

Contributions to the knowledge of the genus *Edwardsiana* Zachv. (Hemiptera: Cicadomorpha: Cicadellidae: Typhlocybinae) in Romania

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Rezumat

Contribuții la cunoașterea genului *Edwardsiana* Zachv. (Hemiptera, Cicadomorpha, Cicadellidae, Typhlocybinae) în România

Lucrarea reprezintă un studiu de ansamblu asupra răspândirii în România a unor specii de Typhlocybinae ce aparțin genului *Edwardsiana* Zachv. Până în prezent au fost citate cincisprezece specii din acest gen în fauna României. Bazându-ne mai ales pe studiile faunistice întreprinse de noi, dar și pe datele din literatură, considerăm că din cele cincisprezece specii citate în România, doisprezece sunt în mod cert prezente, iar trei specii: *E. kemneri* (Ossian.), *E. lethierryi* (Edw.) și *E. frustrator* (Edw.) au prezență incertă, mai ales datorită unor probleme taxonomice, ce ar putea conduce la o incorectă identificare. În afară de cele cincisprezece specii menționate, am identificat alte trei specii din acest gen, care sunt semnalate pentru prima dată în fauna României: *E. avellanae* (Edw.), *E. spinigera* Edw. și *E. ulmiphagus* (Wils. & Clar.). În fauna Transilvaniei sunt citate pentru prima dată două specii din acest gen: *E. ampliata* (Wgn.) și *E. prunicola* (Edw.) Conform răspândirii unor specii ale genului *Edwardsiana* Zachv. în țările învecinate, dar care nu au fost regăsite în România, probabil din cauza lipsei unor cercetări faunistice de mare amploare, considerăm că în țara noastră numărul de specii aparținând acestui gen ar trebui să fie cel puțin treizeci.

Abstract

This article represents an overview about the occurrence of some Typhlocybin species belonging to the genus *Edwardsiana* Zachv. in Romania. There are fifteen species belonging to this genus so far recorded in the fauna of Romania. Basing mainly on our recent studies and also on literature data, we found that within fifteen previous records, twelve are reliable and three are unreliable. The unreliable data refer to *E. kemneri* (Ossian.), *E. lethierryi* (Edw.) and *E. frustrator* (Edw.) probably misidentified due to male parasitisation. Three species belonging to the genus *Edwardsiana* Zachv. are recorded for the first time in Romania: *E. avellanae* (Edw.), *E. spinigera* Edw. and *E. ulmiphagus* (Wils. & Clar.); two species for the first time in the fauna of Transylvania: *E. ampliata* (Wgn.) and *E. prunicola* (Edw.). According to the occurrence of some *Edwardsiana* Zachv. species in the neighbouring countries, we should expect a presence in Romania of at least thirty.

Key words: *Edwardsiana*, occurrence, first record, Transylvania County, Romania

Introduction

Species of cicadellid genus *Edwardsiana* Zachv., are widely distributed in the Holarctic and Palearctic regions, where they feed on a wide range of trees and shrubs. Over 60 species are currently known and the majorities are monophagous or narrowly oligophagous. In appearance they are around 3 mm long and almost all are pale yellow, but a few have darker markings on the forewings. The species are separated by characters of the aedeagus, especially by the arrangements of branching appendages at the apex (WILSON & CLARIDGE, 1999). Nymphs of *Edwardsiana* Zachv. species so far studied, are pale yellow, some of them with dark bases to dor-

sal macrosetae. Anterior margin of vertex rounded, with two pairs of strong macrosetae, sides in front of eyes slightly concave. Face with some shorter macrosetae and short hairs. Thorax, wing pads and abdomen with long macrosetae (OSSIANNILSSON, 1981).

This article presents an overview concerning the occurrence of some species belonging to the genus *Edwardsiana* Zachv. in Romania, basing mainly on previous records CANTOREANU (1958; 1959; 1961; 1963/a; 1963/b; 1965; 1969; 1971; 1972/a; 1972/b; 1973; 1975; 1992) and comparing them with our very recently faunistic studies POPA (2004), considering that taxonomy of this Typhlocybin group has evolved incredibly in the last couple of years.

Several species listed in this article, were found by author and the specimens are kept in personal collection. Some species are presented according to Romanian available literature, and in this case the specimens could not be verified, because we did not have access to the personal collection of Margareta CANTOREANU, who previously studied this insect group in Romania. Another source for *Edwardsiana* specimen has been studied in the WORELL collection from Natural History Museum of Sibiu, Transylvania County.

Material and method

Biological material was collected using sweeping net and hand-held aspirator. The specimens were prepared in dry status and the male genitalia in glycerine slides. All the specimens were carefully analysed, especially concerning the signs of parasitisation, considering this phenomenon as a serious cause of the aedeagus morphology alteration, NICKEL (pers. comm.). I have used NAST (1972; 1987) and the site www.fauna-europea.org for European occurrence and NICKEL (2003) for biology and taxonomic problems. All the specimens were identified using specific literature: ANUFRIEV et al. (1988); EMELJANOV (1964); GIUSTINA (1989); OSSIANNILSSON (1981); RIBAUT (1936).

