

Article

On the genus *Pseudosmittia* Edwards, 1932 from Corsica. I. Description of *P. acquavivai* and *P. tyrrhena* spp. n. (Diptera, Chironomidae, Orthoclaadiinae)

Joel Moubayed

Freshwater & Marine Biology, 10 rue des Fenouils, 34070 Montpellier, France ; chirojmb@gmail.fr

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ABSTRACT

Male adult of *Pseudosmittia acquavivai* sp. n. and *P. tyrrhena* sp. n. are described based on material collected in Corsica. Localities where the type-material of the 2 new species, were captured are: lateral cold springs in western Corsica for the first one; estuarine zone of the River Ostriconi for the second. *P. acquavivai* sp. n. appears to key in the *brevifurcata*-gr, close to both *P. brevifurcata* (Edwards, 1926) and *P. carita* Ferrington & Sæther, 2011, based on some unusual morphological characters: inferior volsella double, both lobes subequal, acutely triangular; gonostylus elongate; crista dorsalis bilobed, proximal lobe bulge-like, occupying 90% of the gonostylus. *P. tyrrhena* sp. n. belongs to a separate subgroup within the *tyrrhena*-gr, based on the following atypical characters: antenna with one apical seta; palpomeres 4 and 5 fused, segment 5 with one apical seta; pars ventralis large tongue-like shaped; gonocoxite truncate apically; inferior volsella double, dorsal lobe broadly triangular, accessory lobe long nose-like, anterior half bare, caudal part covered with setae; gonostylus massive, crista dorsalis large lobe-like, located caudally. The two new species are considered to be local biogeographic representatives of the Tyrrhenian sub-region. Remarks and comments on the ecology of the new species are given.

Keywords: taxonomy, new species, Corsica, conservation measures.

Sur le genre *Pseudosmittia* Edwards, 1932 de Corse. I. Description de *P. acquavivai* et *P. tyrrhena* spp. n. (Diptera, Chironomidae, Orthoclaadiinae)

RÉSUMÉ

L'adulte mâle de *Pseudosmittia acquavivai* sp. n. et de *P. tyrrhena* sp. n. est décrit à partir d'un matériel collecté dans des sources latérales froides situées en Corse occidentale pour la première ; en zone estuarienne de la rivière Ostriconi, pour la seconde (Haute-Corse). Des caractères distinctifs (volselle inférieure double, lobe dorsal et ventral triangulaires, subégaux ; gonostyle allongé ; crista dorsalis bilobée, lobe proximal occupant 90 % du gonostyle), permettent de placer *P. acquavivai* sp. n. dans le groupe *brevifurcata*, proche de *P. brevifurcata* (Edwards, 1926) et *P. carita* Ferrington & Sæther, 2011. Sur la base de certains caractères morphologiques inhabituels (antenne munie d'une soie apicale ; palpomères 4 et 5 fusionnés, segment 5 avec 1 soie

apicale ; pars ventralis en forme de large langue ; apex du gonocoxite tronqué ; volselle inférieure bilobée, lobe dorsal triangulaire, lobe ventral en forme de long nez, moitié antérieure glabre, partie caudale couverte de soies ; gonostyle massif, crista dorsalis en forme de lobe placé caudalement), *P. tyrrhena* sp. n. appartient à un sous-groupe à part au sein du groupe *tyrrhena*. Les deux nouvelles espèces sont considérées comme des éléments biogéographiques représentatifs de la sous-région tyrrhénienne. Des commentaires sur leur position taxonomique et leur écologie sont fournis.

Mots-clés : taxonomie, nouvelles espèces, Corse, mesures de conservation.



Photo 1. Type-locality of Pseudosmittia acquavivai sp. n.: lateral cold spring bordering the Prezzuna stream, where the type-material was collected. (J. Moubayed 05.VI.2012).

Photo 1. Localité type de Pseudosmittia acquavivai sp. n. : source latérale froide en bordure de la Prezzuna, où le matériel-type a été collecté. (J. Moubayed 05.VI.2012).

1. Introduction

Based on knowledge and recently published papers on the taxonomy, geographical distribution and ecology of the genus *Pseudosmittia* Edwards, 1932 (EDWARDS 1929, 1932, GOETGHEBUER 1940-1950, STRENZKE 1950, 1960, BRUNDIN 1956, TOKUNAGA 1964, ALBU 1968, SASA 1979, 1985, 1993, 1998, CASPERS & REISS 1989, CRANSTON et al. 1989, WANG 1990, SASA & OKAZAWA 1992, SÆTHER & FERRINGTON 2003, SÆTHER 2004, 2006, SPIES & SÆTHER 2004, YAMAMOTO 2004, MAKARCHENKO & MAKARCHENKO 2007, 2008, LANGTON & PINDER 2007, FERRINGTON & SÆTHER 2011, ASHE & O'CONNOR 2012, MOUBAYED-BREIL & ASHE 2012, LANGTON & SYROVATKA 2013, MAUAD et al. 2013, SÆTHER & SPIES 2013, MOUBAYED & MARY 2023, MOUBAYED 2025a, 2025b, MOUBAYED & LANGTON 2025), there are currently worldwide up to 107 known valid species, which are distributed in more than sixteen groups and subgroups (FERRINGTON & SÆTHER 2011, SÆTHER & SPIES 2013, MOUBAYED 2025a, 2005b, MOUBAYED & LANGTON 2025).

2. Material and methods

The described male adult of the 2 new species were collected by sweep net in western Corsica: *P. acquavivai* sp. n., in riparian habitats bordering some cold lateral springs located along the Prezzuna stream and the river Fangu; *P. tyrrhena* sp. n. in brackish habitats bordering the estuarine zone of the River Ostriconi. The material was preserved in 80-85% ethanol for the taxonomic examination and description. Information on the methodology of mounting and conservation of the type-material is provided in MOUBAYED-BREIL & ORSINI (2016). Morphological terminology and measurements of the imagines follow those of SÆTHER (1980) and LANGTON & PINDER (2007).

