

The occurrence of froghoppers in Belgium (Homoptera, Cercopidae)

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Summary

The Belgian species of Cercopidae are revised. In all 13 species are presently recognised in Belgian collections. No specimens were found of *Neophilaenus exclamationis* (THUNBERG, 1784) and *Aphrophora corticea* GERMAR, 1821, which, accordingly, have to be removed from the list of Belgian species. *Aphrophora willemsi* LALLEMAND, 1946 is synonymized with *Aphrophora alpina* MELICHAR, 1900. A key is given for all *Aphrophora* species occurring in Belgium.

Key-words : Cercopidae, Belgium.

Samenvatting

Er wordt een revisie gegeven van de Belgische Cercopidae. In totaal werden 13 soorten herkend in de Belgische collecties. Er werd geen enkel exemplaar gevonden van *Neophilaenus exclamationis* (THUNBERG, 1784) and *Aphrophora corticea* GERMAR, 1821, die bijgevolg verwijderd moeten worden van de lijst der Belgische soorten. *Aphrophora willemsi* LALLEMAND, 1946 is een nieuwe synoniem van *Aphrophora alpina* MELICHAR, 1900. Er wordt een sleutel gegeven van alle Belgische *Aphrophora* soorten.

Sleutelwoorden : Cercopidae, België.

Introduction

The first mention of Belgian Cercopidae in literature was given by LETHIERRY (1878) who listed seven species. In 1892 the same author publishes his "Revue des Hémiptères de Belgique" with eight Cercopidae in total, adding *Cercopis sanguinolenta* to the list of Belgian species. In contrast to this, six species were listed by COUBEAUX (1892), who also tried to provide a complete list of Hemiptera occurring in Belgium and adjacent areas. LETHIERRY's paper was probably published later in the year as he gives COUBEAUX as a reference. SYNAVE (1951) gave a new list which was primarily based on the same data and some new records from the period between. Two further species were added by myself in 1979 and 1982.

The taxonomy of European Cercopidae has made much progress since SYNAVE published his list in 1951. LE QUESNE (1965) treats the British species while NAST (1972) gives an updated check list of all palearctic species. Finally, OSSIANNILSSON (1981) gives a complete survey and redescription of all species occurring in Fennoscandia and Denmark. Since 1951 thus, several synonyms have been discovered and the identity of

many species has been clarified. In the light of this progress we have re-examined all collections ; accordingly, the list of Belgian species given below is only based on specimens, and old literature data are considered as insufficient to prove the occurrence of a species in Belgium.

Material and methods

The present study is based on material deposited in the collections of the Koninklijk Belgisch Instituut voor Natuurwetenschappen. These data are completed with own observations and collections submitted to me for identification. For this purpose several works have been used since there is no comprehensive study which covers the entire Belgian cercopid fauna : LE QUESNE (1965), HAUPT (1936), and OSSIANNILSSON (1981).

Results

For the genus *Neophilaenus* only two species were listed in SYNAVE (1951) and their occurrence in Belgium was considered as doubtful : *Neophilaenus exclamationis* (THUNBERG, 1784) and *N. albipennis* ; both species are cited without locality. The most common species, namely *N. lineatus*, was not mentioned as such, but was cited as a subspecies of *Philaenus spumarius* although it was already listed in *Neophilaenus* several times in previous publications. Furthermore, *Neophilaenus minor* and *N. campestris* are cited several times in Belgian literature anterior to SYNAVE (1951) ; *Neophilaenus campestris* and *Neophilaenus albipennis* were confirmed for the Belgian fauna by myself (VAN STALLE 1979 and 1982). Accordingly, at present four species can be distinguished in Belgian collections. There are no records of *Neophilaenus exclamationis* which has to be expelled from the list of Belgian species.

