

**Revision of type and non-type material assigned
to the genus *Orthocladius* by Goetghebuer (1940–1950),
deposited in the Royal Belgian Institute of Natural Sciences
(Diptera: Chironomidae)**

Giulia MAGOGA¹⁾, Matteo MONTAGNA¹⁾, Laura MARZIALI²⁾ & Bruno ROSSARO^{3,*)}

¹⁾Università degli Studi di Milano, Dipartimento di Scienze Agrarie e Ambientali (DISAA),
via Celoria 2, I 20133, Milano, Italia; e-mails: giulia.magoga@unimi.it; matteo.montagna@unimi.it

²⁾Water Research Institute, National Research Council (IRSA-CNR), Via del Mulino 19,
I 20861 Brugherio (MB), Italy; e-mail: marziali@irsa.cnr.it

³⁾Università degli Studi di Milano, Dipartimento di Scienze per gli Alimenti, la Nutrizione e l'Ambiente
(DeFENS), Via Celoria 2, I 20133 Milan, Italy; e-mail: bruno.rossaro@unimi.it

*) Corresponding author

Abstract. Selected type and non-type material belonging to the genus *Orthocladius* van der Wulp, 1874 (Diptera: Chironomidae) sensu GOETGHEBUER (1940–1950), deposited in the Royal Belgian Institute of Natural Sciences (RBINS), originally comprising specimens dry pinned or stored in isinglass, were mounted on microscope slides and re-examined. Other chironomids present in the RBINS collection belonging to other genera were also examined. Fifty slides were prepared and identified to species, or to generic level when the condition of the specimens did not allow species identification. The following types, representing taxa formerly considered as *nomina dubia*, were examined and the concerned species are stated here as valid: *Georthocladius collarti* (Goetghebuer, 1941) comb. nov., *Georthocladius scaturiginis* (Goetghebuer, 1940) comb. nov., *Lapposmittia succinea* (Goetghebuer, 1942) comb. nov., *Orthocladius (Euorthocladius) tolleti* Goetghebuer, 1944 (new subgenus placement), *Orthocladius (Orthocladius) timoni* Goetghebuer & Timon-David, 1939, *Pseudorthocladius hockaiensis* (Goetghebuer, 1933). *Orthocladius (Orthocladius) mitisi* Goetghebuer, 1938, previously stated as junior synonym of *Orthocladius (Orthocladius) glabripennis* (Goetghebuer, 1921), is reinstated as valid species. The following new synonyms are proposed: *Georthocladius (Georthocladius) collarti* = *Parachaetocladius retezati* Albu, 1972: 19, syn. nov.; *Cricotopus (Paratrighocladius) rufiventris* (Meigen, 1830) = *Orthocladius franzi* Goetghebuer, 1949, syn. nov.; *Cricotopus (Paratrighocladius) skirwithensis* Edwards, 1929 = *Orthocladius nigritus* Goetghebuer, 1938,

syn. nov. = *Paratrithocladius spiesi* Ashe & O'Connor, 2012; *Hydrobaenus distylus* (Potthast, 1914) = *Orthocladius antennalis* Goetghebuer, 1944, syn. nov. Lecto-types of *Orthocladius collarti* Goetghebuer, 1941, *Orthocladius antennalis* Goetghebuer, 1944, *Orthocladius timoni* Goetghebuer & Timon-David, 1939, and *Orthocladius hockaiensis* Goetghebuer, 1933 are designated. Non-type material assigned to *Orthocladius* was also mounted on slides and identified. Although a list of the non-*Orthocladius* taxa is also provided, no taxonomic changes are proposed for the latter.

Key words. Diptera, Chironomidae, chironomids, *Orthocladius*, museum, synonyms, taxonomy

Introduction

The number of known species belonging to the family Chironomidae (Diptera) is continuously increasing, especially from areas outside the Palaearctic. West Palaearctic species are much better known, but many described species have been treated as *nomina dubia* (ASHE & O'CONNOR 2009, 2012). This is due to the fact that corresponding voucher specimens (including primary types) preserved in various museum collections urgently require re-examination and revision, opening the possibility that many synonyms and undescribed species still exist in collections. This is particularly true, for example, in *Orthocladius* van der Wulp (SOPONIS 1977; ROSSARO & CASALEGNO 2001; ROSSARO et al. 2002, 2003; SPIES & SÆTHER 2004). In order to contribute to the revision of the genus some specimens deposited in the Belgium, Brussels, Royal Belgian Institute of Natural Sciences (RBINS) belonging to Goetghebuer's collection of 'Chironomides Palaearctiques' were examined and identified to species. In this collection many species actually assigned to other genera had been allocated in *Orthocladius* by GOETGHEBUER (1940–1950), following Kieffer's interpretation of the genus. At Goetghebuer's epoch the genus name *Orthocladius* was an early catch-all taxon name used to name many different and not even closely related genera.

Other species belonging to genera not included in *Orthocladius* sensu Goetghebuer were also loaned from RBINS and examined in the present work.

Material and methods

The examined specimens were received mounted on (1) slides, or (2) dry pinned, or (3) stored between two celluloid layers in isinglass. Specimens received in condition (2) or (3) are now mounted on slides.

When more than one midges were present in the same preparation (some cases in condition (3)) they were generally mounted on separate slides, but separated parts of the same specimen were always mounted on the same slide; only two cases two specimens of the same species were mounted on the same slide, this is specified in the description of the species.

Slides were prepared according to SÆTHER (1969) and WIRTH & MARSTON (1968), with the

following modifications: pinned specimens were boiled in KOH 10%, except wings, transferred in acetic acid, butanol and in a phenol : xylene mixture 3:1, then mounted in balsam on a microscope slide. Specimens in isinglass were also gently boiled in KOH to dissolve gelatin, and thereafter treated identically. Measurements were made at different magnifications (40–1000×) using a LEICA DM LS B2 optic microscope connected to a LEICA DFC320 camera. The slides will be returned to RBINS after the acceptance of the present manuscript. Measurements are given in μm unless otherwise stated. Some photos of characters of taxonomic interest were taken from both type and non-type material.

Results

Members of 32 species were re-analyzed, the list of the examined specimens is given in Tables 1 and 2. Species included in genera other than *Orthocladius* sensu Goetghebuer are given in a separate list after *Orthocladius*-taxa and summarized in Table 3.

For a better understanding of the type material section, the entries of separate labels are separated by a double (/) slash, particular lines of one label by a simple (/) slash.

Regarding the non-type material, all specimens are now mounted on slides and identified; some species identifications were confirmed, other misidentified species were corrected.

All specimens loaned by RBINS were labelled with the acronym: R.I.Sc.N.B. (Institut Royal des Sciences Naturelles de Belgique).

Type material of the genus *Orthocladius* sensu GOETGHEBUER (1940–1950)

Chaetocladius rusticus (Goetghebuer, 1932)

Orthocladius (*Dactylocladius*) *rusticus* Goetghebuer, 1932: 91.

Type material examined. *Orthocladius rusticus*: LECTOTYPE (slide): labelled ‘*Orthocladius / rusticus* n. sp. // Lectotype // Postel 11 juin 1923 G Severin // Type ♂ / M. Goetghebuer // R.I.Sc.N.B.18.073 / Coll. et det. M. Goetghebuer’. PARALECTOTYPE (slide): labelled ‘*rusticus* G // Paralectotype // Postel 11 juin 1923 G Severin // R.I.Sc.N.B. 18.073 / Coll. et det. M. Goetghebuer’.

Comments. SOPONIS (1986) mounted the specimens on slides, redescribed the species, designated the lectotype and placed it in the genus *Chaetocladius* Kieffer, 1911.

Cricotopus (*Paratrichocladius*) *rufiventris* (Meigen, 1830)

Chironomus rufiventris Meigen, 1830: 249.

Orthocladius franzi Goetghebuer, 1949: 4, **syn. nov.**

Type material examined. *Orthocladius franzi*: HOLOTYPE: ♂, pinned, now slide-mounted, labelled ‘*Orthocladius franzi* n sp // type locality Bach vor Mischlauer Wasserfall 1948 leg. D Franz, Admont // Type ♂ / M. Goetghebuer’.

Comments. ASHE & O’CONNOR (2012) listed *Orthocladius franzi* under *nomina dubia* in Orthocladiinae. The specimen examined here is unequivocally assigned to *C. (P.) rufiventris*, *O. franzi* becomes its junior synonym. *Paratrichocladius* Santos Abreu, 1918 is now included as a subgenus in *Cricotopus* van der Wulp, 1874 (CRANSTON & KROSCH 2015).

***Cricotopus (Paratrichocladius) skirwithensis* (Edwards, 1929)**

Spaniotoma (Trichocladius) skirwithensis Edwards, 1929: 329.

Orthocladius nigrinus Goetghebuer, 1938: 459 not *Orthocladius nigrinus* Malloch, 1915: 525, **syn. nov.** (permanently invalid as junior primary homonym).

? *Paratrichocladius nigrinus* (Goetghebuer): LANGTON & VISSER (2003), pupal exuviae.

? *Paratrichocladius nigrinus* (Goetghebuer): LANGTON & PINDER (2007), adult male.

Paratrichocladius spiesi Ashe & O'Connor, 2012: 492, **syn. nov.** (replacement name for *Orthocladius nigrinus* Goetghebuer, 1938).

Type material examined. *Orthocladius nigrinus*: HOLOTYPE: ♂ stored in isinglass, now mounted on slide, labelled 'Orthocladius nigrinus n. sp. // type ♂ / M. Goetghebuer // locality Basse Autriche 1938, t 23° // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer'.

Comments. The specimen fits well with *C. (P.) skirwithensis* (Edwards, 1929); therefore, we propose to synonymize *O. nigrinus* Goetghebuer, 1938 (not Malloch, 1915) with *C. (P.) skirwithensis*. Consequently, its replacement name *P. spiesi* Ashe & O'Connor, 2012 also becomes a junior synonym of *C. (P.) skirwithensis*. LANGTON & VISSER (2003) and LANGTON & PINDER (2007) separated the respective pupae and adult male of *Paratrichocladius nigrinus* (Goetghebuer) and of *P. skirwithensis* (Edwards). Unfortunately, the delimitation of species within the subgenus *Paratrichocladius* is still controversial, many species are probably present, but morphological evidence should be supported by DNA sequences, because of intraspecific variability (CRANSTON & KROSCHE 2015, MONTAGNA et al. 2016). The small differences described in pupal exuviae (LANGTON & VISSER 2003) do not justify the separation of two species, and this is supported by the examination of the adult male of *O. nigrinus*, which cannot be separated from *C. (P.) skirwithensis*. It is thus not recommended to increase species names and the present decision of synonymizing *O. nigrinus* sensu Goetghebuer with *C. (P.) skirwithensis* results in the synonymy of *P. spiesi* with *C. (P.) skirwithensis*.