3. Description

Pseudosmittia acquavivai sp. n.

urn:lsid:zoobank.org:act:A0DBC618-4960-4BA9-AEC0-B3A713CEC3A5

= *Pseudosmittia* sp. 2, in MOUBAYED-BREIL & ASHE (2012)

Material examined

Holotype. W-Corsica. Galéria (2B121), Prezzuna cold stream, lateral spring (Photo 1); alt. 285 m; 8.778064 °E, 42.413432 °N, 1 male adult, leg. J. Moubayed, 05.06.2012. Additional details on the typology of habitats are reported in MOUBAYED-BREIL & ORSINI (2016).

Paratypes (all leg. J. M.). W-Corsica. One male adult, same type-locality and date as for holotype; one male adult, captured in lateral cold springs (Photo 2) along the down basin of the River Fangu (8.6482 °E, 42.4089 °N); alt. 15 m, leg. J. Moubayed, 06.06.2012. Additional details on the typology of habitats are reported in MOUBAYED-BREIL & ASHE (2012).

Holotype (mounted on one slide) is deposited in the collections (GBIFCH01223210) of the 'Muséum cantonal des sciences naturelles, département de zoologie, Palais de Rumine, 6 place de la Riponne, CH-1014 Lausanne (MZL), Switzerland'. The paratypes are deposited in the collection of the author.

Etymology: the new species is named "*acquavivai*" in honour to Thierry Acquaviva and all members of the family Acquaviva, who kindly welcomed me during the field work along the basin of the Prezzuna stream.

Diagnostic characters

The closest *Pseudosmittia* species to *P. acquavivai* sp. n. are *P. brevifurcata* (Edwards, 1926) and *P. carita* Ferrington & Sæther, 2011, both members of the *brevifurcata*-gr. The following distinctive characters will easily separate the new species from all other related congeners. Head. Antenna 600 µm long, terminal segment 300 µm, well clubbed, apex bilobed, apical seta

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	BV	SV	BR
PI	420	440	240	135	90	55	60	0,55	3,24	3,58	1.80
PII	370	345	245	120	70	60	55	0,71	3,15	2,92	2.10
PIII	375	410	185	105	85	80	65	0,45	2,90	4,24	2.20

Table 1. “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 ta₅; BR = Ratio of longest seta of ta₁ divided by minimum width of ta₁, measured one third from apex.”

absent, AR 1.00; clypeus broadly triangular; palpomere 3 ovoid, segment 5 with one apical seta. Thorax. Lobes of antepnotum not gaping, acrostichals 2. Wing. Vein R with 5 setae.

Legs. Sensilla chaetica present on tarsomeres ta₁-ta₅. Tergite IX without dorsal hump. Anal point triangular, pubescent. Virga composed of 2 unequal spines. Superior volsella absent. Inferior volsella double, both dorsal and ventral lobes acutely triangular. Gonostylus linearly elongate; crista dorsalis bilobed, proximal lobe large, swollen to bulge-like medially, distal lobe low, much shorter.

Male imago

(n = 3; Figs 1A-J)

Medium species. Total length 1.75 mm; wing length 1.10 mm; TL/WL = 1.59. General colouration pale brown to dark brown; head dark brown; antenna pale brown; thorax brown with dark brown mesonotal stripes; legs and abdomen brownish; anal segment dark brown.

Head. Eyes bare; suture of coronal triangle well developed, coronals present; temporals 8 including 6 inner and 2 outer verticals. Antenna 13-segmented, 600 µm long, densely covered with long setae; last flagellomere (Fig. 1A) 300 µm long, well clubbed, bilobed apically, with curved sensilla chaetica, with 75-80 long setae up to 150 µm long, apical seta absent; antennal groove reaching segments 3; AR 1.00. Clypeus (Fig. 1B) 100 µm long, about 90 wide at base, broadly triangular to top shaped, with 16 setae in 3 rows. Palp 5-segmented, segments 1-2 fused; palpomere 3 (Fig. 1C) ovoid, sensilla coeloconica absent; segment 5 linearly elongate, with 3 sensilla

clavata and one apical seta; length (in µm) of segments: 15, 25, 60, 75, 115. Thorax. Lobes of antepnotum gaping; lateral antepnotals 5; acrostichals 2, dorsocentrals 13 in 1-2 rows, prealars 4 uniserial, scutellum with 18 setae in 3 rows. Wing. Brachiolium with one seta; subcosta overreaching fork of radius; costal expansion 50 µm long; distribution of setae on veins: R, 5; remaining veins and squama bare. Legs. Length (in µm) of tibial spurs: PI, 55; PII, 35, 25; PIII, 40, 35. Sensilla chaetica present on tarsomeres ta₁-ta₅. Length (µm) and proportions of prothoracic (PI), mesothoracic (PII) and metathoracic (PIII) legs (n = 1) as in the Table 1.