For the genus *Aphrophora*, SYNAVE (1951) lists four species from Belgium : *Aphrophora salicis*, *A. alni*, *A. corticea*, and *A. willemsi*. *Aphrophora salicis* (De Geer, 1773) is an invalid name for *Aphrophora salicina* (see

NAST, 1972). *Aphrophora corticea* GERMAR, 1821 is cited without locality in SYNAVE (1951) and NAST (1972). As no specimens could be identified as such it has to be removed from the list of Belgian species. As discussed below, *Aphrophora willemsi* LALLEMAND, 1946 has to be considered as a junior synonym of *Aphrophora alpina* MELICHAR, 1900. The earliest museum records of this species date from 1942 (the type specimens of *willemsi*), and 1943, a specimen caught in Yvoir (prov. Namur) ; hence, the description of *A. willemsi* is the first mention for Belgium in literature of this species. In 1982 I have recorded for the first time the presence in Belgium of *Aphrophora costalis* MATSUMURA, although we have found out now that the earliest captured specimens in museum collection date from 1868 !

According to HAUPT (1936), LE QUESNE (1965) and OSSIANNILSSON (1981) five species occur in western Europe ; apparently the identity of these species has been confused by LE QUESNE and moreover, there is to my knowledge no revisionary work which described these five taxa simultaneously. From the authors cited above we have made the following key which units all taxa presently found in Belgium or which are supposed to occur in Belgium ; this key is mainly based on OSSIANNILSSON (1981).

1. - Surface of fore wings hairless. Lateral borders of scutellum elevated *A. corticea* GERMAR
 - Fore wings finely pilose. Surface of scutellum plain 2
2. - Fore wings at costal border with two light spots, one larger proximally of middle and one smaller half-way between middle and apex of costal margin. These markings may be indistinct only in very dark specimens *A. alni* FALLÈN
 - Fore wings unicolorous, light or with diffuse markings 3
3. - Plate on vertex 2.5 or more times as broad as long ; fore wings uniformly brown, at most with a paler spot at base and a darker streak behind it *A. alpina* MELICHAR
 - Plate on vertex less broad 4
4. - Fore wings almost unicolorous. Pilosity of fore wing very short, hairs usually not longer than diameter of punctures. In lateral aspect, the part of ovipositor projecting beyond apex of pygofer is at most 1 times as long as wide *A. salicina* (GOEZE)
 - Fore wings with an oblong yellowish spot along basal 2/5 of costal border, and with an indistinct oblique dark transverse band distally of this spot. These markings are more distinct in live specimens. Hairs on forewings distinctly longer than diameter of punctures. In lateral aspect, the part of ovipositor projecting beyond apex of pygofer is nearly twice as long as broad *A. costalis* MATSUMURA

List of Belgian species

Aphrophora alni (FALLÈN, 1805)

Aphrophora alni ; LETHIERRY, 1878 : XXXVII ; LETHIERRY, 1892 : 22 ; Schouteden, 1901 : 269 ; LELOUP & JACQUEMART, 1963 : 138 ; LAMEERE, 1901 : 123 ; SYNAVE, 1951 : VII.

This is the most common Belgian *Aphrophora* species ; the larvae have been found feeding on many species of herbaceous plants, while *Betula* and *Salix* are preferred host plants for adults. It is widespread in Europe, North Africa, and North, Central and East Asia (OSSIANNILSSON, 1981).

Aphrophora salicina (GOEZE, 1778)

Aphrophora salicis ; LETHIERRY, 1878 : XXXVII ; LETHIERRY, 1892 : 22 ; Fokker, 1891 : CCCXLI ; Schouteden, 1901 : 269 ; LAMEERE, 1901 : 123 ; SYNAVE, 1951 : VII.

