

Updates to the Danish crane fly fauna (Diptera, Tipuloidea) and notes on *Tipula crassicornis* Zett

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Abstract

Two species of crane flies are reported for the first time from Denmark (*Dicranophragma separatum* (Walker, 1848) and *Prionocera pubescens* Loew, 1844) and the occurrence of *Tipula pseudoirrorata* Goethgebuer, 1921 and *T. pseudovariipennis* Czizek, 1912 in Denmark is considered uncertain. *Tipula ternaria* Loew, 1864 is proposed to be a junior synonym of *T. crassicornis* Zetterstedt, 1838 (**syn. nov.**). Female genitalia of *T. crassicornis* are illustrated for the first time.

Dansk sammendrag

To stankelbensarter rapporteres for første gang fra Danmark (*Dicranophragma separatum* Walker, 1848 og *Prionocera pubescens* Loew, 1844) og dermed anses danske fund af *Tipula pseudoirrorata* Goethgebuer, 1921 og *T. pseudovariipennis* Czizek, 1912 for at være usikre. *Tipula ternaria* Loew, 1864 foreslås som junior synonym for *T. crassicornis* Zetterstedt, 1838 (**syn. nov.**). Illustrationer af genitalier på *T. crassicornis* hanner præsenteres også for første gang.

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Introduction

A short visit was made to the Zoological Museum, University of Copenhagen, Denmark (ZMUC) in March 2012, with the aim of checking the identifications in the Danish crane fly collection that mainly consists of rather old material. Most of the specimens were identified by Peder Nielsen between 1920's–1960's, and a smaller number of species by other specialists, e.g. Bernhard Mannheims. Relatively few changes to the Danish list are presented here, which indicates good taxonomic abilities of the above mentioned persons. Crane fly specimens from the General collection (i.e. non-Danish specimens) were also briefly examined. In this paper two species are reported for the first time from Denmark and the status of two other species as Danish is downgraded as uncertain.

Tipula ternaria Loew, 1864 is proposed as a new junior synonym of *T. crassicornis* Zetterstedt, 1838, and the female genitalia are illustrated for the first time for this species. The morphological terminology used here mainly follows Alexander and Byers (1981). The following acronyms for museums and collections are used in the text: MZHF – Finnish Museum of Natural History (Zoological Museum), University of Helsinki, Finland; MZLU – Museum of Zoology, Lund University, Sweden; ZMUC – Natural History Museum of Denmark (Zoological Museum), University of Copenhagen, Denmark; PCIK – Private Collection of Iiro Kakko, Hämeenlinna, Finland. Layered photos were taken using an

