

# ***Thienemannia valespira* sp. n., a mountain crenophilous element from the Eastern Pyrenees and the Alps [Diptera, Chironomidae]**

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Keywords: Diptera, Chironomidae, *Thienemannia valespira* sp. n., high mountain springs, Eastern Pyrenees, Alps, conservation.

A description of the adults and pupal exuviae of *Thienemannia valespira* sp. n. is provided based on associated material of pharates and pupal exuviae collected in high mountain springs and streams located in the Eastern Pyrenees and the Alps. This description increases the total number of worldwide species in the genus to ten. Comments on its taxonomic position, ecology and geographical distribution are provided. A short description of the female adult of *T. gracilis*, *T. fulvofasciata* and *T. libanica* is also given based on associated material.

***Thienemannia valespira* sp. n., un élément crénophile de haute montagne connu des Pyrénées-Orientales et des Alpes (Diptera, Chironomidae)**

Mots-Clés : Diptera, Chironomidae, *Thienemannia valespira* sp. n., sources de haute montagne, Pyrénées-Orientales, Alpes, conservation.

Les adultes mâle et femelle et l'exuvie nymphale de *Thienemannia valespira* sp. n., sont décrits à partir d'un matériel composé de pharates et d'exuvies nymphales collectés dans des sources et ruisseaux de haute montagne situés dans les Pyrénées-Orientales et les Hautes Alpes. La présente description porte le nombre total d'espèces mondialement connues appartenant au genre *Thienemannia* à dix. Un commentaire sur la position systématique, l'écologie et la distribution géographique de l'espèce nouvelle est fourni. Une description succincte de la femelle adulte de *T. gracilis*, *T. fulvofasciata* et *T. libanica* est également fournie à partir de matériel composé de pharates.

## **1. Introduction**

Worldwide there are currently 9 valid species of *Thienemannia* Kieffer, 1909 (including *T. corsicana* Moubayed-Breil, 2013), which are known from Europe, the Nearctic, the Near East and the Oriental Region (ASHE & O'CONNOR 2012). The present paper is based on associated material (adults, pharate adults and pupal exuviae) belonging to six species of *Thienemannia* as well as one unassociated species (adult male only). Specimens examined belong to: *T. gracilis* Kieffer, 1909 (Continental France, Corsica, Portugal, Germany); *T. fulvofasciata* Kieffer, 1921 (Continental France, Germany); *T. libanica* Laville & Moubayed, 1985 (Lebanon, terra typica);

*T. corsicana* Moubayed-Breil, 2013 (Corsica); *T. sp. 1* (recorded as *T. libanica* from Bavaria in Germany, collection ZSM); *T. valespira* sp. n. (Continental France: Eastern Pyrenees, High Alps and Maritime Alps). Only *T. gracei* (Edwards, 1929) has been examined as male adult (Germany, collection ZSM). The description here of *T. valespira* sp. n. increases the total number of described worldwide *Thienemannia* species to ten. Male imaginal and pupal characters of *Thienemannia* sp. 1 are quite similar to those of *T. libanica* (in the male: shape of inferior volsella and gonostylus; in the pupal exuviae: armament of tergites VII-VIII) which consequently has been wrongly recorded from high mountain streams located in the Alps and Maritime Alps (MOUBAYED et al. 2000, zone 3; MOUBAYED-BREIL 2008, zones 5b and 10). Further records of *T. libanica* as pupal exuviae from the high Alps (zone E4) by SERRA-TOSIO & LAVILLE (1991) probably also refer to *T. valespira* sp. n. Other citations of *T. libanica* from some areas located in northern, central and southern Europe (Fauna Europaea, SÆTHER & SPIES 2013; SCHACHT 2010; ASHE & O'CONNOR 2012) need to be reviewed and may belong to *T. sp. 1* rather than to *T. valespira* sp. n. The new species, *T. valespira*, previously reported as *Thienemannia* sp. A in MOUBAYED-BREIL (2013), is described here as male and female adults and pupal exuviae based on associated pharate material collected in high mountain streams (altitude 1700-2000 m) located in Continental France (Eastern Pyrenees, Alps and Maritime Alps). A short description of the female adult of *T. gracilis*, *T. fulvofasciata* and *T. libanica* is also provided on the basis of associated pharate adults. Terminology and measurements follow those of SÆTHER (1980, 1985) and LANGTON & PINDER (2007) for male imago, and those of SÆTHER (1980) and LANGTON (1991) for pupal exuviae.

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

### Study material

Holotype: 1 male pharate, Tech River basin, Font Nègre and Ortiga helocrenes and upstream area, Costabone chain of mountain (altitude 1700-2000 m), Eastern Pyrenees, France, 07.VI.2000, J. Moubayed-Breil, sub-region number 8a in MOUBAYED-BREIL (2008).

Paratypes: 1 male pharate, 1 female pharate, same locality and same date as holotype; 1 female pupal exuviae, Buech helocrenes and upstream area (High Alps), 06.VI.1981, J.M-B; 1 female pupal exuviae, Roya helocrenes and upstream area (Maritime Alps), 11.V.2004, J.M-B.