Results and discussions

In the central-european fauna, 40 species belonging to the genus *Edwardsiana* Zachv. has been recorded up to now (HOLZINGER et al. 1997). In Romania, 15 species belonging to this genus has been recorded. NAST (1987) presents the following situation in the neighbouring countries: Hungary (11 species), Ukraine (26 species), Moldavia (10 species), Bulgaria (14 species) and former Yugoslavia (14 species). The species recorded in Romania are the following:

1. *Edwardsiana alnicola* (Edwards, 1924)

European occurrence: Austria, Great Britain, former Czechoslovakia, Denmark, Estonia, Finland, Italy, Latvia, Germany, Norway, Poland, Romania, Sweden, Switzerland, NAST (1972;1987).

Biology and ecology: *E. alnicola* live on *Alnus glutinosa* and *Alnus incana* in moist to wet sites often near water. It is probably a bivoltine species. Overwintering in egg stage, NICKEL (2003).

Records in Romania: Ciucaş Massif and in Sinaia by CANTOREANU (1963/a; 1963/b; 1972/a) and recently in Gârde (Arieş Valley) by POPA (2004). We found *E. alnicola* (Edw.) in a coppice with *Alnus* and *Salix*, (fig. 1).

2. *Edwardsiana crataegi* (Douglas, 1876)

[syn. *Typhlocyba froggatti* Baker, 1925; *Typhlocyba cornuta* W. Wagner, 1948; *Typhlocyba oxyacanthae* Ribaut, 1931; *Empoasca australis* Froggatt, 1918].

European occurrence: Austria, Belgium, Great Britain, Bulgaria, former Czechoslovakia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Moldavia, Norway, Poland, Romania, south Russia, Sweden, Switzerland, Netherlands, former Yugoslavia, NAST (1972;1987).

Biology and ecology: this species can be found on woody species of Rosaceae, mainly *Malus*, *Prunus domestica*, *P. avium*, *P. spinosa*; is also reported from *Mespilus* and *Sorbus*. Bivoltine species. Overwintering in egg stage, NICKEL (2003).

Taxonomic problems: A morph with different shape and length of the aedeagus appendages has been described as *Typhlocyba froggatti* Baker, 1925. Rearings in laboratory (GÜNTHART, 1971) cited by NICKEL (2003) showed that the males could display both the aedeagus type of the nominate form and of *froggatti* Bak., the later considered to be a variety.

Records in Romania: Comana, Retezat Massif, Goleşti, Topoloveni, Petreşti by DLABOLA (1961), CANTOREANU (1972/b; 1992) and recently in Lupşa (Arieş Valley) by POPA (2004), (fig. 1).

3. *Edwardsiana geometrica* (Schrank, 1807)

[syn. *Cicada lineatella* Fallén, 1806; *Typhlocyba plagiata* Hardy, 1850].

European occurrence: Austria, Belgium, Great Britain, Bulgaria, former Czechoslovakia, Estonia, Finland, France, Germany, Ireland, Italy, Latvia, Lithuania, Norway, Poland, Romania, Central and Northern Russia, Sweden, Switzerland, Netherlands, Ukraine, NAST (1972; 1987).

Biology and ecology: the species can be found on alders in various damp to wet sites, usually on *Alnus glutinosa* in lowland regions and on *Alnus incana* in highland areas. In Switzerland was found in the subalpine belt, where presumably living on *Alnus alnobetula*, NICKEL (2003).

Records in Romania: recorded in Sinaia, Azuga, Poiana Țapului, Retezat Massif, Mraconia, Cazanele Dunării, Câmpulung, Nucşoara, Brădet, Domneşti, Arefu, Corbeni, Valea Iaşului, Albeşti, Cirlibaba, Iacobeni, Vatra Dornei, Brosteni, Bicaş, Vaduri, Piatra-Neamţ, Sabaoani, Roman, Buhusi, Bacau by MONTANDON (1900), Bucovina by MARCU O. E. (1939), CANTOREANU (1958; 1969/b; 1971; 1972/b; 1975; 1992) and recently in Gârde (Arieş Valley) by POPA (2004), Sibiu (Worrel collection, 2 male individuals analysed); we found *E. geometrica* (Schrk.) on *Alnus incana*, (fig. 3).