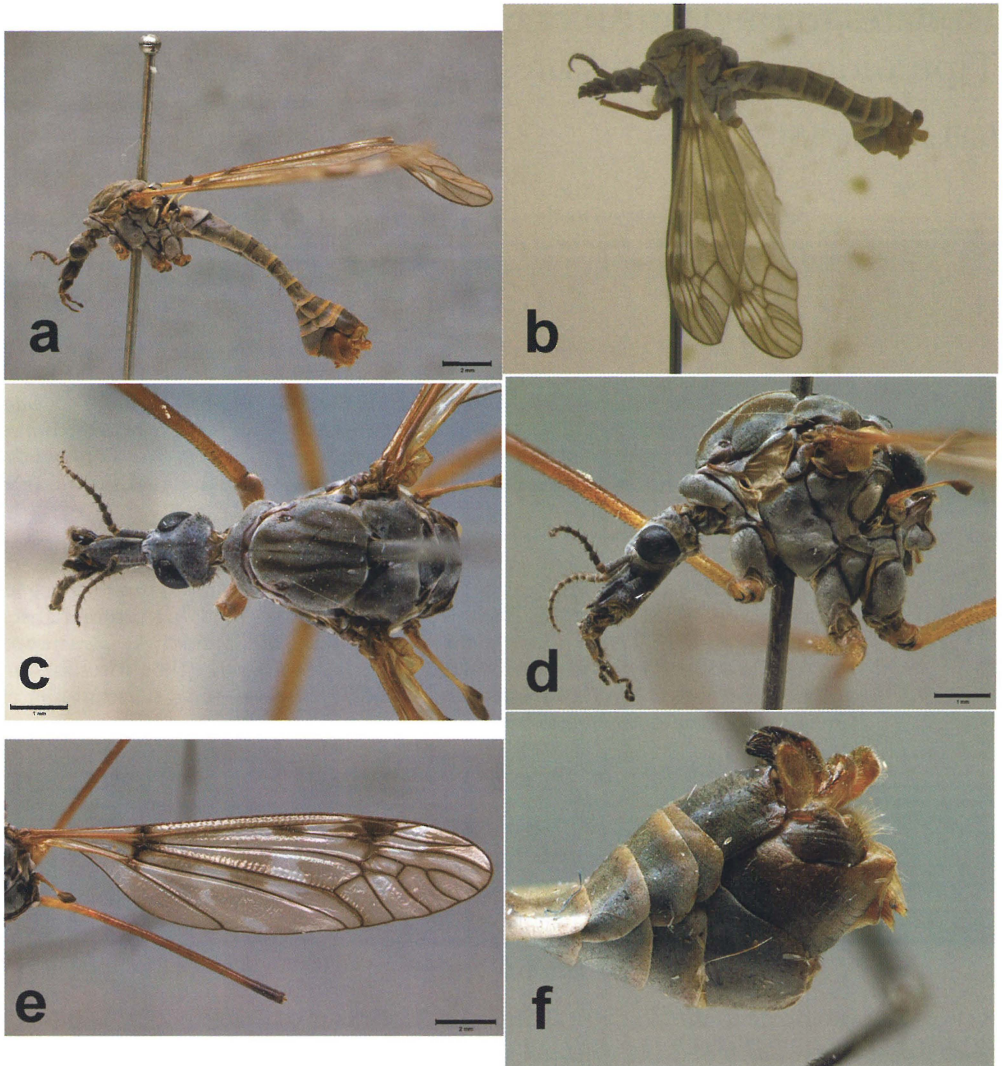


Fig. 1. *Tipula (Pterelachisus) crassicornis* Zetterstedt, 1838. a) male habitus, lateral view (Finland, Kontiolahti), b) male habitus, lateral view (USA, Alaska), c) female head and prescutum, dorsal view (Russia, Vuorijärvi), d) female head and thorax, lateral view (Russia, Vuorijärvi), e) female wing, dorsal view (Russia, Vuorijärvi), f) male hypopygium, lateral view (Finland, Lieksa).

Olympus SZX16 stereomicroscope equipped with an Olympus E520 digital camera (Figs. 1a,c-f, 2) or a Leica MZ16A stereomicroscope equipped with a Leica DFC 420 digital system camera (Fig. 1b). Digital photos were captured using the programmes Deep Focus 3.1 and Quick PHOTO CAMERA 2.3. Layered photos were finally combined with the program Combine ZP.

Changes to the list of Danish crane flies

Limoniidae

Dicranophragma (Brachylimnophila) separatum (Walker, 1848) – new to Denmark

This is a species closely allied to *Dicranophragma nemorale* (Meigen), formerly known as *Neolimnomyia nemoralis* (see Starý & Reusch 2009). Both *D. nemorale* and *D. separatum* are European species, the latter known from North Europe, eastern Central Europe and European part of Russia (Oosterbroek 2012). Salmela (2010) recorded both species in sympatry in Malmö, Sweden. *Dicranophragma separatum* is very common in Finland, known from all biogeographical provinces (Salmela 2011). Further samples are needed to clarify the occurrence of *D. nemorale* and *D. separatum* in Denmark.

Material examined: Jyll. Nebel Bæk (near Esbjerg), 19.7.1964, P. Nielsen leg. (?), 1 male; Nå-egge (near Silkeborg), 4.7.1916, P. Nielsen leg. (?) (all in ZMUC)

Tipulidae

Prionocera pubescens Loew, 1844 – new to Denmark

Østjylland, Mols, Strandkær, Lange (mose), 17.6.1960, L. Lyneborg leg., 1 male. (listed by Petersen and de Jong (2001) as likely to occur in Denmark)

The genus *Prionocera* has a reversed species richness gradient, i.e. increasing number of species with increasing latitude in Europe. For example, no species in Spain, two in France, four in Germany and nine in Finland (data from Oosterbroek 2012). *Prionocera pubescens* is one of the members of the genus present in Central Europe and British Isles. However, the species is threatened in Czech Republic (Martinovský & Barták 2005), Switzerland (Dufour 1994) and Great Britain (Falk 1991). The species is common in Finland and may be locally abundant in minerotrophic fens (Salmela 2008). In Denmark, the known locality and other potential breeding sites (bogs and fens) should be monitored to verify the current presence of the species.

