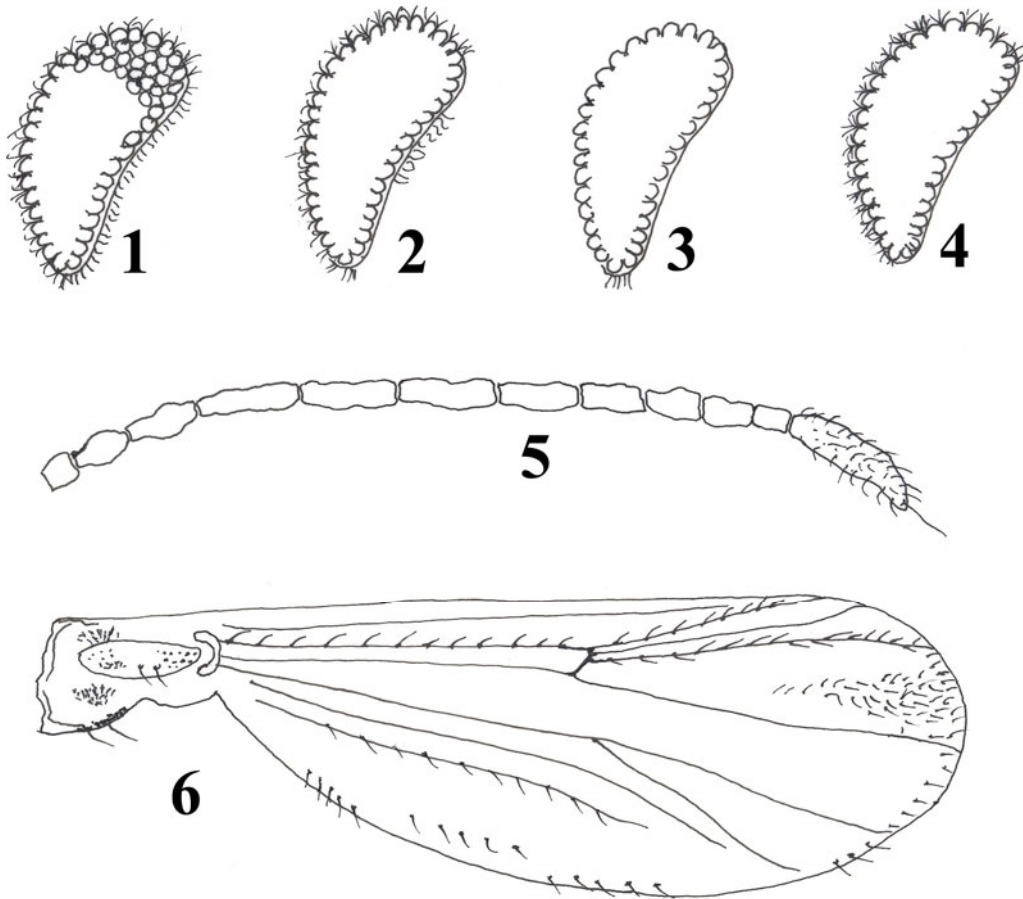
Thorax. Anteprepronotum with 4 lateral setae. Dorsocentrals 21 including 4 in humeral area; acrostichals 16; prealars 7 including 3 anterior and 4 posterior. Scutellum with 6 setae.

Wing (Fig. 6). Brachiolum with 2 setae. Venation and distribution of setae on veins, membrane and cells: R, 12-13; R1, 7-9; R2+3, 23-25; An, 10; r4+5, 45-48; m1+2, 4-5; m3+4, 2-3; cu, 7-10; an, 5-8. Anal lobe weak. Squama with 2 setae. Presence of numerous setae on several cells is considered as a strong distinguishing key of the new species.