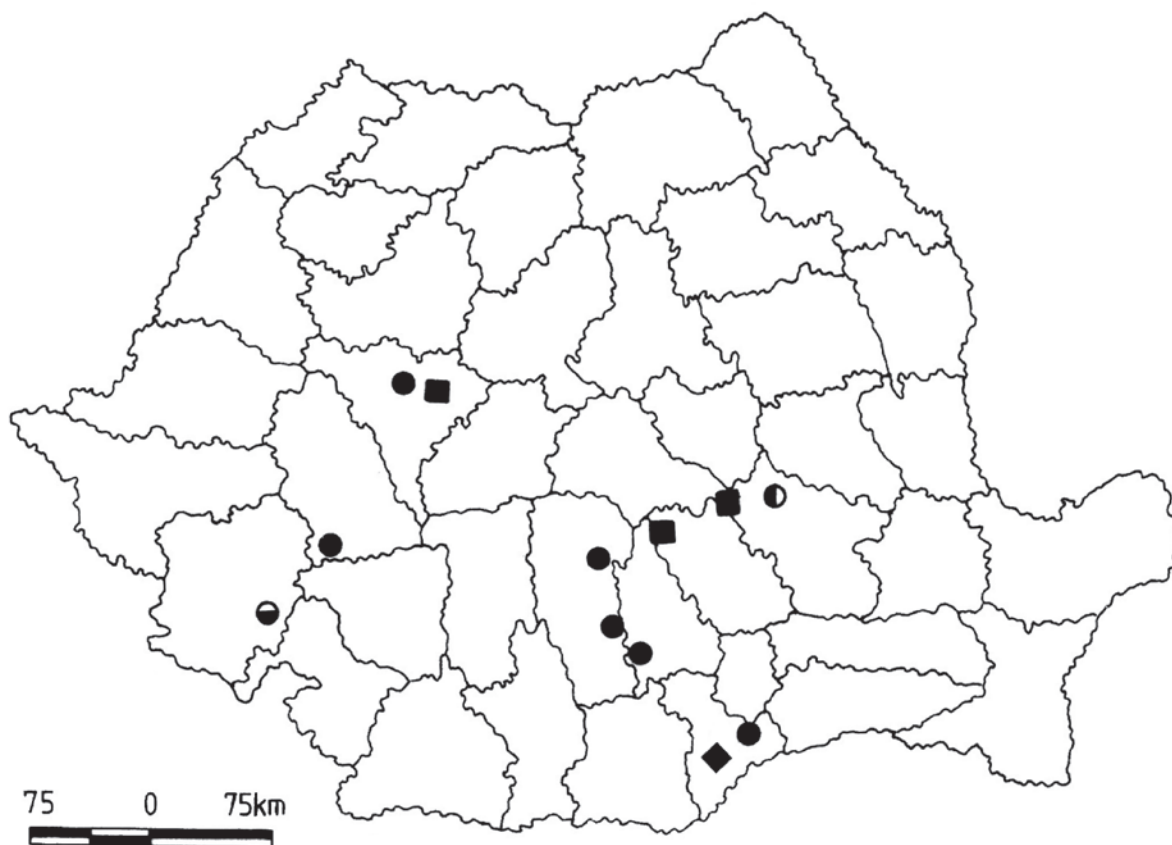


Fig. 1. Occurrence of *E. crataegi* (●), *E. alnicola* (■), *E. kemneri* (◐), *E. ishidae* (◑) and *E. lamellaris* (◆) in Romania.

4. *Edwardsiana kemneri*

(Ossiannilsson, 1942)

European occurrence: Cyprus, former Czechoslovakia, Germany (doubtful record), Romania, Sweden, NAST (1972; 1987).

Biology and ecology: The holotype was found on *Salix*, NICKEL (2003).

Taxonomic problems: This is a dubious species, which has been described after a single male from central Sweden. It is very possible that all the individuals described as *E. kemneri* (Ossian.) could be *E. tersa* (Edw.), individuals displaying genitalic abnormalities due to parasitization, NICKEL (2003).

Records in Romania: recorded in Sinaia by CANTOREANU (1961), (fig. 1).

5. *Edwardsiana rosae* (Linnaeus 1758)

[syn. *Typhlocyba subcarnea* Rey, 1894; *Typhlocyba lactifera* Rey, 1894; *Typhlocyba manca* Ribaut, 1936].

European occurrence: Austria, Belgium, Bulgaria, Great Britain, Cyprus, former Czechoslovakia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy and Sicily, Latvia, Moldova, Norway, Poland, Romania, Russia, Spain, Sweden, Switzerland, Netherlands, Ukraine and former

Yugoslavia, NAST (1972;1987).

Biology and ecology: on various roses (*Rosa canina* group) in moderately shady to sunny, damp to dry sites, in lower numbers and preferentially in the second generation also on other woody species of Rosaceae (*Prunus spinosa*, *Rubus*, *Sorbus* and cultivated cherry, plum, peach, apple and strawberries). Bivoltine species, monovoltine at higher altitude. Overwintering in egg stage, NICKEL (2003).

Records in Romania: Sinaia, Ciucaș Massif, Mraconia, Cazanele Dunării, Arefu, Corbeni, Colibași, Valea Iașului, Curtea de Argeș, Valea Ursului by CANTOREANU (1960; 1972/a; 1972/b; 1975), OSHANIN (1912) and recently in Albac and Moldovenești (Arieș Valley) by POPA (2004), (fig. 2).

6. *Edwardsiana ishidae* (Matsumura, 1932)

European occurrence: Austria, Great Britain, former Czechoslovakia, Denmark, Finland, Germany, Norway, Poland, Romania, central Russia, Switzerland, Netherlands, NAST (1972; 1987).

Biology and ecology: this species live along forest margins and roads, parks on *Ulmus minor*, *Ulmus glabra*, *Ulmus laevis* and perhaps *Corylus avellana*. Bivoltine species. Overwintering in egg stage, NICKEL (2003).