Holotype (on 2 slides), deposited in the collection of the Zoologische Staatssammlung (ZSM, Munich, Germany). Paratypes are deposited in the author's collection. Type material was preserved in 70% alcohol, cleared in 90% lactic acid and later mounted on slides in polyvinyl lactophenol.

Etymology: the new species is named *valespira* after the East Pyrenean mountain area of Valespire, which includes the Natural Reserve of Prats-de-Mollo where the holotype was collected.

### Male imago

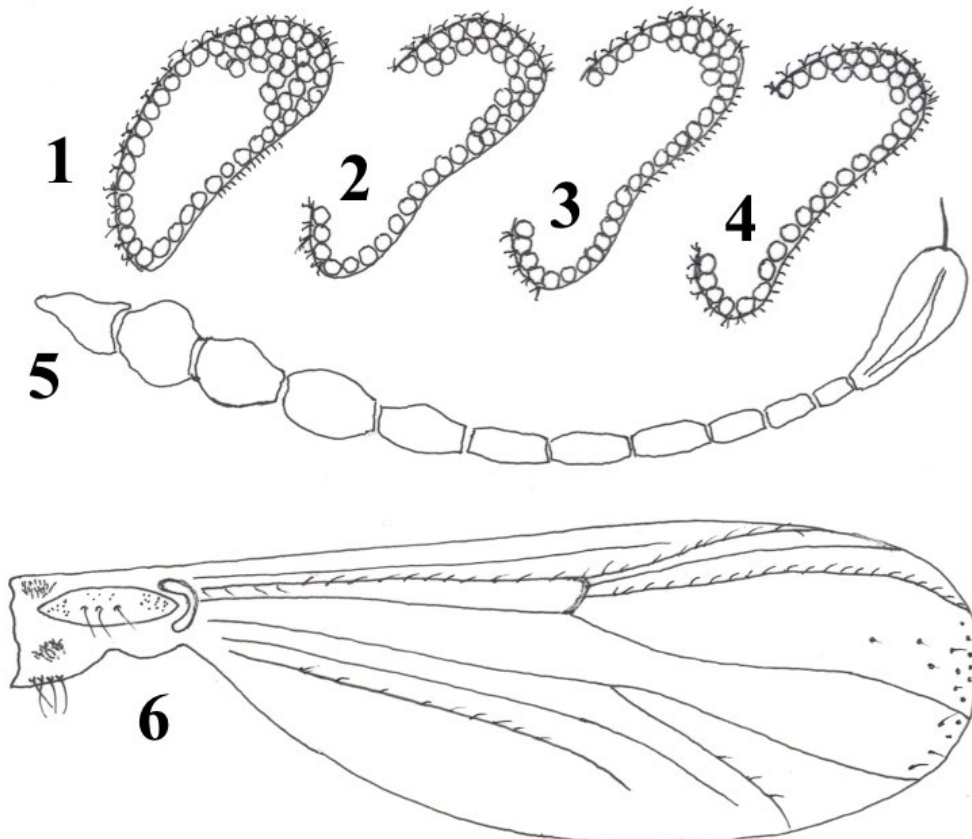
(n = 2, male pharate adults; figures 1, 5-9, 14)

-*Thienemannia* sp. A (from Eastern Pyrenees) in MOUBAYED-BREIL (2013).

Medium sized (large compared to other *Thienemannia* species). Total length 2.45-2.55 mm. Wing length 1.49-1.55 mm. General coloration contrasting blackish to brown, especially in the thorax. Head and antenna dark brown including antennal and wing sheaths, halteres brown.

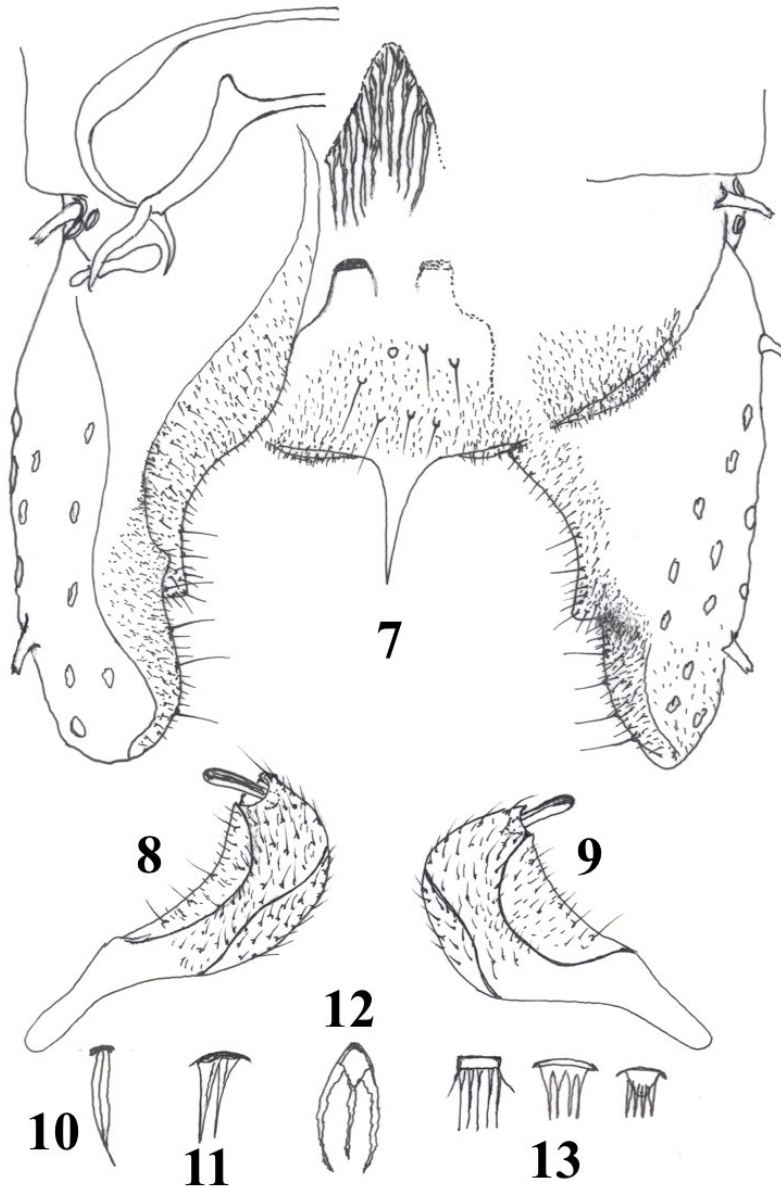
Thorax black to dark brown with black mesonotal strips. Legs dark brown to brown, femur and tibia of PI, PII and PIII dark brown, tarsomeres brownish. Wing with dark faint shadings.