Material examined: Østjylland, Mols, Strandkær, Lange (mose), 17.6.1960, L. Lyneborg leg., 1 male (in ZMUC). (Listed by Petersen and de Jong (2001) as likely to occur in Denmark; also reported from two Danish mainland sites, Ravnsholt and Toggerupp Tørvemose, near Hillerød, by Bjerg [2011]).

Remarks: The status of several other Danish mire-dwelling species of crane flies should also be evaluated. There are only a few old records of the following limoniids that are almost exclusively present in raised bogs and mires: *Erioptera beckeri* Kuntze, *E. nielseni* de Meijere and *Phylidorea heterogyna* Bergroth. Due to the deterioration of most Danish peatlands (Vinther 1985), these may either be critically endangered or already extinct.

Uncertain records

Tipulidae

Tipula (Pterelachisus) pseudoirrorata Goethgebuer, 1921 – uncertain record

Members of the subgenus *Pterelachisus* are difficult to separate based on female characters only. All available Danish material consists of females, and those specimens could also be *T. (P.) irrorata* Macquart. According to the knowledge of the author, female abdominal terminalia of *T. pseudoirrorata* have not been illustrated. Hence, either morphological description of female genitalia and subsequent re-examination of these females or male specimen are needed to verify the occurrence of this species in Denmark.