***Georthocladius (Georthocladius) collarti* (Goetghebuer, 1941), comb. nov.**

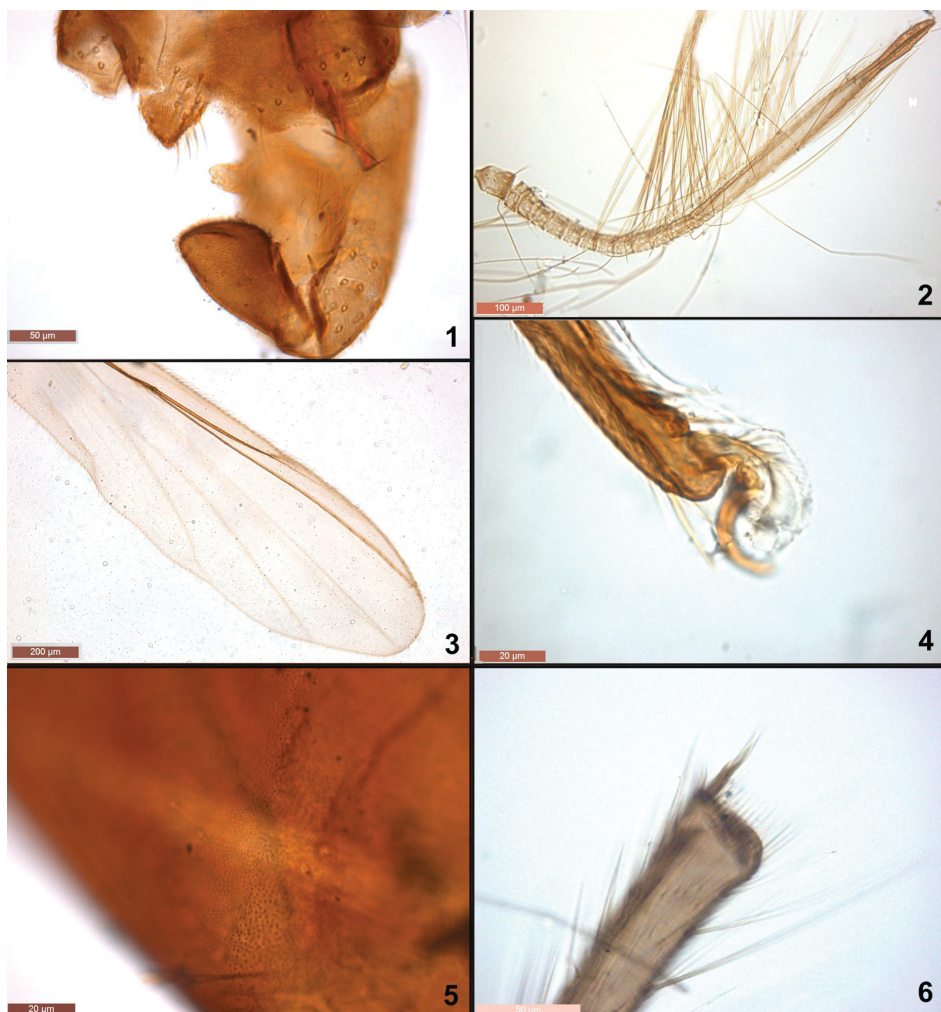
(Figs 1–6)

Orthocladius (Chaetocladius) collarti Goetghebuer, 1941: 7.

Parachaetocladius retezati Albu, 1972: 19, **syn. nov.**

Type material examined. *Orthocladius collarti*: LECTOTYPE (present designation): pinned ♂, now mounted on slide, labelled: 'Orth. collarti n.sp. ♂ D. M. Goetghebuer det. // Lectotype // type locality: Hockai Hautes Fagnes 21.IV.1939 // R.I.S.C.N.B. 18.073 en grand nombre (éclosion) près du sol, dans un endroit très marecageux'. PARALECTOTYPES: TWO pinned ♂♂ without hypopygium, now mounted on the same slide, labelled: 'Orthocladius collarti // Paralectotypes // same locality. R. Mus. Hist. Nat. Belg. I.G. 12.190 Coll. et det. M. Goetghebuer'.

Comments. *Orthocladius collarti* was listed among *nomina dubia* in *Chaetocladius* by ASHE & O'CONNOR (2012). The species is now assigned to *Georthocladius* Strenzke, 1941 because of the presence of a squama with setae, sinuate Cu₁, presence of acrostichals, well developed pulvilli, tarsal pseudospurs present on ta₁ and ta₂ of p₃, a strong triangular anal point with numerous setae, a stout digitiform inferior volsella, and of a gonostylus that is distally enlarged, with a pronounced outer corner. A strong seta at the apex of the antenna seems to be present, but broken in the examined sample. The male hypopygium is identical with the one of *Parachaetocladius retezati* Albu, 1972; the presence of acrostichals reported in ALBU (1972) also supports inclusion in *Georthocladius*. We therefore consider *P. retezati* as a junior synonym of *G. collarti*.



Figs 1–6. *Georthocladius collarti* (Goetghebuer, 1941). 1 – hypopygium, 2 – antenna, 3 – wing, 4 – pulvilli, 5 – acrostichals, 6 – $Ta_1 P_{III}$.

***Georthocladius (Georthocladius) scaturiginis* (Goetghebuer, 1940), comb. nov.**

(Figs 7–12)

Orthocladus scaturiginis Goetghebuer, 1940: 62.

Type material examined. *Orthocladus scaturiginis*: HOLOTYPE: ♂ stored in isinglass, now mounted on slide, labelled: ‘*Orthocladus scaturiginis* n. sp. // type ♂ Goetghebuer // type locality environ d’Abisko en Laponie Suédoise, Thienemann, 1939 // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer’.

Comments. *Orthocladus scaturiginis* was listed among *nomina dubia* in Orthocladiinae by ASHE & O’CONNOR (2012). The holotype male is not well preserved but can be identified as a *Georthocladus* because of the presence of acrostichals and pulvilli (SÆTHER & SUBLETTE

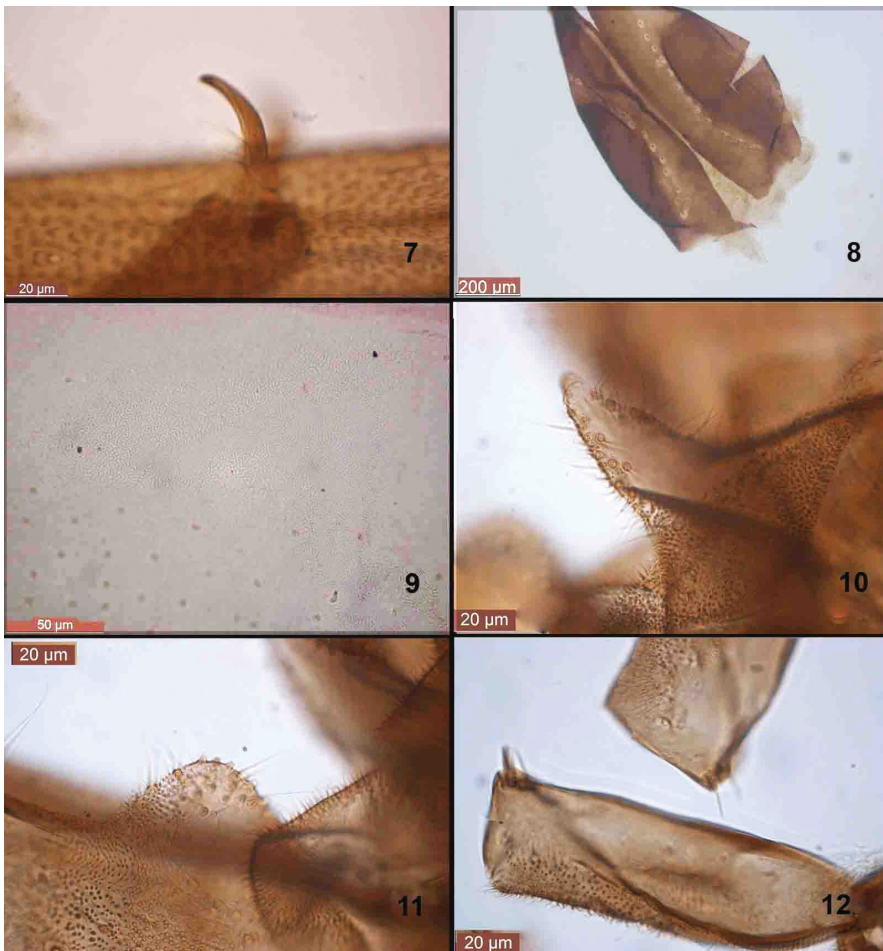
1983); only one broken antenna is present. The species is similar to *Georthocladius platystylus* Sæther & Sublette, 1983.

***Hydrobaenus conformis* (Holmgren, 1869)**

Chironomus conformis Holmgren, 1869: 42.

Orthocladius obesus Goetghebuer, 1940: 60.

Type material examined. *Orthocladius obesus*: HOLOTYPE: pinned ♂, now mounted on slide, labelled: ‘*Orthocladius obesus* n. sp. // type ♂ / M. Goetghebuer // type locality Abisko Lapp Sved Thienemann 1939 // R.I.SC.N.B. 18.073 / Coll. et det. M. Goetghebuer’.



Figs 7–12. *Georthocladius scaturiginis* (Goetghebuer, 1940). 7 – claws and pulvilli, 8 – thorax, 9 – wing points, 10 – anal point, 11 – inferior volsella, 12 – gonostylus.

Comments. The synonymy of *O. obesus* with *H. conformis* was already proposed by SÆTHER (1976), even if the type material was probably not examined; the present examination of the holotype confirms the synonymy.

Hydrobaenus distylus (Potthast, 1914)

Orthocladius distylus Potthast, 1914: 371.

Orthocladius antennalis Goetghebuer, 1944: 39, **syn. nov.**

Type material examined. *Orthocladius antennalis*: LECTOTYPE and PARALECTOTYPE (here designated): two ♂♂ in isinglass, mounted on different slides; one slide labelled ‘*Orthocladius antennalis* Melle 29. III.1944 // Lectotype // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer’, one slide labelled ‘*Orthocladius antennalis* Melle 29. III.1944 // Paralectotype // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer’.

Additional material examined. 1 pinned ♂ (non-type material but from the same type locality) labelled ‘Reg. Mus. Hist. Nat. Belg. I. G. 10.148 // Dr. M. Goetghebuer det., 1933: *Orthocladius distylus* Kief. // Melle 2.IV.23 M. Goetghebuer // *distylus* Kief.’

Comments. ASHE & O’CONNOR (2012) listed *O. antennalis* Goetghebuer, 1944 among *nomina dubia* in Orthoclaadiinae. *Metriocnemus antennalis* Kieffer, 1921 is from another type locality and belongs to another genus. The examination of genitalia supports that *O. distylus* is conspecific with *O. antennalis*.

The wing membrane with faint punctation, squama with setae, presence of acrostichals, absence of pulvilli and the shape of hypopygium suggest the inclusion of all the three specimens in *Hydrobaenus* Fries, 1830. Therefore, *O. antennalis* is here stated as a junior synonym of *H. distylus*.

