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**Revision of the genus *Smittia* Holmgren, 1869
(Diptera Chironomidae Orthocladiinae), 2nd note**

Abstract - A revision of the genus *Smittia* Holmgren (Diptera Chironomidae subfamily Orthocladiinae tribe Metriocnemini) is carried out. Three new species, *S. abruzzae*, *S. alpilonga* and *S. stercoraria* are here described, *S. alpicola* Goetghebuer, 1941 is redescribed from type material, *S. rostrata* Goetghebuer in Schmölzer, 1962, previously considered a *nomen dubium*, is redescribed from type material.

Species descriptions are based on adult males morphology, at present no diagnostic character is available to separate adult females, pupae and larvae. A key to identify the known palearctic species is given.

Riassunto - *Revisione del genere Smittia Holmgren (Diptera Chironomidae Orthocladiinae) 2a nota.*

Sono descritte alcune specie paleartiche del genere *Smittia* Holmgren, 1869 (Diptera Chironomidae sottofamiglia Orthocladiinae tribù Metriocnemini). Tre specie sono nuove per la scienza: *S. abruzzae*, *S. alpilonga* e *S. stercoraria*. *S. alpicola* Goetghebuer, 1941 è ridescritta da materiale tipico, *S. rostrata* Goetghebuer in Schmölzer, 1962, già ritenuta *nomen dubium*, è ridescritta da materiale tipico. Le descrizioni sono basate sull'esame degli adulti maschi, attualmente non sono noti caratteri per classificare le femmine, le larve e le pupe. E' stata preparata una chiave dicotomica per identificare gli adulti maschi finora noti nella regione paleartica.

Key words: Diptera, Chironomidae, *Smittia*, taxonomy, new species.

INTRODUCTION

The genus *Smittia* Holmgren, 1869 is a large genus containing many species. Edwards (1929) and Goetghebuer (1943) described about 50 species from adult males. At present some species are assigned to other genera, others are *nomina dubia*. Many species require description or redescription. Pinder (1978) gave a key to the species

known to occur in Great Britain. Rossaro (1988) described the species known to occur in Italy, Caspers (1988) described 2 new species from Bavarian Alps, Rossaro & Delettre (1992) described a new species from Brittany, France, Rossaro & Orendt (in press) described a new species from Bavarian Alps. A complete revision of the genus is a very long task, because of the very large number of species included in the genus, but the need of determining the well established species is stringent so in the present paper a key to palearctic species is given, together the description of 3 new species and redescription of other 2.

The following type material has been examined:

British Museum (Natural History), London, England (BMNH):

– *Hydrobaenus (Smittia) contingens*, (Walker, 1956), 4 males paratypes,

Institut Royal des Sciences Naturelle de Belgique, Bruxelles, Belgium (R.I.Sc.N.B.):

– *Smittia alpina* Kieffer in Hubault, 1927, nomen dubium: 3 males, not type material, not type locality, Goetghebuer det., I.G. 18.073

– *Smittia alpicola* Goetghebuer, 1941: 3 types, lectotype 1 male, paralectotypes 2 males, I.G. 18.073.

– *Smittia rostrata* Goetghebuer in Schmölzer, 1962: 10 types, lectotype 1 male, paralectotypes 3 males, 6 females. I.G. 18.073.

– *Camptocladius* (= *Smittia*) *stercorarius* (De Geer, 1776): 2 males, 2 males without hypopygium, 4 females, one male a misidentified *Smittia* sp., here assigned to *S. stercoraria* n. sp., coll. Ex Bett, I.G.12.595.

GENUS *Smittia* Holmgren, 1869

HOLMGREN, 1869: K. Svenska VetenskAkad. Handl., 8(5):47.

Type-species: *Chironomus brevipennis* Bohemann, 1865: Öfvers K. VetenskAkad. Förh., 8: 575 (mon.).