Material : 1 ♀, Cibly, 20.VII.1918, KBIN ; 1 ♀, Coxyde, 2.VII.1924, KBIN ; 3 ♂♂, 1 ♀, Moorsel, 26.VIII.1915, KBIN ; 1 ♀, Geel, 12.VIII.1941, KBIN ; 1 ♂, Boitsfort, VI.1916, coll. THIROT, KBIN ; 1 ♂, 2 ♀♀, Hoogstraeten, 12.VII.1918, A. Tonnoir, KBIN ; 1 ♀, Warsage, 11.VI.1920, KBIN ; 1 ♀, Heusden-étangs, 15.VII.1944, J. VERBEKE, KBIN ; 1 ♀, Comblain-au-Pont, 27.VI.1967, KBIN ; 1 ♂, Ronquières, 20.VII.1881, H. DONCKIER ; 1 ♂, Groenendael, coll. VAN VOLXEM, KBIN ; 1 ♀, Overmeire (Fl. or.), 25.IV.1944, J. VERBEKE, KBIN ; 2 ♂♂, 2 ♀♀, Biron, 2.VII.1968, leg. R. DETRY, KBIN ; 1 ♀, Raversijde, Duin Pr. Karel, 15.VIII.1987, leg. G. HAGHEBAERTY, KBIN ; 2 ♀♀, Recogne, 20.VI.1977, KBIN.

A. salicina is closely related with *A. costalis* and both species have been confused in the past. The adults live on *Salix* but exact host plant information is lacking (OSSIANNILSSON, 1981). The species is widespread in Europe, Asia and north Africa. In Belgium records have been made in many parts of the country but detailed information on its distribution is lacking.

Aphrophora costalis MATSUMURA, 1903

Aphrophora costalis ; VAN STALLE, 1982 : 82.

Material : 1 ♂, Heusden, étangs, 28.VI.1944, J. VERBEKE, KBIN ; 1 ♂, Warsage, 11.VI.1920, KBIN ; 2 ♀♀, Ukkel, 28.VIII.1915, KBIN ; 3 ♂♂, 1 ♀, Auderghem, V.1868, A. KOLLER, KBIN ; 1 ♂, 1 ♀, Ronquières, 29.VII.1881, H. DONCKIER ; 1 ♂, Woumen, De Blankaart, 20.VI.1970, H. SYNAVE & TIMMERMANS, KBIN ; 1 ♂, 2 ♀♀, Biron, 2.VII.1968, R.

DETRY, KBIN ; 1 ♀, Chimay (forêt dominiale), 16.VII.1986, MAGIS & POELMAN ; 1 ♀, Virelles (lac, rive N.), 8.VII.1986, MAGIS & POELMAN ; 1 ♀, Trois Ponts, 21.VII.1980, KBIN ; 1 ♀, Virelles, 23.VI.1981, KBIN.

A. costalis has been confused with *A. salicina* and was therefor never recorded in Belgium by subsequent authors, until I recognised the species in 1982 while collecting in Trois-Ponts and Virelles. Examination of older collections showed that the species has always been present in Belgium, and at least since 1968, the earliest record in museum collections ; it was not recently introduced, as could be supposed by its recent discovery.

Aphrophora alpina MELICHAR, 1900

Aphrophora willemsi LALLEMAND, 1946 : 194, syn. n.
Aphrophora willemsi ; SYNAVE, 1951 : VII.

Material : holotype ♀ and paratype, Namur, 4.VIII.1942, British Museum (Natural History) ; 1 ♀, Yvoir, 16.IX.1943, P. DE FRANQUEN.

2 ♀♀, "entre Dorinne et Purnode" (le Bocq), 28.VI.1955, G. DEMOULIN ; 1 ♀, Saint-Roch (Ferrières), 3.VII.1985, N. MAGIS ; 1 ♂, Blaimont (Eau

Blanche), 8.VII.1986, MAGIS & POELMAN ; 1 ♀, Chimay (forêt dominiale), 16.VII.1986, MAGIS & POELMAN ; 2 ♂♂, 1 ♀, Virelles (lac, rive N.), 8.VII.1986, MAGIS & POELMAN.

The female holotype and a mutilated paratype, both deposited in the British Museum, were examined. The type agrees completely with the description of *A. alpina* to which it is synonymized here. The holotype of *A. alpina* was not examined. The head and female genitalia of the type of *A. willemsi* are illustrated in fig. 1 and 2.

The species is uncommon in Belgium and it has only been recorded besouth of the line of the rivers Samber and Maas. The presence of several recent records might indicate that this species is in expansion, although this statement needs confirmation.