Lapposmittia succinea (Goetghebuer, 1942), **comb. nov.**

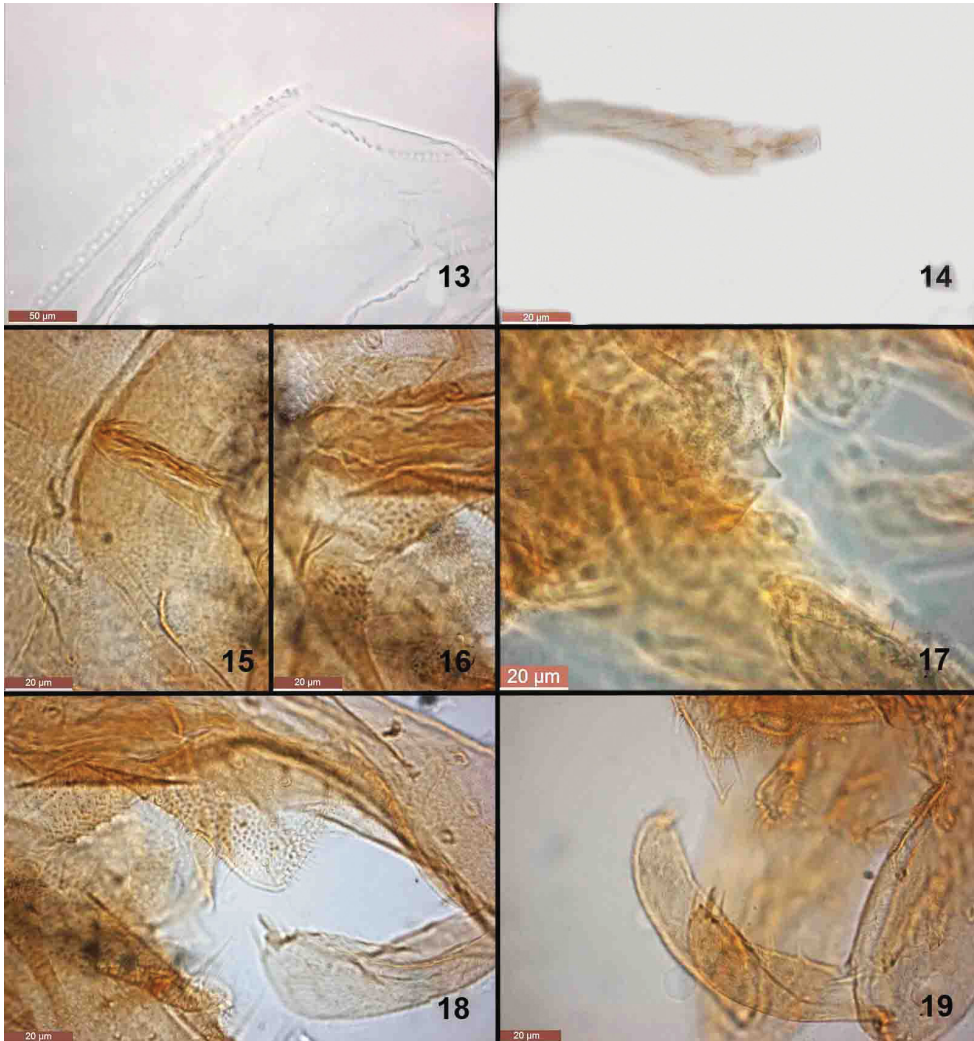
(Figs 13–19)

Orthocladius succineus Goetghebuer, 1942: 664.

Type material examined. *Orthocladius succineus*: LECTOTYPE and PARALECTOTYPE (here designated): two ♂♂, in isinglass, now mounted on the same slide, labelled: ‘*Orthocladius succineus* Goetgh. // Lectotype // Paralectotype // Allemagne 1941 dr. Thienemann // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer’. The labels “Lectotype” and “Paralectotype” are added on the slide near the respective specimens, an Indian ink line separates the two specimens.

Comments. GOETGHEBUER (1942) wrote in his original publication, in a footnote on page 664: ‘came from the Großen Plöner See, more precise data on the collecting locality and time cannot be given’. ASHE & O’CONNOR (2012) listed *Orthocladius succineus* among *nomina dubia* in Orthoclaadiinae.

The specimens are in very poor condition, but the observable characters allow to conclude that the species fits reasonably well in *Lapposmittia* because of bare wings, eyes and squama, well visible pulvilli, a transparent triangular anal point, well developed virga, a sternapodeme with oral projections, inferior volsella with a rectangular dorsal lobe, and a gently curved gonostylus without crista dorsalis. The generic diagnosis must be emended, because the costa is moderately extended, the antennal plume is not reduced, and the sternapodeme has only moderately developed anterior projections.



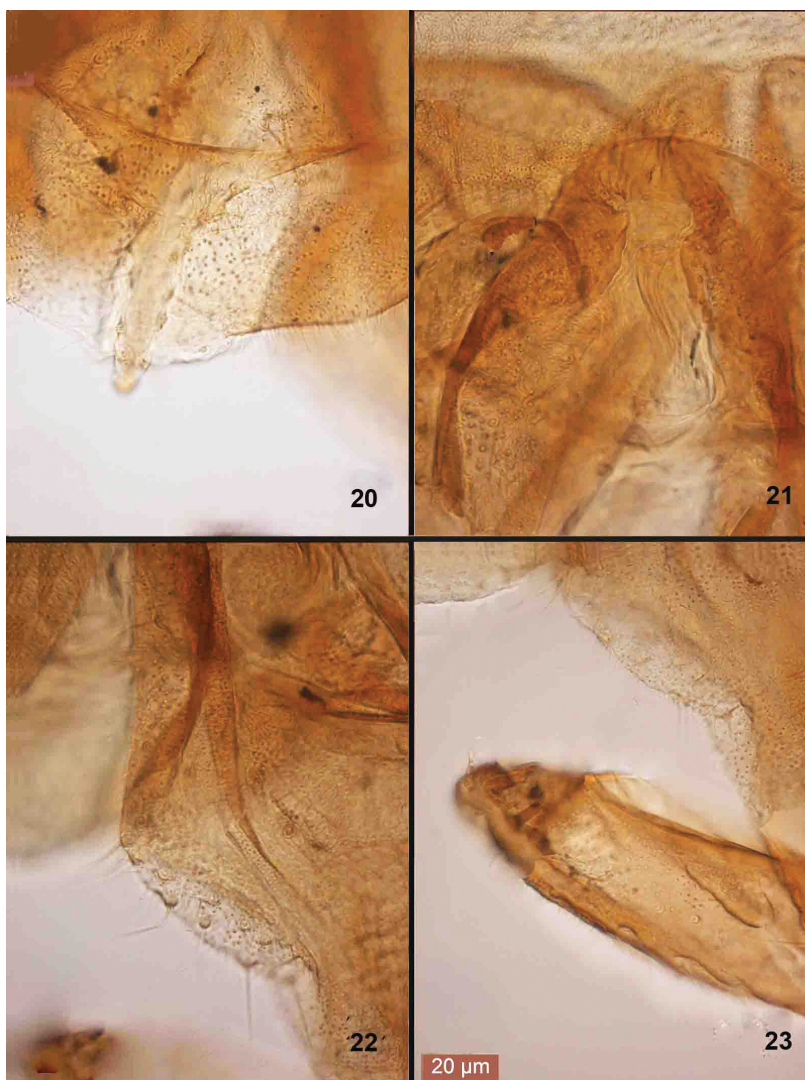
Figs 13–19. *Lapposmittia succinea* (Goetghebuer, 1942). 13 – wing, 14 – pulvilli, 15 – virga, 16 – superior volsella, 17 – anal point, 18 – inferior volsella, 19 – gonostylus.

***Orthocladius* (*Euorthocladius*) *tolleti* Goetghebuer, 1944, stat. nov.**

(Figs 20–23)

Orthocladius tolleti Goetghebuer, 1944: 39.

Type material examined. *Orthocladius tolleti*: HOLOTYPE: ♂ pinned, now mounted on slide, labelled '*Orthocladius tolleti* n. sp. // type ♂ / M. Goetghebuer // type locality Onoz-Spy, 14.V.1942, R. Tollet legit // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer'.



Figs 20–23. *Orthocladius* (*Euorthocladius*) *tolleti* (Goetghebuer, 1944). 20 – anal point, 21 – virga, 22 – inferior volsella, 23 – gonostylus.

Comments. Only the last three abdominal segments and the genitalia are preserved. A detailed examination of the hypopygium shows that it belongs to the subgenus *Euorthocladius* Thienemann, 1935, but it does not fit with any other known species. ASHE & O’CONNOR (2012: 703) listed the name among *nomina dubia* in Orthocladiinae; despite the specimen being in very poor condition, it is considered a valid species.

***Orthocladius (Orthocladius) glabripennis* (Goetghebuer, 1921)**

(Figs 24–29)

Dactylocladius glabripennis Goetghebuer, 1921: 85.*Orthocladius glabripennis* Staeg. Unavailable collection name.

Type material examined. *Dactylocladius glabripennis*: LECTOTYPE (designated by PINDER & CRANSTON 1976): pinned ♂ without hypopygium and a ♂ hypopygium, mounted on slide by P. Cranston, type locality: 'Flanders, Destelbergen, 26.III.1916'. PARALECTOTYPE: 1 pinned ♂, now mounted on slide, labelled '*Dactylocladius glabripennis* Coll. et det. Gtgh. M. Goetghebuer // Flanders, Destelbergen, 26.III.1916'.

Additional material examined. 1 pinned ♂ now mounted on slide, labelled 'M. Goetghebuer det. *Orthocladius glabripennis* Staeg. // R. Mus. Hist. Nat. Belg. I.G. 14.228 // Heusden 20.III.1916 M. Goetghebuer'; 1 pinned ♂ without hypopygium, now mounted on slide, labelled 'Arendonck 29.VI.1926 A. Ball.'; 1 pinned ♂ without hypopygium, now mounted on slide, labelled 'Baraque Fraiture (Mare) 11.VIII.1954 // R.I.S.C.N.B. I.G. 21.717'.



Figs 24–29. *Orthocladius (Orthocladius) glabripennis* (Goetghebuer, 1921). 24 – antenna, 25 – wing, 26 – palps, 27 – hypopygium, 28 – inferior volsella, 29 – superior volsella.

Comments. The lectotype of *O. glabripennis* is a pinned male without hypopygium, the isolated hypopygium was mounted on a slide and figured by LANGTON & CRANSTON (1991); in RBINS there was also another pinned male from the same type locality, now mounted on a slide; this paralectotype and the other (non-type) mounted specimens are provided with a large, about 30–40 µm wide dorsal lobe on the inferior volsella, projecting from a gonocoxite 347 µm long and 42 µm wide; all the above characters agree with the description by LANGTON & CRANSTON (1991).

***Orthocladius (Orthocladius) lapponicus* Goetghebuer, 1940**

Orthocladius lapponicus Goetghebuer, 1940: 60.

Type material examined. LECTOTYPE (designated by SOPONIS 1977): ♂ (slide) labelled ‘*Orthocladius lapponicus* n. sp. // Env. d’Abisko Lap. Suedoise 1939 A. Thienemann // type M. Goetghebuer // lectotype A. R. Sponis, 1975’. PARALECTOTYPE: ♂ (slide), labelled: ‘*Orthocladius lapponicus* n. sp. same locality // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer Paratype – AR Sponis 1975’.

Comments. The species is just mounted on a slide and well described in another publication (SOPONIS 1977). Nothing to add here.

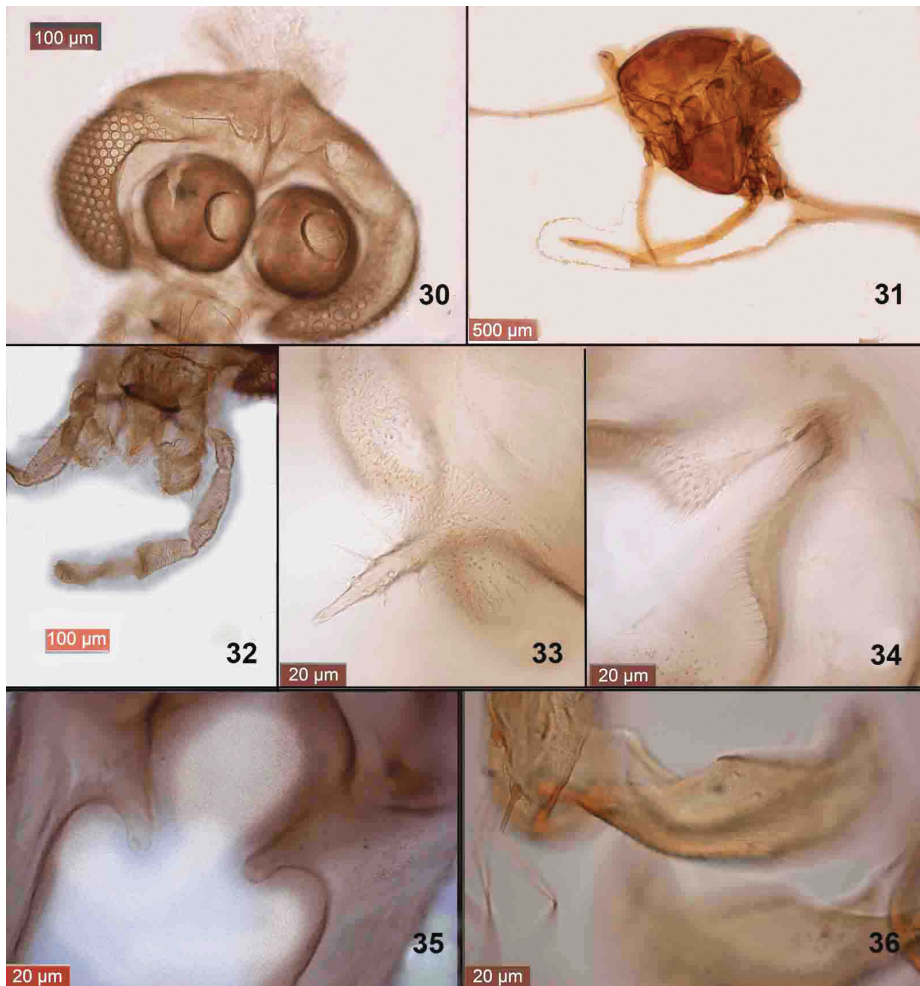
***Orthocladius (Orthocladius) mitisi* Goetghebuer, 1938, stat. restit.**

(Figs 30–36)

Orthocladius mitisi Goetghebuer, 1938: 458.