Head. Eyes hairy between ommatidia, hairs present on median part of inner eye margin (Fig. 1). Temporal setae 6 including 3 inner and 3 outer verticals, postorbitals absent. Clypeus with 10-12 setae. Palp 5-segmented; length ( $\mu\text{m}$ ) of segments 38, 58, 65, 73, 96; lanceolate lateral sensilla clavata absent on third segment; last segment bearing 1-2 apical setae. Antenna (Fig. 5) 440-485  $\mu\text{m}$  long, 12-segmented; segments 2-4 globulous; segments 5 to 8 subequal (33-37  $\mu\text{m}$  long each), segments 9 to 11 are progressively decreasing in size; ultimate flagellomere 71-75  $\mu\text{m}$  long, moderately clubbed, bearing a distinct apical seta, presence of sensilla chaetica on distal half. AR 0.17-0.20.



Figures 1-6. *Thienemannia* spp. Hairs on inner margin of eyes: (1) *T. valespira* sp. n., (2) *T. libanica*, (3) *T. gracilis*, (4) *T. corsicana*. Male imago of *T. valespira* sp. n.: (5) antenna, (6) wing.

Figures 1-6. *Thienemannia* spp. Pubescence du bord interne des yeux : (1) *T. valespira* sp. n., (2) *T. libanica*, (3) *T. gracilis*, (4) *T. corsicana*. Imago mâle de *T. valespira* sp. n. : (5) antenne ; (6) aile.



Figures 7-13. *Thienemannia* spp. Male imago of *T. valespira* sp. n.: (7) hypopygium, ventral (left) and dorsal (right); (8) gonostylus, left; (9) gonostylus, right. Virga: (10) *T. fulvofasciata*, (11) *T. libanica*, (12) *T. gracei*, (13, 3 aspects) *T. gracilis*.

Figures 7-13. *Thienemannia* spp. Imago mâle de *T. valespira* sp. n. : (7) hypopyge, vues ventrale (à gauche) et dorsale (à droite) ; (8) gonostyle, gauche ; (9) gonostyle, droit. Virga : (10) *T. fulvofasciata*, (11) *T. libanica*, (12) *T. gracei*, (13, 3 aspects) *T. gracilis*.

Thorax. Anteprenotum with 4 lateral setae, median setae absent; acrostichals 18-22 uni-biserial, relatively long, including 8-10 placed in front near the anteprenotum, 4 medially and 7-8 distally; dorsocentrals 20-21; prealars 8 including 4 anterior and 4 posterior. Scutellum with 6-7 setae in a single row. Preepisternum bare. Wing (Fig. 6). Brachiolum with 3 setae. Venation and distribution of setae on veins, membrane and cells: R, 15-17; R<sub>1</sub>, 8-10; R<sub>2+3</sub>, 19-21; Cu<sub>1</sub>, 2-3; An, 6-10; r<sub>4+5</sub>, 21-30; m<sub>1+2</sub>, 5; m<sub>3+4</sub>, 0; cu, 0-1; an, 9. Anal lobe weak. Squama with 3 setae.

Legs. Spur of front tibia 26-27  $\mu\text{m}$  long, spurs of middle tibia 19 and 15  $\mu\text{m}$  long, spurs of hind tibia 43 and 32  $\mu\text{m}$  long; hind comb with 13 setae, longest setae 41  $\mu\text{m}$  long, shortest setae 28  $\mu\text{m}$  long; only tarsus ta4 of PIII is distinctly bilobed. Length ( $\mu\text{m}$ ) and proportions of legs:

	fe	ti	ta1	ta2	ta3	ta4	ta5	LR	BV	SV	BR
PI	405	488	232	153	112	62	65	0.48	2.87	3.85	1.3
PII	455	452	195	121	95	61	65	0.43	3.22	4.65	1.8
PIII	465	510	275	152	133	64	68	0.54	3.00	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.”