A detailed description of the genus is in Cranston et al. (1989). Terminology follows Sæther (1980). Additions to the genus description are: antennal tip with 1 or 2 apical setae, eyes hairy in most species, with very short microtrichia in some species (*S. pratorum*, *S. amoena*). A small superior volsella is present in some species. Pars ventralis more or less developed. Inferior volsella separable into a dorsal and a ventral lobe in some species. Gonostylus with a smooth outer margin, with a crest in *S. abruzzae*, with a spiniform expansion in *S. scutellosetosa* and in *S. amoena*.

Crista dorsalis generally developed in the distal part of gonostylus, in *S. reissi* developed in the proximal part, absent in some species (*S. contingens*, *S. celtica*). Gonostylus sometime with a median expansion (*S. alpilonga*, *S. rostrata*).

KEY TO ADULT MALES

- 1 Anal point short, microtrichia more or less extended to apex, only the very distal part is sometime devoid of microtrichia 2
- Anal point with the distal part always devoid of microtrichia, if microtrichia are present they are restricted to the proximal part 4
- 2 Gonostylus with a triangular crista dorsalis developed for $\frac{1}{3}$ of gonostylus total length (Pinder, 1978), anal point triangular, with pointed apex *S. leucopogon* (Meigen, 1818)
- Gonostylus in the distal part with a rounded well developed crista dorsalis 3
- 3 Anal point with rounded apex, very developed crista dorsalis, inferior volsella triangular ..
..... *S. aterrima* (Meigen, 1818)
- Anal point with pointed apex, triangular, crista dorsalis not very expanded, inferior volsella rounded *S. stercoraria* n. sp.
- 4 Gonostylus with an outer margin with a more or less developed characteristic spiniform expansion 5
- Gonostylus without spiniform expansion on the outer margin 7
- 5 Spiniform expansion on the outer margin of gonostylus very developed, similar to the one observed in some *Limnophyes* species (Sæther, 1990) 6
- Outer margin of gonostylus with a crest *S. abruzzae* n.sp.
- 6 Inferior volsella about triangular, with rounded apex, eyes not hairy, only shortly pubescent
..... *S. amoena* Caspers, 1988
- Inferior volsella digitiform, eyes hairy *S. scutellosetosa* Caspers, 1988
- 7 Gonostylus without a developed distal crista dorsalis 8
- Gonostylus with a more or less developed distal crista dorsalis 10
- 8 Crista dorsalis developed only in the proximal part of gonostylus, distal part pubescent, without crista dorsalis, dorsal lobe of inferior volsella hyaline, virga absent
..... *Smittia reissi* Rossaro & Orendt, 2000
- Crista dorsalis not developed in proximal part of gonostylus, gonostylus slender in its distal part 9
- 9 Inferior volsella present with a characteristic posterior lobe, anal point short, narrow with pointed apex, virga present *S. contingens* (Walker, 1956)
- Inferior volsella absent, anal point long, rounded at apex, virga absent, eyes naked. AR<1
..... *S. celtica* Rossaro & Delettre, 1992
- 10 Gonostylus with an evident enlargement in its medial part, proximal to crista dorsalis 11
- Gonostylus without median enlargement 12
- 11 Inferior volsella digitiform, antenna often with 2 apical setae *S. alpilonga* n.sp.
- Inferior volsella rounded, antenna always with only 1 apical seta
..... *S. rostrata* Goetghebuer in Schmölzer, 1962
- 12 Gonostylus with a very developed crista dorsalis, anal point with rounded apex, proximal part with microtrichia, inferior volsella large; ventral lobe covered by dorsal lobe, AR very high >2.0, eyes hairy *S. foliacea* (Kieffer, 1921)
- Crista dorsalis of gonostylus less pronounced, inferior volsella not so large, AR < 2.0, eyes hairy or naked 13
- 13 Eyes naked, microtrichia between ommatidia very short and difficult to see, anal point long and large, squared at its apex, inferior volsella with a characteristic chitinized spur; ventral lobe evident below dorsal lobe *S. pratorum* (Goetghebuer, 1927)
- Eyes hairy 14