Type material examined. HOLOTYPE: ♂ mounted on slide, labelled: ‘*Orthocladius mitisi* 1938 // type locality: Basse Autriche // Coll et det. M. Goetghebuer *Orthocladius mitisi* Goetgh. R.I.Sc.N.B.18.073’.

Comments. The holotype of *Orthocladius mitisi* was mounted on a slide from a specimen formerly compressed in isinglass between two layers of celluloid (LANGTON & CRANSTON 1991). LANGTON & CRANSTON (1991) considered *O. mitisi* as a junior synonym of *O. glabripennis* (Goetghebuer, 1921) on the basis of the genitalia and similarity between pupal exuviae labelled ‘*mitisi*’ at the Zoologische Staatssammlung des Bayerischen Staates, Munich, Germany (ZSM) and the pupal exuviae of *O. glabripennis* (LANGTON 1984). Except for missing antennae the specimen is rather well preserved and recognized here as a distinct species. This conclusion is based on the following evidence. The dorsal lobe on the inferior volsella is very narrow, 13–15 µm wide on a gonocoxite 277 µm long and 40 µm wide, whereas in *O. glabripennis* the dorsal lobe is proportionally much wider. This large difference supports the conclusion that *O. mitisi* and *O. glabripennis* are different species. In addition, the thorax in *O. mitisi* has light brown vittae, while in *O. glabripennis* the vittae are darker. The hypopygium of the holotype of *O. mitisi* has some similarity with other species in *Orthocladius* s. str., such as *O. timoni* (see below), *O. excavatus* Brundin, 1947 and *O. marchettii* Rossaro & Prato, 1991, but all are well different from *O. glabripennis*. See also the section on *Orthocladius timoni* below.



Figs 30–36. *Orthocladius (Orthocladius) mitisi* Goetghebuer, 1938: 30 – eyes, 31 – thorax, 32 – palps, 33 – anal point, 34 – superior volsella, 35 – inferior volsella, 36 – gonostylus.

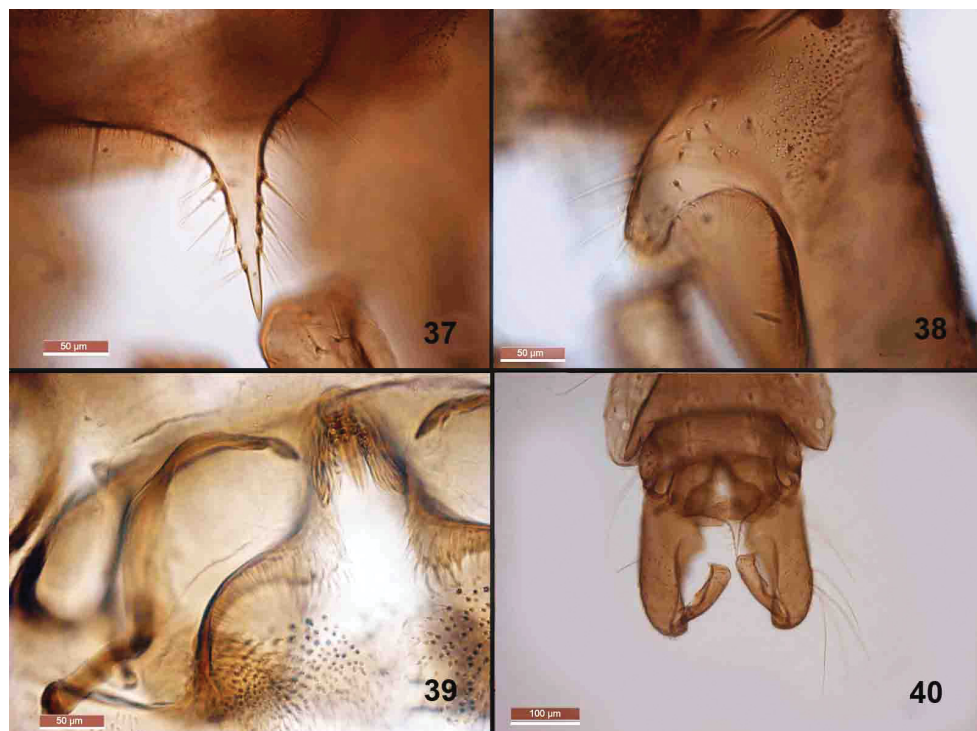
Orthocladius (Orthocladius) timoni Goetghebuer & Timon-David, 1939

(Figs 37–40)

Orthocladius (Orthocladius) timoni Goetghebuer & Timon-David, 1939: 69.

Type material examined. LECTOTYPE (pinned ♂, present designation) and PARALECTOTYPE (pinned ♂), both now mounted on the same slide and labelled: ‘*Orthocladius timoni* n. sp. // type ♂ Goetghebuer // Env. Marseille 1938, leg. Timon David // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer’. The labels “Lectotype” and “Paralectotype” are added on the slide near the respective specimens, an Indian ink line separates the two specimens.

Comments. *Orthocladius timoni* was listed as a *nomen dubium* in Orthoclaadiinae by ASHE & O’CONNOR (2012). The specimens are in good condition and the examination of the hypopygi-



Figs 37–40. *Orthocladius (Orthocladius) timoni* Goetghebuer & Timon-David, 1939. 37 – anal point, 38 – inferior volsella, 39 – virga and superior volsella, 40 – hypopygium.

um allows the assignment of the species to the subgenus *Orthocladius* s. str., but a separation from other species within the subgenus is not easy without associated exuviae or molecular data even if the details of the hypopygium, such as the anal point, the superior and inferior volsella and the presence of virga suggest a possible conspecificity with *O. (O.) excavatus* Brundin, 1947; the species can be considered tentatively valid, but for the same reasons reported for other species of the subgenus at present a formal synonymy is not recommended.

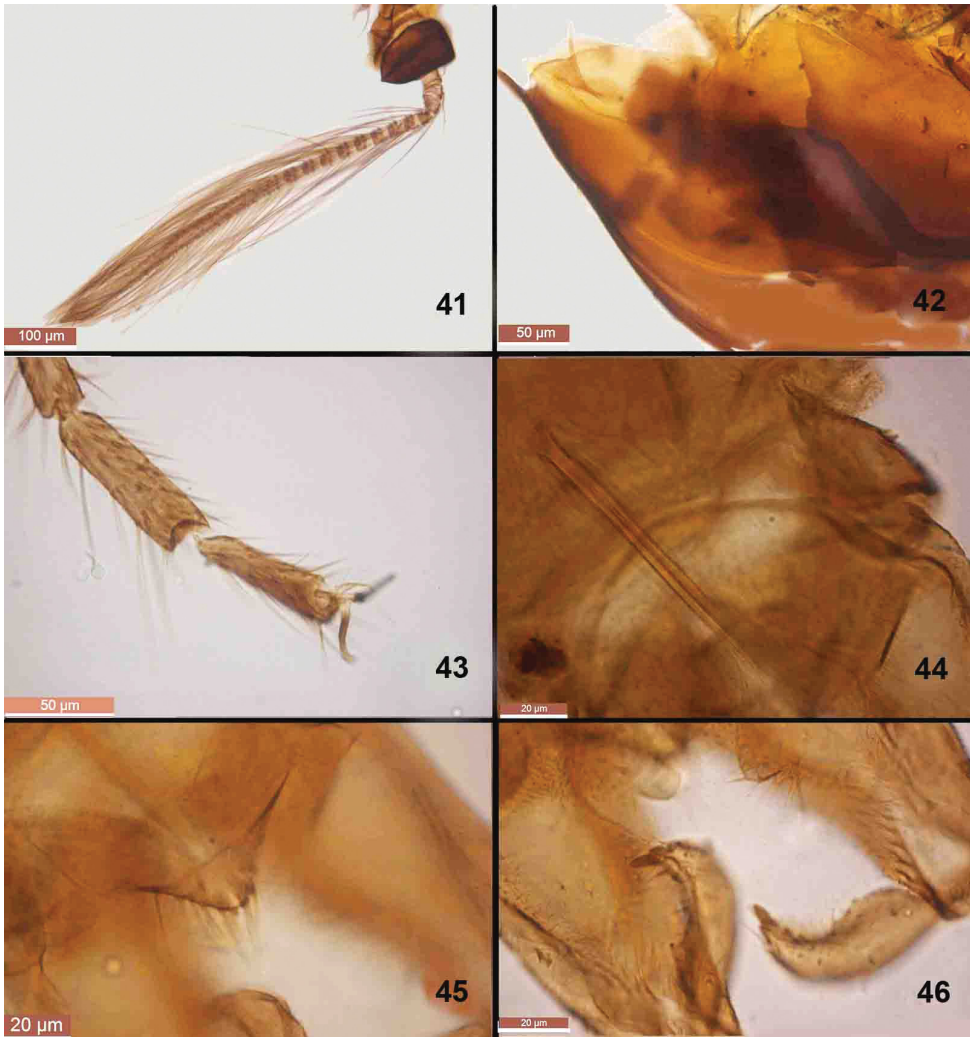
***Pseudorthocladius (Pseudorthocladius) hockaiensis* (Goetghebuer, 1933), comb. nov.**

(Figs 41–46)

Orthocladius (Dactylocladius) hockaiensis Goetghebuer, 1933: 289.

Type material examined. LECTOTYPE (present designation): ♂ in isinglass, now mounted on slide, labelled: ‘*Orth. hockaiensis* Hockai Hautes Fagnes 17.VI.1932 // type ♂ / M. Goetghebuer // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer’. PARALECTOTYPES: 2 ♂♂ in isinglass, now mounted on slide, with hypopygium only, same locality, except sampling date: 19.VI.32.

Redescription. Antennal plume well developed. Wing: squama (broken) without visible setae, with fine punctation, Cu₁ strongly curved. Pulvilli present. Virga very long and large,



Figs 41–46. *Pseudorthocladius hockaiensis* (Goetghebuer, 1933). 41 – antenna, 42 – thorax, 43 – pulvilli, 44 – virga, 45 – anal point, 46 – gonostylus.

similar to the one observed in *P. macrovirgatus* Sæther & Sublette, 1983, but much longer, about 100 micron long.

Comments. ASHE & O'CONNOR (2012) listed *Orthocladius hockaiensis* among *nomina dubia* in Orthoclaudiinae; the examination of type material shows that the species belongs to the genus *Pseudorthocladius* Goetghebuer, 1943 and does not fit with any other described species.

Table 1. List of types assigned to *Orthocladius* van der Wulp, 1874, examined from RBINS.