Hypopygium in dorsal and ventral view as in figures 7-9 (holotype), 14 (paratype). Anal point 25-27  $\mu\text{m}$  long; tergite IX 90-96  $\mu\text{m}$  wide, broad with straight margin, bearing 7 setae. Laterosternite IX with 3 setae. Transversal sternapodeme and phallapodeme as in figure 7 and 14. Virga consists of 9-11 characteristic subequal long spines (27-32  $\mu\text{m}$  long), which are sinuous and indistinctly fused at base. Gonocoxite 175-185  $\mu\text{m}$  long bearing a triangle-like inferior volsella which consists of two nearly subequal lobes (Fig. 7, holotype; Fig. 14, paratype); outer margin of dorsal lobe distinctly swollen basally; ventral lobe less prominent, distal margin of ventral lobe distinctly swollen. Gonostylus (Figs 8-9 and 14) 73-78  $\mu\text{m}$  long, basal margin swollen distally, bearing 4-5 stout orally directed setae; crista dorsalis absent; megaseta 10-12  $\mu\text{m}$  long.

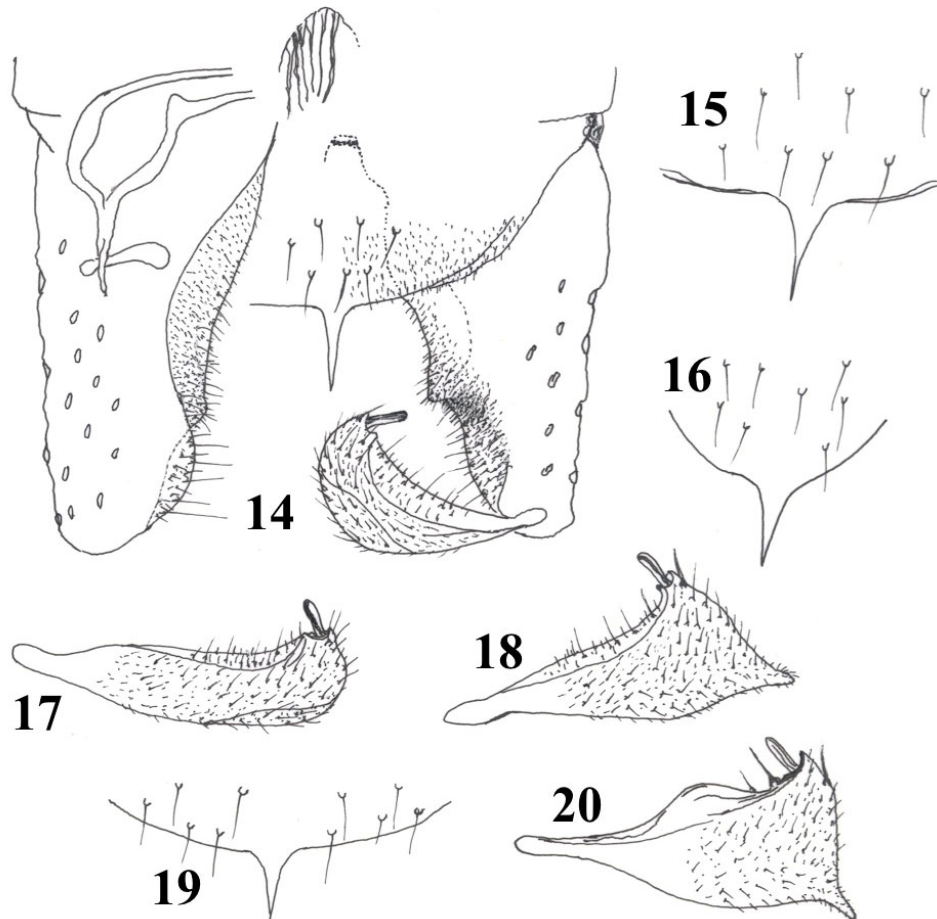
#### Female imago

(n = 1, female paratype adult; figures 21-23)

Colouration as in the male adult except for the legs, which are yellowish to medium brown including femur, tibia and tarsomeres. Total length 2.60 mm. Wing length 1.55 mm. Antenna length 0.17 mm.