Lepyronia coleoprata (LINNAEUS, 1758)

Lepyronia coleoprata ; COUBEAUX, 1892 : 34 ; Schouteden, 1909 : 422 ; MARÉCHAL, 1931 : 24 ; MARÉCHAL, 1939 : 333 ; MULLER, 1936 : 162 ; SYNAVE, 1951 : VII.

Material : Dinant-Neffe, 15.VI.1947 ; Heusden, étangs (Fl. or.), 28.VI.1944 ; Torgny, 15.IX.1892 ; De Panne, 6.VIII.1930 ; La Francheville, 5.VIII.1941 Buzenol, 27.VIII.1973 ; Nieuwpoort, 19.VIII.1953 ; Fringshaus, Hautes-Fagnes, 30.VII.1952 ; Winenne, 16.VI.1951, H. SYNAVE, KBIN ; 1 ♀, Nismes, Fondru des chiens, 24.VI.1981, KBIN.

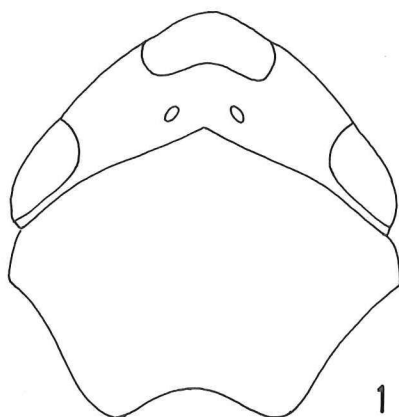
A species which is probably more common in the southern part of the country ; some older records are available from Flanders.

Neophilaenus albipennis (FABRICIUS, 1798)

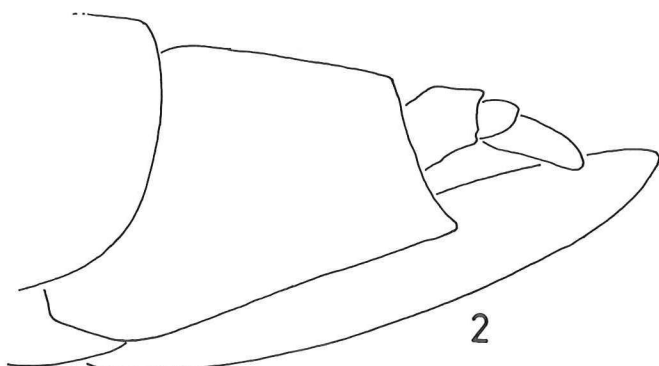
Ptyelus albipennis ; COUBEAUX, 1892 : 34.
Neophilaenus albipennis ; SYNAVE, 1951 : VII ; VAN STALLE, 1982 : 82.

Material : 3 ex., Winenne, 22.VII.1950, H. SYNAVE, KBIN ; 45 ex., Bure, 20.VIII.1971, H. SYNAVE, KBIN ; 8 ex., Tellin, 20.VIII.1971, H. SYNAVE, 4 ex., Belvaux, II-VII.1973, H. SYNAVE, KBIN ; 1 ex., Torgny, 30.VIII.1973, H. SYNAVE, KBIN ; 1 ♀, Torgny, 8.VII.1981, K. MAES ; 1 ♂, Frasnes les Couvin, 21.VI.1981, R. BOSMANS ; 1 ♀, Nismes, Fondru des chiens, 4.VI.1981, KBIN.

This species occurs in central and south Europe and north Africa. In Belgium it has only been found in the southern part, beneath the rivers Samber and Maas.



1



2

Fig. 1-2 : *Aphrophora willemsi* LALLEMAND, holotype. 1 : head ; 2 : female genitalia, lateral view.

Neophilaenus campestris (FALLÉN, 1805)

Ptyelus campestris ; FOKKER, 1891 : CCCXLI ; LETHIERRY, 1892 : 22%

Neophilaenus campestris ; VREURICK, 1932 : 86 ; VAN STALLE, 1979 : 118.

