

Checklist, preliminary distribution maps, and bibliography of millipedes in Hungary (Diplopoda)

by

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Abstract: An updated account of 86 diplopod species of Hungary is presented. A preliminary map using UTM grid is given for each species, and comments on their status and distribution are made. A complete bibliography of the myriapodological literature with respect to Hungary is also given.

Key words: Diplopoda, Hungary, mapping, bibliography

Introduction

The zoology of millipedes in Hungary has been studied for more than a century, although never being really in the focus of interest. As a result of this, no updated account has been produced since Daday's monograph (1889a, 1896). Those data, not only because the territory of Hungary has been reduced considerably, but mainly because the taxonomy of the species has been changed, cannot serve as a starting point to introduce students to Hungarian diplopodology. The aim of this paper is to give a modern list of the Diplopoda species occurring in present-day Hungary, with comments on their status, distribution and intraspecific categorisation. As the science of diplopodology has not stopped, the data presented here may change in the future. Revisions concerning several species-groups are needed, especially in the order Chordeumatida, and distribution ranges may considerably extend as a result of the increasing collecting activity. It is hoped that this paper will stimulate not only Hungarian zoologists, but also foreign experts to work on the interesting millipede fauna of our country.

In the first part of the paper, species list of Hungarian millipedes as known at present is given. The numbers correspond to the maps presented in the second half of the paper. Every species name is accompanied by the name of the author and the year of description; and followed by a short name history, showing the most important changes in the name of the species in question. References are usually not given for the original descriptions, only for the important changes. It should be mentioned here, that references throughout the whole paper can be resolved in the two final parts: all literature referring to the Hungarian millipede fauna are to be found in the complete "Bibliography", whereas those of general interests are listed separately ("References"). The checklist section is completed by individual remarks concerning either taxonomy or distribution at most of the species.

Apart from compiling a checklist, distribution maps are usually considered as basic information sources when studying faunas of certain areas (Barber & Keay 1988, Biernaux 1971, Enghoff 1974, Jeekel 1978, Kime 1990, Loksina & Golovatch 1979, Pedrolí-Christen 1993). Such works, however, could almost never be completed, as details of the species ranges

continuously change and the information gathered always increase. Summaries on distributions should hence be considered as members of a series describing the reality at different co-ordinates of time and space.

The present set of maps about the ranges of millipedes are only from within the borders of present-day Hungary. Data are based on the literature and the Myriapoda Collection of the Hungarian Natural History Museum. In the case of the first, only reliable species identifications are considered, and distribution data are taken mainly from myriapodological papers of the second half of this century. Identifications in the Museum collection have been checked by the author, and data evaluation was finished by the end of 1993.

It should be mentioned that a definitely important myriapod material, collected by late Prof. Imre Loksa, is housed in the Institute of Zoosystematics and Ecology of the Eötvös Loránd University, Budapest. Because of the sudden decease of the collector, the material is in a largely unordered state, which makes its availability for further studies especially difficult. These data are not included in the present analysis (except of those already published by Loksa), and it is emphasized that a more exact picture on the millipede fauna of Hungary is expected (and will be summarized in a faunal monograph) with the involvement of this collection. An application for raising funds, necessary for the preparation of this material and initiating co-operation of international experts, is under progress.

In the final part of the paper a comprehensive bibliography concerning Hungarian myriapodology is given. Papers dealing with the fauna of present-day Hungary are only listed; however, relevant works of the three Hungarian zoologists: Ö. Tömösváry, J. Daday, and L. Szalay, showing the greatest myriapodological activity, are enumerated completely.

Ödön (= Edmund) Tömösváry (1852–1884) had a promising talent for zoology. Unfortunately, he died very young, at the age of 32, of tuberculosis. His name is immortalized by the peculiar organ of myriapods, which was first described by him in 1883 (Tömösváry 1883c: in Hungarian, 1883d: in German). His biography is given and a complete list of his papers is listed by Herman (1885).

Jenő (= Eugene) Daday (1855–1920) was primarily a specialist of Crustacea, but produced a number of important papers on other, non-insect arthropod groups, and hence on myriapods as well. A complete bibliography was compiled by Lukács (1975).

László Szalay (1887–1970) worked mainly on Hydracarina, however, as a curator of the arachnoid (at that time incl. myriapod) collection in the Zoological Department of the Hungarian Natural History Museum, he had also some faunistic and popular papers on centipedes and millipedes. A complete list of his works can be found in Allodiatoris (1973).

Hungarian myriapodology in this early phase can otherwise only be characterized by small faunistical papers of other authors. A number of Hungarian zoologists occasionally dealt with millipedes and centipedes during their activities (Bíró 1901, Chyzer 1886, Csiki 1903, Entz 1905, Kadocsa 1911, Lendl 1897, Margó 1879, Merkl 1883, Náday 1918, Paszlavszky 1878a, 1878b, Petricskó 1891, 1892, Rotarides 1928, Szabó 1931, 1932 and Szilády 1925). They contributed with several data to the known distribution and zoology of millipedes.

The fourth, and most prominent Hungarian myriapodologist was undoubtedly Imre Loksa (1923–1992). Obituaries, with list of publications, are published by Dózsa-Farkas (1992a, 1992b) and Korsós (1993). A final evaluation of his many-sided soil zoological activity is still in progress.

One of Loksa's student, Sziráki (1966, 1967) dealt for a short time also with millipedes. Starting as a pioneer, he compiled a key for the Hungarian millipedes based exclusively on female vulval characters. His careful observations and illustrations are still useful even today. The faunal list provided in his doctoral thesis is rather big (comprises 80 species), but only

with a few faunistically valuable comments, hence including a number of species with uncertain status or doubtful and uncontrollable occurrences in Hungary.

Myriapodological investigations of the last two decades in Hungary mainly include ecological researches. Works of Ilosvay, Hornung, Pobožsny and Szlávecz should be mentioned here, who are successful followers of Gere, making pioneer investigations about the production biology of millipedes in the '50s. These experiments usually combine the two arthropod groups, millipedes and woodlice (Isopoda), which are close to each other regarding their habitats, as well as their detritophagous role in the soil-litter ecosystems.

Publications of another research group in Hungary deal with the microbial flora of the gut systems of millipedes. Since these results are less relevant to the subject of the present paper (and to millipede zoology in the sense of the author), only reference to a comprehensive paper is made here (Dózsa-Farkas *et al.* 1991).

Apart from these Hungarian students of myriapodology, the activity of the well-known giants of this science such as K. W. Verhoeff or C. Attems refers to Hungary (or territories formerly belonging to Hungary) as well, as it is illustrated by a series of their articles. There is no place here to enumerate all these papers (for a complete list of their works, see Mauermayer 1962, and Strouhal 1961, respectively), those, however, which are especially outstanding are included in the bibliography.

Species list

order Polyxenida Polyxenidae

1. *Polyxenus lagurus* (Linnaeus, 1758)
Scolopendra lagura Linnaeus, 1758
Polyxenus lagurus: Latreille 1802/1803
Polyxenus lagurus: Latzel 1884

Widespread in the entire Palaearctic Region. There are some records (possibly introductions) from the Sahara, Africa, and North America as well. The species tends to be synanthropic, hence it is common, sometimes very abundant in the habitats under anthropogenic influence, e.g. in city parks.

order Glomerida Glomeridellidae

2. *Glomeridella minima* (Latzel, 1884)
Glomeris minima Latzel, 1884
Latzelia minima: Bollmann 1893
Glomeridella minima: Brölemann 1895
Glomeridella germanica Verhoeff, 1912

Several specimens are known from the Kőszegi Mts, near to the western border of Hungary (Jermy 1942). There is no material in the HNHM.

Glomeridae

3. *Haploglomeris multistriata* (C. L. Koch, 1844)*Glomeris multistriata* C. L. Koch, 1844*Haploglomeris multistriata*: Verhoeff 1928

Only known from the Kőszegi Mts (Jermy 1942), Western Hungary.

4. *Glomeris pustulata* Fabricius, 1781*Oniscus pustulatus* Fabricius, 1781*Glomeris pustulata*: Latreille 1802/1803

Known from two mountains in Hungary: Börzsöny and Bakony (Jermy 1942).

5. *Glomeris ornata* C. L. Koch, 1847

Only one record could be found in the literature, from the Kőszegi Mts, by Szalay (1942b, 1943). The identification was made by Jermy. There is no material in the HNHM.

6. *Glomeris connexa* C. L. Koch, 1847

Jermy (1942) criticizes 10 varieties and 4 aberrations from the earlier literature: they do not show any stable differences. The species has its main range in the Carpathian Mts, the occurrences in Hungary (especially in the bog forest of Bátorliget) are considered as glacial relicts and mosaic-like remnants of a formerly continuous, large distribution in Eastern Europe some ten thousand years ago (Verhoeff 1927, Korsós 1991b).

7. *Glomeris hexasticha* Brandt, 1833

Three subspecies from the Carpathian Basin have been mentioned (Jermy 1942): the distribution of the nominal form and ssp. *bavarica* Verhoeff, 1906 being divided by the river Danube. The third subspecies (*formosa* [Latzel, 1884]) is a montane form, does not occur in present-day Hungary. Altogether almost 70 different subspecies, varieties and aberrations have been described from the region by different authors, but they do not have any taxonomical status. *Glomeris hexasticha* is the most widespread glomerid in Hungary, found in all kind of forests in the country.

8. *Glomeris conspersa* C. L. Koch, 1847

Two subspecies and 27 varieties have been described from Hungary, which cannot be revalidated. The species is reported by Jermy (1942) from Nagyharsány and Mt. Jakab, Mecsek Mts, Southern Hungary.

Trachysphaeridae

9. *Trachysphaera gibbula* (Latzel, 1884)*Gervaisia costata* var. *gibbula* Latzel, 1884*Gervaisia gibbula*: Verhoeff 1906*Trachysphaera gibbula*: see Strasser 1966

Two different varieties (var. *genuina* and var. *germanica*) have been described from Hungary by Verhoeff, but the species seems to be uniform throughout the country (Jermy 1942).

10. *Trachysphaera noduligera* (Verhoeff, 1906)
Gervaisia noduligera Verhoeff, 1906
Trachysphaera noduligera: see Strasser 1966

From the two subspecies mentioned by Jermy (1942, *noduligera* Verhoeff and *hungarica* Jermy), the nominal form has been recorded from the Mecsek Mts (also in the Cave of Abaliget). The collection of HNHN has no material of this species.

11. *Trachysphaera costata* (Waga, 1858)
Gervaisia costata Waga, 1858
Trachysphaera costata: Strasser 1966

Strasser (1966) noted that *Gervaisia* Waga is preoccupied and proposed *Trachysphaera* Heller as a replacement name. *T. costata* is reported by Jermy (1942) and by Loksa (1959b) from the surrounding of Budapest; new material from Szentdomonkos, Upponyi Mts is deposited in the HNHN.

order Polyzoniida
Polyzoniidae

12. *Polyzonium germanicum* Brandt, 1837

In several undisturbed places, especially in natural or old pine forests.

order Chordeumatida
Mastigophorophyllidae

13. *Mastigona bosniensis* (Verhoeff, 1897)
Heteroporatia bosniense Verhoeff, 1897
Mastigona bosniensis: see Jeekel 1970

The species is reported from a number of localities scattered throughout the country. There is no material in the HNHN.

Sziráki (1966) enumerates *Heteroporatia mutabile* (Latzel, 1884) as a member of the Hungarian fauna, without further details. No other references could be traced in the literature.

Gebhardt (1934) lists *Heteroporatia méhelyi* Verhoeff, 1897 from the Cave of Abaliget, Mecsek Mts, and the species is also mentioned from Mt. Hársbokor, Buda Mts, by Gere (1962b) in his ecological work. Verhoeff originally described *H. méhelyi* from a locality also in the Buda Mts, together with *Julus dietli* (= *Cylindroiulus horvathi* [Verhoeff, 1897]); the species, however, being very similar to *M. bosniensis*, has an uncertain status in taxonomy (Golovatch in litt.).

14. *Mastigona vihorlatica* (Attems, 1899)
Heteroporatia bosniense var. *vihorlaticum* Attems, 1899
Mastigona vihorlatica: see Jeekel 1970

Recorded by Szalay (1940a) from the Kecske Cave, Bükk Mts. There is no material in the HNHN.

15. *Haploporatia eremita* (Verhoeff, 1909)
Heteroporatia (Haploporatia) simile eremita Verhoeff, 1909
Haploporatia eremita: Schubart 1934

The first and only record is from Mt. Kovács (Loksa 1961b). There is no material in the HNHM.

Haaseidae

16. *Haasea flavescens* (Latzel, 1884)
Craspedosoma flavescens Latzel, 1884
Xiphogona flavescens: Cook 1895
Orobainosoma flavescens: Verhoeff 1897
Haasea flavescens: see Hoffman 1979

The only record from Hungary is by Loksa (1959b): Mt. Naszály, in a cave. There is no material in the HNHM.

17. *Haasea hungarica* (Verhoeff, 1928)
Orobainosoma hungaricum Verhoeff, 1928
Haasea hungarica: see Hoffman 1979

Found in the Cave of Abaliget, Mecsek Mts. Loksa (1961b) refers to samples of unknown localities in the Mecsek Mts and Kőszegi Mts (after Szalay 1942b, 1943) as well. He also reports the species from Mt. Kovács. There is no material in the HNHM.

18. *Hylebainosoma tatranum* Verhoeff, 1899

The subspecies *jósuaense* Loksa, 1962, was described from Jósvalő, Northern Hungary, based on a comparison with *Hylebainosoma tatranum* var. *dudichi* Verhoeff, 1941, known from Velsic, now in Slovakia. There is no material in the HNHM.

Craspedosomatidae

19. *Craspedosoma transsilvanicum* (Verhoeff, 1897)
Craspedosoma rawlinsii transsilvanicum Verhoeff, 1897
Craspedosoma transsilvanicum: see Schubart 1934

Two forms were described: f. *pákozdense* Loksa, 1955, and f. *barcsicum* Loksa, 1981, from the western part of the country. The species is also recorded from the Cave of Abaliget (Gebhardt 1934), Kőszegi Mts (as ssp. *austriacum* Verhoeff, by Szalay 1942b, 1943) and the Visegrádi Mts (Loksa 1991). There is no material in the HNHM. A detailed revision is needed: *Craspedosoma transsilvanicum* may well be part of the following species.

20. *Craspedosoma rawlinsii* Leach, 1814
Craspedosoma rawlinsii Leach, 1814
Craspedosoma simile Verhoeff, 1910: Schubart 1934

A highly variable species, and I agree with Brölemann's opinion (1935) that it is distributed throughout Europe and the numerous forms described by different authors all belong to this species.