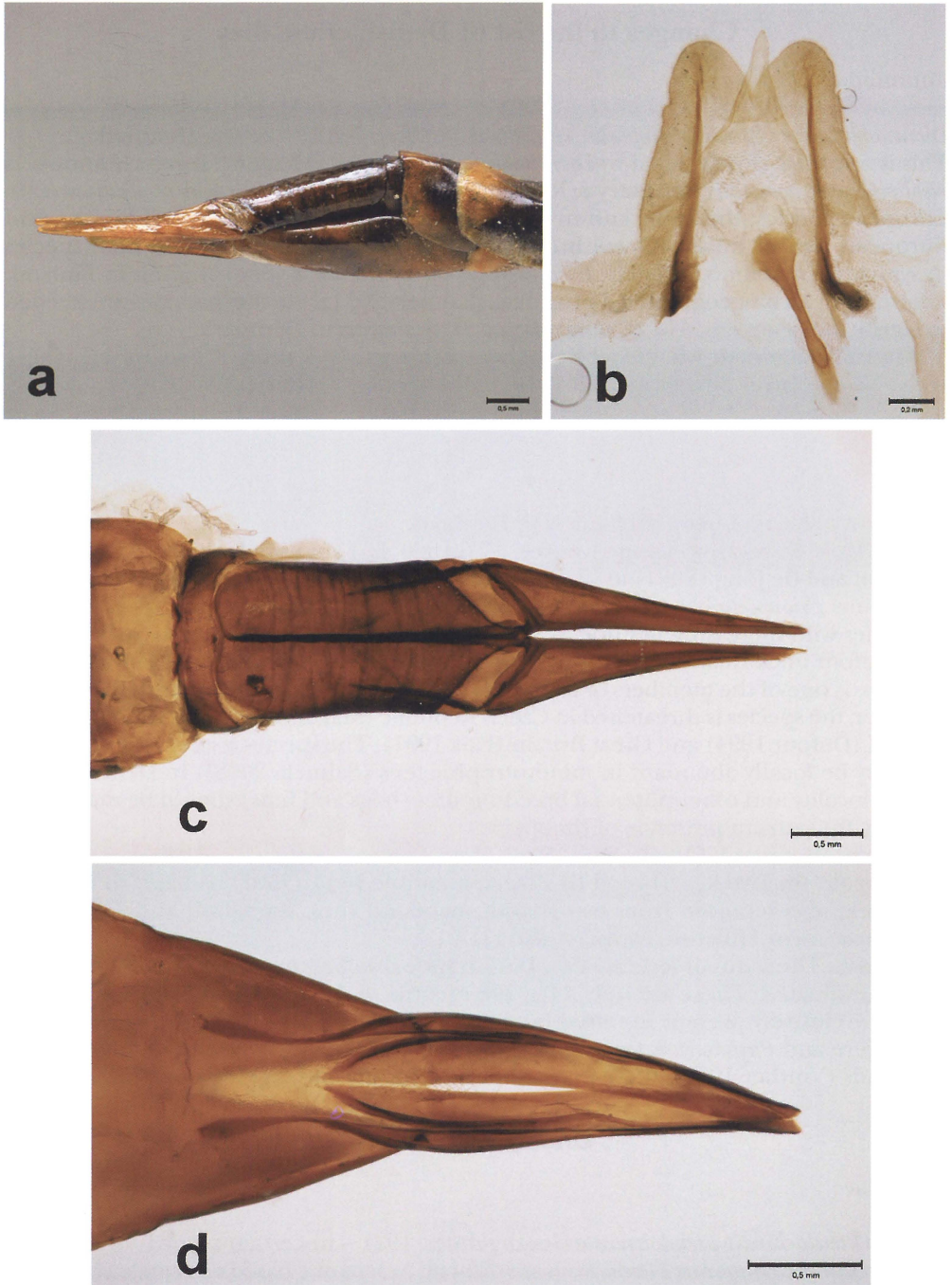


Fig. 2. *Tipula (Pterelachisus) crassicornis* Zetterstedt, 1838, female (Russia, Vuorijärvi), a) terminal abdominal segments, cerci and hypogynial valves, lateral view, b) genital fork and vaginal apodeme, ventral view, c) terminal abdominal segments and cerci, dorsal view, d) hypogynial valves and 8th sternite, dorsal view.

Material examined: Vedersø, Klit, 6.6.1954, collector unknown, 1 female; Frøbakke, Tisvilde Hegn, 4.6.1965, A.M. Hemmingsen leg, 1 female; same locality but 15.6.1965, 1 female; same locality but 16.6.1965, 1 female (all in ZMUC and identified by B. Mannheims).

Tipula (Pterelachisus) pseudovariipennis Czizek, 1912 – uncertain record

89 Danish specimens identified as *Tipula hortulana* Meigen were present in the collection. *Tipula hortulana* has caused much confusion (see e.g. Mannheims 1964) and is considered a synonym of *T. pseudovariipennis* (Oosterbroek 2012). However, all Danish specimens in the collection apparently belong to *T. (P.) submarmorata* Schummel. *Tipula pseudovariipennis* was recently removed from the list of Finnish crane flies (Salmela 2011) and the occurrence of the species in Sweden should also be re-evaluated (Swedish specimens of *T. pseudovariipennis* in MZLU, Lund, Sweden, also belong to *T. submarmorata*, J. Salmela, unpublished).

Material examined: 89 Danish specimens identified as *Tipula hortulana* Meigen (all in ZMUC).

Taxonomic note – *Tipula crassicornis*

Tipula (Pterelachisus) crassicornis Zetterstedt, 1838.

Zetterstedt 1838: 841 (as *Tipula crassicornis*, description)

Loew 1864: 57 (as *Tipula ternaria*, description, **syn n.**)

Lundström 1907: 9 (as *Tipula crassicornis*, redescription, fig. 9)

Alexander 1915: 464 (as *Tipula ternaria*, notes on holotype specimen)

Alexander 1925: 395 (as *Tipula sachalinensis*, description)

Alexander 1934: 426 (as *Tipula (Lunatipula) sachalinensis*, comparison with *T. laetibasis*, fig. 51)

Alexander 1943: 275 (as *Tipula (Oreomyza) ternaria*, key, short diagnosis, fig. 30j, 9th tergite)

Savchenko 1964: 101 (as *Tipula (Oreomyza) crassicornis*, key, redescription, fig. 64)

Theowald 1980: 463 (as *Tipula (Pterelachisus) crassicornis*, key, redescription, fig. 362)