Legs. Spur of front tibia 25  $\mu\text{m}$  long, spurs of middle tibia 17 and 12  $\mu\text{m}$  long, spurs of hind tibia 37 and 27  $\mu\text{m}$  long; hind comb with 12 setae. Tarsus ta4 of PI, PII and PIII is bilobed apically. Length ( $\mu\text{m}$ ) and proportions of legs:

	fe	ti	ta1	ta2	ta3	ta4	ta5	LR	BV	SV	BR
PI	435	452	223	136	105	65	63	0.49	3.59	3.98	1.3
PII	425	450	185	115	83	69	58	0.41	3.26	4.73	1.8
PIII	441	508	267	143	108	71	73	0.53	3.08	3.55	2.3

LR = Length of tarsomere ta1 divided by length of tibia (ti); BV = Combined length of femur (fe), tibia and ta1 divided by combined length of tarsomeres ta2-ta5; SV = Ratio of femur plus tibia to tarsomere ta1; BR = Ratio of longest seta of ta1 divided by minimum width of ta1, measured one third from apex.

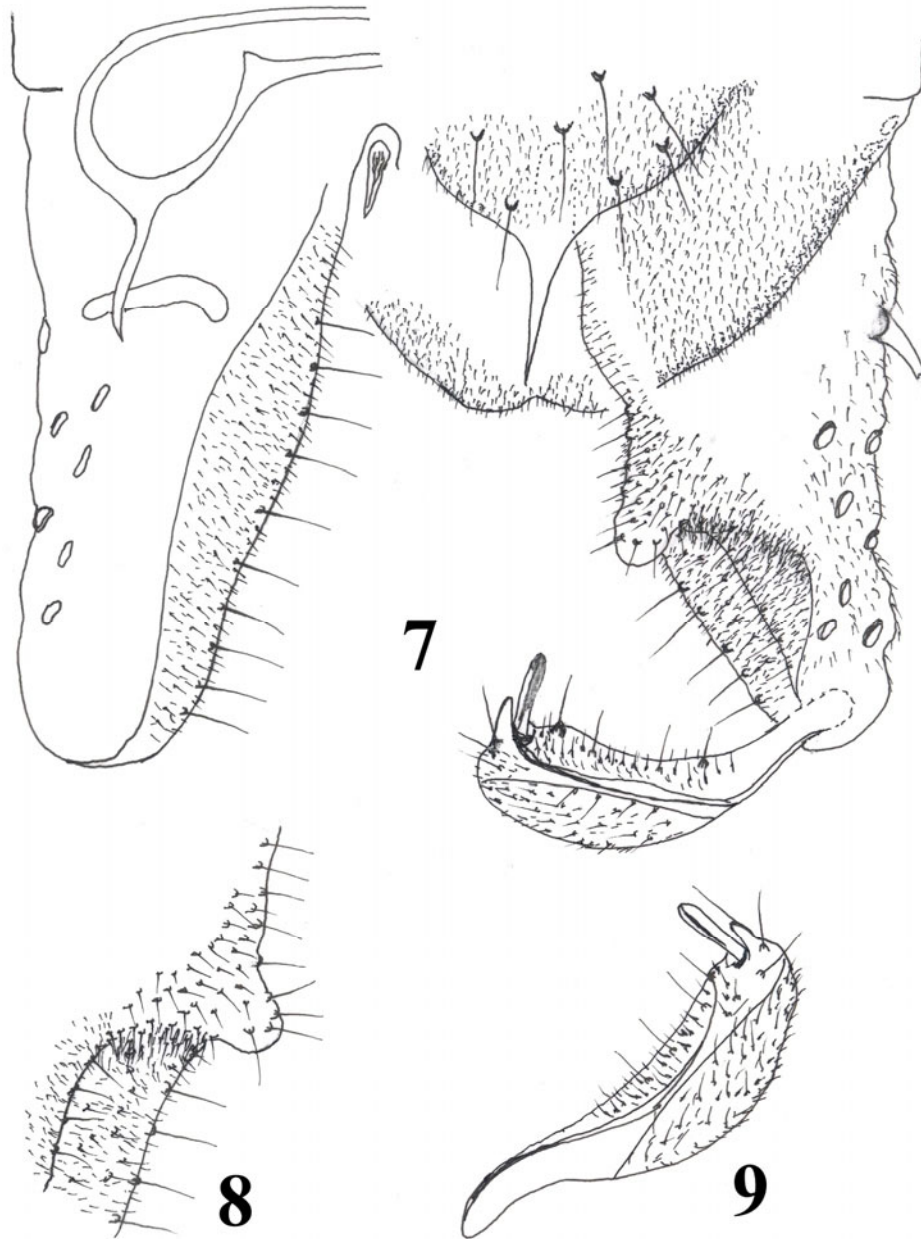


Figures 1-6. *Thienemannia* spp. Hairs on inner margin of eyes: (1), *T. corsicana* sp. n.; (2) *T. sp. A.*, Eastern Pyrenees; (3) *T. fulvofasciata*, continental France; (4) *T. libanica*, Lebanon and France.