21. *Ochogona caroli* (Rothenbühler, 1900)
Ceratosoma caroli Rothenbühler, 1900
Ochogona caroli: see Hoffman 1979

Two subspecies were described from Hungary: ssp. *hungaricum* Loksa, 1968, from the Bakony Mts (based on Szalay's material, 1944); and ssp. *somloense* Loksa, 1968, from Mt. Somló. The species is also recorded from the Kőszegi Mts (Szalay 1942b, 1943) and the juniper woodland of Barcs (Loksa 1981). There is no material in the HNHM.

22. *Ochogona triaina* (Attems, 1895)
Atractosoma triaina Attems, 1895
Ceratosoma triaina: Szalay 1942b, 1943
Ochogona triaina: see Hoffman 1979

It is reported by Szalay (1942b, 1943) from the Kőszegi Mts (without more precise locality) and Loksa (1961b) from Mt. Kovácsi. There is no material in the HNHM.

Szalay (1942b, 1943) listed another form of "*Ceratosoma*", namely *C. elaphron* Attems, 1895 ssp. *nubium* Verhoeff, 1921 from the Kőszegi Mts, as new to the fauna of Hungary. The present status of this form, however, cannot be settled, although it is mentioned in Schubart's book (1934) as well. Its appearance in the Hungarian fauna list can be question-marked.

Chordeumatidae

23. *Chordeuma sylvestre* C. L. Koch, 1847
Chordeuma sylvestre Latzel, 1884; Schubart 1934
Chordeuma sylvestre C. L. Koch, 1847: Blower 1985

It is reported by earlier authors (e. g. Daday 1889a from the Villányi Mts). There is no material in the HNHM.

24. *Melogona broelemanni* (Verhoeff, 1897)
Microchordeuma (Chordeumella) brölemanni Verhoeff, 1897
Melogona broelemanni: see Hoffman 1979

Loksa (1962b) described the new subspecies *gebhardti* from the Mecsek Mts, Southern Hungary, and later also reported it from the juniper woodland of Barcs (Loksa 1981). There is no material in the HNHM.

25. *Melogona transsilvanica* (Verhoeff, 1897)
Microchordeuma transsilvanicum Verhoeff, 1897
Melogona transsilvanica: see Hoffman 1979

A new subspecies, ssp. *hungarica* was described by Sziráki (1967) from the Karancs Mts, Northern Hungary. There is no material in the HNHM.

Trachygonidae

26. *Acrochordum evae* Loksa, 1960

The species is known from only a few specimen collected in beech litter near to Bánkút and Hosszúbérc, Bükk Mts, in the 1950s (Loksa 1960b). There is no material in the HNHM.

Anthroleucosomatidae

27. *Hungarosoma bokori* Verhoeff, 1928

It is recorded from the Cave of Abaliget, Mecsek Mts, where its occurrence was proved by recent samples as well. Loksa (1961b) adds Mt. Kovácsi as a second locality.

order Callipodida

Dorypetalidae

28. *Dorypetalum degenerans* (Latzel, 1884)

Lysiopetalum degenerans Latzel, 1884

Dorypetalum degenerans: Verhoeff 1900

Dorypetalum degenerans: Strasser 1974

Known only from scattered localities in the Buda side of Budapest, and the Budai Mts. It is not rare in the inhabited areas, among houses, in gardens, parks, or graveyards (e. g. Városmajor, Gellérthegey, János-kórház, Farkasrét). Its distribution is probably of anthropogenic origin. The closest occurrences are in Bosnia, Serbia, Macedonia and on the Balkan Peninsula.

order Julida

Nemasomatidae

29. *Nemasoma varicorne* C. L. Koch, 1847

Isobates varicornis: Latzel 1884

Nemasoma varicorne: Enghoff 1985

The species has an interesting distribution pattern of its two forms in Europe: parthenogenetic populations surround the Central European bisexual form. It would be worthwhile to make a detailed study of the mode of reproduction in Hungary.

Blaniulidae

30. *Blaniulus guttulatus* (Fabricius, 1798)

[*Julus guttulatus* Bosc, 1791: Jeekel 1970]

Julus guttulatus Fabricius, 1798

Blaniulus guttulatus: C. L. Koch 1863

It has only been found in Budapest (Korsós 1992), in habitats under anthropogenic influence.

31. *Proteroiulus fuscus* (Am Stein, 1857)*Blaniulus fuscus* Am Stein, 1857*Proteroiulus fuscus*: Lohmander 1925

It has a tendency to be a synanthropic species, although it was found in natural forests (under bark of dead wood) as well.

32. *Choneiulus palmatus* (Nemec, 1895)*Blaniulus palmatus* Nemec, 1895*Choneiulus palmatus*: Brölemann 1921*Choneiulus palmatus*: Enghoff 1984a

It is a typical hothouse millipede of Budapest, rarely occurring outdoors.

33. *Nopoiulus kochii* (Gervais, 1847)*Iulus kochii* Gervais, 1847*Nopoiulus venustus* Meinert, 1868: Enghoff & Shelley 1979*Nopoiulus kochii*: Enghoff & Shelley 1979

It was found in synanthropic and natural habitats as well; Loksa (1960c, 1962a) reported it from several caves.

34. *Cibiniulus phlepsii* (Verhoeff, 1897)*Blaniulus phlepsii* Verhoeff, 1897*Bilselibates bosporanus* Verhoeff, 1940: Enghoff 1984*Cibiniulus phlepsii*: Enghoff 1984b

It was recently found in the flood forests on the islands and banks of the river Danube around Budapest (Korsós 1992).

35. *Archiboreoiulus pallidus* (Brade-Birks, 1920)*Proteroiulus pallidus* Brade-Birks, 1920*Archiboreoiulus pallidus*: Blower 1985

First mentioned by Loksa (1957) from Dunaharaszti when reviewing the material of Daday (1889a). Later he (Loksa 1959b, 1960d) mentioned the species from two more localities (in the caves Násznép and Lóczy, Mt. Naszály and Balatonfüred, respectively). There is no material in the HHNM.

Julidae

36. *Brachyiulus bagnalli* (Curtis, 1845)*Iulus pusillus* Leach, 1815 sensu Latzel 1884*Brachyiulus pusillus*: Verhoeff 1898 and numerous subsequent authors*Brachyiulus bagnalli* (Brölemann, 1924): Dziadosz 1964

It was shown by Dziadosz (1964) that *Brachyiulus bagnalli* in Eastern Europe had usually been misidentified as *pusillus*. Loksa (1956) even described ssp. *Kaszabi* which is in complete agreement with the typical specimens of *bagnalli*

Sziráki (1966) mentioned *Brachyiulus lusitanus* (Verhoeff, 1898) in his list of Hungarian millipedes, however, he gave no further detail about its occurrences. No other references could be traced in the literature.

37. ***Megaphyllum projectum*** Verhoeff, 1894
Megaphyllum projectum Verhoeff, 1894
Chromatoiulus projectus: Schubart 1934
Megaphyllum projectum: see Hoffman 1979

Two subspecies were described and later repeatedly mentioned from Hungary: ssp. *kochi* (Verhoeff, 1907), and ssp. *dioritanum* (Verhoeff, 1907). The species is the most widespread litter-dwelling millipede in the Hungarian oak and mixed forests.

38. ***Megaphyllum transsylvanicum*** (Verhoeff, 1897)
Brachyiulus transsylvanicus Verhoeff, 1897
Megaphyllum transylvanicum: see Hoffman 1979

Known from Hungary only by its subspecies, ssp. *transdanubicus* Loksa, 1962. There is no material in the HNHM.

39. ***Megaphyllum unilineatum*** (C. L. Koch, 1838)
Julus unilineatus C. L. Koch, 1838
Brachyiulus unilineatus: Verhoeff 1897
Chromatoiulus unilineatus: Attems 1927
Megaphyllum unilineatum: Hoffman 1979

It is a common species, also in dry, disturbed habitats, usually with poor vegetation.

40. ***Megaphyllum bosniense*** (Verhoeff, 1897)
Brachyiulus bosniensis Verhoeff, 1897
Megaphyllum bosniense: see Hoffman 1979

Its only known Hungarian subspecies was described as ssp. *cotinophilum* Loksa, 1962, from the Keszthelyi Mts, and later (Loksa 1968a) more to the west from a pine forest. There is no material in the HNHM.

41. ***Mesoiulus paradoxus*** Berlese, 1886

A synanthropic species, living in parks and gardens. Until now it was found only in Budapest (Városliget, Gellérthegy, Városmajor) and its surroundings (Békásmegyér).

42. ***Unciger foetidus*** (C. L. Koch, 1838)
Julus foetidus C. L. Koch, 1838
Oncoiulus foetidus: Verhoeff 1899
Unciger foetidus: Lohmander 1925

The species is considered to be synanthropic in Western and Northern Europe (Blower 1985); in Hungary it is rather confined to natural habitats, dense forests.

43. *Julus scandinavicus* Latzel, 1884

A widespread European species, distributed mainly in the centre of the continent, and also in the British Isles (Blower 1985).

44. *Julus terrestris* Linnaeus, 1758

It is a widespread species, sometimes in mass occurrences. Typical millipede on the Great Hungarian Plain. A valid subspecies was described from a locality near to the Lake Balaton: ssp. *balatonensis* Sziráki, 1967.

45. *Julus scanicus* (Lohmander, 1925)

Julus terrestris scanicus Lohmander, 1925

Julus scanicus: Schubart 1928

A new member of the millipede fauna of Hungary, recorded recently from the inundation area of the Szigetköz. The most probable explanation for the expansion of this species is the distribution by the sediment of the river Danube. This observation is otherwise supported by the relatively rich millipede fauna of the flood areas in Hungary (Korsós 1992). *Julus scanicus* is a common species north of Hungary, in Germany and Northern Europe, where it prefers undisturbed forests without human influence. In the Szigetköz, it was collected from a dead willow tree.

46. *Pachypodoiulus eurypus* (Attems, 1894)

Julus eurypus Attems, 1894

Julus (Pachypodoiulus) eurypus: Verhoeff 1901

Pachypodoiulus eurypus: Schubart 1934

There are several records from the western border of Hungary (Szalay 1942b, 1943); one sample (det. L. Szalay) from the Kőszegi Mts is deposited in the HNHM.

47. *Ophiulus pilosus* (Newport, 1842)

Julus pilosus Newport, 1842

Julus fallax Meinert, 1868: Verhoeff 1898

Ophiulus fallax: Berlese 1884

Ophiulus pilosus: Blower 1985

The subspecific composition of this species has to be revised. Loksa (1962b) enumerates three subspecies to Hungary (the nominate form, *major* Verhoeff, and the new ssp. *brevispinosus* Loksa). He also gives differentiating characters and distributional patterns, although these are not convincing.

48. *Leptoiulus proximus* (Nemec, 1896)

Julus (Leptoiulus) proximus Nemec, 1896

Julus (Leptoiulus) ciliatus bükkensis Verhoeff, 1899

Leptoiulus trilobatus bükkensis: Verhoeff 1908

Leptoiulus proximus: Attems 1927

Leptoiulus bükkensis: Schubart 1930

Among several localities, it is also reported by Szalay (1942b, 1943) from the Kőszegi Mts as *L. p. var. noaranus* Verhoeff.

49. *Leptoiulus cibdellus* (Chamberlin, 1921)*Julus minutus* Porat, 1889*Julus (Leptoiulus) minutus*: Verhoeff 1898*Leptoiulus minutus*: Verhoeff 1908*Julus cibdellus* Chamberlin, 1921*Leptoiulus cibdellus*: Enghoff 197450. *Leptoiulus baconyensis* (Verhoeff, 1899)*Julus (Leptoiulus) alemannicus baconyensis* Verhoeff, 1899*Leptoiulus baconyensis*: Stojalowska 1961

It was originally described from the Bakony Mts, Western Hungary. Szalay (1940a) reported it from the Kecske Cave in the Bükk Mts, and from two other localities in the Bakony Mts (1944). Unfortunately, no material exists in the HNHM.

51. *Leptoiulus tussilaginis* (Verhoeff, 1907)*Julus tussilaginis* Verhoeff, 1907*Leptoiulus tussilaginis*: Stojalowska & Starega 1974

It is mentioned by Stojalowska (1961) from Hungary, without any further details. There is no material in the HNHM.

52. *Leptoiulus saltuvagus* (Verhoeff, 1898)*Julus (Leptoiulus) saltuvagus* Verhoeff, 1898*Leptoiulus saltuvagus*: Verhoeff 1908

Known from the Kőszegi Mts (Szalay 1942b, 1943), and it has also been reported from Ócsa in the frame of a recent ecological investigation (Sallai 1993a, 1993b, 1993c).

53. *Leptoiulus simplex* (Verhoeff, 1894)*Julus alemannicus simplex* Verhoeff, 1894*Leptoiulus simplex*: Schubart 1934

Mentioned by Szalay (1942b, 1943) from the Kőszegi Mts as *L. s. attenuatus* Attems, 1927. There is no material in the HNHM.

54. *Leptoiulus trilobatus* (Verhoeff, 1894)*Julus trilobatus* Verhoeff, 1894*Julus (Leptoiulus) ciliatus* Verhoeff, 1897*Leptoiulus trilobatus*: Verhoeff 190855. *Leptoiulus* sp.

A probably new species, found in oak forests mainly around Budapest. A complete revision is definitely needed for all forms of *Leptoiulus* in Hungary.

56. *Microiulus laeticollis* (Porat, 1889)*Julus laeticollis* Porat, 1889*Julus (Microiulus) laeticollis*: Verhoeff 1907*Microiulus laeticollis*: Verhoeff 1917

Two valid subspecies occur in Hungary: ssp. *dudichi* (Verhoeff, 1927) from Bátorliget (see also Korsós 1991b), and ssp. *evae* Loksa, 1965 from Nagybajom.

57. *Microiulus imbecillus* (Latzel, 1884)

Julus (Allaiulus) imbecillus Latzel, 1884

Styrioiulus imbecillus: Loksa 1961b

Microiulus imbecillus: Strasser 1971

The nominal form was mentioned by Loksa (1961b) from Mt. Kovácsi. He also described a new subspecies, *M. i. beszkidensis* Loksa, 1957, from Mt. Beszkid, Northeast Carpathians, now in Romania. There is no material in the HNHM.