Abdomen. Hypopygium in dorsal and ventral view as in figures 1E-F (ventral view, Fig. 1F, with tergite IX and anal point omitted). Tergite IX 75 µm long, 95 maximum wide, broadly sub-rectangular, distal half semicircular, dorsal hump absent; with 8 dorsal setae located laterally at base of the anal point (4 on each side). Laterosternite IX with 6 setae (3 on each side). Anal point (Fig. 1E, dorsal; Fig. 1G, lateral) 25 µm long, 25 µm maximum width at base; acute triangle shaped, entirely pubescent, not overreaching tip of tergite IX. Apodemes (Fig. 1F); transverse sternapodeme semicircular, lateral expansion absent; phallapodeme knife shaped. Virga (Figs 1E-F, H) composed of 2 long unequal spines. Gonocoxite 140 µm long; ventral margin with 9 stout inner setae. Superior volsella absent. Inferior volsella (Figs 1E-F, I) double, dorsal and ventral lobes acutely triangular, nearly equal in size; located medially and distally; ventral accessory densely covered with setae. Gonostylus (Figs 1J-L; at acute angle, 1J; at right angle, Figs K-L), 65 µm long, 25-30 µm maximum width; linearly

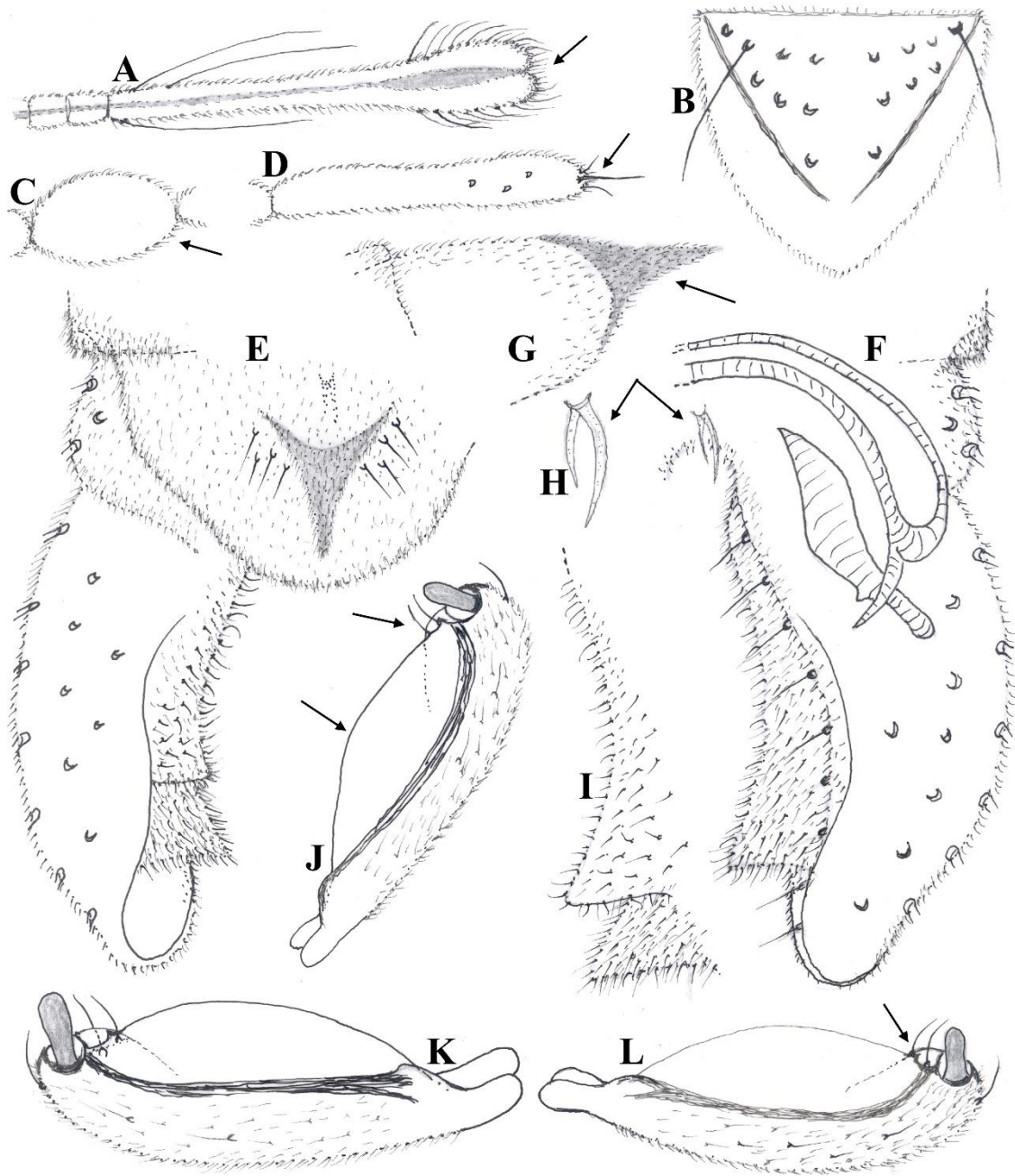


Figure 1. Male imago of *Pseudosmittia acquavivai* sp. n. Antenna, segments 11-13 (A); clypeus (B); palpomere 3 (C); palpomere 5 (D); hypopygium in dorsal (E) and ventral view (F); tergite IX and anal point, lateral (G); virga (H); inferior volsella, right side (I); gonostylus at acute (J) and right angle (K-L, 2 aspects). The arrows indicate some distinctive characters.

Figure 1. Imago mâle de *Pseudosmittia acquavivai* sp. n. Antenne, segments 11-13 (A) ; clypéus (B) ; palpomère 3 (C) ; palpomère 5 (D) ; hypopyge en vue dorsale (E) et ventrale (F) ; tergite IX et pointe anale en vue latérale (G) ; virga (H) ; volselle inférieure, côté droit (I) ; gonostyle, angle aigu (J) et angle droit (K-L, 2 aspects). Les flèches indiquent quelques caractères distinctifs.

elongate; median part swollen; anterior sidebare, pre-apical part with 2 characteristic curved setae; crista dorsalis bilobed, proximal lobe large, bulge-like shaped, occupying 90 % of the anterior side, distal lobe much shorter, located pre-apically; megaseta well developed, 1,5-2 μm long, ellipsoidal located apically. HR 2.15; HV 2.69.