Accepted species name	Original combination	Type status	Orig. preserv.	Sex	Present state of art
<i>Chaetocladus rusticus</i>	<i>Orthocladus rusticus</i>	LT + PLT	slide	♂♂	no change
<i>Cricotopus</i> (<i>Paratrilocladus</i>) <i>rufiventris</i>	<i>Orthocladus franzi</i>	HT	pinned	♂	junior synonym
<i>Cricotopus</i> (<i>Paratrilocladus</i>) <i>skirwithensis</i>	<i>Orthocladus nigrilus</i>	HT	isinglass	♂	junior synonym
<i>Georthocladus collarti</i>	<i>Orthocladus collarti</i>	LT + PLT	pinned	♂♂	valid name, comb. nov.
<i>Georthocladus scaturiginis</i>	<i>Orthocladus scaturiginis</i>	HT	isinglass	♂	valid name, comb. nov.
<i>Hydrobaenus conformis</i>	<i>Orthocladus obesus</i>	HT	pinned	♂	no change
<i>Hydrobaenus distylus</i>	<i>Orthocladus antennalis</i>	LT + PLT	isinglass	♂♂	junior synonym
<i>Lapposmittia succinea</i>	<i>Orthocladus succineus</i>	HT	isinglass	♂	valid name, comb. nov.
<i>Orthocladus</i> (<i>Euorthocladus</i>) <i>tolleti</i>	<i>Orthocladus tolleti</i>	HT	pinned	♂	valid name, new subgenus assignment
<i>Orthocladus</i> (<i>Orthocladus</i>) <i>glabripennis</i>	<i>Dactylocladus glabripennis</i>	LT + PLT + non-type	pinned	♂♂	valid name
<i>Orthocladus</i> (<i>Orthocladus</i>) <i>lapponicus</i>	<i>Orthocladus lapponicus</i>	LT + PLT	slide	♂♂	no change
<i>Orthocladus</i> (<i>Orthocladus</i>) <i>mitisi</i>	<i>Orthocladus mitisi</i>	HT	isinglass	♂	valid name, new subgenus assignment
<i>Orthocladus</i> (<i>Orthocladus</i>) <i>timoni</i>	<i>Orthocladus timoni</i>	LT + PLT	pinned	♂♂	valid name, new subgenus assignment
<i>Pseudorthocladus hockayensis</i>	<i>Orthocladus hockayensis</i>	LT + 2 PLT	isinglass	♂♂	valid name, comb. nov.

**Non-type material examined of the genus
Orthocladus sensu GOETGHEBUER (1940–1950)**

***Bryophaenocladus muscicola* (Kieffer, 1906)**

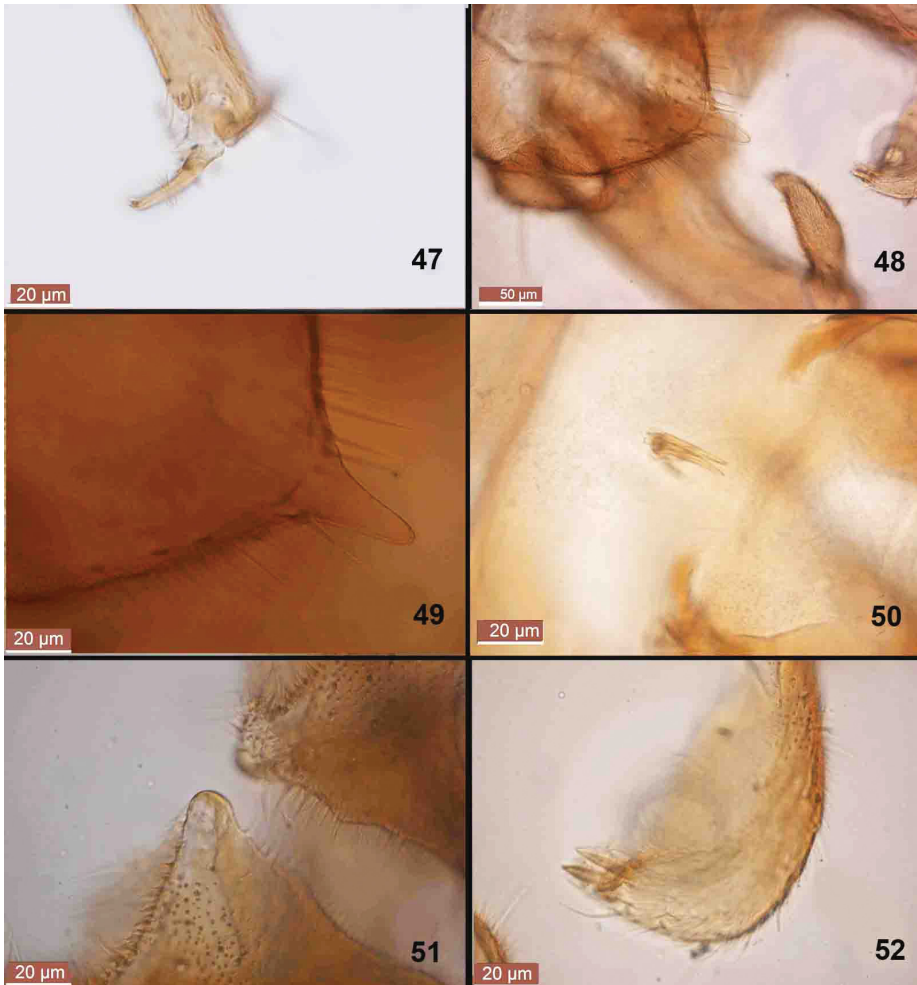
Orthocladus muscicola Kieffer, 1906: 332.

Material examined. 1 ♂ pinned, now mounted on slide, labelled ‘*Orthocladus muscicola*, Kieff Coll. et det. M. Goetghebuer // Hockai, 1.VII.1920 // 817’.

Comments. The specimen is not from the type locality. The hypopygium is lacking, but the wings with coarse points, squama with setae and the well-developed acrostichals suggest conspecificity with *B. muscicola* (Kieffer, 1906). It is non-type material so nothing more is here stated other than that it belongs to *Bryophaenocladus* Thienemann, 1934.

***Orthocladius corax* (Kieffer, 1924)**

(Figs 47–52)

? Orthocladius corax Kieffer, 1924: 65.**Material examined.** 1 ♂ in isinglass, now mounted on slide, labelled '*Orthocladius corax* // locality Silésie 23.III.1944 // ex. coll. Bettinger, Belg. I. G. 12.595'.**Comments.** ASHE & O'CONNOR (2012) listed *Orthocladius corax* Kieffer, 1924 among *nomina dubia* in Orthocladiinae. The bare eyes, the fine wing punctuation, squama with setae, presence of acrostichals, absence of pulvilli, the presence of an anal point rounded at the apex suggest inclusion of the species in *Hydrobaenus* Fries, 1830.

Figs 47–52. *Hydrobaenus corax* (Kieffer, 1924). 47 – pulvilli, 48 – hypopygium, 49 – anal point, 50 – virga, 51 – inferior volsella, 52 – gonostylus.

The species appears to be valid based on specimens examined, however the material examined is non-type material, even if it comes from the type area (Silésie), but being collected twenty years later. At present it cannot be ascertained whether Goetghebuer's identification of the RBINS specimen is correct or a misidentification of *O. corax*.

***Orthocladus (Eudactylocladius) spitzbergensis* (Kieffer, 1919)**

Dactylocladius spitzbergensis Kieffer, 1919 in KIEFFER & THIENEMANN (1919: 116).

Material examined. 1 ♀ pinned, now mounted on slide, labelled '*Dactylocladius spitzbergensis* // Greenland East 10.VIII.1926 // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer'.

Comments. ASHE & O'CONNOR (2012) listed *Dactylocladius spitzbergensis* among *nomina dubia* probably in *Orthocladus (Eudactylocladius)*. The examined female is from Greenland, not from the type locality (Spitzbergen, Cross Bay, Ebelthof harbour). It is very damaged, including the genitalia, which do not allow an accurate redescription or an evaluation whether Goetghebuer's determination of this specimen was a correct identification of *D. spitzbergensis*. Therefore, no change in the generic placement and status is proposed here (see ASHE & O'CONNOR 2012).

***Orthocladus (Mesorthocladus) frigidus* (Zetterstedt, 1838)**

Chironomus frigidus Zetterstedt, 1838: 812.

Orthocladus sydowi n.sp., unavailable collection name.

Material examined. 2 pinned ♂♂, now mounted on the same slide labelled '*Orthocladus sydowi* n.sp. // Tyrol 1941 leg. Dr. Sydow Deut. Mus. Berlin // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer'.

Comments. The specimens can be easily identified as *O. (Mesorthocladus) frigidus*. The specific epithet 'sydowi' is not reported in ASHE & O'CONNOR (2012), nor in any other publication we are aware of. Therefore, *Orthocladus 'sydowi'* is treated as an unavailable collection name here.

***Orthocladus (Orthocladus) decoratus* (Holmgren, 1869)**

Chironomus decoratus Holmgren, 1869: 43.

Material examined. 1 ♂ in isinglass, mounted on slide, labelled: '*Orthocladus decoratus* Holmgren det. Goetghebuer // type locality Hoels eksp. 1930 Østgrønland Jull'; 1 ♀ in isinglass, labelled: '*Orthocladus decoratus* ♀ // type locality "Groenland 8.26 Exped. Courguoi // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer'.

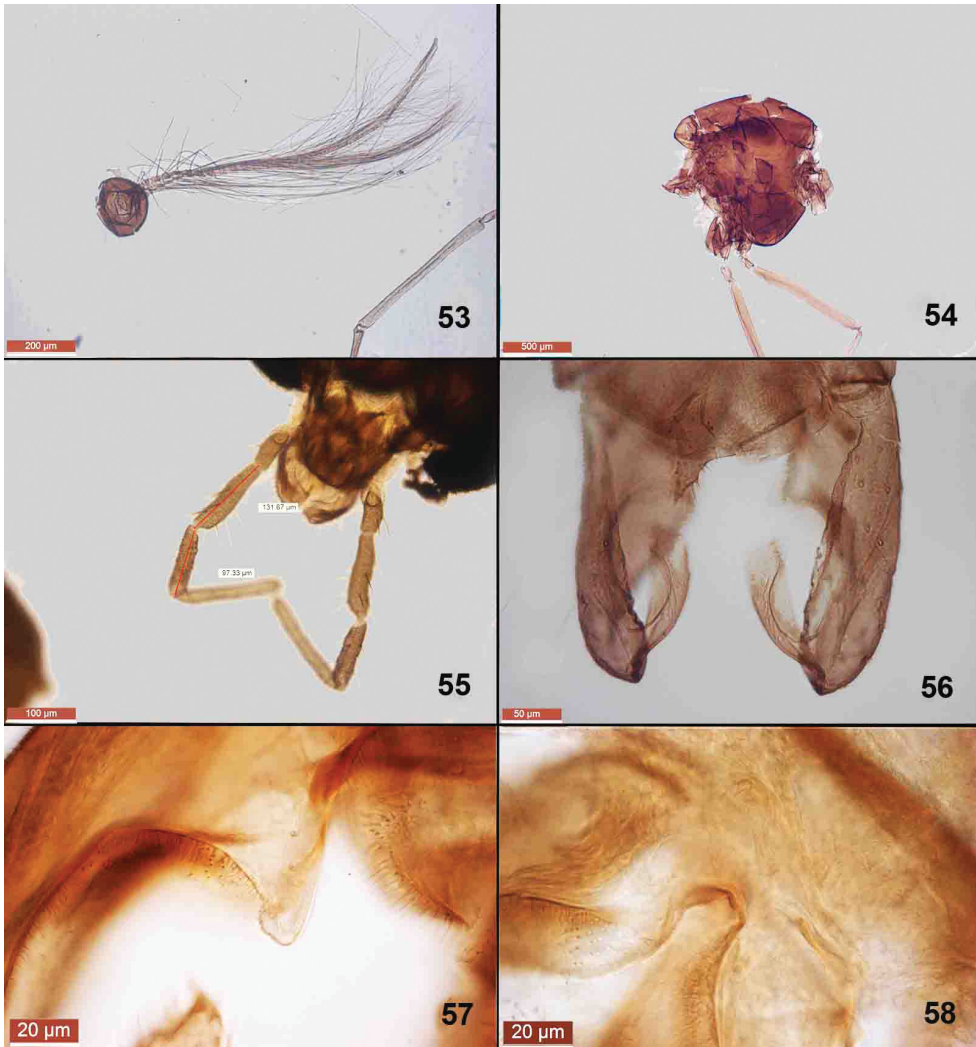
Comments. The specimens match the published descriptions of *O. decoratus* (SOPONIS 1977, ROSSARO et al. 2003).