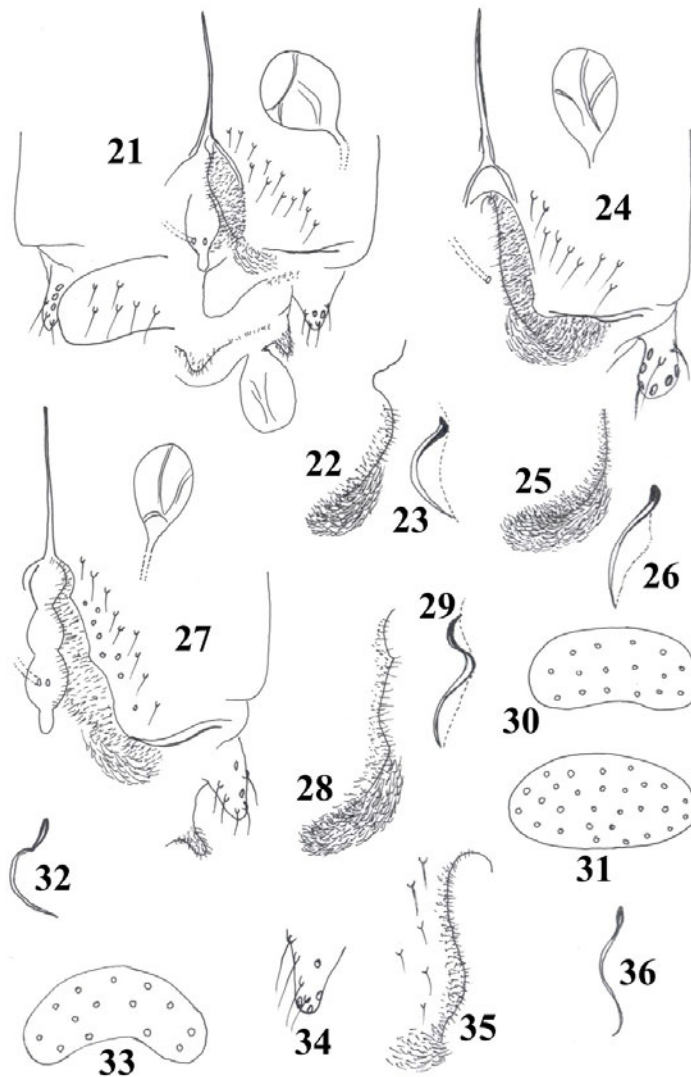
Head. Eyes hairy, hairs present on median part of inner eye margin; temporal setae 7 including 1 inner and 6 outer verticals, postorbitals absent. Clypeus with 13 setae. Palp 5-segmented; length ( $\mu\text{m}$ ) of segments 21, 23, 45, 62, 75; last segment lacking apical setae. Antenna 5-segmented; length ( $\mu\text{m}$ ) of segments: 42, 25, 25, 27, 51; ultimate flagellomere moderately clubbed, bearing 1 apical seta 20  $\mu\text{m}$  long and 6-7 sensilla chaetica; AR 0.43. Thorax. Anteprenotum with 4 lateral setae, median setae absent; acrostichals 24 uni-biserial, relatively long, starting close to anteprenotum; dorsocentrals 18-19; prealars 6. Scutellum with 6 setae in one row. Preepisternum bare. Wing. Brachiolum with 3 setae. Distribution of setae on veins, mem-

brane and cells is similar to that in the male (R, 16; R<sub>1</sub>, 8; R<sub>2+3</sub>, 22; Cu<sub>1</sub>, 1; An, 7); squama with 4 setae. Genitalia in dorsal and ventral view as in figure 21. Notum 86 µm long, rami distinct. Gonapophysis VIII including ventrolateral and dorsomesal lobes as in figure 22; dorsomesal lobe distinctly swollen proximally; apodeme lobe (Fig. 23) semi-circular. Seminal capsules 87 µm long, 57 µm wide, pear-shaped, anterior more darkly sclerotized. Spermathecal ducts with loops and separate openings. Sternite VIII with 24 setae. Gonocoxite triangular, with 5-6 setae. Tergite IX undivided, nearly rectangular with concave apical margin and bearing 12 setae. Cercus 43 µm long.



Figures 14-20. *Thienemannia* spp. Male imago of *T. valespira* sp. n., paratype: (14) hypopygium, ventral (left) and dorsal (right). Anal point and tergite IX of: (15) *T. gracilis*, (16) *T. libanica*, (19) *T. sp. 1*. Gonostylus of: (17) *T. gracilis*, (18) *T. libanica*, (20) *T. sp. 1*.

Figures 14-20. *Thienemannia* spp. Imago mâle de *T. valespira* sp. n., paratype : (14) hypopyge, vue ventrale (à gauche) et vue dorsale (à droite). Pointe anale et tergite IX de : (15) *T. gracilis*, (16) *T. libanica*, (19) *T. sp. 1*. Gonostyle de : (17) *T. gracilis*, (18) *T. libanica*, (20) *T. sp. 1*.



Figures 21-36. *Thienemannia* spp. Female imago of *T. valespira* sp. n.: (21) hypopygium, dorsal (left) and ventral (right); (22) gonapophysis VIII, dorsomesal and ventrolateral lobes; (23) apodeme lobe. Hypopygium (ventral), gonapophysis VIII and apodeme lobe of: (24-26) *T. gracilis*; (27-29) *T. fulvofasciata*. Tergite IX in dorsal view of: (30) *T. gracilis*; (31) *T. fulvofasciata*, (33) *T. libanica*. Apodeme lobe of *T. sp. 1* (32). Female imago of *T. libanica*: (34) gonocoxite, (35) dorsomesal and ventrolateral lobes, (36) apodeme lobe.

Figures 21-36. *Thienemannia* spp. Imago femelle de *T. valespira* sp. n. : (21) hypopyge en vues dorsale (à gauche) et ventrale (à droite) ; (22) gonapophyse VIII, lobes dorsomésal et ventrolatéral ; (23) lobe de l'apodème. Hypopyge (vue ventrale), gonapophyse VIII et lobe de l'apodème de : (24-26) *T. gracilis* ; (27-29) *T. fulvofasciata*. Tergite IX en vue dorsale de : (30) *T. gracilis*, (31) *T. fulvofasciata*, (33) *T. libanica*.