Female adult and larva: unknown.

Pseudosmittia tyrrhena sp. n.

urn:lsid:zoobank.org:act:97688794-DB47-45EA-932A
C8A0729EA68

= *Pseudosmittia* sp. 1, in MOUBAYED-BREIL & ASHE (2012)

Material examined.

Holotype. **Corsica.** One male pharate adult, estuary of the river Ostriconi, at the locality of Palasca (2B199), north-western Corsica (42.659418 °N, 9.058353 °E); riparian brackish habitats with wet grasses surrounding the estuarine zone (Photo 2); site n° 57 as reported in MOUBAYED-BREIL & ASHE (2012) and MOUBAYED-BREIL et al. (2013); alt. 0-10 m; leg. J. Moubayed 05.VIII.2012.

Paratype (leg. J. Moubayed). One male adult, same locality and date as for holotype.

Holotype (mounted on one slide) is deposited in the collections (GBIFCH01223212) of the 'Musée cantonal de Zoologie, Palais de Rumine, 6 place de la Riponne, CH-1014 Lausanne (MZL), Switzerland'. The paratype is deposited in the collection of the author.

Etymology: the name "*tyrrhena*" of the new species refers to the Tyrrhenian sub-region, which includes Corsica, Sardinia, Sicily, Elbo and the Mediterranean areas of continental France, Italy and Spain.

Diagnostic characters

The following morphological characters will separate the new species from other related congeners. Head. Antenna 985 μm long, terminal segment 565 μm long, densely covered with long setae, apical seta present, AR 1.35; temporals 12; clypeus with 11 setae; palpomeres atypically

shaped, segment 5 with 1 apical seta; Thorax. Acrostichals 2, dorsocentrals 11, scutellars 6. Hypopygium. Tergite IX with 6 setae inserted at base of anal point; anal point triangular, pubescent; virga consists of 1 spine, pars ventralis present, large tongue shaped; gonocoxite truncate apically; superior volsella absent; inferior volsella double, dorsal lobe triangular, ventral lobe nose-like, anterior half bare, caudal half with setae; gonostylus massive, crista dorsalis present apically; megaseta well developed.

Male imago

(n = 2; Figs 1A-H)

Large species. Total length 1.85 mm; wing length 1.38 mm; TL/WL = 1.34. General colouration contrasting dark brown to blackish; head dark brown; antenna and palpomeres brownish; palpomeres 1-2 hyaline becoming darker on 3-5; thorax dark brown with blackish mesonotal stripes; legs and abdomen brownish; anal segment contrasting dark brown.

Head. Eyes bare; coronals present; temporals 12 including 9 inner and 3 outer verticals. Antenna 13-segmented, 985 μm long, segments 2-12 subequal (40-45 μm long), last flagellomere (Fig. 1A) 565 μm long, not clubbed, narrowing distally distal part with about 15 curved setae, apical seta present, densely covered with about 175-200 long setae (350-500 μm long), antennal groove reaching segments 2; AR 1.35. Clypeus (Fig. 1B) 100 μm long, 125 μm maximum width, cup-like shaped, with 11 setae in 3 rows. Palp (Fig. 1C) 5-segmented, segments 1-2 and 4-5 fused; length (in μm) of segments: 25, 30, 75, 120, 80; palpomere 4 much longer than segment 5; one sensilla coelonica present on palpomere 3; segment 5 bean-like shaped, with 2 sensilla clavata and one characteristic apical seta. Thorax. Lobes of antepnotum not gaping; lateral antepnotals 5; acrostichals 2, prealars 3, dorsocentrals 11 not decumbent, scutellum with 6 setae (3 on each side of the midline). Wing. Brachiolium with one seta; subcosta overreaching fork of radius; costal expansion about 25 μm long; distribution of setae

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	BV	SV	BR
PI	320	415	225	285	115	65	65	0,54	1,81	3,27	1.70
PII	305	390	160	95	70	55	65	0,41	3,00	4,34	2.20
PIII	405	440	210	115	95	60	65	0,48	3,15	4,02	2.0

Table 1. "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."