Male imago of *T. corsicana* sp. n.: (5) antenna; (6) wing.

Figures 1-6. *Thienemannia* spp. Pubescence de la membrane oculaire, bord interne : (1), *T. corsicana* sp. n. ; (2) *T. sp. A.*, Pyrénées-Orientales ; (3) *T. fulvofasciata*, France continentale ; (4) *T. libanica*, Liban et France. Imago mâle de *T. corsicana* sp. n. : (5) antenne ; (6) aile.

Hypopygium in dorsal and ventral view as in Figs 7-9. Anal point 21  $\mu\text{m}$  long, ninth tergum with 9 setae. Laterosternite IX with 2 setae. Transversal sternapodeme and phallapodeme as in Fig. 7. Virga consisting of undistinct subequal spines of 16  $\mu\text{m}$  long which are fused at base. Gonocoxite 137  $\mu\text{m}$  long; inferior volsella elongated, slightly swollen basally, lobe-shaped distally; dorsal lobe (Fig. 8) with nose-like apex, broad and bearing a small inner setose lobe; ventral margin of gonocoxite slightly swollen medially. Gonostylus (Figs 7 and 9) 63  $\mu\text{m}$  long with pointed apex, bearing 4-5 stout orally directed setae; crista dorsalis absent; megaseta 11-13  $\mu\text{m}$  long.



Figures 7-9. Male imago of *Thienemannia corsicana* sp. n.: (7) hypopygium, ventral (left) and dorsal (right); (8) inferior volsella, left; (9) gonostylus, left.

Figures 7-9. Imago mâle de *Thienemannia corsicana* sp. n. : (7) hypopyge, vue ventrale (à gauche) et vue dorsale (à droite) ; (8) volsella inférieure, gauche ; (9) gonostyle, gauche.

**Male pupa**

(n = 2)

(Figures 10-12)

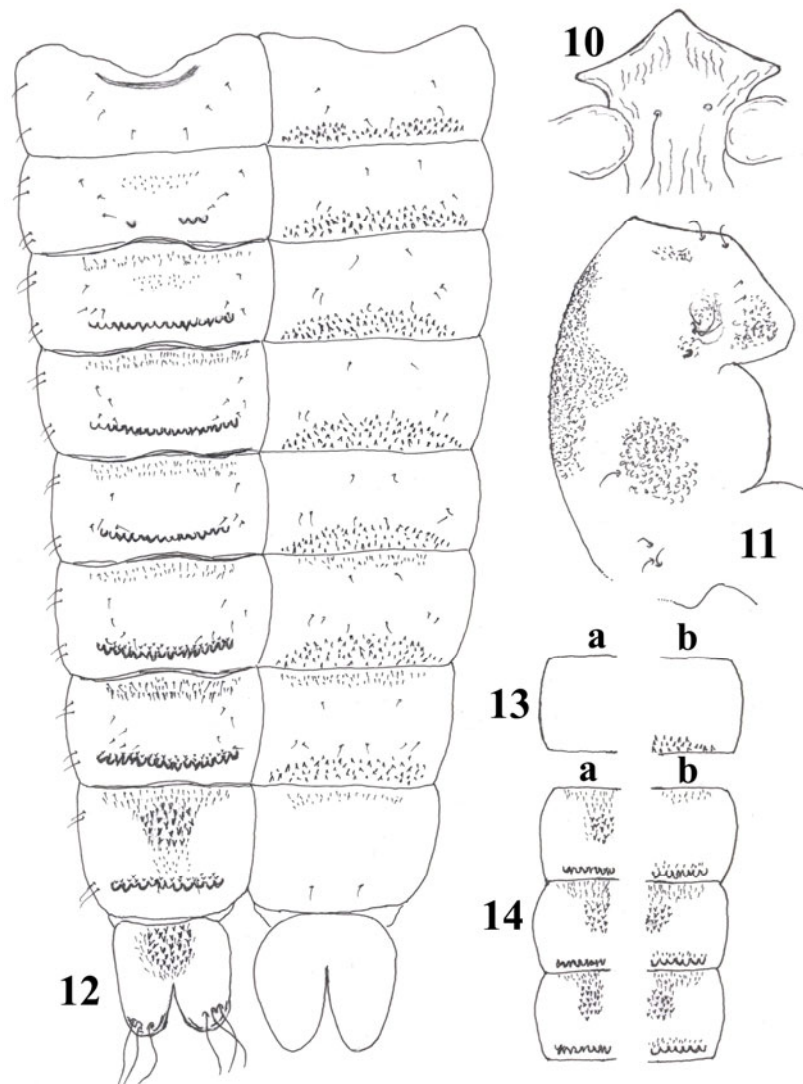
Colouration yellow brown to brown blackish in general; thorax brown yellowish with markedly dark granulations near thoracic suture and dorsocentral area; abdomen brown with blackish apophyses; anterior area of tergites III-VIII brown; anal segment brown. Total length 2.40-2.45 mm.