Imago femelle de *T. libanica* : (34) gonocoxite, (35) dorsomesal et ventrolateral lobes, (36) lobe de l'apodème.

### Male pupa

(n = 2; figures 37-39)

- *Thienemannia libanica* Laville & Moubayed, 1985: 2 pupal exuviae from High Alps (Buech upstream) and Maritimes Alps (Roya upstream) in MOUBAYED-BREIL (2008).

- *Thienemannia* sp. A: in MOUBAYED-BREIL (2013).

Colouration yellow brownish to brown in general; thorax brown to dark brown with faint dark granulations near thoracic suture nearly reaching the median area; antennal and wing sheaths with faint brownish shading; abdomen including anal segment brown yellowish with blackish apophyses; anterior area of tergites III-VIII brownish. Total length 2.60-2.65 mm. Frontal apotome (Fig. 37) darkened and slightly rugulose, frontal setae 60-65  $\mu\text{m}$  long. Cephalothorax (Fig. 38). Postorbitals and vertical relatively weak; anteprenotals 63 and 75  $\mu\text{m}$  long. Thoracic horn absent. Precorneal setae 28, 35 and 41  $\mu\text{m}$  long. Thorax (Fig. 38) covered with broad darkened granulations on thoracic suture and median area, dorsocentral area lacking granulation. Dorsocentrals placed as in figure 38; distance between  $\text{Dc}_1$  and  $\text{Dc}_2$  67  $\mu\text{m}$ ;  $\text{Dc}_2$ ,  $\text{Dc}_3$  and  $\text{Dc}_4$  equidistant, each separated by about 12  $\mu\text{m}$ .

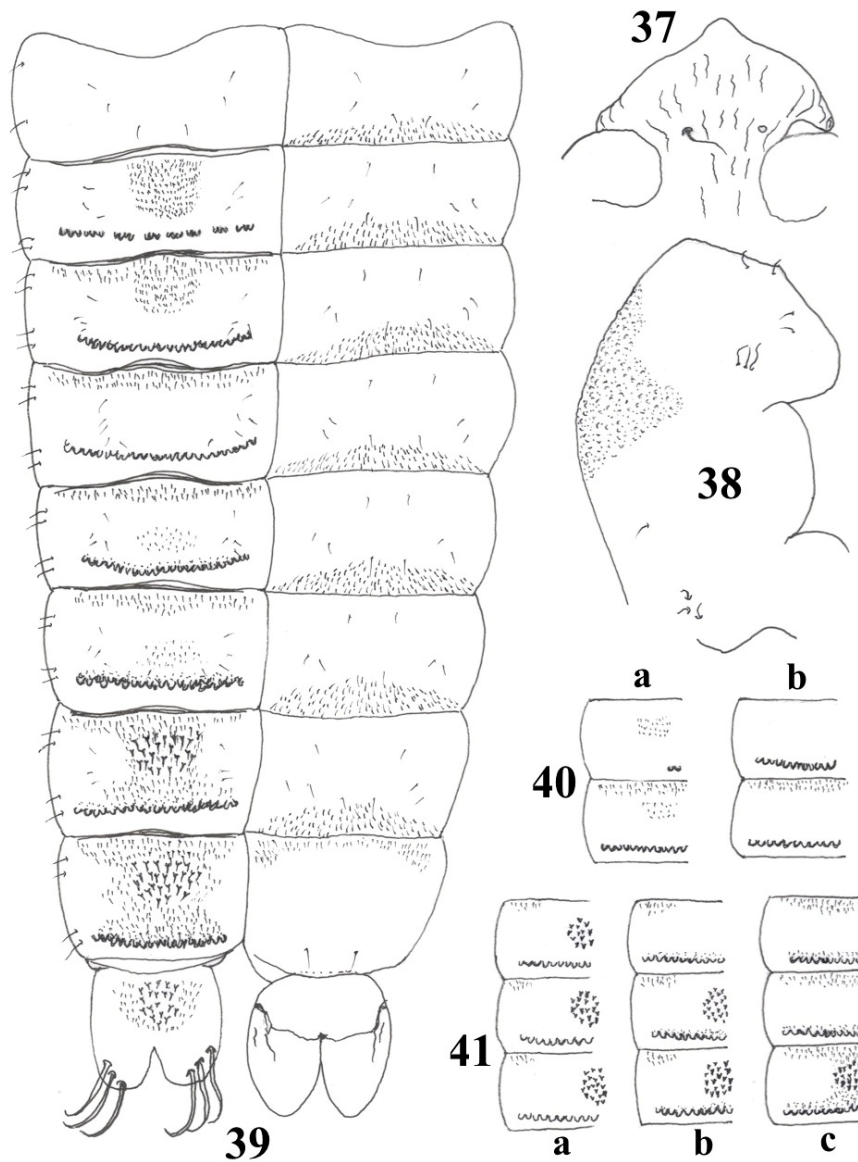
Abdomen. Armament and distribution pattern of shagreen, patches of spines and spinules, chaetotaxy and lateral setation of abdominal segments as illustrated in figure 39 (tergites and sternites). Tergite I bare. Posterior transverse tooth row present on tergites II-VIII; tooth row on tergite II consists of 25-35 teeth regularly interrupted at least 3 times; in general, teeth are mostly smooth at apex. Tergites II-III bearing a very characteristic anteromedian patch of shagreen which consisting of circular rows of spinulae. Transverse anterior shagreen present on tergites III-VIII consisting of spinules (III-VI), which increase to small spines on tergites VII and VIII. Anterior median circular patch of strong spinules to small spines present only on tergites VII and VIII. Sternites I-VI bare; sternites VII-VIII bearing a faint anterior row of fine shagreen. Conjunctions of intersegments I-VII with rows of anteriorly directed long pointed spinules. Pedes spurii A and B absent. Lateral abdominal setae weak and hair-like, consisting of reduced minute setae: tergite I (2), tergites II-VIII (4). Apophyses brown to blackish and relatively straight. Anal lobe 170-175  $\mu\text{m}$  long, apical margin nearly straight; macrosetae 85-90  $\mu\text{m}$  long, stout and curved apically. Genital sac rounded apically and well extended beyond apical margin of anal lobe.