***Orthocladus (Orthocladus) rhyacobius* Kieffer, 1911**

(Figs 53–58)

Orthocladus (Orthocladus) rhyacobius Kieffer, 1911: 181.

Material examined. 1 ♂ pinned labelled: '*O. oblidens* Edw. Brno 1937 (Zavrel) // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer'; 1 ♂ in isinglass labelled: '*Orthocladus rhyacophilus* K. Brno, Zavrel // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer', all now mounted on slides.



Figs 53–58. *Orthocladius* (*Orthocladius*) *rhyacobius* Kieffer, 1911. 53 – antenna, 54 – thorax, 55 – palps, 56 – hypopygium, 57 – inferior volsella, 58 – virga and superior volsella.

Comments. The two specimens apparently come from the same locality and are conspecific. The dorsal lobes of the inferior volsellae and the absence of virga fit the description of *O. rhyacobius* Kieffer, 1911, not with that of *O. oblidens* (Walker, 1856) (ROSSARO et al. 2003).

KIEFFER (1911: 181–182) separated *O. rhyacobius* from *O. rhyacophilus* by the color of the thoracic vittae (black in *O. rhyacophilus* versus yolk-colored ‘vitellines’ in *O. rhyacobius*) and by the relative lengths of palpomeres (Pm) 3 and 4, with the Pm 3 being longer than Pm 4 in

O. rhyacobius ('articles 2 des palpes plus long che le 3') versus the reverse in *O. rhyacophilus* ('articles 2 des palpes plus court che le 3'). It is emphasized (SPIES & SÆTHER 2004: 25–26), that Pm 3 and Pm 4 correspond to articles 2 and 3 of KIEFFER (1911). All the examined adult specimens of various species in *Orthocladius* s. str. that are present in the Department of Food, Environmental and Nutritional Science at the University of Milano (DeFENS) have Pm 3 longer than or subequal to Pm 4, never shorter, with the sole possible exception of *O. (O.) wetterensis* Brundin, 1956. The color of the vittae is variable, winter specimens are often black, while spring specimens are lighter.

The RBINS males examined are in poor condition, the color of the vittae was not registered in the pinned specimens and cannot be evaluated in the mounted slide. Consequently, in light of the problems discussed in detail by SPIES & SÆTHER (2004: 24–26), the status of these two species (*O. rhyacobius* and *O. rhyacophilus*) remains unresolved. In the present work, the solution proposed by ASHE & O'CONNOR (2012) is followed, considering *Orthocladius* (*Orthocladius*) *rhyacophilus* Kieffer, 1911, a *nomen dubium* in *Orthocladius*.

Orthocladius (Orthocladius) rubicundus (Meigen, 1818)

Chironomus rubicundus Meigen, 1818: 35.

Material examined. 1 ♂ pinned, now mounted on slide, labelled: 'M. Goetghebuer det. *Orthocladius rubicundus* Meig // *Orthocladius rubicundus* Meig. // Virton, 2.IX.1921 // R. Mus. Hist. Nat. Belg. I.G. 14.228'; 1 ♂ in isinglass, now mounted on slide, labelled: '*O. rhyacophilus* K. Brno (Zavrel) // R.I.SC.N.B. 18.073 / Coll. et det. M. Goetghebuer'.

Comments. Both specimens have weak and reduced (about 30 µm long) dorsocentrals (SOPONIS 1977) and genitalia compatible with *O. (O.) rubicundus* (ROSSARO et al. 2003); the shape of genitalia and the observation that all the other *Orthocladius* species known from the West Palearctic possess more robust and longer (about 70 µm long) dorsocentrals allows us to assign both specimens to *O. (O.) rubicundus*.

Orthocladius (Pogonocladus) consobrinus (Holmgren, 1869)

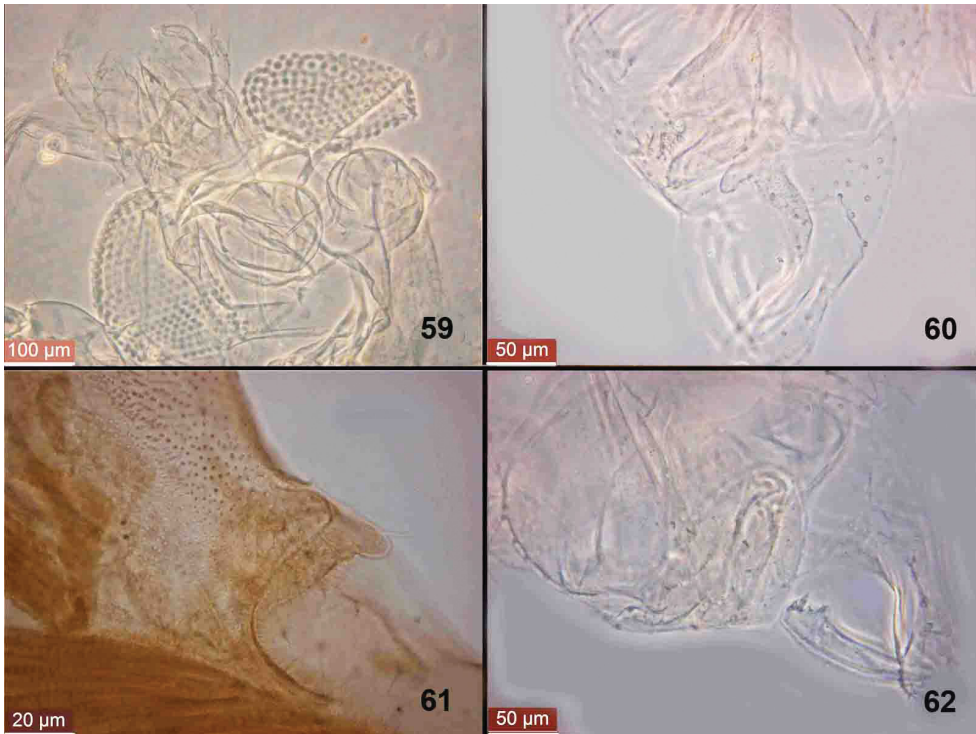
(Figs 59–62)

Chironomus consobrinus (Holmgren, 1869): 44.

Orthocladius crassicornis Goetghebuer, 1937: 31.

Material examined. 1 pinned ♂, now mounted on slide, labelled: '*Orthocladius crassicornis* Gtgh. // type ♂ / M. Goetghebuer // Env. Dublin (Irlanda) 1948 day men. Humphries // R.I.SC.N.B. 18.073 / Coll. et det. M. Goetghebuer'.

Comments. The specimen is labelled as type, but it does not originate from the type locality, which is the lake of Plön, and the sampling date does not belong to the type material. The preparation is very transparent, but can be examined using phase contrast. Examination of the genitalia suggests that the specimen belongs to *O. (P.) consobrinus* as evidenced by the very pronounced and pointed crista dorsalis on the gonostylus and the long and slender dorsal lobe of the inferior volsella. Comparison with the lectotype conserved in Naturhistoriska Riksmuseet, Stockholm (NHRM), supports the identification. The synonymy of *O. crassicornis* with *O. (P.) consobrinus* by PINDER & CRANSTON (1976) is supported by the present material.



Figs 59–62. *Orthocladius (Pogonocladius) consobrinus* (Holmgren, 1869) (= *Orthocladius crassicornis* Goetghebuer, 1937). 59 – head, 60 – inferior volsella, 61 – inferior volsella of lectotype of *P. consobrinus* from NHRM; 62 – gonostylus.

Orthocladius (Symposiocladius) lignicola Kieffer, 1914

Orthocladius lignicola Kieffer, 1914 in POTTHAST (1915: 273).

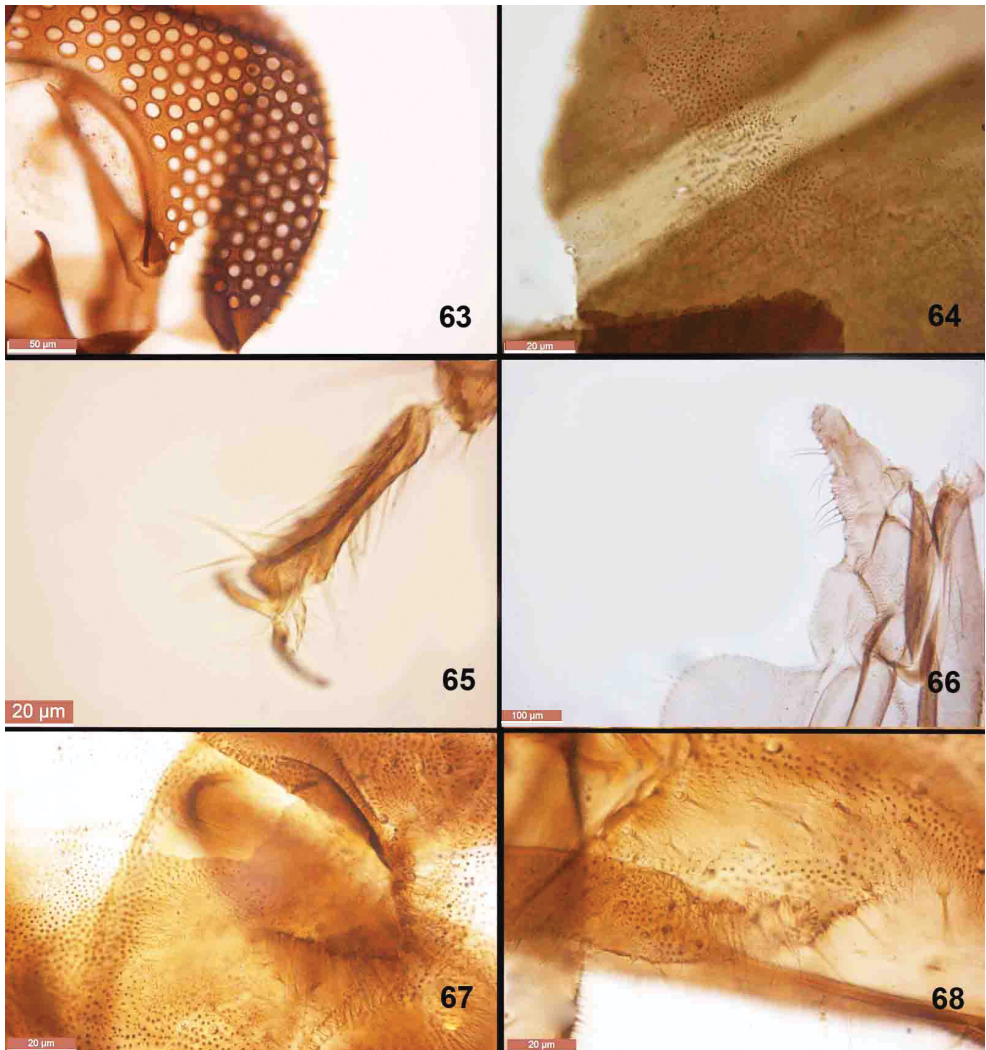
Material examined. 2 ♂♂ pinned, now mounted on slides, labelled: ‘*Orthocladius lignicola* K. // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer’, type locality not given.