Material examined. USA, Alaska, Matanuska, VI.1944, J. Chamberlin, 66 44, 22503Trap, 1 male (ZMUC); Russia, Vuorijärvi, 66.789 N, 30.133 E, 10.7.1934 Winter leg., 1 female (MZHF); Finland, Karelia borealis, Eno, 62.79 N, 30.16 E, Envald leg., 1 female (MZHF); Karelia borealis, Kontiolahti, 62.77 N, 29.84 E, Grönvik leg., 1 male (MZHF); Karelia borealis, Lieksa, Ruunaa, 63.33 N, 30.40 E, 3.6.2003, I. Kakko leg., 2 males (PCIK); Karelia borealis, Lieksa, Ruunaa, 63.4780 N, 30.3726 E, 5.6.2007, I. Kakko leg., 1 male (PCIK).

Tipula crassicornis was described from Sweden (Zetterstedt 1838), *T. ternaria* from Alaska, Hudson Bay Territory (Loew 1864, Alexander 1915) and *T. sachalinensis* from Russia, Sakhalin (Alexander 1925). Synonymy of *T. sachalinensis* with *T. crassicornis* was first proposed by Savchenko (1964). Despite the fact that the holotype of *T. ternaria* was not studied, it is proposed that *T. ternaria* is also a junior synonym of *T. crassicornis*. This is based on the (i) striking similarity between the male specimen from Alaska and northern European specimens and (ii) similarity of all available illustrations between *T. ternaria*, *T. sachalinensis* and *T. crassicornis*. In the Nearctic region, the species is known from USA (Alaska, New Hampshire) and Canada (Yukon, North West Territories, Alberta, New Foundland) (Alexander 1943, Oosterbroek 2012). In the Palaearctic region, the range of the species encompasses Fennoscandia, the Ukraine, Russia (Siberia and Far East) and Mongolia (Oosterbroek 2012). Thus, *T. crassicornis* has a wide-ranging Holarctic distribution, a pattern that is not uncommon among species occupying northern latitudes (e.g. Brodo 1987, Marusik & Koponen 2005).

Finnish records of *T. crassicornis* were recently mapped by Salmela (2009, fig. 3b).

However, the species is not known from the subalpine ecoregion; the specimen from Li: Utsjoki, Outakoski (MZHF) is actually *T. (P.) laetibasis* Alexander. Thus, all Finnish records are from a rather small area in the eastern part of the country, North Karelia. According to Savchenko (1964) the species inhabits meadows on hill slopes, in elevations between 400–700 m in Sakhalin, Russian Far East. Recent Finnish records are from rather dry Scots pine (*Pinus sylvestris*) forests.

Tipula crassicornis is a medium-sized tipulid, wing length 17–18 mm in males and 20–25 mm in females (Savchenko 1964). General coloration is darkish, with blue-grey pruinosity covering head, thorax and abdomen (Fig. 1a–d). Antennae 13-segmented, short in both sexes (barely exceeding length of head, Fig. 1c, d). Prescutum with four broad longitudinal stripes and a thin median dark stripe (Fig. 1c, d). Wings patterned with whitish and dark clouds (Fig. 1e). Abdominal tergites and sternites of segments 3–8 with contrasting yellow hind margins (Fig. 1a, b). Femorae yellowish, tips infuscated. Male hypopygium large, brownish or brownish yellow (Fig. 1f); for details, see Alexander (1934, as *T. sachalinensis*), Savchenko (1964), and Theowald (1980). Female cerci shorter than 10th tergite (Fig. 2a, c). 10th tergite and 8th sternite polished, with no pruinosity, dark brown; cerci yellowish brown (Fig. 2a). Basal part of hypogynial valves with light setosity (Fig. 2d). Genital fork sclerotized, vaginal apodeme mostly membranous, hyaline, (Fig. 2b).

Tipula laetibasis is perhaps the closest relative to *T. crassicornis*. Both species are externally alike, having similar wing pattern, pruinosity, short antennae and yellow abdominal rings. However, in *T. laetibasis* i) the wing is more heavily patterned and ii) yellow hind margins on abdominal tergites are wider and interrupted at the mid-point of most tergites. Male hypopygium of *T. laetibasis* is clearly differentiated from *T. crassicornis* (see e.g. Salmela et al. 2007) and female vaginal apodeme is rather sclerotized in *T. laetibasis* (membranous and hyaline in *T. crassicornis*).

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