- 14 Alar lobe absent (Pinder, 1978), inferior volsella with a rounded dorsal lobe, without microtrichia, not covering an elongated ventral lobe which is full of microtrichia, anal point long with rounded apex, $AR < 1.0$ *S. nudipennis* (Goetghebuer, 1913)
 – Alar lobe present 15
 15 Inferior volsella small, pointed at apex, anal point short, virga present
 *S. alpicola* Goetghebuer, 1941
 – Inferior volsella small, triangular, rounded at apex, anal point narrow, very pointed at its apex, virga absent *S. edwardsi* Goetghebuer, 1932

SPECIES DESCRIPTION

Abbreviations:

A.R. = antennal ratio, length of the last flagellomere divided by the length of all the other flagellomeres

Anp = anal point of male hypopygium

Gc = gonocoxite of male hypopygium

AnP/Gc = ratio between anal point length and gonocoxite length.

Measures: all measures are in micron ($= \mu$), except ratios. Minimum and maximum values are given, mean ($m =$) is given when stated.

Smittia abruzzae n. sp. (Fig. 1)

= *Smittia* sp. FX sensu Rossaro, 1988

Type locality, a spring near Pescasseroli, P. N. Abruzzi, 22.4.92.

Type material: holotype 1 male deposited in Dept. Biology, Univ. of Milano, paratype in type locality, 19.5.78, 1 male. Other material examined: Po river, CRTN, Caorso, Piacenza, 1 male, Ovindoli, L'Aquila, Abruzzo, 30.7.88, 1 male, Zittola, P.N. Abruzzi, L'Aquila, Abruzzo, 22.2.91, 1 male, 22.4.92, 3 males, 18.6.92, 1 male, 6.11.92, 3 males, Vetoio, L'Aquila, 19.3.93, 1 male, Rossaro legit. All material deposited in Dept. Biol. Univ. Milano.

DIAGNOSTIC CHARACTERS: outer margin of gonostylus with a crest.

AR = 1.9 - 2.0 ($m = 1.9$), eyes hairy, anal point with rounded apex, devoid of microtrichia in its distal part, 41 - 55 ($m = 45$) μ long, AnP/Gc = 0.32 - 0.33, virga present, inferior volsella triangular, with a rounded apex, dorsal and ventral lobes not well separable, outer margin of gonostylus with a crest, crista dorsalis present not developed.

Smittia alpicola Goetgh., 1941 (Fig. 1)

= *Smittia* sp. C sensu Rossaro, 1988.

Type locality Otstalen Alpen Tyrol 17.2.1940.

Type material: lectotype 1 male, deposited in R.I.Sc.N.B.18.073. Other collection