Cephalothorax (Figs 10-11). Frontal apotome (Fig. 10) darkened and rugose, frontal setae 37  $\mu$ m long. Postorbitals and vertical minute and weak. Thoracic horn absent. Precorneal setae 35, 21 and 19  $\mu$ m long. Dorsocentrals inserted as in Fig. 11; Dc2-Dc4 inserted close together; distance between Dc1 and Dc2 72  $\mu$ m, between Dc2 and Dc3 7  $\mu$ m, between Dc3 and Dc4 3  $\mu$ m. Thorax covered with broad dark granulations on thoracic suture, anterior half, median and dorsocentral area.

Abdomen. Armament and distribution pattern of shagreen, patch of spines and spinules, chaetotaxy and lateral setation of segments as in Fig. 12. Tergite I bare. Posterior transverse tooth row present on tergites II-VIII; tooth row on tergite II consists of few teeth interrupted medially (holotype: 1, left side; 3, right side). Transversal anterior shagreen present on tergites III-VIII consisting of spinules (III-VI) which are relatively increasing to small spines on tergites VI and VII; tergites II-III bearing a patch of fine shagreen medially. Anterior median circular patch of strong spinules to small spines present only on tergites VIII and IX. Sternites I-V bare; sternites VI-VIII bearing rows of fine shagreen. Conjunctions of tergites and sternites I-VII with rows of anteriorly directed fine to relatively long spinules; rows nearly interrupted on tergal conjunctions VII/VIII. Pedes spurii A and B absent. Lateral abdominal setae weak and hair-like, consisting of strongly reduced minute setae: tergite I (2), tergites II-VIII (4). Apophyses dark and relatively straight. Anal lobe 170  $\mu$ m long, macrosetae 85-90  $\mu$ m long, curved distally. Genital sac 188  $\mu$ m long, rounded apically and well surpassing apex of anal lobe.

**3. Taxonomic remarks**

Diagnoses characters, taxonomic position and useful keys for identification of known Palearctic species of *Thienemannia* Kieffer, 1909 from Europe and Near East have been provided for male imagines and pupal exuviae (THIENEMANN 1944; SÆTHER 1985; LANGTON 1980, 1991; COFFMAN ET AL. 1986; CRANSTON et al. 1989; LANGTON & PINDER 2007). Treated species are: *T. gracilis* Kieffer, *T. fulvofasciata* Kieffer, *T. libanica* Laville & Moubayed and *Thienemannia* sp. A (Eastern Pyrenees). In this paper, the main differentiating features to separate the male adult and pupal exuviae of *T. corsicana* sp. n. from other related species are given in the following combination of characters. In the male adult: eyes hairy, presence of microtrichia on the apical and entire lateral inner margin of the eyes (Fig. 1), distribution pattern is differently figured in *Thienemannia* sp. A (Fig. 2), *T. fulvofasciata* (Fig. 3), *T. libanica* (Fig. 4); low value of AR (0.22), size of segments and shape pattern of antenna; distribution of setae on membrane and veins of wing (r4+5, 45-48; m1+2, 4-5; m3+4, 2-3; cu, 7-10; an, 5-8); shape pattern of anal tergum, inferior volsella and gonostylus.