**Larva:** known but not described.

### 3. Taxonomic remarks

Useful diagnoses characters, taxonomic notes and keys for identification of known Palaearctic and Oriental species of *Thienemannia* from Europe, Lebanon and India have been provided for male imagines and pupal exuviae (THIENEMANN 1944; BRUNDIN 1956; SÆTHER 1985; LANGTON 1980, 1991; BHATTACHARYA et al. 1986; COFFMAN et al. 1986; TUISKUNEN & LINDBERG 1986; CRANSTON et al. 1989; LANGTON & PINDER 2007; MOUBAYED-BREIL 2013). In this paper, the new species is compared as male and female adult and pupal exuviae to the following related members: *T. gracilis*, *T. fulvofasciata*, *T. libanica*, *T. corsicana* and *T. paasivirtai* Tuiskunen 1986.





Figures 37-41. *Thienemannia* spp. Male pupal exuviae of *Thienemannia valespira* sp. n.: (37) frontal apotome; (38) cephalothorax; (39) abdominal segments I-IX with armament of tergites (left) and sternites (right). Armament of tergites II-III of: (40a) *T. corsicana*; (40b) *T. libanica*. Armament of tergites VI-VIII of: (41a) *T. gracilis* and *T. fulvofasciata*, (41b) *T. libanica*, (41c) *T. corsicana*.

Figures 37-41. *Thienemannia* spp. Exuvie nymphale mâle de *Thienemannia valespira* sp. n. : (37) pièce frontale ; (38) cephalothorax ; (39) segments abdominaux I-IX, ornementation et chaetotaxie des tergites (à gauche) et des sternites (à droite). Ornementation des tergites II-III de : (40a) *T. corsicana*; (40b) *T. libanica*. Ornementation des tergites VI-VIII : (41a) *T. gracilis* et *T. fulvofasciata*, (41b) *T. libanica*, (41c) *T. corsicana*.

*T. valespira* sp. n. can be distinguished from other related *Thienemannia* species by a combination of differentiating characters.

In the male adult: (i) presence of hairs on median area of inner lateral margin of eyes (Fig. 1), differently figured in both *libanica* (Fig. 2), *gracilis* (Fig. 3) and *corsicana* (Fig. 4); (ii) chaetotaxy of thorax and distribution pattern of setae on wing (Fig. 6) are differently figured in *gracilis*, *fulvofasciata*, *libanica* and especially in *paasivirtai*; (iii) the characteristic pattern of the virga (consisting of long sinuous spines in *valespira*) is easily distinguished from those of *fulvofasciata* (2-3 fused spines, Fig. 10), *libanica* (2 long spines, Fig. 11), *gracei* (Fig. 12) and *gracilis* (4 to 5 parallel thin spines, Fig. 13: 3 aspects), virga in *paasivirtai* is apparently absent according to TUISKUNEN & LINDEBERG (1986, Fig. 14D); (iv) anal tergite is narrowed with distinctly rounded margin in *T. libanica* (Fig. 16) but different in *T. valespira*, *T. gracilis* and *T. sp. 1* (margin straight, Figs 14, 15 and 19); (v) gonostylus strongly curved (Fig. 14) but is elongated and nearly straight in *gracilis* (Fig. 17) or triangle-like in *libanica* (crista dorsalis absent, Fig. 18) and *T. sp. 1* (crista dorsalis well developed, Fig. 20).

In the female adult: (a) shape of gonocoxite, which is triangle-like in *valespira*, *fulvofasciata* and *libanica* (Figs 21, 27, 34) while it is globular in *gracilis* (Fig. 24); (b) the ventrolateral and dorsomesal lobes (Fig. 22) are differently figured in *T. gracilis* (straight proximally, Figs. 24-25) and *T. fulvofasciata* (relatively straight and sinuous, Figs 27-28); (c) apodeme lobe is curved outward in *gracilis* (Fig. 26), sinuous in *fulvofasciata* and *libanica* (Figs 29, 36), sickle-like in *T. sp. 1* (Fig. 32); and (d) tergite IX is rectangular with concave apical margin as in *gracilis* and *libanica* (Figs 30, 33) while it is oval in *fulvofasciata* (Fig. 31), bearing 12 setae in *valespira*, 16 in *gracilis*, 28 in *fulvofasciata*, 14 in *libanica*.