Comments. The differences between the species described in the subgenus *Symposiocladius* Cranston, 1982 (SÆTHER 2004) are really small and the two RBINS specimens are in poor condition, with some body parts missing. Nevertheless, the hypopygeal structure confirms that the specimens belong to *Symposiocladius* and the length ratio of Pm 3 / Pm 4 = 114 / 78 (about 1.5) supports the identification of *O. (S.) lignicola*.

Orthocladius (Symposiocladius) ruffoi Rossaro & Prato, 1981

Orthocladius ruffoi Rossaro & Prato, 1981: 60.

Material examined. 1 ♂ in isinglass now mounted on slide, labelled: ‘*Rheorthocladius* sp. A. 416 // Heusden 20.3.16 M. Goetghebuer // Non-type, type locality Ploen (GERMANY), 1937 Humphries, P.S. Cranston, 1975 // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer’.



Figs 63–68. *Pseudorthocladius* sp. 63 – eyes, 64 – acrostichals, 65 – pulvilli, 66 – wing squama, 67 – anal point, 68 – inferior volsella.

Comments. The genus *Rheorthocladius* was created by THIENEMANN (1935) to include species of *Orthocladius* on the basis of their metamorphic stages (pupal exuviae). This male is associated with pupal exuviae labelled as *Rheorthocladius* sp. A, deposited in the Zoologische Staatssammlung München (ZSM). The last antennal flagellomere is 1066 µm long, the total length of the remaining flagellomeres is 379 µm, AR = 2.81; Pm3 length 151 µm, Pm4 length 116 µm, length ratio Pm3/Pm4 = 1.30; dorsocentrals 13; tergite IX with 13 setae. Hypopygium

as in *O. (S.) ruffoi* (see ROSSARO et al. 2003) with phallapodeme distinctly curved apically. A comparison with the holotype allows the assignment of the studied specimen to *O. (S.) ruffoi*, even though in the holotype of *O. (S.) ruffoi* the length ratio Pm3/Pm 4 is near to 1, instead of 1.30 (ROSSARO et al. 2003).

Table 2. List of non-type material of species assigned to *Orthocladius* van der Wulp, 1874 examined from RBINS.

Accepted species name	Original combination	Type status	Orig. preserv.	Sex	present state of art
<i>Bryophaenocladius muscicola</i>	<i>Orthocladius muscicola</i>	non-type	pinned	♂	no change
<i>Hydrobaenus corax</i>	<i>Orthocladius corax</i>	non-type	isinglass	♂	possibly comb. nov.
<i>Hydrobaenus distylus</i>	<i>Orthocladius distylus</i>	non-type	pinned	♂	no change
<i>Orthocladius (Eudactylocladius) spitzbergensis</i>	<i>Dactylocladius spitzbergensis</i>	non-type	pinned	♀	no change
<i>Orthocladius (Mesorthocladius) frigidus</i>	<i>Orthocladius sydowi</i>	non-type	pinned	♂	assigned valid species name
<i>Orthocladius (Orthocladius) decoratus</i>	<i>Orthocladius decoratus</i>	non-type	isinglass	♂	valid name
<i>Orthocladius (Orthocladius) decoratus</i>	<i>Orthocladius decoratus</i>	non-type	isinglass	♀	valid name
<i>Orthocladius (Orthocladius) glabripennis</i>	<i>Orthocladius glabripennis</i>	non-type	pinned	♂	valid name
<i>Orthocladius (Orthocladius) glabripennis</i>	<i>Orthocladius glabripennis</i>	non-type	pinned	♂	valid name
<i>Orthocladius (Orthocladius) glabripennis</i>	<i>Orthocladius glabripennis</i>	non-type	pinned	♂	valid name
<i>Orthocladius (Orthocladius) rhyacobius</i>	<i>Orthocladius oblidens</i>	non-type	pinned	♂	misidentified
<i>Orthocladius (Orthocladius) rhyacobius</i>	<i>Orthocladius rhyacophilus</i>	non-type	pinned	♂	possibly valid name
<i>Orthocladius (Orthocladius) rubicundus</i>	<i>Orthocladius rhyacophilus</i>	non-type	pinned	♂	misidentified
<i>Orthocladius (Orthocladius) rubicundus</i>	<i>Orthocladius rubicundus</i>	non-type	pinned	♂	valid name
<i>Orthocladius (Pogonocladius) consobrinus</i>	<i>Orthocladius crassicornis</i>	non-type labelled as type	pinned	♂	no change
<i>Orthocladius (Symposiocladius) lignicola</i>	<i>Orthocladius lignicola</i>	non-type	pinned	♂	no change
<i>Orthocladius (Symposiocladius) ruffoi</i>	<i>Rheorthocladius</i> sp. A.	non-type	isinglass	♂	assigned valid species name
<i>Pseudorthocladius</i> sp.	<i>Trissocladius nigerimus</i> (in RBINS labelled <i>Orthocladius</i>)	non-type	pinned	♂	misidentified

***Pseudorthocladius* sp.**

(Figs 63–68)

Material examined. 1 ♂, pinned, now mounted on slide, labelled: ‘*Trissocladius nigerrimus* Coll. et det. Goetgh. M. Goetghebuer // type locality: Tronchiennes, 24.III.1918’ and loaned by RBINS as *O. nigerrimus*.

Comments. We decided to analyze this species because, despite the pinned specimen being labelled as ‘*Trissocladius*’, it was in the same box of other *Orthocladius*: R.I.S.C.N.B._07_Chir_11_Suppléments Déterminés. The name *Trissocladius nigerrimus* was made available by GOETGHEBUER (1919: 59) based on a ‘large number of pupal exuviae’ that he had collected ‘in a ditch at Tronchiennes, in March’. Later GOETGHEBUER (1921: 91–92) described an unspecified number of adult males and females that he had sampled from ‘hundreds’ of specimens, the behavior of which he had observed before, during and after ‘eclosion’ from a ditch at Tronchiennes on 24.III.1918 (GOETGHEBUER 1921: 24–25). GOETGHEBUER (1919, 1921) himself suggested the possible junior synonymy of *T. nigerrimus* with *T. brevipalpis* Kieffer, 1908 in KIEFFER & THIENEMANN (1908), and this synonymy has been the state of knowledge on the case (ASHE & O’CONNOR 2012).

The examined male is labelled ‘*Trissocladius nigerrimus*’ and comes from the same type locality where GOETGHEBUER (1919, 1921) described the pupal exuviae and adults. Even if the specimen is very poorly preserved and the gonostyli have been lost, it cannot be assigned to *Trissocladius*, so it cannot be congeneric with the pupal exuviae figured in GOETGHEBUER (1919). It probably belongs to *Pseudorthocladius*, so it should represent a separate valid species. The antenna with a stiff seta (apparently broken at its tip), the wing with coarse punctuation, the squama with about 18 setae and strongly curved Cu_1 , the presence of pulvilli, the absence of tibial pseudospurs, and the anal point with strong setae suggest the inclusion in *Pseudorthocladius*. The specimen is in poor condition and we prefer not to describe it as a new species, because at present it is necessary to clarify the real status of *T. nigerrimus*.

**Species not belonging to the genus *Orthocladius* present
in the Goetghebuer’s collection in IRSNB**

Subfamily Diamesinae Kieffer, 1922

***Diamesa cinerella* Meigen, 1835**

Diamesa cinerella Meigen, 1835 in GISTL (1835: 66).

Diamesa waltlii Meigen, 1838: 13.

Material examined. 2 specimens in isinglass, now mounted on slides: one ♂ and one ♀ labelled: ‘*D. waltli* Mg. // Hockai Hautes Fagnes, 11. VI. 1912 // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer’.

Comments. The male fits well with the species description of *D. cinerella*. At this time, it is impossible to confirm species identity of the female. SERRA-TOSIO (1971: 222) described a female from a copula with a male, and WILLASSEN & SERRA-TOSIO (1988: 92) even described the female lectotype. Despite these descriptions the females within the *D. cinerella* group cannot be separated at present.

Diamesa vaillanti Serra-Tosio, 1972

Diamesa vaillanti Serra-Tosio, 1972: 10.

Syndiamesa alpina Goetghebuer, 1941: 2, an invalid junior secondary homonym of *D. alpina* Tokunaga, 1936.

Material examined. *Syndiamesa alpina*: LECTOTYPE: ♂ (slide), labelled: '*Syndiamesa alpina* n. sp. // Tyrol 12. VIII. 1939 Janets check // = *Diamesa vaillanti* S. T., E. Willassen rev. 1986 // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer'. PARALECTOTYPE: ♂ (slide), same locality, labelled '=*Diamesa zernyi*, E. Willassen rev. 86 // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer'.

Comments. The lectotype can be confirmed to belong to *D. vaillanti*, the paralectotype was identified as *D. zernyi* by Willassen, but the length × width ratio of the gonocoxite (399 × 124–175) suggests that it belongs to *D. vaillanti*. The high range width of gonocoxite observed in the paralectotype may be attributed to a different compression and orientation of the right and left gonocoxites; nevertheless, they fall within the range of *D. vaillanti*, the lectotype gonocoxite length × width ratio = 398 × 140, well in the range of *D. vaillanti*.

Syndiamesa edwardsi (Pagast, 1947)

Sympothastia edwardsi Pagast, 1947: 459.

Material examined. 2 pinned ♂♂, now mounted on the same slide, labelled: '*Synd. macronyx* K. // Gastein 13. VII. 1907 // coll. Holdenberg // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer'.

Comments. Examination of the hypopygium indicates that both specimens belong to *S. edwardsi*, characterized by a tubercle-like expansion on the gonostylus. *Syndiamesa macronyx* Kieffer, 1918 from the type locality 'Italien Alpen, Mont Cenis' (KIEFFER 1918), assigned to the genus *Onychodiamesa* Pagast, 1947 by PAGAST (1947) and currently treated as a valid species in *Diamesa*, clearly is a different species (see PAGAST 1947: Figs 17–18). It is concluded that Goetghebuer's identification of the RBINS specimen as '*Synd. macronyx*' is incorrect.

Family Prodiamesinae Sæther, 1976

Prodiamesa olivacea (Meigen, 1818)

Chironomus olivacea Meigen, 1818: 29.

Diamesa notata Staeger, 1839: 583.

Material examined. 1 pinned ♂, now mounted on slide, labelled: '*Diamesa notata* Styria Strobl. // ♂ // Collection E. CANDELE'.

Comments. We confirm that this specimen belongs to *P. olivacea*.

Subfamily Orthocladiinae Kieffer, 1911

Clunio marinus Haliday, 1855

Clunio marinus Haliday, 1855: 62.

Material examined. 1 ♂ in isinglass, now mounted on slide, labelled: '*Clunio marinus* Holm. // Knocke (br-lames) 26. VI. 1938'; 1 ♂ in isinglass, now mounted on slide, labelled: '*marinus* H. // Leysele 22. V. 1934 // R.I.S.C.N.B. 18.073 / Coll. et det. M. Goetghebuer'.

Table 3. Examined species from Goetghebuer collection not assigned to the genus *Orthocladius*.