58. *Typhloiulus polypodus* (Loksa, 1960) **comb. nov.**

Allotyphloiulus polypodus Loksa, 1960

Allotyphloiulus bükkensis Loksa: in Loksa 1962a

Cylindroiulus polypodus: Sziráki 1966

It was described from the Forrás Cave at Lillafüred, Bükk Mts, based on several specimens collected in 1958-59 (Loksa 1960b). *Allotyphloiulus*, to which it was originally assigned, is a subgenus of *Cylindroiulus*, including only one species, *vulnerarius* Berlese, 1888. The other species (which was mentioned by Loksa as closest relative to *polypodus*), *C. (A.) ellingseni* Verhoeff, 1912, is based on a specimen with broken gonopods, as this was pointed out by Jeekel (1978). Although the type specimens of *A. polypodus* could not yet be traced, similarity of the gonopod illustration to other members of *Typhloiulus* (e. g. *bosniensis* and *strictus*, both by Strasser 1966) suggests its reallocation in this genus. Its true troglobiontic character also supports this assumption.

59. *Kryphioiulus occultus* (C. L. Koch, 1847)

Allajulus occultus C. L. Koch, 1847

Cylindroiulus occultus: Verhoeff 1907

Kryphioiulus occultus: Read 1990

The species is distributed in Germany, Poland, the Czech Republic, Slovakia and Romania. In Hungary it is confined to the warm grasslands of limestone slopes with a southern exposure, where the specimens are usually hidden under rocks or among plant roots. During the hot summer and the frozen winter period they are in aestivation/hibernation deep in the soil (Korsós 1991a).

60. *Cylindroiulus boleti* (C. L. Koch, 1847)

Julus boleti C. L. Koch, 1847

Cylindroiulus boleti: Verhoeff 1907

A common forest species, usually found in dead wood.

61. *Cylindroiulus luridus* (C. L. Koch, 1847)

Julus luridus C. L. Koch, 1847

Cylindroiulus luridus: Verhoeff 1907

Often found together with the previous species, but not so common. It does not seem to be confined to dead wood as regards to its microhabitat.

62. *Cylindroiulus meinerti* (Verhoeff, 1891)
Iulus luridus var. *meinerti* Verhoeff, 1891
Iulus meinerti: Verhoeff 1893
Cylindroiulus meinerti: Verhoeff 1913

Reported by Szalay (1942b, 1943) from the Kőszegi Mts. There is no material in the HNHM.

Two more *Cylindroiulus* species were mentioned by Sziráki (1966) in his faunal list of Hungarian millipedes: *C. groedensis* (Attems, 1899) and *C. dicentrus* (Latzel, 1884), without further details on their occurrences. *C. groedensis* is also mentioned by Loksa (1984). No other references could be traced in the literature.

63. *Cylindroiulus abaligetanus* Verhoeff, 1901
Cylindroiulus hyperopherus Attems, 1903: Verhoeff 1905
Cylindroiulus abaligetanus: Korsós & Read 1994

The species is quite rare, known only from the southwestern part of Hungary: County Somogy, and the Mecsek Mts.

64. *Cylindroiulus horvathi* (Verhoeff, 1897)
Iulus (*Cylindroiulus*) *Horvathi* Verhoeff, 1897
Iulus (*Cylindroiulus*) *Dietli* Verhoeff, 1898: Verhoeff 1898
Cylindroiulus deubeli Attems, 1903: Verhoeff 1905
Cylindroiulus (*Crenatoiulus*) *vtosae* Strasser, 1962: Korsós & Read 1994
Cylindroiulus ponticus Golovatch, 1978: Korsós & Read 1994
Cylindroiulus horvathi: Korsós & Read 1994

More widespread than *C. abaligetanus*; it is, however, not very easy to collect and identify.

65. *Cylindroiulus latestriatus* (Curtis, 1845)
Iulus latestriatus Curtis, 1845
Iulus luscus Meinert, 1868: Korsós & Enghoff 1990
Iulus owenii Bollmann, 1887: Schubart 1934
Iulus frisius Verhoeff, 1891: Blower 1953
Cylindroiulus parisorum miraculus Brölemann & Verhoeff, 1896: Schubart 1934
Cylindroiulus latestriatus: Brade-Birks 1928

It was found only recently in a few synanthropic localities (Korsós 1992).

66. *Cylindroiulus parisorum* (Brölemann & Verhoeff, 1896)
Iulus parisorum Brölemann & Verhoeff, 1896
Cylindroiulus parisorum: Brade-Birks & Brade-Birks 1918
Cylindroiulus ignoratus Attems, 1927: Blower 1957
Cylindroiulus parisorum: Korsós & Enghoff 1990

A synanthropic species in Hungary, preferring the habitats under anthropogenic influence, such as parks, gardens, horticultures, or even hothouses. The most frequently found member of the *Cylindroiulus truncorum*-group.

67. *Cylindroiulus truncorum* (Silvestri, 1896)
Diploiulus truncorum Silvestri, 1896
Cylindroiulus truncorum: Attems 1908
Cylindroiulus luscus salicis Verhoeff, 1926: Verhoeff 1930
Cylindroiulus truncorum: Korsós & Enghoff 1990

The species was described first from North Africa, but later reported from a number of localities in and around Europe. In Hungary it occurs mainly in hothouses and horticulture, as in other parts of Europe.

68. *Cylindroiulus arborum* Verhoeff, 1928
Cylindroiulus arborum: Korsós & Enghoff 1990

A rare synanthropic species, occurring in habitats under human influence.

69. *Enantiulus nanus* (Latzel, 1884)
Julus nanus Latzel, 1884
Julus (Enantiulus) nanus: Attems 1895
Leptophyllum nanum: Verhoeff 1910
Enantiulus nanus: Hoffman 1979

70. *Enantiulus tatranus* (Verhoeff, 1907)
Leptophyllum tatranum Verhoeff, 1907
Enantiulus tatranus: see Hoffman 1979

The subspecies *evae* Loksa, 1968, was described from the Bükk Mts, Northern Hungary. There is no material in the HNHM.

71. *Styrioiulus pelidnus* (Latzel, 1884)
Julus (Allaiulus) pelidnus Latzel, 1884

First it was reported by Szalay (1942b, 1943) from the Kőszegi Mts. A new subspecies: *Styrioiulus pelidnus orientalis* Loksa, 1962, was described from Mt Kovács.

72. *Ommatoiulus sabulosus* (Linnaeus, 1758)
Iulus sabulosus Linnaeus, 1758
Julus (Ommatoiulus) sabulosus: Haase 1887
Schizophyllum sabulosum: Verhoeff 1900
Archiulus sabulosus: Attems 1927
Ommatoiulus sabulosus: Jeekel 1968

order Polydesmida
Paradoxosomatidae

73. *Oxidus gracilis* (C. L. Koch, 1847)
Fontaria gracilis C. L. Koch, 1847
Paradesmus gracilis: Latzel 1884
Orthomorpha gracilis: Attems 1898
Oxidus gracilis: Cook 1911

One of the most widespread ubiquitous species of millipedes, found almost in every part of the world. In Hungary it mainly occurs in hothouses - sometimes in large numbers. Horticulturists consider this millipede as a pest. There are scattered reports of open-air localities as well.

74. *Stosatea italica* (Latzel, 1886)

Strongylosoma italicum Latzel, 1886

Entothalassinum italicum: Attems 1929

Stosatea italica: Jeekel 1967

It is reported only along the western border of Hungary. Mass occurrence has been reported by Szabó (1931) in the town of Szeged; without the material, however, the identification is doubtful. This record was repeated by Sziráki (1966). There is no material in the HNHM.

75. *Strongylosoma stigmatosum* (Eichwald, 1830)

[*Julus pallipes* Olivier, 1792]

Julus stigmatosus Eichwald, 1830

Strongylosoma pallipes: Latzel 1884

Strongylosoma stigmatosum: Jeekel 1967

Widespread in hilly and montane forests throughout the country.

Polydesmidae

76. *Brachydesmus superus* Latzel, 1884

77. *Brachydesmus dadayi* Verhoeff, 1895

Two closely related species, differing only in a few external characters and the structure of male gonopods. The only overlap of their distribution is along the Danube, in the small flood forests on the islands south of Budapest. *B. dadayi* seems not to invade further to the east of the river.

78. *Brachydesmus troglobius* Daday, 1889

Found only in the Cave of Abaliget, Mecsek Mts (Gebhardt 1934). Recent records approve its validity.

79. *Brachydesmus attemsii* Verhoeff, 1895

A subspecies: *Brachydesmus attemsii tenkesensis* Loksa, 1962, has been described from the southernmost part of Hungary.

80. *Polydesmus collaris* C. L. Koch, 1847

A beautifully coloured southern European species, distributed in Hungary only in the southwestern region, from the Mecsek Mts to the Őrség. Old, moist forests (*Quercus* and *Alnus* spp.), fallen trees, places under bark and moss, and litter are the best habitats, though the species is not very abundant.

81. *Polydesmus complanatus* (Linnaeus, 1761)*Julus complanatus* Linnaeus, 1761*Polydesmus complanatus*: C. L. Koch, 1844*Polydesmus complanatus illyricus* (Verhoeff, 1893): Schubart 1934

The most common *Polydesmus* species in Hungary, dispersed in almost every kind of habitat, including anthropogenic ones. In natural biotopes it is mostly confined to dead tree trunks, living usually under the bark.

82. *Polydesmus polonicus* Latzel, 1884

The species is known from the Carpathian Mts, in the territories joint by the countries Poland, Ukraine, Slovakia, and Romania. There are only two specimens recorded from Hungary (Kor-sós 1989). Its distribution can possibly be explained by unpublished data from the plains of East Slovakia and Ukraine (Golovatch, pers. com.).

83. *Polydesmus denticulatus* C. L. Koch, 1847

A widespread species throughout Europe, except the Mediterranean region. In Hungary it is abundant in moist forests, under bark, sometimes together with the following species.

84. *Polydesmus schaessburgensis* Verhoeff, 1898

A montane species described from the Eastern Carpathian Mts, Romania. In Hungary it can be found in cold, relict bog forests (e. g. Ócsa, Dabas, and Töserdő at Lakitelek). Its habitat is basically the same as that of *P. denticulatus* but this is less abundant.

85. *Polydesmus monticola* (Latzel, 1884)*Polydesmus complanatus* var. *monticola* Latzel, 1884*Polydesmus monticola*: Verhoeff 1907

It is known only from a subspecies: ssp. *koszegensis* Loksa, 1954, from Western Hungary, 600 m a.s.l. (mentioned already by Szalay 1943, 1944, as the nominal form).

86. *Polydesmus edentulus* C. L. Koch, 1847

Its nominal form is reported from Mt. Kovácsi, Western Hungary (Loksa 1961b). The form *Polydesmus edentulus bidentatus* f. *hungarica* was described by Loksa (1958), from Szakonyfalu at the Austrian border.

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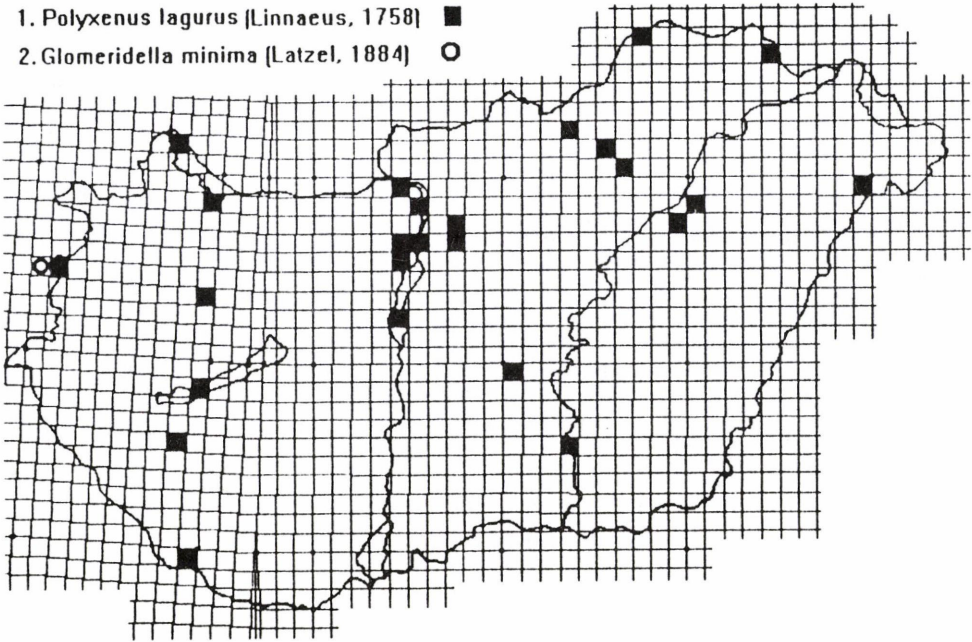
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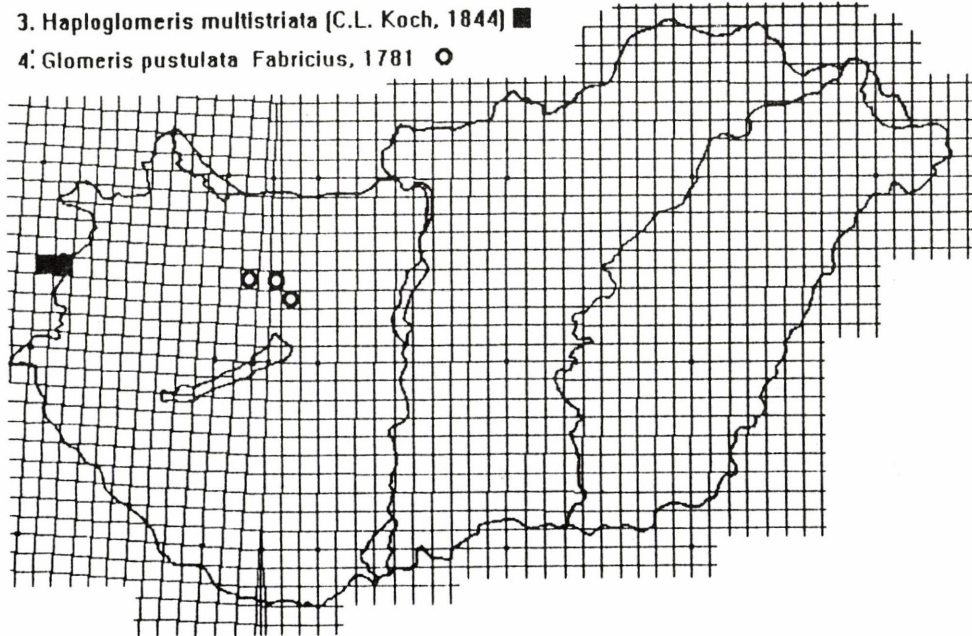
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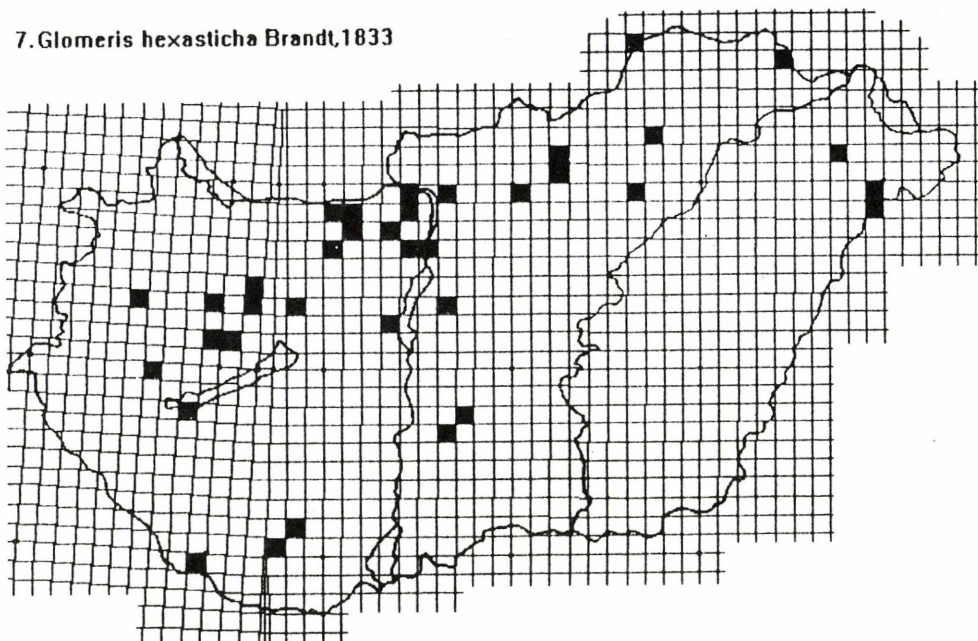
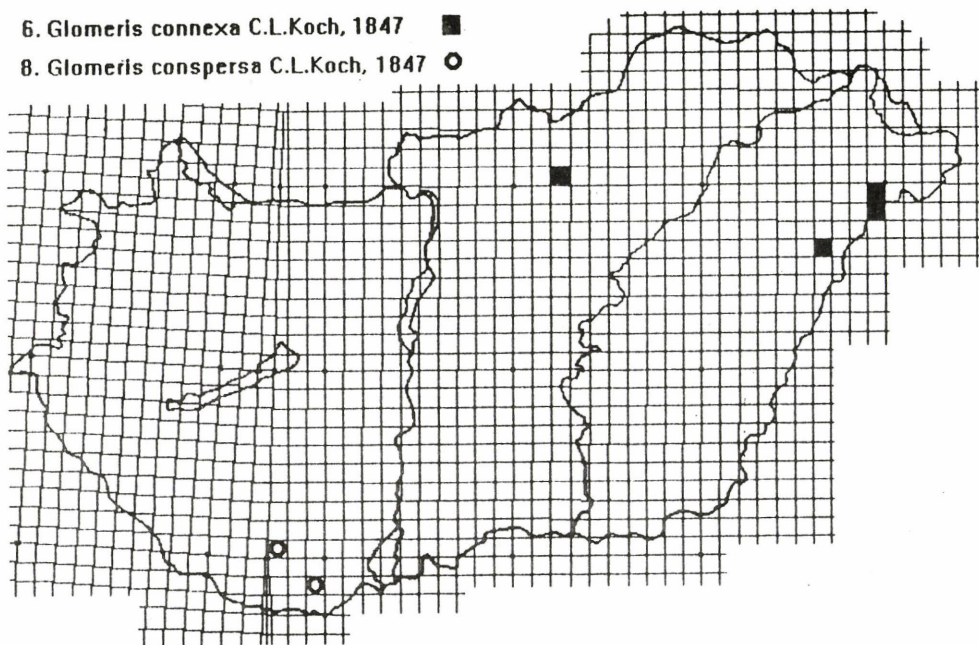
2. *Glomeridella minima* [Latzel, 1884] ○