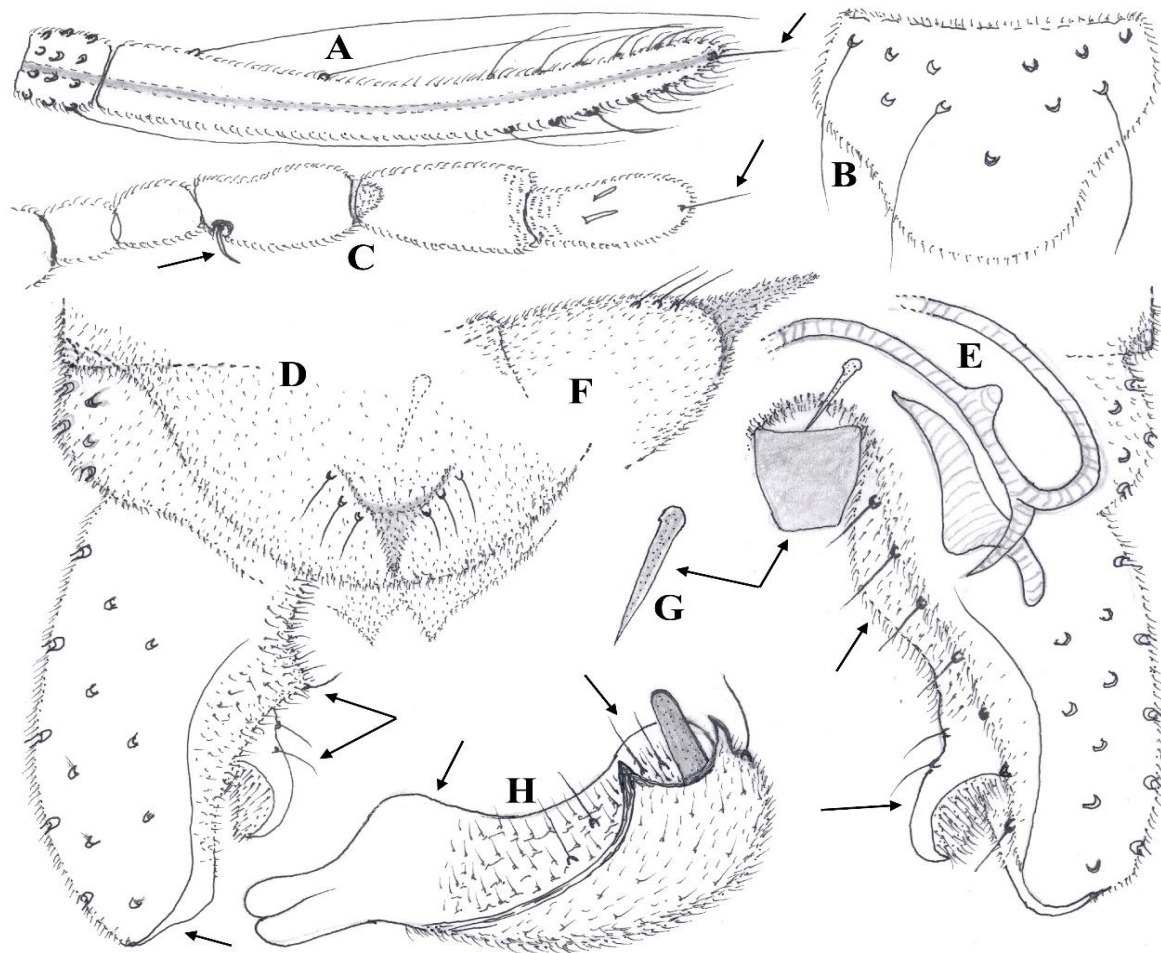


Figure 2. Male imago of *Pseudosmittia tyrrehena* sp. n. Antenna, two last segments (A); clypeus (B); palpomeres 1-5 (C); hypopygium in dorsal (D) and ventral view (E, with virga and pars ventralis); tergite IX and anal point in lateral view (F); virga (G); gonostylus, right angle (H). The arrows indicate some distinctive characters.

Figure 2. Imago mâle de *Pseudosmittia tyrrehena* sp. n. Antenne, deux derniers segments (A) ; clypéus (B) ; palpomères 1-5 (C) ; hypopyge en vue dorsale (D) et ventrale (E, avec virga et pars ventralis) ; tergite IX et pointe anale en vue latérale (F) ; gonostyle, angle droit (H). Les flèches indiquent quelques caractères distinctifs

on veins: R, 7; R₁, 2; remaining veins and squama bare. Legs. Length (in μm) of tibial spurs: PI, 55; PII, 25, 20; PIII, 40, 35. Sensilla chaetica present

on tarsomeres ta₁-ta₅. Length (μm) and proportions of prothoracic (PI), mesothoracic (PII) and metathoracic (PIII) legs (n =1) as in the Table 1.

Abdomen. Hypopygium in dorsal and ventral view as in figures 1D-E (ventral view, Fig. 1E, with tergite IX and anal point omitted). Tergite IX about 75 μm long, 105 maximum wide, broadly semicircular, dorsal hump absent (Fig. 1F); with 6 dorsal setae (Figs 1D, F) inserted at base of anal point (3 on each side). Laterosternite IX with 10 setae (5 on each side). Anal point (Fig. 1D, dorsal; Fig. 1F lateral) 15 μm as long as wide at base; triangular, almost reaching tip of tergite IX; densely covered with curved macrotrichia. Apodemes (Fig. 1E), transverse sternapodeme rounded; phallapodeme well-developed, saw-like shaped. Virga (Figs 1D-E, G) about 12 μm long, composed of 1 long spine. Gonocoxite 120 μm long, 55 μm maximum width including inferior volsella; distinctly truncate apically; basal junction with a characteristic pars ventralis, 30 μm as long as wide, trapezoidal to tongue-like shaped, clearly visible in ventral view (Fig. 1E); ventral margin with 7-8 stout inner setae. Superior volsella absent. Inferior volsella (Figs 1D-E), double; dorsal lobe (Fig. 1D) broadly triangular, located medially, anterior side with 1 stout curved seta; accessory lobe typical nose-like shaped, located distally, distinctly projecting downwards, almost free apically, anterior part bare, with 2 characteristic stout setae; posterior side densely covered with setae. Gonostylus (Fig. 1H, right angle), 55 μm long, 30 μm maximum width; caudal part more massive, concave medially; anterior side with orally directed setae, pre-apical part with a characteristic semicircular hollow; crista dorsalis lobe-like, located apically; megaseta 3 μm long, well developed. HR 2.18; HV 3.36.

Female adult, pupal exuviae and larva: unknown

4. Remarks and discussion

Currently, the genus *Pseudosmittia* comprises about 110 known valid species worldwide, of which up to 20 are reported from Europe (FERINGTON & SÆTHER 2011, SÆTHER & SPIES 2013, MOUBAYED 2025a, 2025b, MOUBAYED & LANGTON 2025). To date, only 6 valid *Pseudosmittia* species

are reported from Corsica (MOUBAYED-BREIL & ASHE 2012), namely: *P. angusta* (Edwards, 1929); *P. obtusa* Strenzke & Thienemann, 1942; *P. danconai* (Marcuzzi, 1947); *P. gracilis* (Goetghebuer, 1913); *P. holsata* Thienemann & Strenzke, 1940; *P. trilobata* (Edwards, 1929). Consequently, the description of *P. acquavivai* sp. n. and *P. tyrrhena* sp. n. increases the total number to 8 from this island.