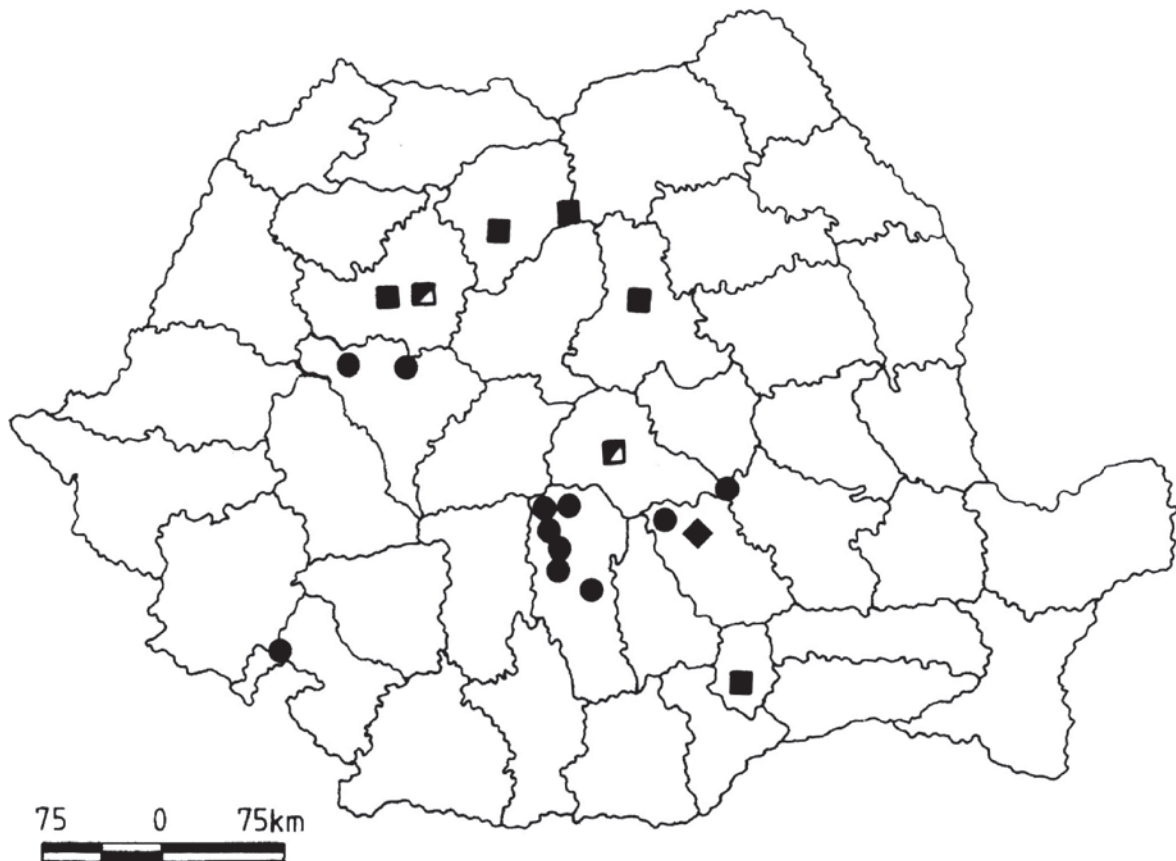


Fig. 2. Occurrence of *E. rosae* (●), *E. lethierryi* (■), *E. salicicola* (◻) and *E. diversa* (◆) in Romania.

[syn. *Typhlocyba fratercula* Edwards, 1908; *Typhlocyba sororcula* Ossiannilsson, 1936].

European occurrence: Austria, Belgium, Bulgaria, Great Britain, former Czechoslovakia, France, Germany, Greece, Hungary, Ireland, Italy, Sicily and Sardinia, Lichtenstein, Moldavia, Norway, Poland, Romania, south Russia, Sweden, Switzerland, Netherlands, Ukraine and former Yugoslavia, NAST (1972;1987).

Biology and ecology: this species live preferentially on *Carpinus betulus* and *Fagus sylvatica* in forests, parks, along hedges, occasionally also on other species of deciduous woody plants (*Salix*, *Quercus*, *Acer*, *Ulmus* and *Betula*). Monovoltine species. Overwintering in egg stage, NICKEL (2003).

Records in Romania: Sinaia, Poiana Țapului by CANTOREANU (1959; 1969/b) and recently in Gârda Seacă, Arieș Mic Valley, Sălciua, Cheile Turzii, Vâlcele by POPA (2004), (fig. 4).

9. *Edwardsiana lethierryi* (Edwards 1881)

[syn. *Typhlocyba hippocastani* Edwards, 1888].

European occurrence: Austria, Belgium, Bulgaria, Great Britain, former Czechoslovakia, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Moldavia, Norway, Poland, Romania, Sweden, Switzerland, Netherlands, Ukraine and former Yu-

France, Germany, Hungary, Latvia, Lithuania, Norway, Poland, Romania, Sweden, Switzerland, Netherlands, Ukraine, NAST (1972;1987).

Biology and ecology: live on *Salix cinerea*, *S. aurita*, *S. caprea* occasionally on *S. viminalis* and *S. appendiculata*). This species could be found in wet or cool sites along margins of bogs and fens, in wet meadows, forest glades and subalpine scrub. Bivoltine species. Overwintering in egg stage, NICKEL (2003).

Records in Romania: Brașov by HORVATH (1897), OSHANIN (1912) and recently in Vâlcele (Arieș Valley) by POPA (2004), (fig. 2).