Material : 3 ♂♂, 4 ♀♀, Orval, 17.VIII.1890, KBIN ; 1 ♀, Virton, 19.VI.1925, J. A. BALL, KBIN ; 1 ♂, Lamorteau, 19.VI.1925, J. A. BALL ; 14 ex., Torgny, 9.IX.1942, R. MAYNÉ, KBIN ; 1 ♀, Amay, 29.VII.1971, R. DETRY ; 1 ♂, 2 ♀♀, Ny-Vieuvville, 27.VI.1969, R. DETRY ; 1 ♂, Embourg, 18.VI.1960, KBIN ; 1 ♂, Dinant, Fond de Leffe, 30.X.1978, KBIN.

Widespread in central and southern Europe where it prefers dry grasslands with a warm microclimate ; in Belgium all records are situated in the southern half of the country.

Neophilaenus lineatus (LINNAEUS, 1758)

Philaenus lineatus ; SCHOUTEDEN, 1901 : 269.

Ptyelus lineatus ; COUBEAUX, 1892 : 34 ; LETHIERRY, 1892 : 22 ; LAMEERE, 1901 : 123.

Neophilaenus lineatus ; LELOUP & JACQUEMART, 1963 : 138 ; VAN STALLE, 1979 : 118.

Philaenus spumarius var. *lineatus* ; SYNAVE, 1951 : VII.

A common species throughout the country. The forma *pulchella* has been taken in the following localities : Welle (prov. Eastern Flanders), 9.VII.1978 ; Trois Ponts (prov. Liège), 21.VII.1980 ; Bullange, 8.IV.1923 (KBIN).

Neophilaenus minor (KIRSCHBAUM, 1868)

Ptyelus minor ; Fokker, 1891 : CCCXLI ; LETHIERRY, 1892 : 22.

Philaenus minor ; MARÉCHAL, 1931 : 24.

Material : 3 ex., Frasnés lez Couvin, VII.1936, J. DRUET, KBIN ; 24 ex., La Calamine, 12.VII.1967, R. Detry, KBIN ; 1 ex, Bure (carrières), 20.VIII.1971, H. SYNAVE, KBIN.

This species lives on dry sandy grasslands where it should be monophagous on *Corynephorus canescens* (OSSIANILSSON, 1981). It is a central and southern European species, probably with a restricted distribution in Belgium.

Philaenus spumarius (LINNAEUS, 1758)

Ptyelus spumarius ; LETHIERRY, 1892 : 22 ; LAMEERE, 1901 : 123.

Philaenus spumarius ; SCHOUTEDEN, 1901 : 269 ;

LELOUP & JACQUEMART, 1963 : 138 ; SYNAVE, 1951 : VII.

Philaenus spumarius, the "spittlebug" is the most common cercopid in Belgium and it has been recorded all over the country. It is widespread throughout the palearctic region and introduced into the nearctic. The species is ubiquitous, polyphytophagous, especially on herbaceous plants in cultivated fields. The total number of known hostplants established in the world exceeds 1000 (Ossiannilsson, 1981).

Cercopis vulnerata ROSSI, 1807

Triecphora vulnerata ; LETHIERRY, 1878 : XXXVII ; LETHIERRY, 1892 : 22.

Schouteden, 1901 : 269 ; LAMEERE, 1901 : 123.

Cercopis vulnerata ; SYNAVE, 1951 : VII.

This species occurs in central and south Europe. In Belgium it is very common and it has been recorded all over the country.

Cercopis sanguinolenta (SCOPOLI, 1763)

Triecphora sanguinolenta ; COUBEAUX, 1892 : 34.

Triecphora mactata ; LETHIERRY, 1880 : CLXI ; LETHIERRY, 1892 : 22.

Cercopis sanguinolenta ; SYNAVE, 1951 : VII.

Material : 1 ♂, 2 ♀♀, Nancroix, 1926 ; 1 ♂, 1 ♀, Lourdes, V.1909 ; 1 ♂, V. de la Molinee, 12.VI.1881, H. DONCKIER ; 1 ♀, Francorchamps, 17.VIII.1900 ; 1 ♀, Houx, 5.VI.1942.

A rare species in Belgium ; only old records are available, situated besouth of the rivers Samber and Maas.