P. acquavivai sp. n.

Based on the following unusual morphological characters (clypeus broadly triangular; palpomere 3 bare, segment 5 with 1 apical seta; anal point triangular, pubescent; sternapodeme rounded, lateral expansion absent; virga composed of 2 unequal spines; superior volsella absent; inferior volsella double, both lobes triangular, subequal; gonostylus elongate; crista dorsalis bilobed, proximal one larger, bulge-like medially, occupying 90% of the anterior side, apical one much smaller), the new species appears to key in the ancestor *brevifurcata*-gr, close to both *P. brevifurcata* and *P. carita*. Despite some common morphological similarity, the three previously cited species are distinguishable from each other on the basis of the differently shaped inferior volsella and gonostylus.

P. tyrrhena sp. n.

On the basis of the following atypical morphological characters (antenna with long setae and apical seta; palpomere 3 with 1 sensilla coeloconica; segments 4 and 5 fused, segment 5 with 1 apical seta; pars ventralis large tongue-like shaped; gonocoxite truncate apically; inferior volsella double, dorsal lobe broadly triangular, accessory lobe long nose-like, anterior half bare, caudal part covered with setae; gonostylus massive, concave medially, crista dorsalis large lobe-like located caudally, the new species appears to belong to a separate group of *Pseudosmittia* species: the *tyrrhena*-gr. Accordingly, *P. tyrrhena* sp. n. is considered to be not only a local biogeographic representative but also a relevant biological indicator of estuarine zone over the Tyrrhe-



Photo 2. Type-locality of *Pseudosmittia acquavivai* sp. n.: coastal lateral cold spring bordering the River Fangu, where the type-material was collected. (J. Moubayed, 05.VI.2012).

Photo 2. Localité type de *Pseudosmittia acquavivai* sp. n.: source latérale côtière froide en bordure de la rivière Fangu, où le matériel-type a été collecté. (J. Moubayed, 05.VI.2012).

nian sub-region.

5. Ecology and geographical distribution

P. acquavivai sp. n.

The male adults of *P. acquavivai* sp. n. was captured exclusively in semi-terrestrial habitats bordering lateral springs located along the two rivers of Prezzuna and Fangu (western Corsica). Shaded riparian habitats enriched with aquatic plants, bryophytes and hepatics (Photos 1-2) represent the most favourable microhabitats for larval populations, which appear to belong to the crenophilous community of species as documented by LINDEGAARD (1995). Emergence pe-

riod: between late spring and early summer. Geographical distribution of the new species is currently restricted to its type locality. Therefore, *P. acquavivai* sp. n. is considered to be biogeographic local indicator, which deserves protection and greater conservation measures.

Encountered species in the same localities as *P. acquavivai* sp. n. include: *Potthastia dominicii* Moubayed-Breil & Orsini, 2016; *P. giudicellii* Moubayed-Breil & Orsini, 2016; *Boreoheptagya legeri* (Goetghebuer, 1933); *Diamesa insignipes* Kieffer, 1908; *D. tonsa* (Haliday, 1856); *Sympotthastia zavreli* Pagast, 1947; *Bryophaenocladius aestivus* (Brundin, 1947); *B. nidorum* (Edwards, 1929); *Chaetocladius melaleucus* (Meigen, 1818); *C. perennis* (Meigen, 1830); *Corynoneura gratias* Schlee, 1968; *C. lobata* Edwards, 1924; *Eu-*



Photo 3. Type-locality of *Pseudosmittia tyrrhena* sp. n.: brackish habitats bordering the estuarine zone of the River Ostriconi, where the type-material was collected. (J. Moubayed, 06.VI.2012).

Photo 3. Localité type de *Pseudosmittia tyrrhena* sp. n. : habitats saumâtres en bordure de la zone estuarienne de la rivière Ostriconi, où le matériel-type a été collecté. (J. Moubayed, 06.VI.2012).

kiefferiella brulini Moubayed & Ashe, 2015; *E. minor* (Edwards, 1929); *E. tirolensis* Goetghebuer, 1938; *Heleniella ornatocollis* (Edwards, 1929); *H. serratosioi* (Ringe, 1976); *Krenosmittia camptophleps* (Edwards, 1929); *Orthocladius vicentii* Moubayed-Breil, 2013; *Parametriocnemus stylatus* (Spärck, 1923); *Pseudorthocladius berthelemyi* Moubayed, 1989; *P. curtistylus* (Goetghebuer, 1921); *Rheocricotopus effusus* (Walker, 1856); *R. meridionalis* Moubayed-Breil, 2016; *R. thomasi* Moubayed-Breil, 2016; *Rheotanytarsus curtistylus* (Goetghebuer, 1921); *R. pentapoda* (Kieffer, 1909).

***P. tyrrhena* sp. n.**

P. tyrrhena sp. n. is apparently exclusively confined to brackish habitats bordering the estuarine zone of some rivers in western Corsica. Moderately shaded habitats (Photo 3) with dense cover of aquatic and subaquatic plants represent the favourable microhabitats for larval populations of the new species. Unfortunately, such riparian wetlands are currently endangered by eco-

tourism and both natural and accidental flooding, deserve much greater consideration, protection and preservation. Emergence is observed between September and October.