11. *Edwardsiana ampliata* (Wagner, 1941)

[syn. *E. rossica* Zachvatkin, 1948].

European occurrence: Austria, former Czechoslovakia, Germany, Hungary, Latvia, Moldavia, Poland, Romania, south and central Russia, Ukraine, NAST (1972;1987).

Biology and ecology: on *Acer campestre*, *A. pseudoplatanus*, *Corylus avellana*, *Quercus robur*, *Tilia* and *Cerasus*. Bivoltine species. Overwintering in egg stage, NICKEL (2003).

Taxonomic problems: *E. ampliata* male genitalia are very resembling to *E. frustrator* and also their life habits. Both are considered only as distinct sub-

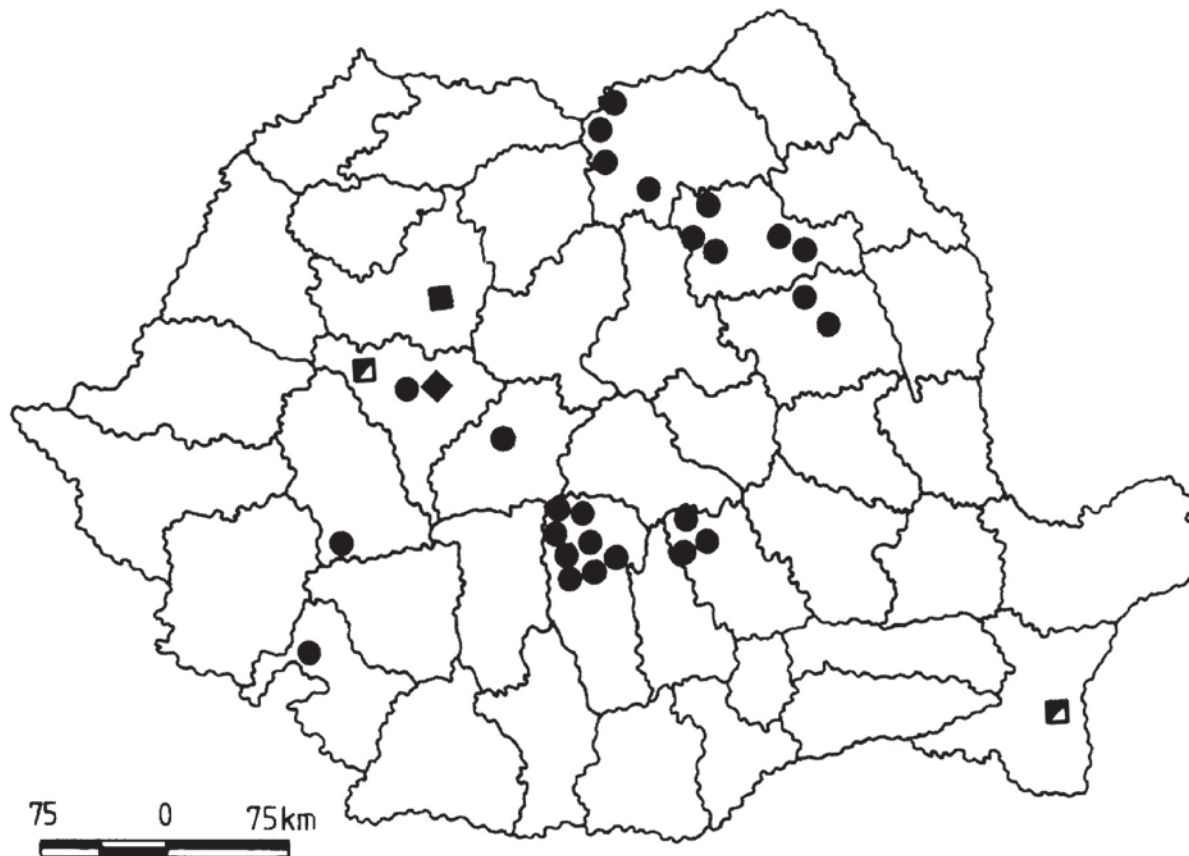


Fig. 3. Occurrence of *E. geometrica* (●), *E. prunicola* (▤), *E. avellanae* and *E. spinigera* (■), *E. ulmiphagus* (◆) in Romania.

species, NICKEL (2003).

Records in Romania: Snagov, Comana by DLABOLA (1961) and recently in Vâlcele (Transylvania County) by POPA (2004). This species is recorded for the first time in fauna of Transylvania, (fig. 4).

12. *Edwardsiana lamellaris* (Ribaut, 1931)

European occurrence: Bulgaria, France, Germany, Hungary, Italy, Romania, Slovakia, Netherlands, former Yugoslavia, NAST (1972;1987).

Biology and ecology: in Germany was recorded on *Rosa canina*, in Italy on *Quercus robur* and *Q. petraea*. This species live in moderately dry grassland with scattered oaks. Bivoltine species, NICKEL (2003).

Records in Romania: Comana by DLABOLA (1961), (fig. 1).

13. *Edwardsiana prunicola* (Edwards, 1924)

[syn. *Typhlocyba barbata* Ribaut, 1931].