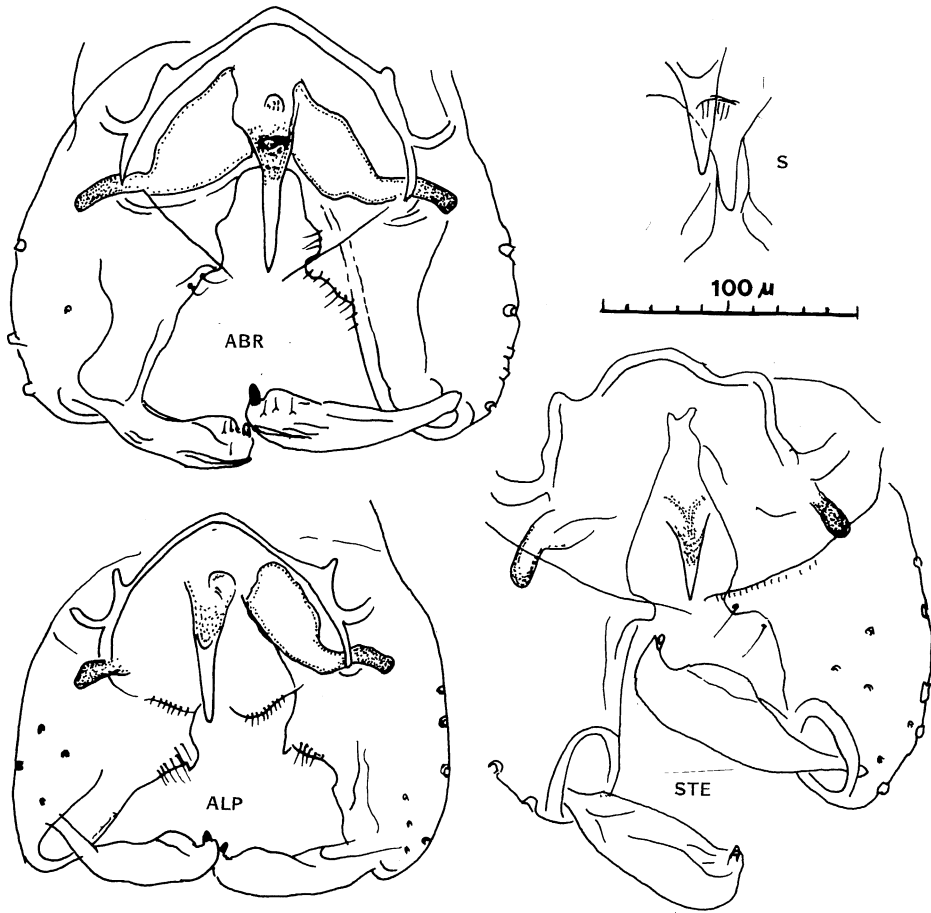


Fig. 1 - ABR = male hypopygium of *Smittia abruzzae* n. sp.; S = : detail of anal point, virga and pars ventralis of *S. stercoraria* n. sp.; STE = STE = male hypopygium of *Smittia stercoraria* n. sp.; ALP = male hypopygium of *Smittia alpicola* Goetgh.

sites: Po River, Serafini Isle, 3.5.78, 4 adult males, Mantova lake, 15.11.86, 1 male, Rossaro legit, Ahlum, Germany, 20.8.91, 6 males, Fillinger legit. All material deposited in Dept. Biol. Univ. Milano, unless otherwise stated.

DIAGNOSTIC CHARACTERS: inferior volsella pointed.

Small species, AR = 1.2 - 1.6 ($m = 1.25$), eyes hairy, anal point short, 31 - 49 ($m = 38$) μ , large at its base, with pointed apex, devoid of microtrichia in its distal part, AnP/Gc = 0.38 - 0.39, virga present with very short spines, inferior volsella pointed, with narrow apex, dorsal and ventral lobes not well separable, outer margin of gonostylus without a crest, distal crista dorsalis small.

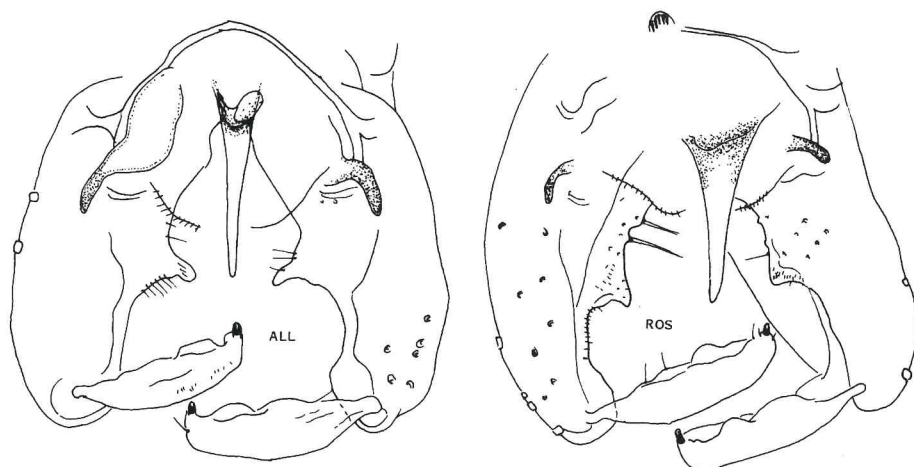


Fig. 2 - ALL - male hypopygium of *Smittia alpilonga* n. sp.; ROS = male hypopygium of *Smittia rostrata* Goetgh.