Associated species encountered in the same locality with *P. tyrrhena* sp. n., were partly reported from some estuarine zones of Corsica (MOUBAYED-BREIL & ASHE 2012, MOUBAYED-BREIL 2013). To date, the list includes actually: *Ablabesmyia longistyla* Fittkau, 1962; *A. monilis* (Linnaeus, 1758); *Clinotanytus nervosus* (Meigen, 1818); *Procladius choreus* Meigen, 1804; *Rheopelopia maculipennis* (Zetterstedt, 1838); *Thienemannimyia lentiginosa* (Fries, 1823); *Corynoneura scutellata* Winnertz, 1846; *Cricotopus bicinctus* (Meigen, 1818); *C. caducus* Hirvenoja, 1973; *C. flavocinctus* (Kieffer, 1924); *C. pulchripes* Verral, 1912; *C. sylvestris* (Fabricius, 1794); *C. trifascia* Edwards, 1929; *Halocladius variabilis* (Staeger, 1839); *H. varians* (Staeger, 1839); *Paratrachocladius micans* (Kieffer, 1918); *Psectrocladius sordidellus* (Zetterstedt, 1838); *Smittia aterrima* (Meigen, 1818); *S. pratorum* (Goetghebuer, 1927); *Syorthocladius semivirens*

(Kieffer, 1909); *Chironomus aprilius* Meigen 1818; *C. riparius* Meigen, 1804; *Kiefferulus tendipediformis* (Goetghebuer, 1921); *Microchironomus deribae* (Freeman, 1957); *M. tener* (Kieffer, 1918); *Paracladopelma camptolabis* (Kieffer, 1913); *Pentapedilum sordens* (Wulp, 1874); *Parachironomus vitiosus* (Goetghebuer, 1921); *Polypedilum nubifer* (Skuse, 1889); *P. convictum* (Walker 1826); *Cladotanytarsus lepidocalcar* Krüger, 1838; *C. mancus* (Walker, 1856); *Paratanytarsus dissimilis* (Johannsen, 1905); *P. laetipes* (Zetterstedt, 1850); *Tanytarsus ejuncidus* (Walker, 1856); *T. formosanus* Kieffer, 1912.

References

- ALBU, P. 1968. *Pseudosmittia mathildae* sp. n. (Diptera, Chironomidae). *Annales Zoologici Fennici*, **5**: 4-5.
- ASHE, P. & J.P. O'CONNOR. 2012. *A World Catalogue of Chironomidae (Diptera). Part 2. Orthocladiinae*. Irish Biogeographical Society & National Museum of Ireland, Dublin. 968 pp.
- BRUNDIN, L. 1956. Zur Systematic der Orthocladiinae (Diptera, Chironomidae). *Report of the Institute of Freshwater Research, Drottningholm*. **37**: 5-185.
- CASPER, N. & F. REISS. 1989. Die Chironomidae der Türkei. Teil I: Podonominae, Diamesinae, Prodiamesinae, Orthocladiinae (Diptera, Nematocera, Chironomidae). *Entomofauna*, **10**: 105-160.
- CRANSTON, P.S., D. R. OLIVER & O.A. SÆTHER. 1989. The adult males of Orthocladiinae (Diptera, Chironomidae) of the Holarctic region - Keys and diagnoses. In Wiederholm, T. (ed.): *Chironomidae of the Holarctic region. Keys and diagnoses. Part 3 - Adult males*. *Entomologica Scandinavica*, Supplement **34**: 164-352.
- EDWARDS, F. W. 1929. British non-biting midges (Diptera, Chironomidae). *Transactions of the Entomological Society of London*, **77**: 279-430.
- EDWARDS, F. W. 1932. Recent literature. *Faune de France : 23. Diptères : Chironomidae*. IV. Par M. Goetghebuer, Paris (Lechevallier), 1932. *The Entomologist*, **65**: 1-240.
- FERRINGTON, L.C.JR. & O.A. SÆTHER. 2011. A revision of the genera *Pseudosmittia* Edwards, 1932, *Allocladius* Kieffer, 1913, and *Hydrosmittia* gen. n. (Diptera, Chironomidae). *Zootaxa*, **2849**: 1-314.
- GOETGHEBUER, M. 1940-1950. Tendipedidae (Chironomidae). f) Subfamily Orthocladiinae. A. Die Imagines. In Lindner, E. (Hrsg.): *Die Fliegen der Palaearktischen Region*. **13g**: 1-208 + XXIV Figs.
- LANGTON, P.H. & L.C.V. PINDER. 2007. *Keys to the adult males of Chironomidae of Britain and Ireland*. Volume 1 (Pp: 1-239) and volume 2 (Pp: 1-68). Freshwater Biological Association, Scientific Publication, n° **64**.
- LANGTON, P.H. & V. SYROVATKA. 2013. New chironomid pupal types from Norway, one with a male pharate adult: *Pseudosmittia paraspinispinata* n. sp. *Chironomus Journal of Chironomidae Research*, **26**: 29-32.
- LINDEGAARD, C. 1995. Chironomidae (Diptera) of European cold springs and factors influencing their distribution. *Journal of the Kansas Entomological Society*, Supplement **68** (2): 108-131.
- MAKARCHENKO, E. & M. MAKARCHENKO. 2007. New records of chironomids (Diptera, Chironomidae) in the Russian Far East. I. Subfamily Orthocladiinae. *Euroasian Entomological Journal*, **6** (3): 299-310.
- MAKARCHENKO, E. & M. MAKARCHENKO. 2008. Review of the genus *Pseudosmittia* Edwards (Diptera, Chironomidae, Orthocladiinae) from the Russian Far East. *Euroasian Entomological Journal*, **17** (2): 215-226.
- MAUAD, M., A. SIRI & M. DONATO. 2013. New species of *Pseudosmittia* Edwards, 1932 and new records of *Allocladius* Kieffer, 1913 (Diptera, Chironomidae, Orthocladiinae) from South America. *Zootaxa*, **3694** (5): 445-460.
- MOUBAYED, J. 2025a. On the genus *Pseudosmittia* from continental France. I. Description of *P. beverana* sp. n. from the upper basin of the River Bévère, SE-France (Diptera, Chironomidae, Orthocladiinae). *Ephemera*, **26**: in prep.
- MOUBAYED, J. 2025b. *Pseudosmittia mediterranea* sp. n., a crenophilous species from Corsica and Lebanon (Diptera, Chironomidae, Orthocladiinae). *Ephemera*, **26**: in prep.
- MOUBAYED, J. & P.H. LANGTON. 2025. On the genus *Pseudosmittia* from continental France. II. Des-