In the pupal exuviae: general colouration and presence of granulations on thorax key *T. valespira* sp. n. near *T. corsicana*; armament, chaetotaxy and shagreen pattern of segments II-III and VI-VIII are differently figured in *corsicana* (Figs 40a, 41c), in *libanica* (Figs 40b, 41b), *fulvofasciata* and *gracilis* (Fig. 41a); posterior transverse tooth row on tergites II consists of 25-35 teeth, which are interrupted at least 3 times in *valespira*, while it is continuous in *libanica* (Fig. 40b) and bearing only few teeth in *corsicana*, *gracilis* and *T. sp. 1*; presence of orally directed rows of spines on conjunctive I/II is regularly occurring in *T. valespira* sp. n. and *T. libanica* but occasionally lacking in *T. gracilis* as illustrated in MOUBAYED-BREIL (2013, Fig. 13a).

According to all the cited works above on the taxonomy of the genus *Thienemannia*, the male adult of the new species keys near those of *T. sp. 1*, *T. gracilis* and *T. corsicana*. However, the pupal exuviae of *T. valespira* resembles that of *T. libanica* (armament patterns of tergites VII-VIII, Fig. 41b) from which it differs in particular by the armament patterns of tergites II and III (Fig. 40b). The pupal exuviae of *T. sp. 1* can be separated from those of *T. valespira* by the following characters: tooth row on tergite II consists only of 1-2 teeth (25-35 teeth in *valespira*); anteromedian patch of spines on tergite VII includes only 3-4 spines.

It is not feasible at present to provide keys for males, or to known adult females and pupal exuviae, until current work on the genus is complete and more material can be examined.

## 4. Ecology

Associated material of male and female pharate adults belonging to *Thienemannia valespira* sp. n. have been collected in high mountain springs and streams located in Eastern Pyrenees, High Alps and Maritime Alps (altitude 1700-2000 m: MOUBAYED et al. 2000, zone 3; MOUBAYED-BREIL 2008, zones 5b and 10). Localities where pharates, pupal exuviae and larvae were sampled consist of shady stretches of cold mountain helocrenes and streams with small waterfalls and sandy to gravely substrata, which deserve greater consideration and preservation. Bryocolous, hygropetric and madicolous habitats represent the most common and possibly favoured aquatic areas for larval populations. The new species is believed to be a typical representative of helocrenes and upstream areas located at higher altitudes in Europe. It belongs to the crenobiontic and crenophilous community of species documented by LINDEGAARD (1995).

*T. valespira* sp. n. has been often confused with *T. libanica* due to the strong resemblance between their pupal exuviae. Nevertheless, *T. libanica* is actually known only from one single locality in Lebanon: the upper stream of Yammouné-Chlifa (altitude 1100-1200 m), which is located in the inner plain of Bekaa (LAVILLE & MOUBAYED 1985). Despite extensive investigations made throughout Lebanon, *T. libanica* is still unknown and apparently absent from coastal high mountain streams located in the eastern Mediterranean including the Levantine Province. Further doubtful and probably misidentified records of *T. libanica* have been reported based on pupal material from some areas located in northern, central and southern Europe (MOUBAYED et al. 2000, zone 3; MOUBAYED-BREIL 2008, zones 5b and 10; SERRA-TOSIO & LAVILLE 1991, zone E4; Fauna Europaea, SÆTHER & SPIES 2013; SCHACHT 2010; ASHE & O'CONNOR 2012). Therefore, records of *T. libanica* from Europe may refer to *T. valespira*, *T. sp. 1* or some other species. Occurrence of this sparsely distributed new rheophilic species in the helocrenes and upper streams of rivers located in the high Alps and high Eastern Pyrenees indicates that it is apparently more widespread in cold high mountain streams of central and southern Europe and, therefore can be expected from such habitats located in the western Mediterranean Region, including for example Switzerland, Italy and Spain. Species encountered in the same localities with *T. valespira* include: *Diamesa aberrata* Lundbeck, 1889; *D. bertrami* Edwards, 1935; *D. veletensis* Serra-Tosio, 1970; *Pseudodiamesa branickii* (Nowicki, 1873); *Syndiamesa edwardsi* (Pagast, 1947); *Bryophaenocladus nidorum* (Edwards, 1929); *Chaetocladus gracilis* Brundin, 1956; *C. perennis* (Meigen, 1830); *C. suecicus* (Kieffer, 1916); *Eukiefferiella fittkaui* Lehmann, 1970; *Krenosmittia boreoalpina* (Goetghebuer, 1944); *Parametriocnemus boreoalpinus* Gowin & Thienemann, 1942; *Rheocricotopus effusus* (Walker, 1856); *Lithotanytarsus emarginatus* (Goetghebuer, 1933); *Micropsectra auvergnensis* Reiss, 1969 and *M. nohedensis* (Moubayed & Langton, 1996).

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