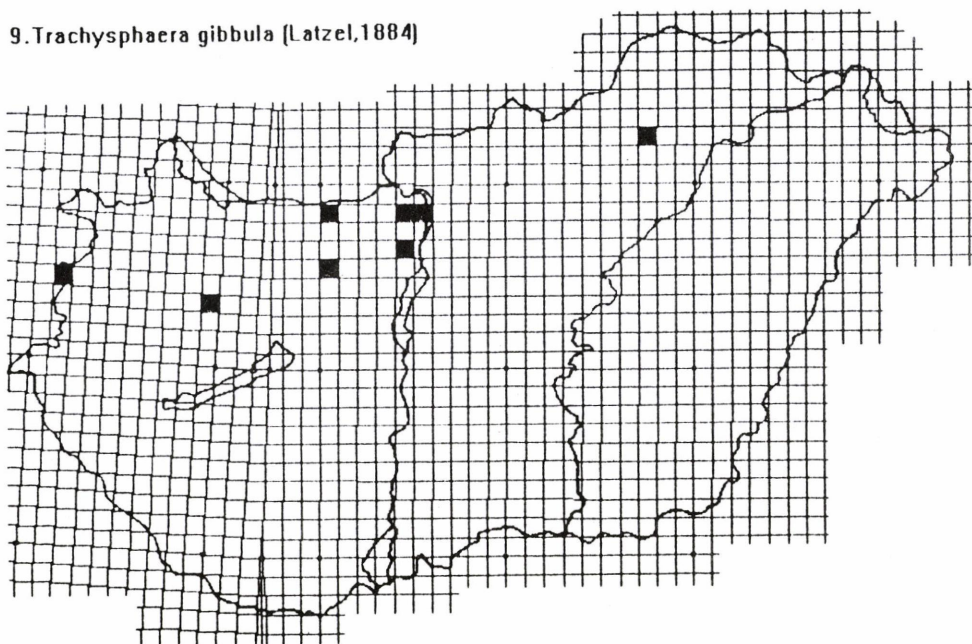
3. *Haploglomeris multistriata* [C.L. Koch, 1844] ■

4. *Glomeris pustulata* Fabricius, 1781 ○



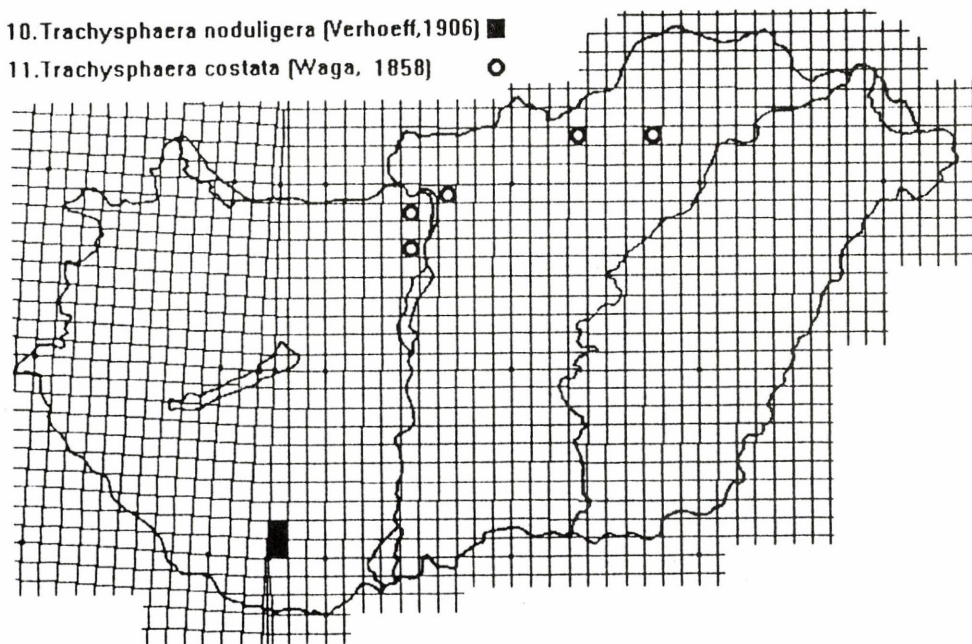
7. *Glomeris hexasticha* Brandt, 18336. *Glomeris connexa* C.L.Koch, 1847 ■8. *Glomeris conspersa* C.L.Koch, 1847 ○

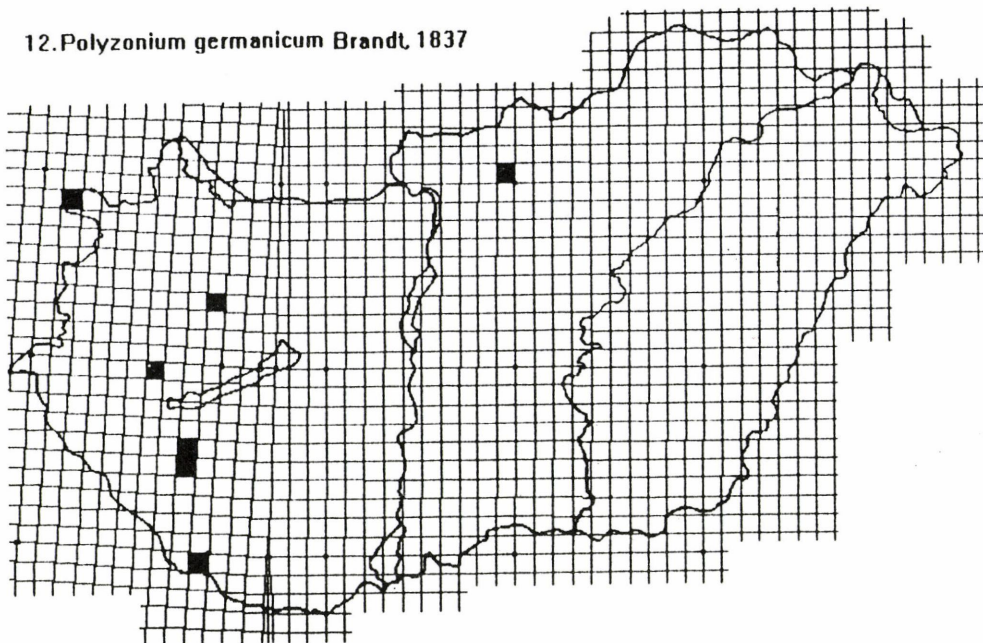
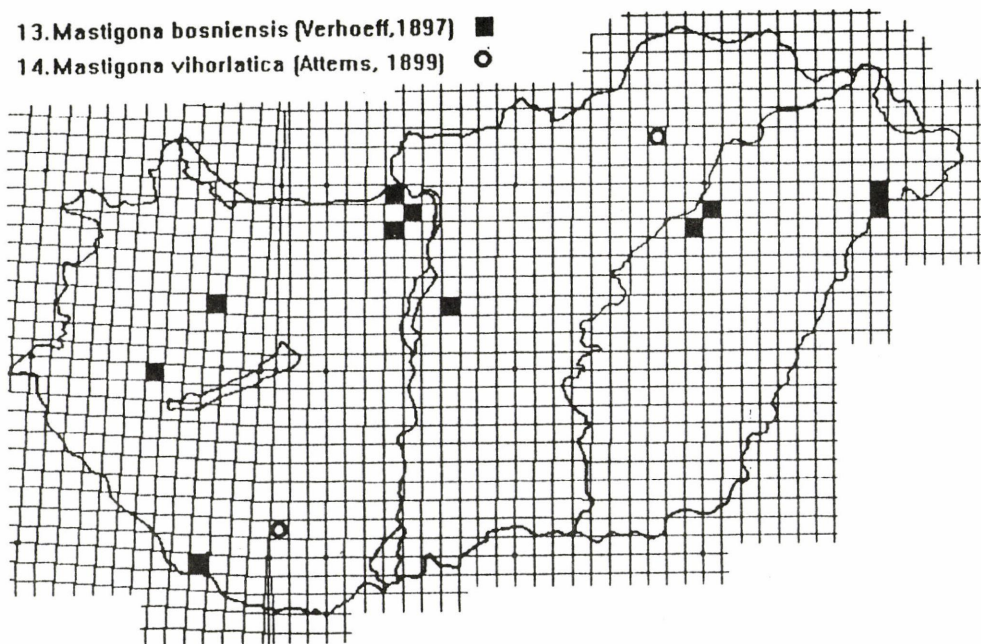
9. *Trachysphaera gibbula* (Latzel, 1884)



10. *Trachysphaera noduligera* (Verhoeff, 1906) ■

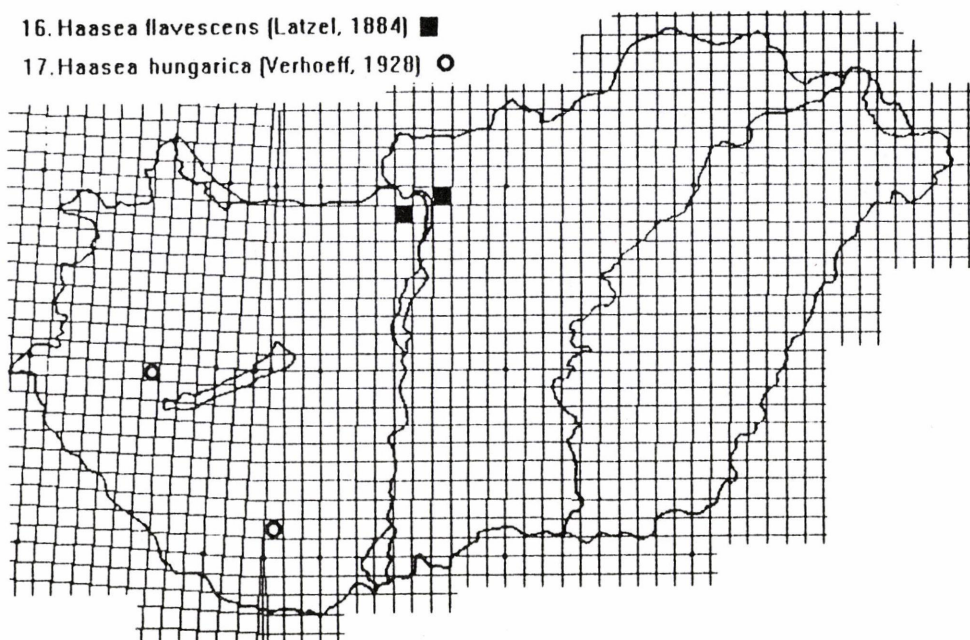
11. *Trachysphaera costata* (Waga, 1858) ○



12. *Polyzonium germanicum* Brandt, 183713. *Mastigona bosniensis* (Verhoeff, 1897) ■14. *Mastigona vihorlatica* (Attems, 1899) ○