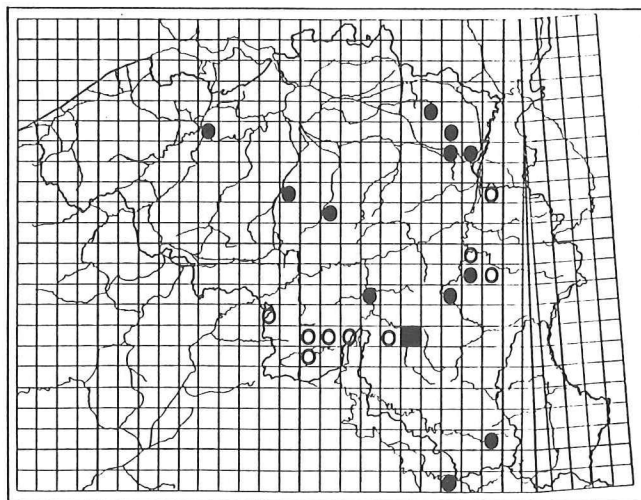


Fig. 3 : distribution of *Haematoloma dorsatum* in Belgium ; open circles : records anterior to 1950 ; full circles : records posterior to 1949 ; squares : records posterior and anterior to 1950.

Haematoloma dorsatum (AHRENS, 1812)

Triecphora dorsata; VREURICK, 1931 : 100; 1932 : 86; MULLER, 1936 : 162; MARÉCHAL & LECLERCQ, 1938 : 231.

Haematoloma dorsata; SYNAVE, 1951 : VII; REICHLING, 1979 : 104.

The distribution of this species has already been discussed by REICHLING (1979) and COBBEN (1987). This was originally a Mediterranean species which has gradually moved north. The first record in Belgium was made in 1913 at Eprave (prov. Namur). In the Netherlands the first record has been made in 1942 in the province Zuid-Limburg. The species has now spread all over the Netherland and Belgium as far as its host plant, *Pinus*, is available. The relatively high number of records made after 1950 compared to those anterior to 1950 also illustrates its progress in Belgium.

Conclusions

In all 13 species have been recorded in Belgium. From these *Cercopis sanguinolenta* is only known from older records and its presence in Belgium needs confirmation. I have not found any specimens of *Aphrophora corticea* in Belgian collections; accordingly, the name has to be removed from the list of Belgian species.

However, in one of his last publications the late Dr. Cobben has drawn our attention to the recently widespread occurrence of *Aphrophora corticea* in the Netherlands. The species was firstly recorded in this country by Cobben & GRAVESTEIN (1958) and according to COBBEN (1987) it has only recently become a widespread species in the Netherlands. It feeds on *Pinus* and, together with some other *Pinus* feedings insects, it might be a possible vector of the fungus *Sphaeropsis sapinea* which causes an epidemic disease on this tree (COBBEN, 1987). Its presence in Belgium might thus be expected at least in the province of Antwerp and Limburg as there is no significant difference between these parts of Belgium adjacent to the Netherlands.

Since the last check list at least one species has made considerable progress : *Haematoloma dorsatum*. It lives on *Pinus* and is now probably common wherever this tree is present. Although it was considered as an exclusively Mediterranean species till 1925 (Cobben, 1987) we have evidence from museum collections that the first record in our country has been made in 1913. A further species which might be expected in Belgium is *Neophilanus exclamationis*, as it has been found in surrounding countries. Although it was already listed as a Belgian species we have not found any specimens in collections.

Table 1.

L	W	O	N	wings	vert.	ovi
alni	alni	alni	alni	+	+	
major	alpina		alpina	±	+	+
salicina	salicina	salicina	salicina	-	-	-
forneri	-	costalis	costali	±	-	+
-	corticea	corticea	corticea			

Table 1 : list of Western European Aphrophora species as they are named and described in LE QUESNE (L), Haupt (W) and OSSIANNILSSON (O); wings : colour pattern present (+) or absent (-); vertex : plate broad (+) or narrow (-); ovipositor : long (+) or short (-).

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