- cription of *Pseudosmittia aina* sp. n. (Diptera, Chironomidae, Orthoclaadiinae). *Ephemera*, **26**: in prep.
- MOUBAYED, J. & N. MARY. 2023. On the genus *Pseudosmittia* Edwards, 1932 from New Caledonia. I. Description of *P. noumeana* sp. n., *P. paniens* sp. n. and *P. pouemboutana* (Diptera, Chironomidae, Orthoclaadiinae). *Ephemera*, **24** (2): 105-120.
- MOUBAYED-BREIL, J. 2013. *Orthocladus* (*Euorthocladus*) *vicentei* sp.n., a Tyrrhenian element from coastal springs in Corsica (Diptera, Chironomidae). *Ephemera*, **14** (1): 1-12.
- MOUBAYED-BREIL, J. & P. ASHE. 2012. An updated checklist of the Chironomidae of Corsica with an outline of their altitudinal and geographical distribution (Diptera). *Ephemera*, **13** (1): 13-39.
- MOUBAYED-BREIL, J. & A. ORSINI. 2016. On the genus *Potthastia* Kieffer, 1922 from Corsica and continental France with description of three new species (Diptera, Chironomidae, Diamesinae). *Ephemera*, **17** (1): 1-36.
- MOUBAYED-BREIL, J., M. VERLAQUE, J.-M. DOMINICI & C.-H. BIANCONI. 2013. Zones estuariennes de Corse : données faunistiques, écologiques et biogéographiques. *Travaux de l'Institut scientifique de Rabat, Série Zoologie*, **49** : 43-58.
- SÆTHER, O.A. 1980. Glossary of chironomid morphology terminology (Diptera, Chironomidae). *Entomologica Scandinavica, Supplement*. **14**: 1-51.
- SÆTHER, O.A. 2004. The Chironomidae (Diptera) of the Seychelles. *Annales de Limnologie*, **40**, 285-308.
- SÆTHER, O.A. 2006. Japanese *Pseudosmittia* Edwards (Diptera: Chironomidae). *Zootaxa*, **1198**: 21-51.
- SÆTHER, O.A. & L.C. FERRINGTON JR. 2003. Nomenclature notes on some orthoclaids (Diptera, Chironomidae). *Zootaxa*, **322** : 1-7.
- SÆTHER, O.A. & M. SPIES. 2013. Fauna Europaea: Chironomidae. In Beuk, P. & T. Pape (eds): *Fauna Europaea: Diptera Nematocera. Fauna Europaea version 2.6*. Internet database at <http://www.fauna-eur.org> [accessed February 2015].
- SASA, M. 1979. A morphological study of adults and immature stages of 20 Japanese species of the family Chironomidae (Diptera). *Research Report from the National Institute of Environmental studies*, **7**: 1-158.
- SASA, M. 1985. Studies on Chironomid collected from the lakes of the Mount Fuji area (Diptera, Chironomidae). *Research Report, Institute of Environmental and Welfare Studies*: 1-156.
- SASA, M. 1993. Studies on the chironomid midges (*Yusurika*) collected in Toyama and other areas of Japan. Part 5. The chironomids collected from lakes in the Aizu District (Fukushima). *Research Report from Toyama Prefectural Environmental Pollution Research Centre*, **1993**: 69-95.
- SASA, M. 1998. Chironomid of Japan 1998. List of species recorded, and supplemented keys for identification. *Research Report from the National Institute of Environmental studies, Japan*,
- SASA, M. & T. OKAZAWA. 1992. Studies on Chironomid midges (*Yusurika*) of Toga-Mura, Toyama. Part 2. The subfamily Orthoclaadiinae. *Research Report from the National Institute of Environmental studies*, **1992**: 92-204.
- SPIES, M. & O.A. SÆTHER. 2004. Notes and recommendations on taxonomy and nomenclature of Chironomidae (Diptera). *Zootaxa*, **752**: 1-90.
- STRENZKE, K. 1950. Systematik, Morphologie und Ökologie der terrestrischen Chironomiden. *Archiv für Hydrobiologie, Supplement* **18**: 207-414.
- STRENZKE, K. 1960. Terrestrische Chironomiden XIX-XXIII (Diptera, Chironomidae). *Deutsche Entomologische Zeitschrift*, **7**: 414-441.
- TOKUNAGA, M. 1964. Insects of Micronesia Diptera: Chironomidae and Simuliidae. *Bernice P. Bishop Museum*, **12** (5): 485-628.
- WANG, S. 1990. *Pseudosmittia aizaiensis*, a new species of Orthoclaadiinae (Diptera, Chironomidae) from Hunan Province of China. *Chinese Journal of Oceanology and Limnology*, **8**: 273-279.
- YAMAMOTO, M. 2004. A catalogue of Japanese Orthoclaadiinae (Diptera, Chironomidae). *Makunagi, Acta Dipterologica*, **21**: 1-121.