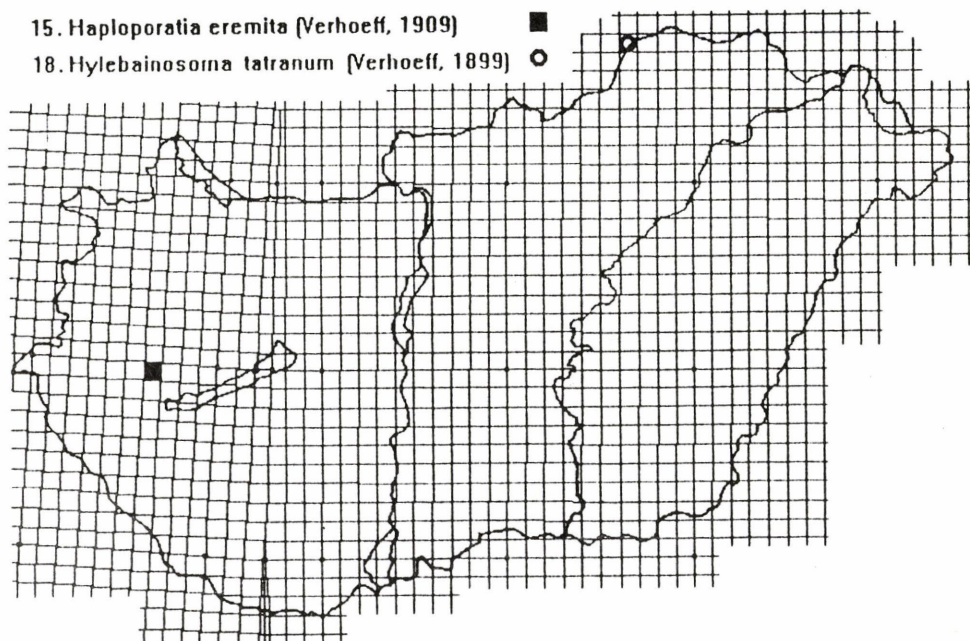
16. *Haasea flavescens* (Latzel, 1884) ■

17. *Haasea hungarica* (Verhoeff, 1928) ○



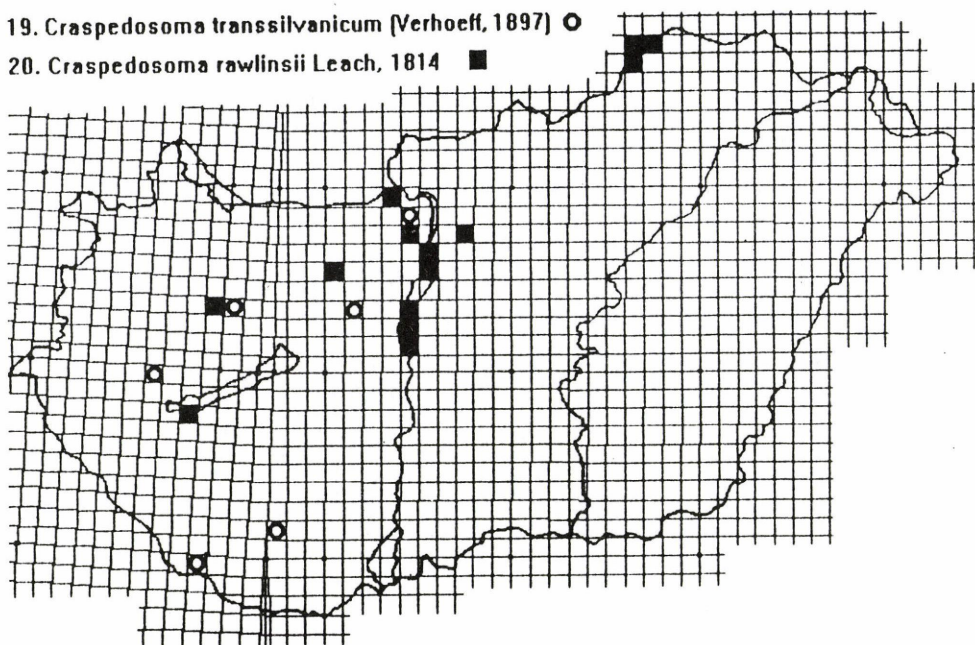
15. *Haploporatia cremita* (Verhoeff, 1909) ■

18. *Hylebainosoma tatranum* (Verhoeff, 1899) ○



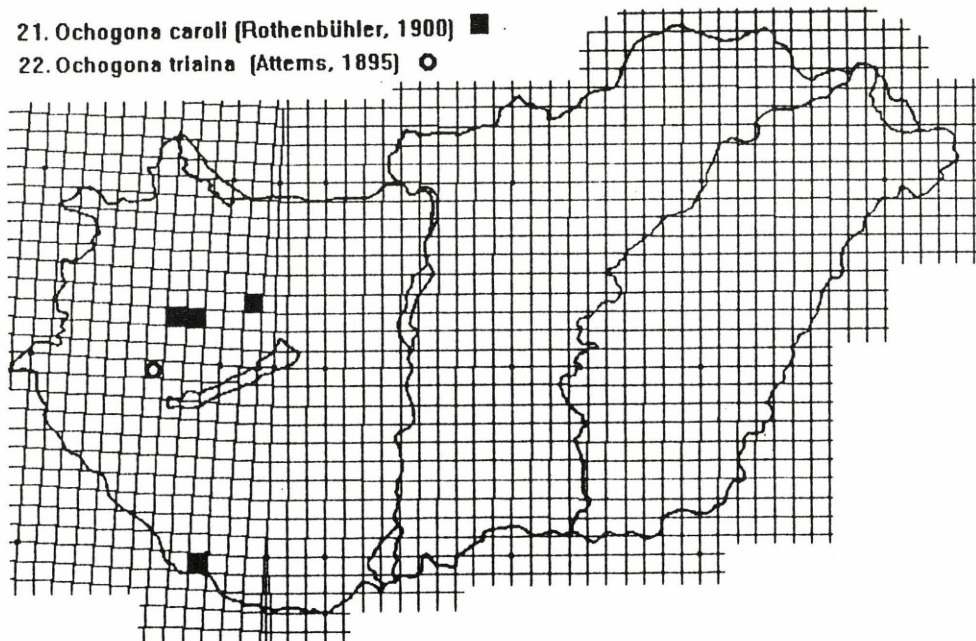
19. *Craspedosoma transsilvanicum* (Verhoeff, 1897) ○

20. *Craspedosoma rawlinsii* Leach, 1814 ■



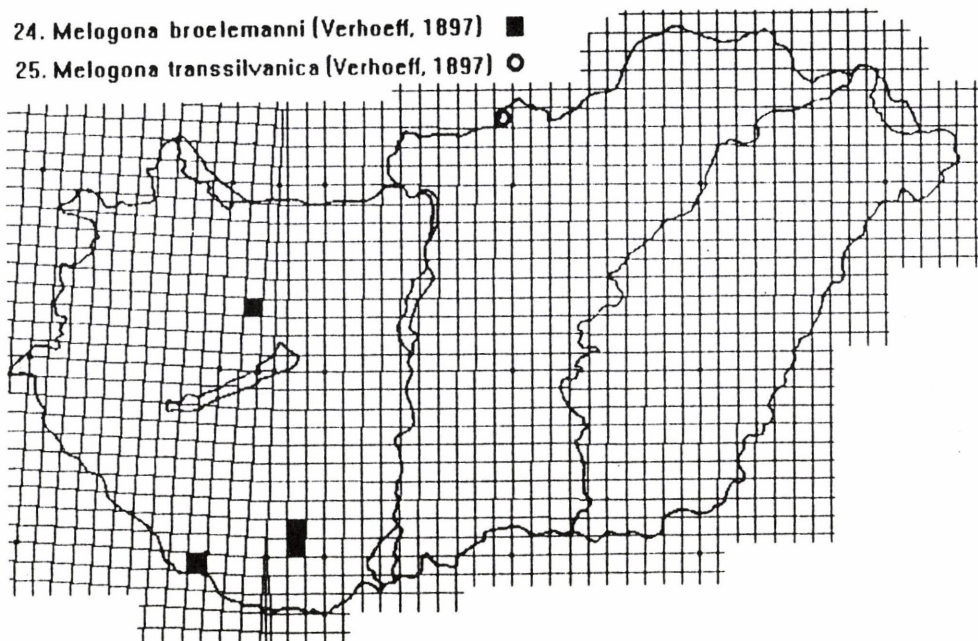
21. *Ochogona caroli* (Rothenbühler, 1900) ■

22. *Ochogona triaina* (Attems, 1895) ○



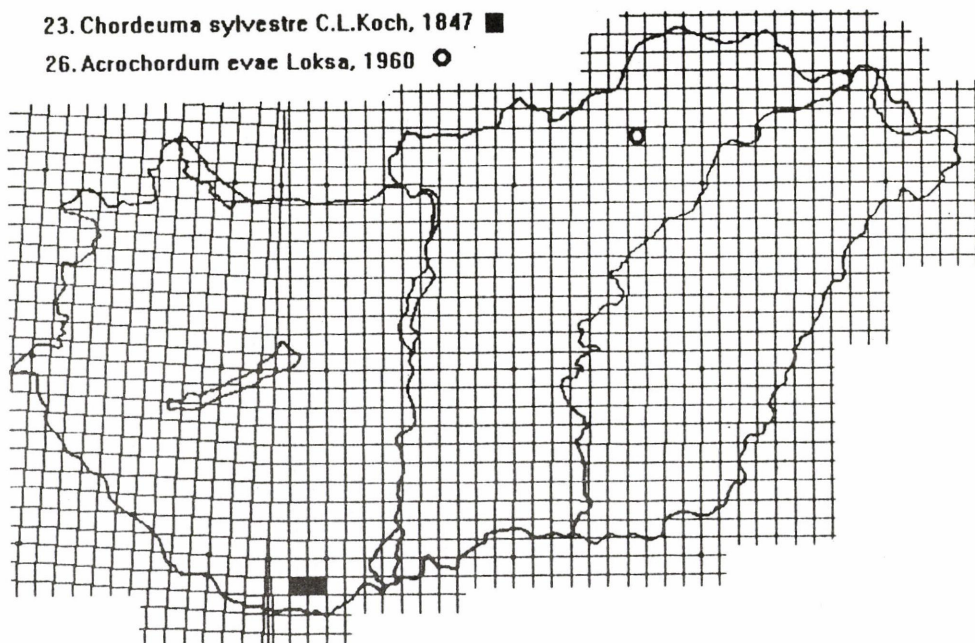
24. *Melogona broelemanni* (Verhoeff, 1897) ■

25. *Melogona transsilvanica* (Verhoeff, 1897) ○



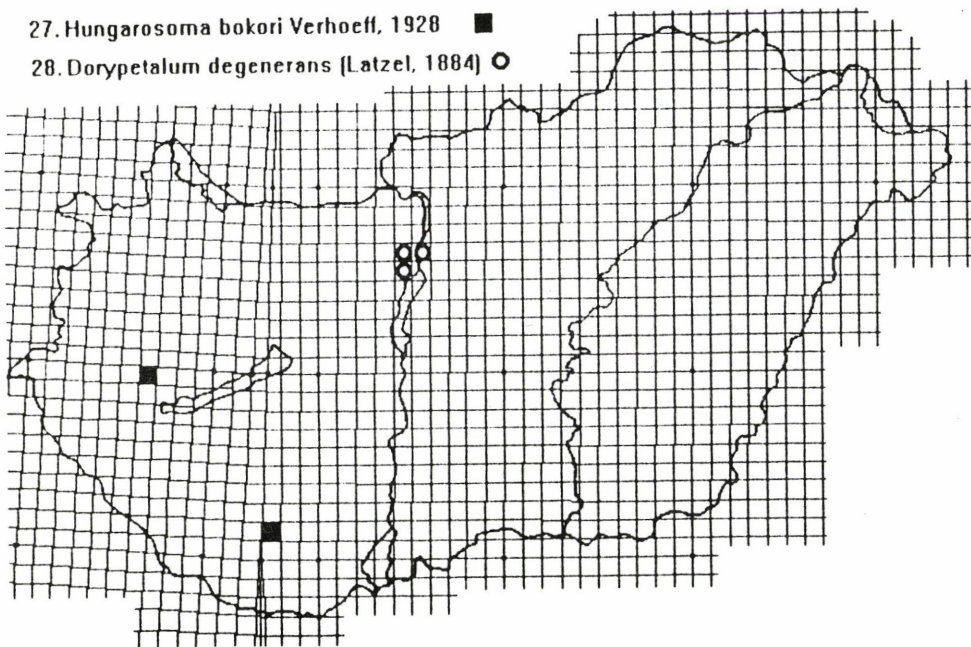
23. *Chordeuma sylvestre* C.L.Koch, 1847 ■

26. *Acrochordum evae* Loksa, 1960 ○

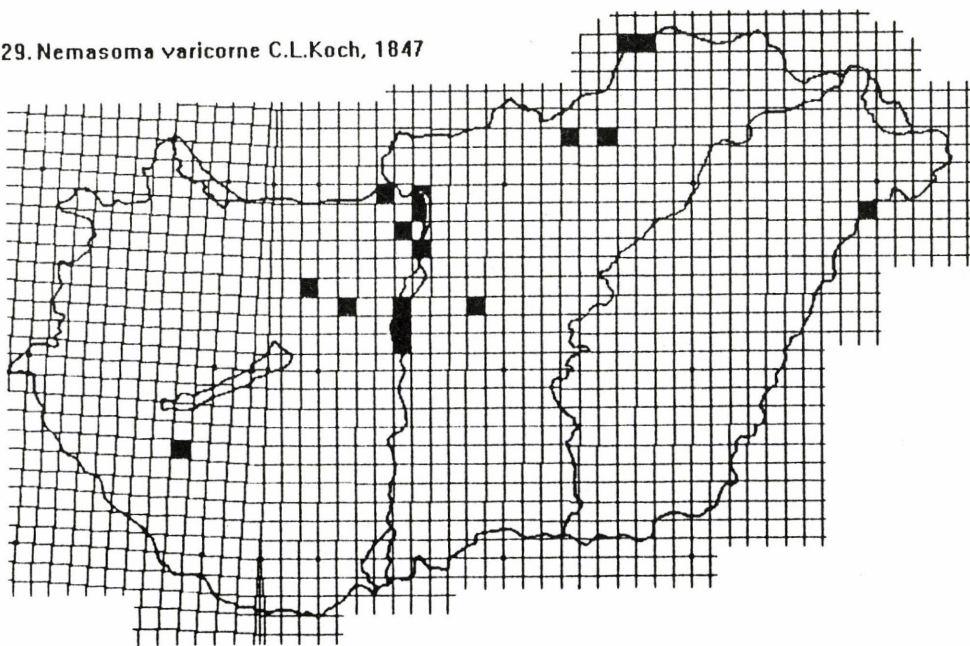


27. *Hungarosoma bokori* Verhoeff, 1928 ■

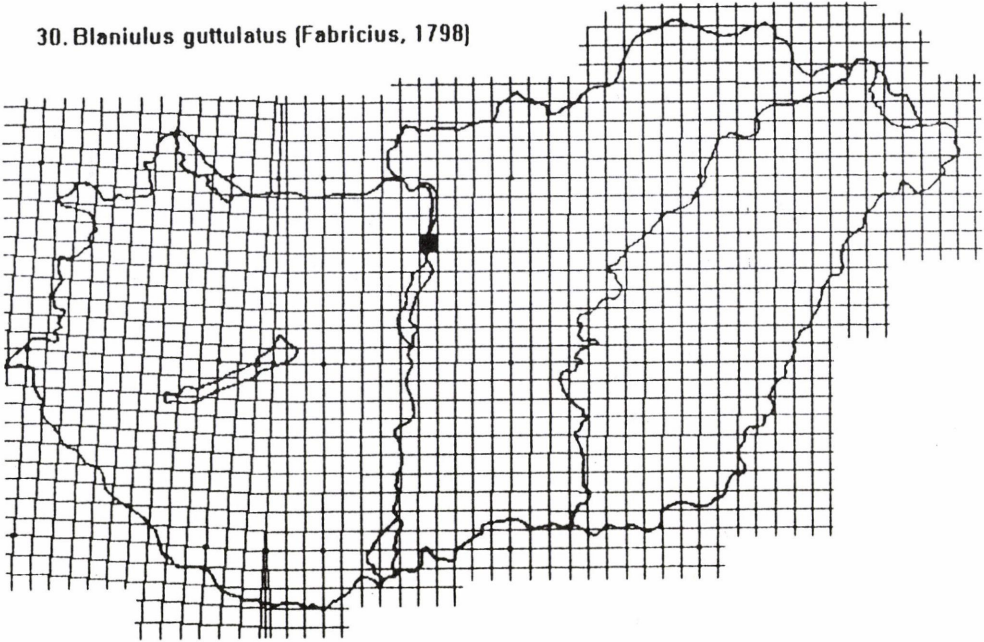
28. *Dorypetalum degenerans* [Latzel, 1884] ○