***Smittia alpilonga* n. sp. (Fig. 2)**

= *Smittia* sp. A, *Smittia* sp. G sensu Rossaro (1988).

Type locality: Veny valley, st. 2 near Rifugio Elisabetta, Estellette glacial stream, Mont Blanc, 12.9.97.

Type material: holotype 1 male, deposited in Dept. Biology, Univ. of Milano, paratypes, in type locality, 7.9.96, 2 males, 8.9.99, 1 male. Other material examined: Lehnejoch, Tyrol, Austria, 16.9.32, 3 males, Steinböck legit, deposited in R.I.Sc.N.B.. S. Bernardo, Variola lake, val Formazza, Novara, 5.10.87, 1 male, Col de la Seigne, Mont Blanc, 8.9.96, 2 males, 14.9.97, 1 male, Estellette glacier, at outlet, 8.9.96, 3 males, 12.9.97, 1 male, Schiranna, Varese lake, 4.2.96, 1 male, Rifugio Viola Valtellina, Sondrio, 17.7.85, 2 males, Rifugio Bedole, val Genova, 12.9.90, 1 male, Vetoio lake, L'Aquila, Abruzzo, 1.12.92, 1 male, Rossaro legit. All material deposited in Dept. Biol. Univ. Milano, unless otherwise stated.

DIAGNOSTIC CHARACTERS: inferior volsella digitiform, long and slender.

Large species, AR 1.4 - 2.1 ($m = 2.0$), antennal tip with 2 strong apical setae. Type material and all material from the Aosta valley has antennal tip with 2 apical setae, specimens from other localities have antennal tips with only one apical seta, but there are specimens with one seta on one antenna and 2 setae on the other. Anal point very long, 91 - 147 ($m = 95$) μ m, reaching inferior volsella. AnP/Gc = 0.44 - 0.50 ($m = 0.48$). Virga present, but in some specimens not visible, spines short. A small superior volsella is evident. A well developed pars ventralis is present. Inferior volsella digitiform, long and slender, sometime very long and slender. Gonostylus with a median enlargement, with a well developed distal crista dorsalis.

Smittia rostrata Goetghebuer in Schmölzer, 1962 (Fig. 2)

Type locality: Hohenweg zum Wolfendorn, Wildseespitze (Austria), 20.8.51, 2700 m. Schmölzer legit.

Type material: lectotype 1 male, paratypes 3 males in type locality, deposited in R.I.Sc.N.B. Other material: Miage garden, Mont Blanc, 10.9.95, 1 male, Rifugio Elisabetta, Estellete glacier, 2700m, 11.9.95, 1 male, 7.9.96, 2 males, Combal lake, 9.9.96, 10 males, Col de la Seigne, 8.9.96, 1 male, Estellette glacier, near outlet, 8.9.96, 2 males, La Les Blanc and Estellette glaciers confluence, 7.9.96, 2 males, Niscli glacier, Adamello group, Trento, 31.7.96, 1 male, Lobbia glacier, val Genova, Adamello group, Trento, 12.9.80, 1 male, Viola stream, 2700 m, Valtellina, Sondrio, 15.7.85, 1 male, Aviolo lake, 2900 m, Camonica valley, Brescia, 9.8.79, 1 male, Rossaro legit, Müttbach glacier, 10.8.96, 2 males, Lods Crozet legit.. All material deposited in Dept. Biol. Univ. Milano, unless otherwise stated.