Accepted species name	Original identification	Type status	Original preserv.	Sex	Present state of art
<i>Diamesa cinerella</i>	<i>Diamesa waltlii</i>	non-type	isinglass	♂ ♀	no change
<i>Diamesa vaillanti</i>	<i>Diamesa vaillanti</i>	lectotype	slide	♂	no change
<i>Diamesa vaillanti</i>	<i>Diamesa zernyi</i>	paratype	slide	♂	misidentified
<i>Syndiamesa edwardsi</i>	<i>Syndiamesa macronyx</i>	non-type	pinned	♂	misidentified
<i>Prodiamesa olivacea</i>	<i>Diamesa notata</i>	non-type	pinned	♂	no change
<i>Clunio marinus</i>	<i>Clunio marinus</i>	non-type	isinglass	♂	no change
<i>Chironomidae</i> sp.	<i>Clunio marinus</i>	non-type	isinglass	♂	no change
<i>Cricotopus</i> (<i>Paratricho-</i> <i>cladius</i>) <i>rufiventris</i>	<i>Trichocladus dentifer</i>	lectotype + paralectotype	slide	♂ ♀	no change
<i>Smittia nudipennis</i>	<i>Camptocladus nudi-</i> <i>pennis</i>	non-type	pinned	♂	no change

Comments. The male from Knocke has well preserved genitalia and legs, but not wings; it can be assigned to the genus, but the species cannot be confirmed. The specimen from Leysele is surely not a *Clunio* Haliday, 1855; only antennae, parts of thorax with a leg and abdomen without hypopygium are preserved and cannot be identified to species.

Cricotopus (*Paratricho-* *cladius*) *rufiventris* (Meigen, 1830)

Chironomus rufiventris Meigen, 1830: 249.

Trichocladus dentifer Goetghebuer, 1935: 7.

Material examined. *Trichocladus dentifer*: LECTOTYPE: ♂ (slide) labelled: 'Trichocladus dentifer n sp // Röserenbach Geijskes // Type ♂ / M. Goetghebuer // *alpestris* Goetgh. det. M. Hirvenoja // Holotypus reconnu par M. Hirvenoja 1968'. PARALECTOTYPE: ♀ (slide) labelled: 'TRICHOCLADIUS dentifer Gtgh. // R.I.Sc.N.B.18.073 / Coll. et det. M. Goetghebuer // Allolectotypus reconnu par M. Hirvenoja 1968'.

Comments. HIRVENOJA (1973: 89) identified one female from the type series of *T. dentifer* as *Cricotopus curtus* Hirvenoja, 1973, and one male and two females as *Paratricho-*
cladius rufiventris, designating the male as lectotypus (labelled Holotypus) and one female as paralectotypus (labelled Allolectotypus). The slides were reexamined and the synonymy is confirmed.

Smittia nudipennis (Goetghebuer, 1913)

Camptocladus nudipennis Goetghebuer, 1913: 166.

Material examined. 1 pinned ♂ now mounted on slide, labelled: 'Camptocladus nudipennis, Coll. et det. Goetgh. M. Goetghebuer // Gand, 31.III.1914'.

Comments. The hypopygium is lacking so the specimen cannot be confirmed to be *S. nudipennis* even if it cannot be excluded.

Acknowledgements

The authors are grateful to the Royal Belgian Institute of Natural Sciences (RBINS) for having loaned the specimens examined, to prof. Peter Cranston (Australian National University, Canberra, Australia) and to Dr. Martin Spies (Zoologische Staatssammlung München, Germany) for having read the first draft of the manuscript and provided important advice.

References

- ALBU P. 1972: Doua specii de Chironomide noi pentru stiinta în Masivul Retezat. (Two species of chironomids new to science from the Retezat Mountains). *Studii și Cercețări de Biologie. Seria Biologie Animală* **24**: 15–20 (in Romanian, English summary).
- ASHE P. & O'CONNOR J. P. 2009: *A World Catalogue of Chironomidae (Diptera). Part 1. Buchonomyiinae, Chilenomyiinae, Podonominae, Aphroteniinae, Tanypodinae, Usambaromyiinae, Diamesinae, Prodiamesinae and Telmatogetoninae*. The Irish Biogeographical Society and National Museum of Ireland, Dublin, 445 pp.
- ASHE P. & O'CONNOR J. P. 2012: *A World Catalogue of Chironomidae (Diptera) Part 2. Orthoclaudiinae*. The Irish Biographical Society and National Museum of Ireland, Dublin, 968 pp.
- CRANSTON P. S. & KROSCH M. N. 2015: DNA sequences and austral taxa indicate generic synonymy of Paratrichocladius Santos-Abreu with Cricotopus Wulp (Diptera: Chironomidae). *Systematic Entomology* **40**: 719–732.
- GISTL J. 1835: Neue Arten von Dipteren aus der Umgegend von München, benannt und beschrieben von Meigen, aufgefunden von Dr. J. Waltl. *Faunus* **2**: 66–72.
- GOETGHEBUER M. 1919: Observations sur les larves et les nymphes de quelques Chironomides de Belgique. *Annales Biologie Lacustre* **9**: 51–78.
- GOETGHEBUER M. 1921: Chironomides de Belgique et spécialement de la zone des Flandres. *Mémoires du Musée Royal d'Histoire Naturelle de Belgique* **8**: 1–210.
- GOETGHEBUER M. 1942: Diagnose de trois Orthocladines nouveaux. *Archiv für Hydrobiologie* **38**: 663–664.
- GOETGHEBUER M. 1940–1950: Tendipedidae (Chironomidae). f) Subfamille Orthoclaudiinae. A. Die Imagines. In: LINDNER E. (ed.): *Die Fliegen der palaearktischen Region* **13g**: 1–208.
- HIRVENOJA M. 1973: Revision der Gattung Cricotopus van der Wulp und ihrer Verwandten (Diptera, Chironomidae). *Annales Zoologici Fennici* **10**: 1–363.
- KIEFFER J. J. 1911: Nouveaux Tendipédides du groupe Orthocladius [Dipt.]. (1re note). *Bulletin de la Société Entomologique de France* **1911**: 181–187.
- KIEFFER J. J. 1918: Beschreibung neuer, auf Lazaretschiffen des östlichen Kriegsschauplatzes und bei Ignalino in Litauen von Dr. W. Horn gesammelter Chironomiden, mit Übersichtstabellen einiger Gruppen von paläarktischen Arten (Dipt.). *Entomologischen Mitteilungen* **7**: 35–53, 94–110, 163–170, 177–188.
- KIEFFER J. J. & THIENEMANN A. 1908: Neue und bekannte Chironomiden und ihre Metamorphose. I. Neue und bekannte Chironomiden. *Zeitschrift für Wissenschaftliche Insektenbiologie* **4**: 1–10.
- KIEFFER J. J. & THIENEMANN A. 1919: Chironomiden, gesammelt von Dr. A. Koch (Münster) auf den Lofoten, der Bäreninsel und Spitzbergen (Dipt.). (Vorwort von A. Koch: 38–39). Chironomiden der nördlichen Polarregion. *Entomologische Mitteilungen* **8**: 110–120.
- LANGTON P. H. 1984: *A key to pupal exuviae of British Chironomidae*. March, Cambridge, 324 pp.
- LANGTON P. H. & CRANSTON P. S. 1991: Pupae in nomenclature and identification: West Palaearctic Orthocladius s. str. (Diptera: Chironomidae) revised. *Systematic Entomology* **16**: 239–252.
- LANGTON P. H. & PINDER L. C. V. 2007: *Keys to the adult male Chironomidae of Britain and Ireland*. Freshwater Biological Association, Scient. Publ. **64** (2 volumes): 239 + 168 pp.
- LANGTON P. H. & VISSER H. 2003: *Chironomidae exuviae. A key to pupal exuviae of the West Palaearctic Region*. World Biodiversity Database. CD-ROM Ser.; ETI, Amsterdam.
- MONTAGNA M., MEREGHETTI V., LENCIONI V. & ROSSARO B. 2016: Integrated taxonomy and DNA barcoding of alpine midges (Diptera: Chironomidae). *PLOS ONE* **11**(e0149673): 1–20.
- PAGAST F. 1947: Systematik und Verbreitung der um die Gattung Diamesa Gruppiereten Chironomiden. *Archiv für Hydrobiologie* **41**: 435–596.

- PINDER L. C. V. & CRANSTON P. S. 1976: Morphology of the male imagines of *Orthocladius* (*Pogonocladus*) *consobrinus* and *O. glabripennis* with observations on the taxonomic status of *O. glabripennis* (Diptera: Chironomidae). *Entomologica Scandinavica* **7**: 19–23.
- POTTHAST A. 1915: Über die Metamorphose der *Orthocladius*-Gruppe. (Ein Beitrag zur Kenntnis der Chironomiden). *Archiv für Hydrobiologie, Supplement* **2**: 243–376.
- ROSSARO B. & CASALEGNO C. 2001: Description of the pupal exuviae of some species belonging to *Orthocladius* s. str. van der Wulp, 1874 (Diptera: Chironomidae: Orthoclaudiinae), with a new key to species of West Palaearctic region. *Zootaxa* **7**: 1–20.
- ROSSARO B., CASALEGNO C. & LENCIONI V. 2002: West Palaearctic species belonging to the subgenus *Orthocladius* s. str. (Diptera, Chironomidae). *Bollettino di Zoologia Agraria e Bachicoltura, Ser. II* **34**: 227–233.
- ROSSARO B., LENCIONI V. & CASALEGNO C. 2003: Revision of West Palaearctic species of *Orthocladius* s. str. van der Wulp, 1874 (Diptera: Chironomidae: Orthoclaudiinae), with a new key to species. *Studi Trentini di Scienze Naturali, Acta Biologica* **79**: 213–241.
- SÆTHER O. A. 1969: Some Nearctic Podonominae, Diamesinae and Orthoclaudiinae (Diptera: Chironomidae). *Bulletin of the Fisheries Research Board of Canada* **170**: 1–154.
- SÆTHER O. A. 1976: Revision of *Hydrobaenus*, *Trissocladus*, *Zalutschia*, *Paratrissocladus*, and some related genera (Diptera: Chironomidae). *Bulletin of the Fishery, Research Board Canada* **195**: 1–287.
- SÆTHER O. A. 2004: A review of *Orthocladius* subgenus *Symposiocladus* Cranston (Diptera: Chironomidae). *Aquatic Insects* **25**: 281–317.
- SÆTHER O. A. & SUBLETTE J. E. 1983: A review of the genera *Doithrix* n. gen., *Georthocladius* Strenzke, *Parachaetocladus* Wülker and *Pseudorthocladius* Goetghebuer (Diptera: Chironomidae, Orthoclaudiinae). *Entomologica Scandinavica, Supplement* **20**: 1–100.
- SERRA-TOSIO B. 1971: *Contribution à l'étude taxonomique, phylogénétique, biogéographique et écologique des Diamesini (Diptera, Chironomidae) d'Europe*. Doct. thesis, Université Scientifique et Médicale Grenoble. Vol. I: pp. 2A–2E, 1–303; vol. II: pp. 304–462 + [1], pls 1–184.
- SOPONIS A. R. 1977: A revision of the Nearctic species of *Orthocladius* (*Orthocladius*) van der Wulp (Diptera: Chironomidae). *Memoires of the Entomological Society of Canada* **102**: 1–187.
- SOPONIS A. R. 1986: The transfer of *Orthocladius rusticus* Goetghebuer to *Chaetocladus* with a redescription of the type (Diptera: Chironomidae). *Entomologica Scandinavica* **17**: 299–300.
- SPIES M. & SÆTHER O. A. 2004: Notes and recommendations on taxonomy and nomenclature of Chironomidae (Diptera). *Zootaxa* **752**: 1–90.
- THIENEMANN A. 1935: Chironomiden-Metamorphosen. X. “*Orthocladius-Dactylocladus*” (Dipt.) *Stettiner Entomologische Zeitung* **96**: 201–224.
- WILLASSEN E. & SERRA-TOSIO B. 1988: Description de trois femelles de *Diamesa* Meigen dont *D. cinerella* Meigen (lectotype et paratype) (Diptera, Chironomidae). *Spixiana, Supplement* **14**: 91–100.
- WIRTH W. W. & MARSTON N. 1968: A method for mounting small insects on microscope slides in Canada Balsam. *Annals of the Entomological Society of America* **61**: 783–784.