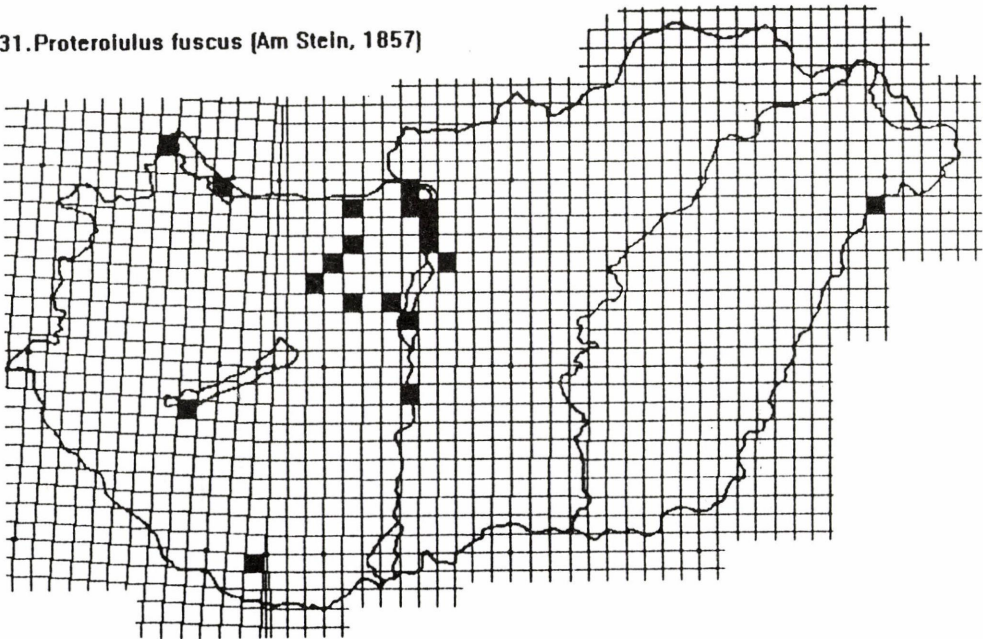
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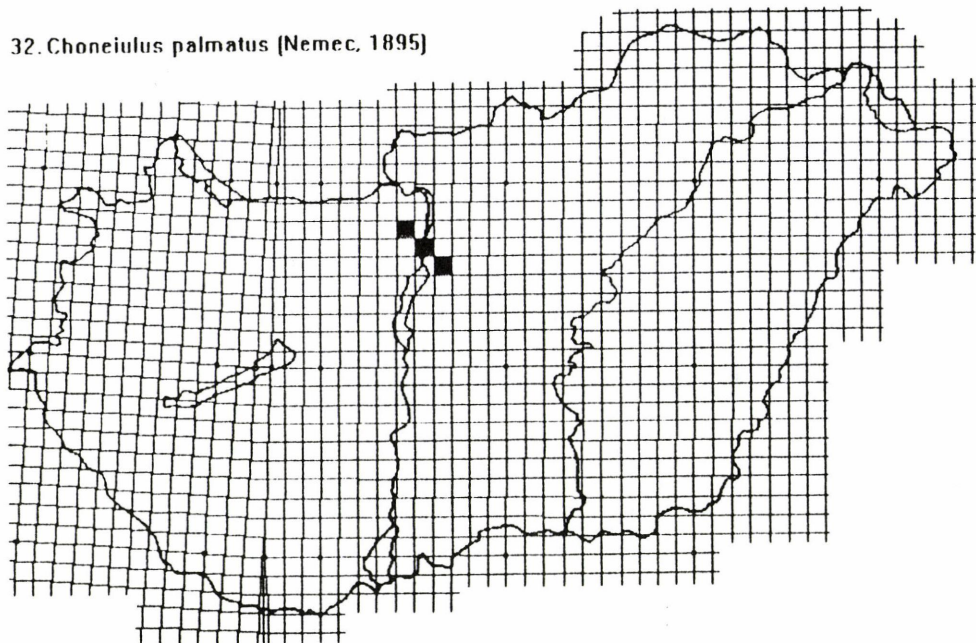
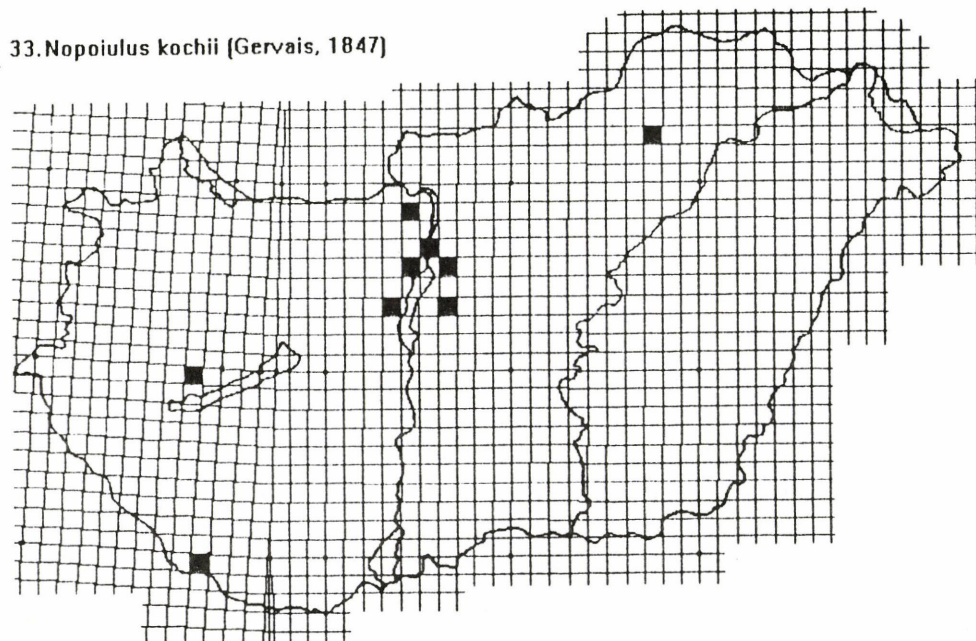


30. *Blaniulus guttulatus* (Fabricius, 1798)



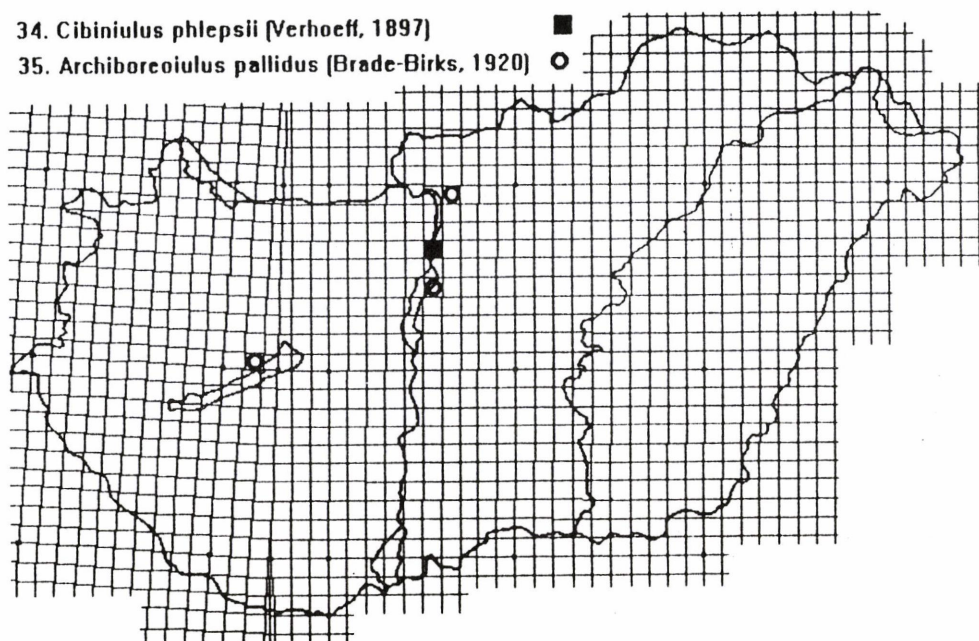
31. *Proterolulius fuscus* (Am Stein, 1857)



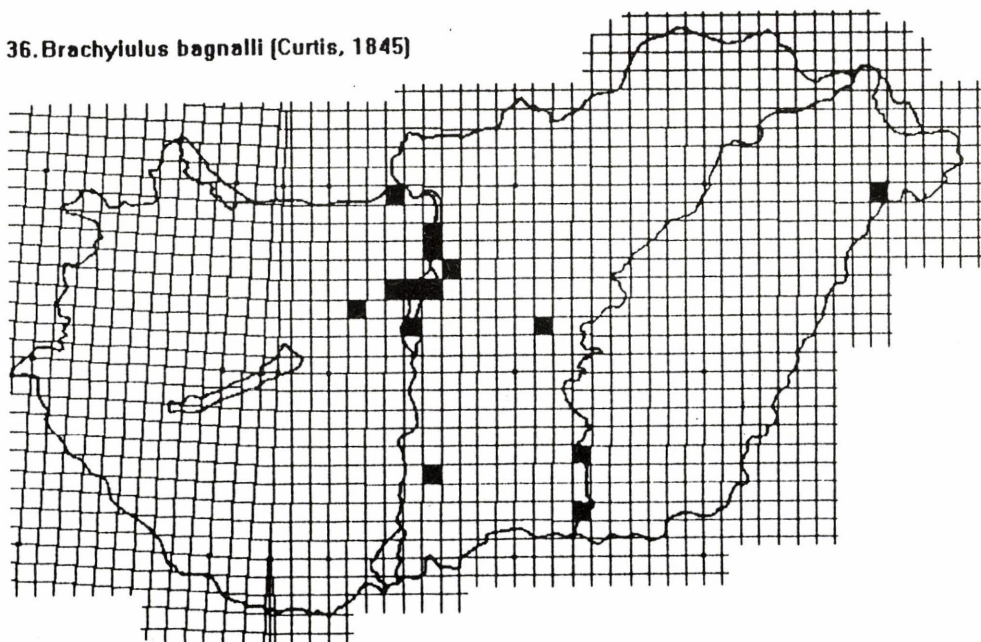
32. *Choneiulus palmatus* (Nemec, 1895)33. *Nopoiulus kochii* (Gervais, 1847)

34. *Cibiniulus phlepsii* (Verhoeff, 1897)

35. *Archiboreoiulus pallidus* (Brade-Birks, 1920)

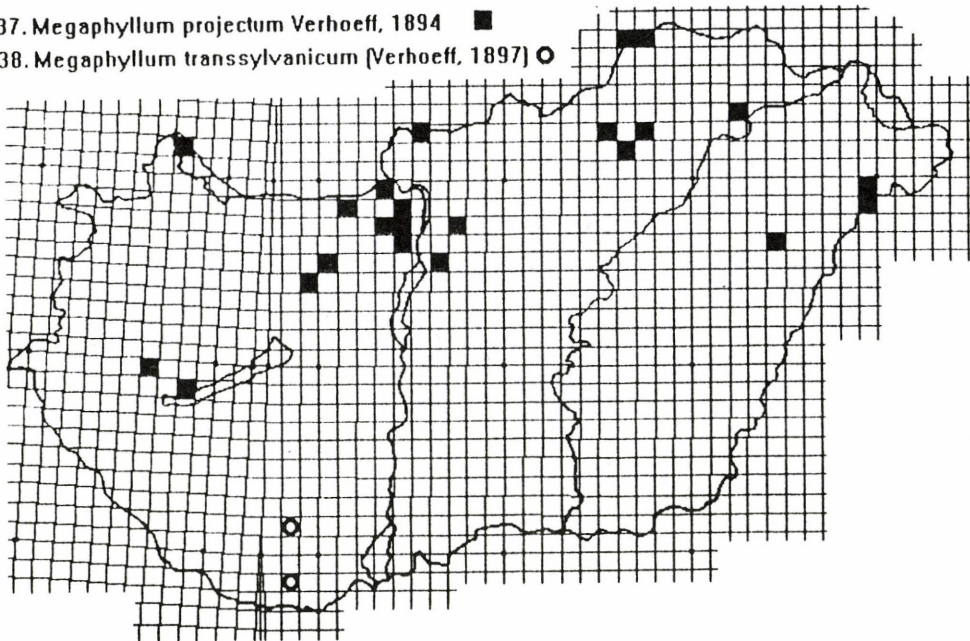


36. *Brachyiulus bagnalli* (Curtis, 1845)