European occurrence: Austria, Belgium, Great Britain, Bulgaria, former Czechoslovakia, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Lithuania, Moldavia, Poland, Romania, south Russia, Sweden, Switzerland, Netherlands, Ukraine, former Yugoslavia, NAST (1972;1987).

Biology and ecology: Usually live on willows (*Salix cinerea*, *S. aurita*, *S. viminalis* and occasionally on *S. caprea*) in various wetlands, as well as on spe-

cies of *Prunus* (*P. spinosa* and *P. domestica*), along hedges and forest margins, fruit-tree plantations and few records on *Viburnum lantana*, NICKEL (2003).

Records in Romania: Siutghiol (Dobrogea) by CANTOREANU (1969/a) and recently in Albac (Transylvania) by POPA (2004); *E. prunicola* (Edw.) is recorded for the first time in the fauna of Transylvania. This species was captured by hand-held aspirator on *Prunus domestica*, (fig. 3).

14. *Edwardsiana candidula* (Kirschbaum, 1868)

[syn. *Anomia lactea* Lethierry, 1869; *Typhlocyba martigniaci* Cerutti, 1939].

European occurrence: Austria, Belgium, Great Britain, former Czechoslovakia, France, Germany, Hungary, Italy, Latvia, Lithuania, Poland, Romania, Southern Russia, Sweden, Switzerland, Netherlands, Ukraine, former Yugoslavia, NAST (1972;1987).

Biology and ecology: Monophagous on *Populus alba*. The species can be found on solitary trees along forest margins in river floodplains and parks. Bivoltine species. Overwintering in egg stage, NICKEL (2003).

Records in Romania: Bucegi Massif, Valea Prahovei, Gârbova by CANTOREANU (1973), (fig. 4).

15. *Edwardsiana frustrator* (Edwards, 1908)

[syn. *Typhlocyba solearis* Ribaut, 1931].

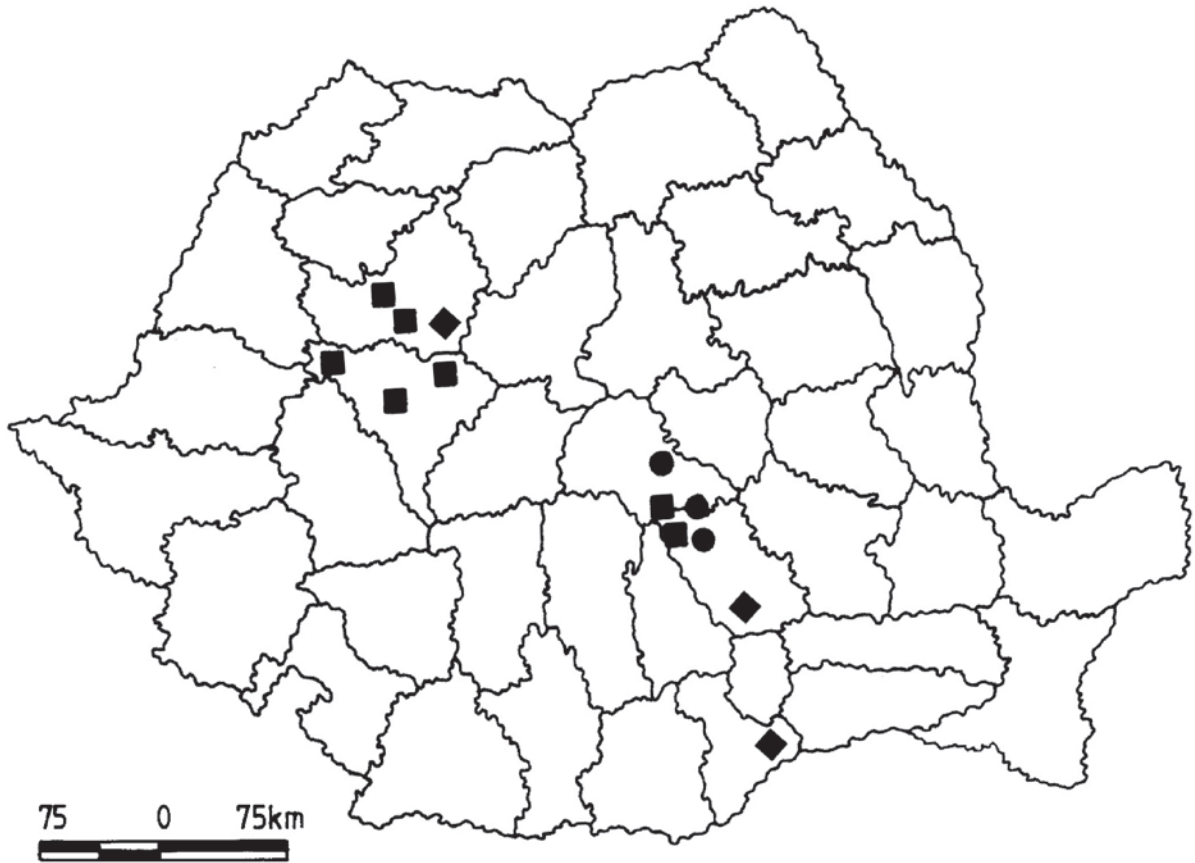


Fig. 4. Occurrence of *E. flavescens* (■), *E. candidula* and *E. frustrator* (●), *E. ampliata* (◆) in Romania.