Figures 10-14. *Thienemannia* spp. Male pupal exuviae of *Thienemannia corsicana* sp. n.: (10) frontal apotome; (11) cephalothorax including granulations on thoracic suture, median and dorsocentral areas; (12) abdominal segments I-IX with armament of tergites (left) and sternites (right); (13) conjunctive of intersegment I/II (*T. gracilis* and *T. fulvofasciata*, 13a; *T. libanica* and *T. sp. 3*, 13b); (14) armament of tergites VI-VIII (*T. gracilis* and *T. fulvofasciata*, 14a; *T. libanica* and *T. sp. 3*, 14b).

Figures 10-14. *Thienemannia* spp. Exuvie nymphale mâle de *Thienemannia corsicana* sp. n. : (10) pièce frontale ; (11) cephalothorax, granulations du thorax au niveau de la suture et des aires médiane et dorso-centrale ; (12) segments abdominaux I-IX, ornementation et chétotaxie des tergites (à gauche) et des sternites (à droite) ; (13) membrane de l'intersegment I/II (*T. gracilis* et *T. fulvofasciata*, 13a ; *T. libanica* et *T. sp. 3*, 13b) ; (14) ornementation des tergites VI-VIII (*T. gracilis* et *T. fulvofasciata*, 14a ; *T. libanica* et *T. sp. 3*, 14b).

In the pupal exuviae: general colouration brownish to dark brown; frontal apotome rugose (Fig. 10); thoracic horn absent; thorax covered with dense granulations on thoracic suture, median and dorsocentral area (Fig. 11); tergite II with posterior row of tooth consisting of few teeth interrupted medially (Fig. 12); presence of orally directed rows of spines on conjuncture of intersegment I/II as in *T. libanica* and *T. sp. A* (Fig. 13 b), this character is lacking in both *T. gracilis* and *T. fulvofasciata* (Fig. 13a); rows of oromedian patch of spines present only on tergite VIII in *T. corsicana* sp. n. (Fig. 12), represented otherwise in *T. gracilis* and *fulvofasciata* (Fig. 14 a) and both *T. libanica* and *T. sp. 3* (Fig. 14 b).

#### 4. Ecology and distribution

*Thienemannia corsicana* sp. n. is apparently a very rare species which is exclusively confined to high mountain stream located in central Corsica. It is currently restricted to the upstream of the Golu River basin (altitude 1100-1000 m) where the type material has been collected. Larvae of this new species are typically rheophilic, occurring exclusively in running water habitats located in high altitude. The type locality where larvae and the male adult pharate were collected, consists of shady stretches of stream with small to large waterfalls and sandy to gravelly substratum where bryoculous, hygropetric and madicolous habitats exist. Aquatic insects encountered in the same locality include cold stenothermic species belonging mainly to the following genera: *Baetis*, *Ecdyonurus*, *Electrogena*, *Rhithrogena* (Ephemeroptera); *Leuctra*, *Capnioneura*, *Isoperla* (Plecoptera); *Rhyacophila*, *Silo*, *Silonella*, *Allogamus* (Trichoptera); *Liponeura*, *Prosimulium*, *Simulium*, *Thaumalea*, *Diamesa*, *Syndiamesa*, *Pseudodiamesa*, *Wiedemannia*, etc. (Diptera).

Chironomid species found in the same stream are partly listed in LAVILLE & LANGTON (2002) and MOUBAYED-BREIL & ASHE (2012): *Boreoheptagyia cinctipes* (Edwards, 1928), *Diamesa latitarsis* (Goetghebuer, 1921), *D. insignipes* Kieffer, 1908, *D. cinerella* Meigen, 1835, *Pseudodiamesa branickii* (Nowicki, 1873), *Bryophaenocladus aestivus* (Brundin, 1947), *B. nidorum* (Edwards, 1929), *Chaetocladus perennis* (Meigen, 1830), *Eukiefferiella fittkaui* Lehmann, 1972, *E. minor* (Edwards, 1929), *Krenosmittia boreoalpina* (Goetghebuer, 1944), *Parametrioctenemus boreoalpinus* Gowin & Thienemann, 1942, *Pseudorthocladus berthelemyi* Moubayed, 1989, etc.

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