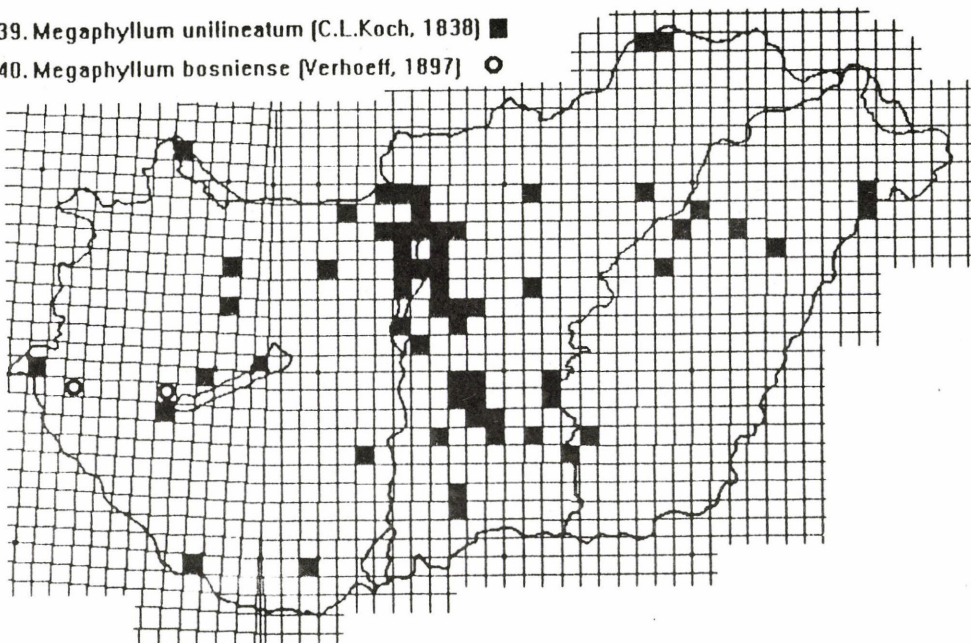
37. *Megaphyllum projectum* Verhoeff, 1894 ■

38. *Megaphyllum transsylvanicum* [Verhoeff, 1897] ○

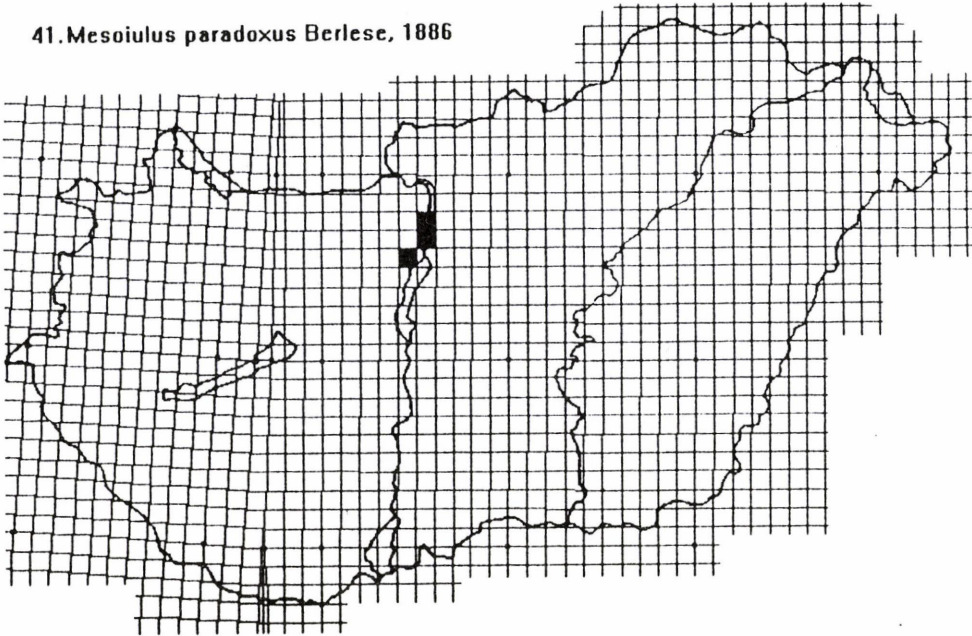


39. *Megaphyllum unilineatum* [C.L.Koch, 1838] ■

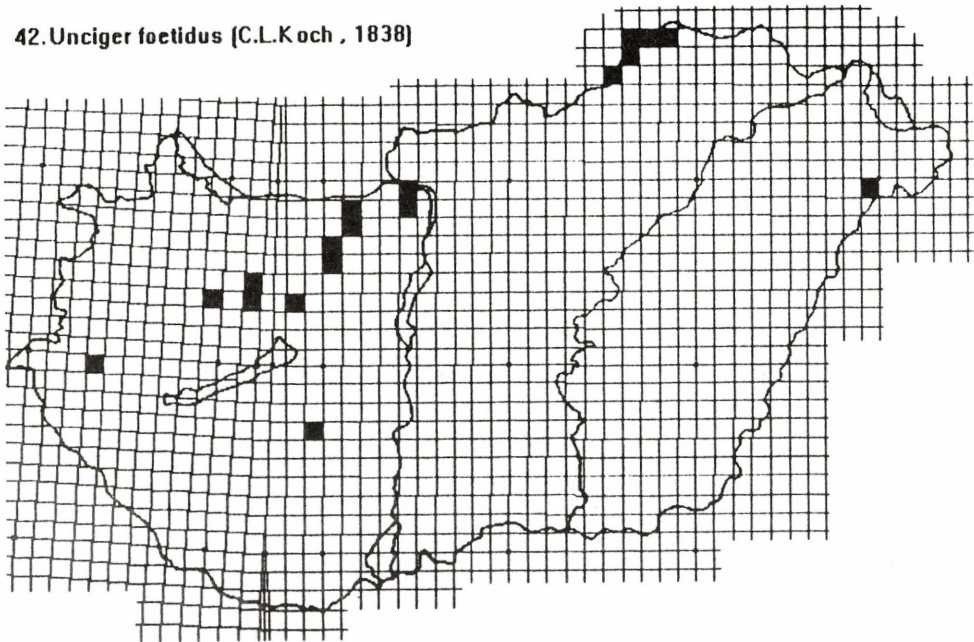
40. *Megaphyllum bosniense* [Verhoeff, 1897] ○

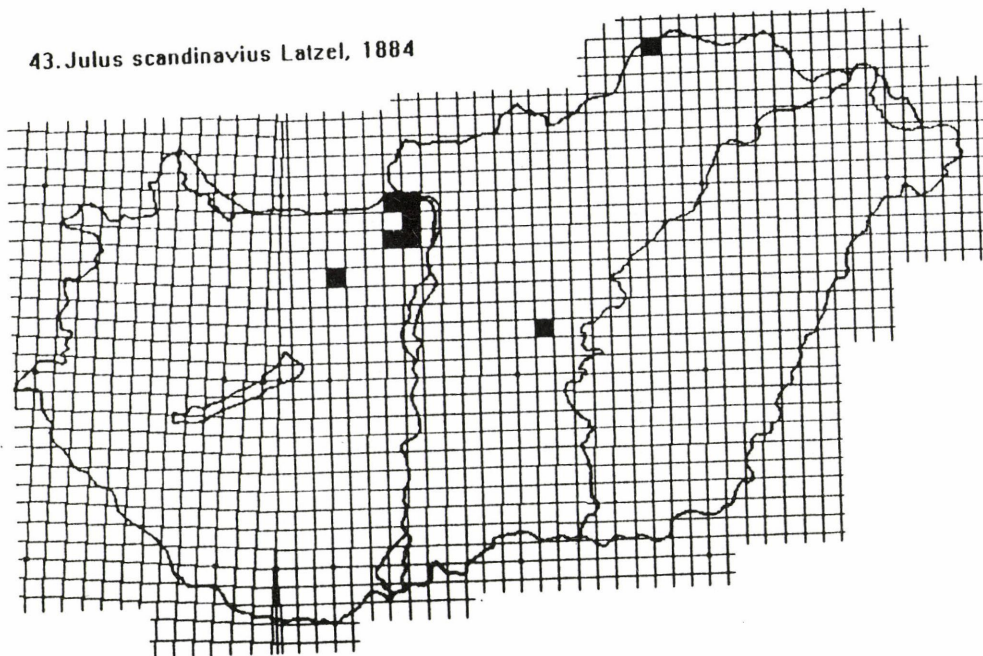
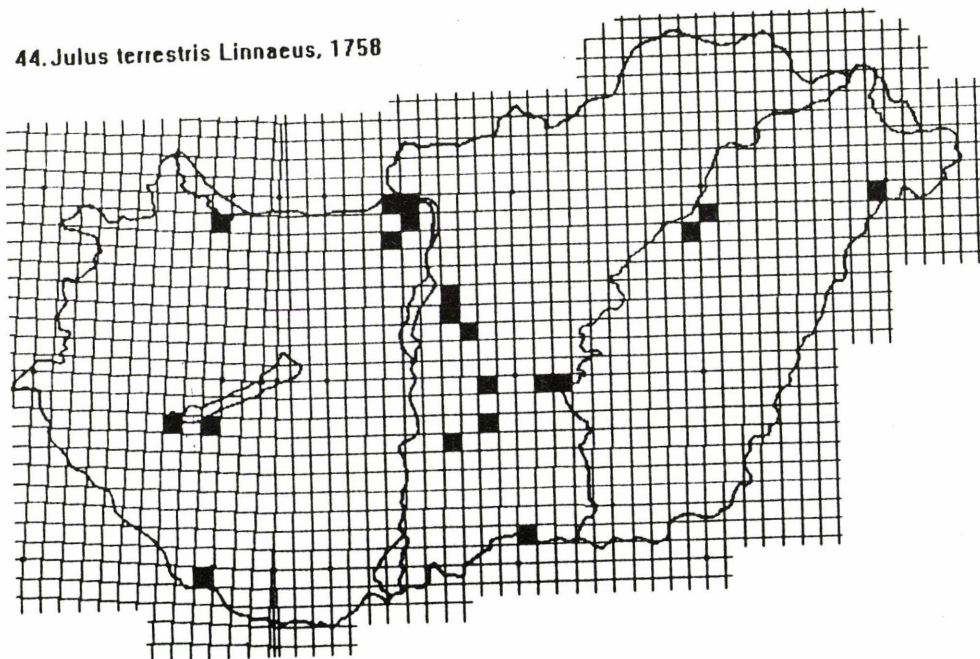


41. *Mesoiulus paradoxus* Berlese, 1886



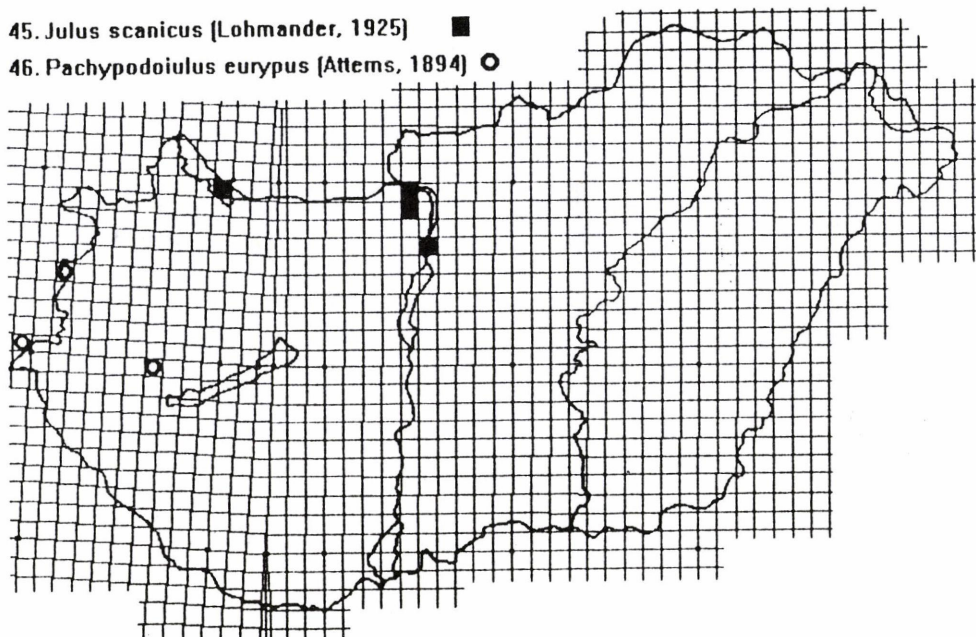
42. *Unciger foetidus* [C.L.Koch, 1838]



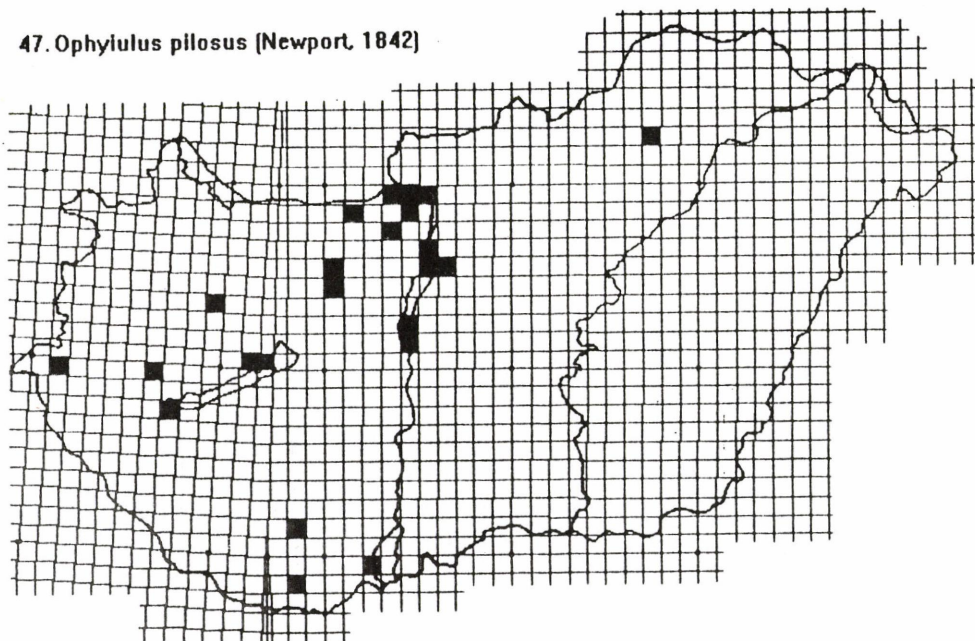
43. *Julus scandinavicus* Latzel, 188444. *Julus terrestris* Linnaeus, 1758