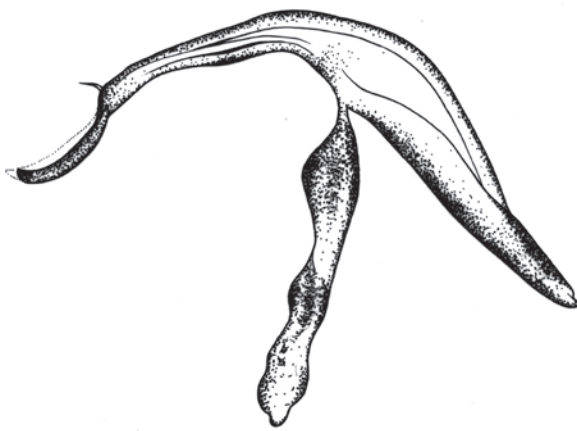


Fig. 5. Aedeagus morphology in *Edwardsiana avellanae*. Magnification - 380 X

European occurrence: Belgium, Great Britain, Bulgaria, former Czechoslovakia, Denmark, Finland, France, Germany, Ireland, Italy, Norway, Poland, Romania, south Russia, Sweden, Switzerland, Netherlands, Ukraine, former Yugoslavia, NAST (1972;1987).

Biology and ecology: this species live on various deciduous woody plants without apparent host preference: *Corylus*, *Acer*, *Aesculus* also occasionally found on *Carpinus*, *Tilia*, *Ulmus*, *Fagus*, *Betula*, *Malus*, *Prunus*, *Rosa*, *Crataegus* and probably additional species. Bivoltine species. Overwintering

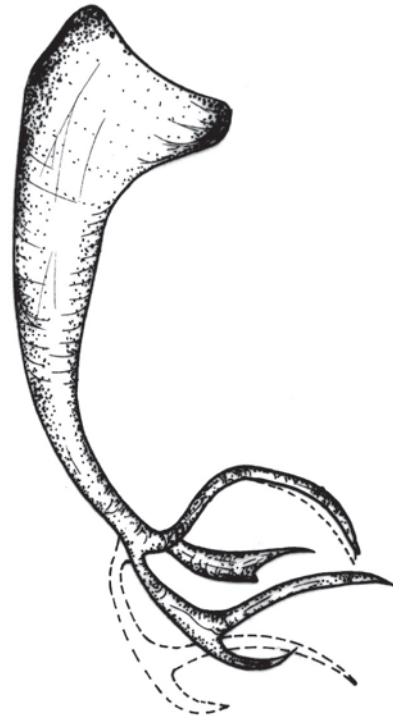


Fig. 6. Aedeagus morphology in *Edwardsiana spinigera*. Magnification - 280 X

in egg stage, NICKEL (2003).

Records in Romania: Bucegi Massif, Valea Prahovei, Gîrbova by CANTOREANU (1973). It is quite possible that all the specimens recorded by CANTO-

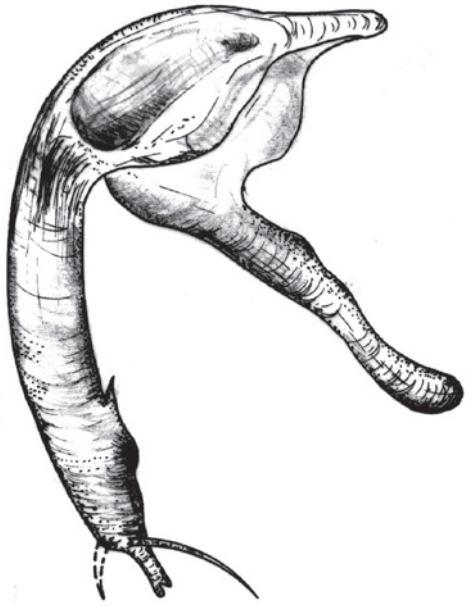


Fig. 7. Aedeagus morphology in *Edwardsiana ulmiphagus*. Magnification – 320 X

REANU being in fact pipunculized males of *E. ampliata* (Wgn.), (fig. 4).

Considering all the species recorded in the neighbouring countries, we expect having high chance to find in Romania the followings: *Edwardsiana ruthenica* Zachvatkin, 1929 recorded in Hungary, Ukraine and Bulgaria; *Edwardsiana plebeja* (Edwards, 1914) recorded in Ukraine, former Yugoslavia, Bulgaria; *Edwardsiana nicolovae* Dlabola, 1967 recorded in Bulgaria, former Yugoslavia; *Edwardsiana bergmanni* (Tullgren, 1916), even though is reported only in Ukraine, in Europe it is a widespread species; *Edwardsiana nigriloba* (Edwards, 1924) recorded in Ukraine and Bulgaria; *E. gratiosa* (Boheman, 1852) recorded in Hungary.

There are also some *Edwardsiana* species that would have a less chance (but possible!) to record in Romania, like: *Edwardsiana egregia* Kirejtshuk, 1977; *E. logvinenkovae* Kirejtshuk, 1975 and *E. verecunda* Kirejtshuk, 1977 recorded in Ukraine; *Edwardsiana severtsovi* Zachvatkin, 1978 and *E. tshinari* Zachvatkin, 1947 recorded in Republic of Moldavia.