DIAGNOSTIC CHARACTERS: inferior volsella large, triangular, with a rounded apex, gonostylus with a median enlargement.

Large species, AR 1.4 - 1.5 ($m = 1.45$), lower than in *S. alpilonga*. Anal point long, 70 - 93 ($m = 75$) μ , AnP/Gc = 0.45. Inferior volsella large, triangular, with a rounded apex, gonostylus with a median enlargement and a small moderately developed crista dorsalis.

Smittia stercoraria n. sp. (Fig. 1)

= *Smittia* sp D *sensu* Rossaro (1988).

Type locality: P. N. Abruzzi, 19.5.78.

Type material: holotype 1 male deposited in Dept. Biology, Univ. of Milano. Other material: 1 male, deposited in R.I.Sc.N.B., collection locality not decipherable. Wolfenbüttel Ahlum, 14.9.89, 7 males, Fillinger legit. Veny valley, Mont Blanc, m 2900 near a small pond, 8.9.96, 1 male, Schiranna, Varese lake, 4.2.96, 1 male, Trenno parc, Milano, 23.3.96, 1 male, Q. Romano, Milano, 28.3.97, 3 males, Vittuone, Milano, 24.3.96, 2 males, Baggio, Milano, 23.2.96, 1 male, fontanili est Milano, Pantigliate, 8.3.98, 2 males. Crosina, 8.3.98, 1 male, Po river, Olza, Cremona, 10.3.2000, Rossaro legit. All material deposited in Dept. Biol. Univ. Milano, unless otherwise stated.

DIAGNOSTIC CHARACTERS: Anal point very short, covered with microtrichia, inferior volsella rounded to square with rounded corners.

Small species, AR = 1.5 - 2.0 ($m = 1.7$). Anal point very short, 22 - 44 ($m = 30$) μ , covered with microtrichia except in its very distal part. AnP/Gc = 0.14 Virga present, but often not visible or very difficult to see, pars ventralis well developed. Inferior volsella rounded to square with rounded corners, gonostylus with a moderately developed crista dorsalis.

DISCUSSION

Three new species belonging to *Smittia* Holmgren are here described from type material: *S. abruzzae*, *S. alpilonga*, *S. stercoraria*.

In R.I.Sc.N.B. specimens determined by Goetghebuer as *S. alpina* are present, but they are not type material, which is probably lost and *S. alpina* Kieffer in Hubault, 1927 is reported by Soès & Papp (1991) as a *nomen dubium*. According to art. 75 of International Code of Zoological Nomenclature it is not recommended to establish a neotype, except there are exceptional circumstances. In this case it is not sure that the specimens present in R.I.Sc.N.B. are conspecific with *S. alpina*, so it is compulsory to describe a new species *S. alpilonga* and obviously I.R.Sc.N.B. material belongs to this species.

Nine specimens labelled as *S. stercoraria* are in R.I.Sc.N.B., many of them do not belong to *Smittia*, but to *Camptocladius stercorarius* (De Geer, 1776), one male belongs to *Smittia* and is described as a new species, *S. stercoraria* n. sp. Type material is not established on the basis of I.R.Sc.N.B. specimens because type locality is not decipherable.

S. alpicola Goetgh. is redescribed from type material found in I.R.Sc.N.B., *S. rostrata* Goetgh. is reported by Soès & Papp (1991) as a *nomen dubium*, but type material is present in I.R.Sc.N.B. so the species can be redescribed as a valid species.

All the characters used to separate species can be observed in male hypopygium. Other characters such as the number of apical setae on the antennal tips probably are subject to variation within different populations of the same species and should not be considered as characters useful to separate species. Wing venation is often used as a character to separate species within the genus, the description of the species in the present work does not consider wing venation, one reason is that wings were not in good condition in material present in I.R.Sc.N.B.

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