New records in the fauna of Romania.

1. *Edwardsiana avellanae* (Edwards, 1888)

[syn. *Typhlocyba bidentata* Edwards, 1914; *Typhlocyba staminata* Ribaut, 1931].

Material: 2 males and 6 females collected on 28. 06. 2000. This species was recorded in Vâlcele (Cluj area, Transylvania) in the fringe of two type of forests (beech and oak forest – Pădurea Mare and

Pădurea Goruniș). The species was swept on *Corylus avellana* (fig. 3).

Diagnosis features: Light yellow or whitish yellow, shining. Apical part of forewing indistinctly fumose. Aedeagus display a pair of apical appendages. Both male individuals captured by us display signs of pipunculization, and the aedeagus show morphology very close to former *E. staminata* Rib. (fig. 5)

European occurrence: Austria, Estonia, Great Britain, Ireland, former Czechoslovakia, Bulgaria, Denmark, Italy, Latvia, Lithuania, Moldavia, Norway, Netherlands, France, Germany, Hungary, Poland, middle Russia, Sweden, Switzerland, Ukraine, former Yugoslavia, NAST (1972; 1987).

Biology and ecology: monophagous on *Corylus avellana*. Most individuals could be swept along forest margins and roads, generally in shady and cool sites. Bivoltine species. Overwintering in egg stage, NICKEL (2003).

Taxonomic problems: *E. staminata* (Rib.) compared to *E. avellanae* (Edw.) display two tiny appendages on the aedeagus tip. This is the only distinctive character. Most of these individuals are pipunculized or otherwise abnormal. Body size, colouration, host plant, and distribution are almost identical to *E. avellanae* (Edw.). Therefore, a lot of author consider them conspecific, NICKEL (2003).

CANTOREANU (1970) list this species as being present in the fauna of Romania, basing only on literature information, quoting OSHANIN (1912). Any specialist who knows very well this work would realize that there is no really a record of this species in the fauna of Romania. Thus, we consider that we found *E. avellanae* for the first time in the fauna of Romania.

2. *Edwardsiana spinigera* Edwards, 1924

Material: 1 male collected on 28. 06. 2000 in Vâlcele (Cluj County, Transylvania) in the herbaceous layer of Pădurea Goruniș (oak and hornbeam forest), (fig. 3).

Diagnosis features: Aedeagus, strong laterally compressed showing a long pair of appendages at latero-apical part. The tip of aedeagus present a tiny unpaired appendage anteriorly oriented. Another pair of appendages are located near the base of apical one, but they are oriented in opposite direction (fig. 6), RIBAUT (1936).

European occurrence: Austria, Belgium, Bulgaria, Great Britain, former Czechoslovakia, France, Germany, Poland, south Russia, Switzerland, Netherlands, Ukraine, former Yugoslavia, NAST (1972; 1987).

Biology and ecology: on *Corylus avellana* preferring dryer and warmer sites. Bivoltine species.

Overwintering in egg stage, NICKEL (2003).

3. *Edwardsiana ulmiphagus*
(Wilson & Claridge, 1999)

Material: 1 male collected on 2.06.2001 in Lupșa (Aries Valley) in a deciduous forest (*Carpino-Fagetum*), (fig. 3).

Diagnosis features: Male with inner and outer branches of anterior (inferior) aedeagal appendages running close to each other, in side view the concavity of the outer fitting into the concavity of the inner. There does appear to be some variation in that the outer branch may have a small spur which may be asymmetrical (fig. 7), WILSON & CLARIDGE (1999).

European occurrence: Austria, Belgium, former Czechoslovakia, Great Britain, Denmark, France, Germany, Greece, Lithuania, Moldavia, Norway, Poland, Sweden, Switzerland, Netherlands, Ukraine, NAST (1972; 1987).

Biology and ecology: on *Ulmus* spp. in forests, parks and on solitary trees; single vagrants also on other deciduous trees. Bivoltine species. Overwintering in egg stage, NICKEL (2003).

Conclusions

1. As a result of our faunistic studies performed in Romania we have recorded three new species: *E. avellanae* (Edw.), *E. spinigera* Edw. and *E. ulmiphagus* (Wils. & Clar.), thus the overall number of *Edwardsiana* Zachv. species recorded in Romania being raised at eighteen.
2. *Edwardsiana prunicola* (Edw.) and *E. ampliata* (Wgn.) are recorded for the first time in the fauna of Transylvania.
3. Considering the occurrence of some species in the neighbouring countries we expect that at least eleven or twelve *Edwardsiana* Zachv. species should be recorded in Romania in the further faunistic studies, thus the overall number of species should be almost thirty.
4. There are some previous records in Romania that hardly need revision, like: *Edwardsiana kemneri* (Ossiann.) it is a dubious species which might be parasitized individuals of *Edwardsiana tersa* (Edw.); *Edwardsiana frustrator* (Edw.) which might be *Edwardsiana ampliata* (W. Wg.); *Edwardsiana lethierryi* (Edw.) which might be *Edwardsiana plurispinosa* (W. Wg.) or *Edwardsiana ulmiphagus* (Wils. & Clar.).

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