45. *Julus scanicus* (Lohmander, 1925) ■

46. *Pachypodoiulus eurypus* (Attems, 1894) ○

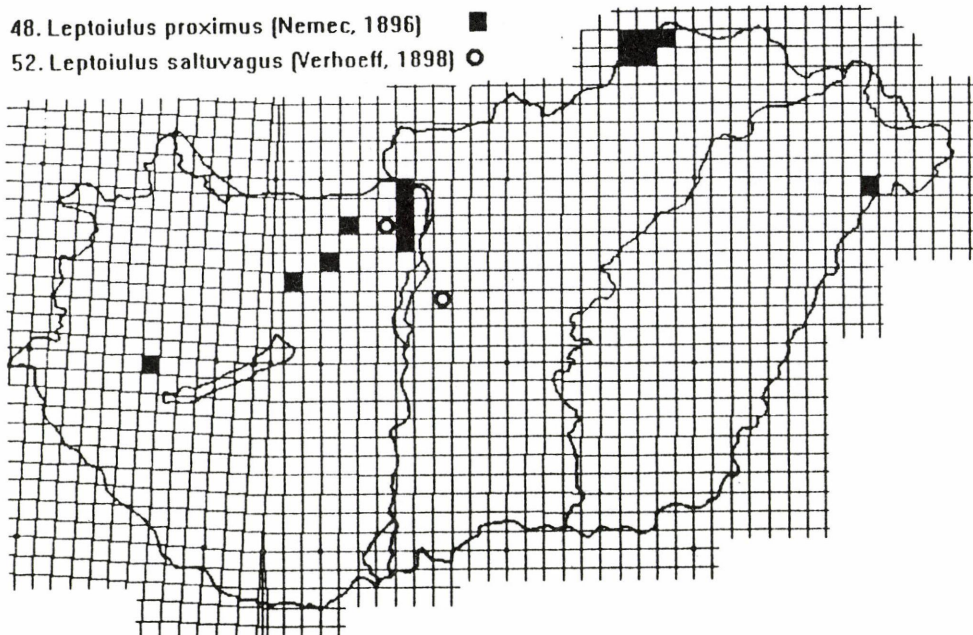


47. *Ophiulus pilosus* (Newport, 1842) ■



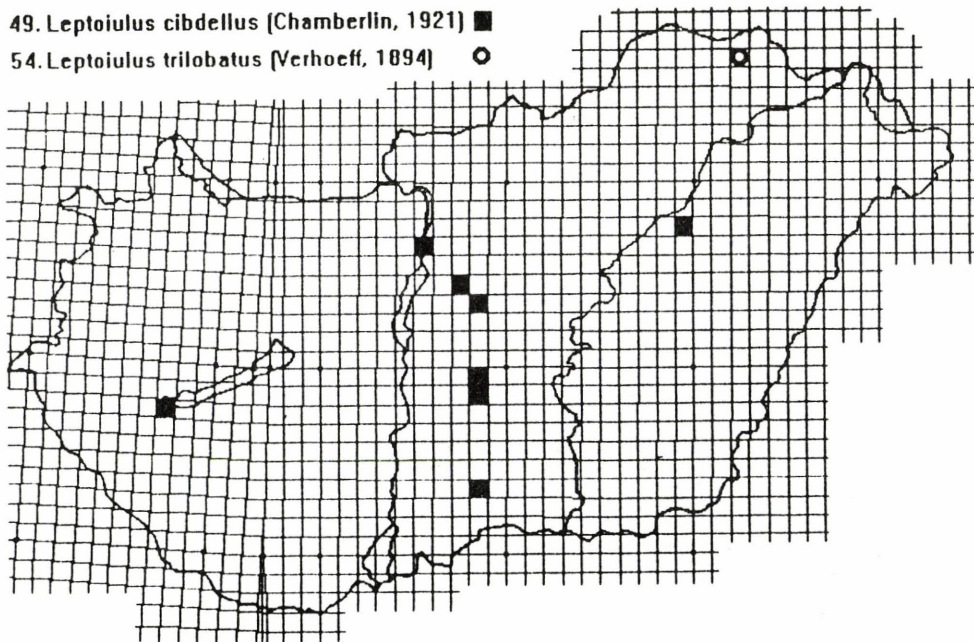
48. *Leptoiulus proximus* (Nemec, 1896) ■

52. *Leptoiulus saltuvagus* (Verhoeff, 1898) ○



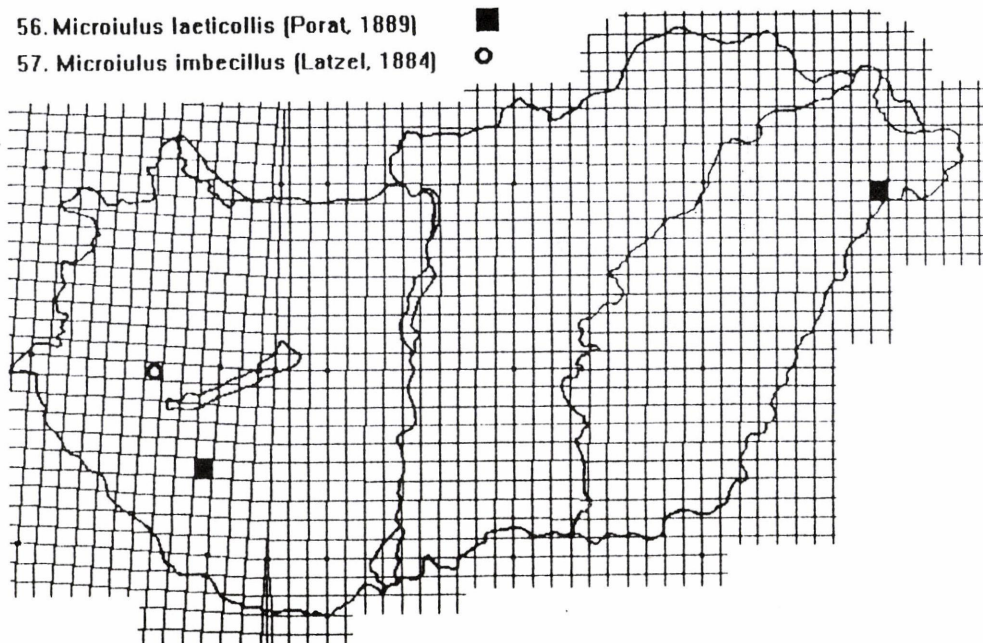
49. *Leptoiulus cibdellus* (Chamberlin, 1921) ■

54. *Leptoiulus trilobatus* (Verhoeff, 1894) ○



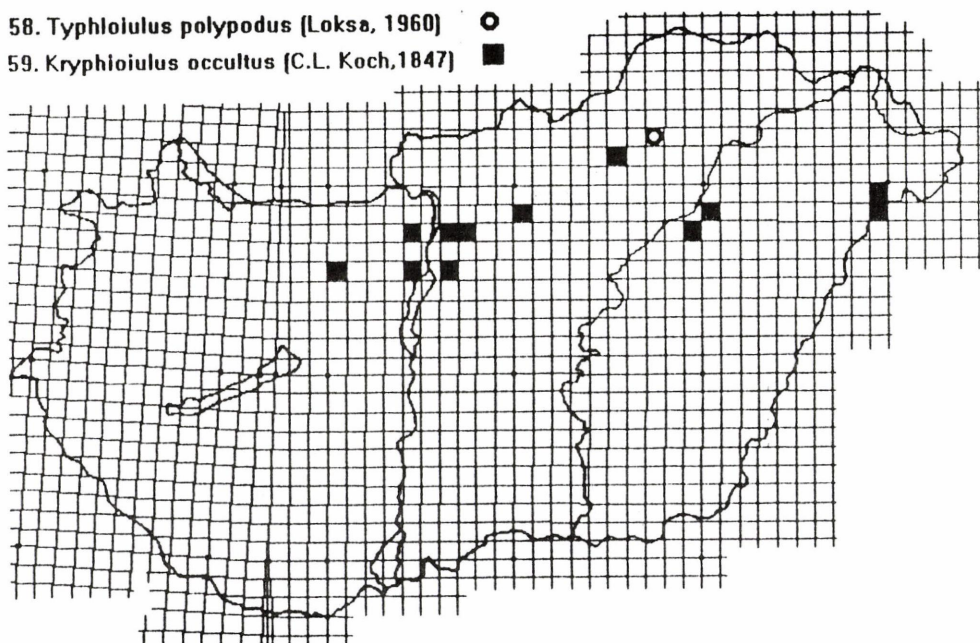
56. *Microiulus laticollis* (Porat, 1889) ■

57. *Microiulus imbecillus* (Latzel, 1884) ○

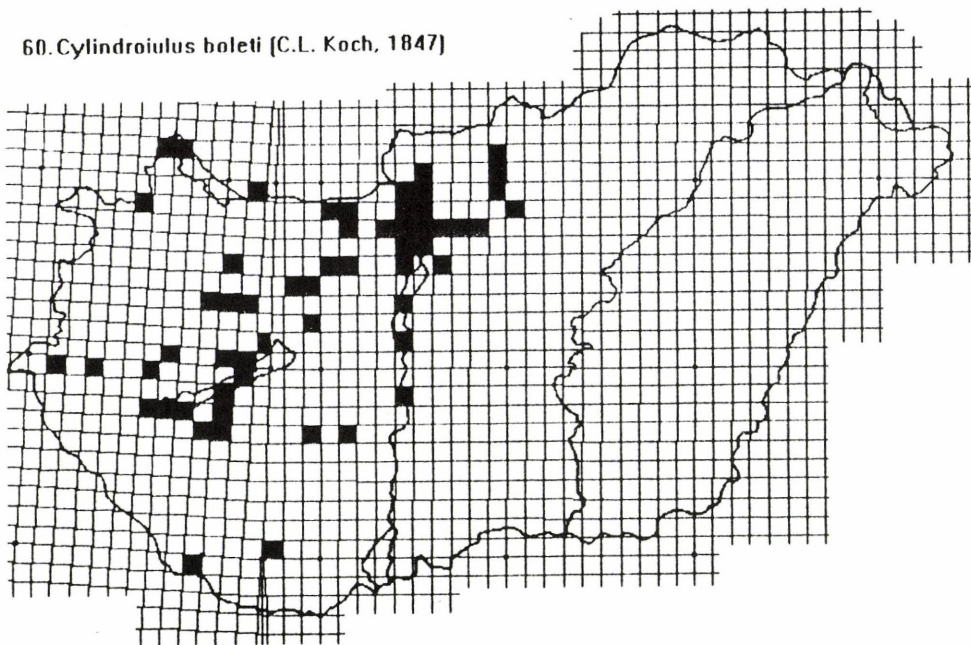


58. *Typhloiulus polypodus* (Loksa, 1960) ○

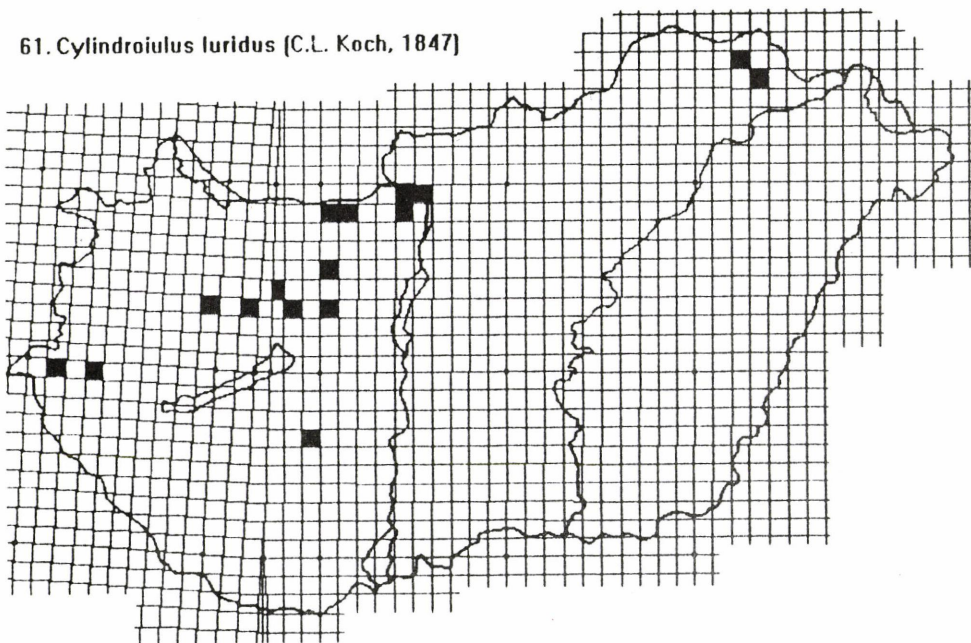
59. *Kryphioiulus occultus* [C.L. Koch, 1847] ■



60. *Cylindroiulus boleti* [C.L. Koch, 1847]

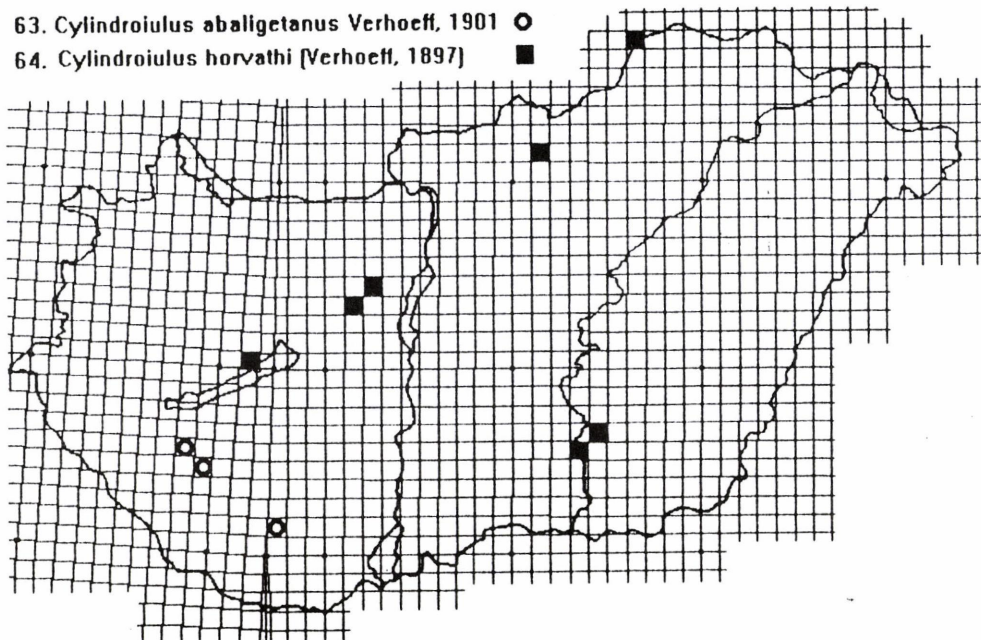


61. *Cylindroiulus luridus* [C.L. Koch, 1847]

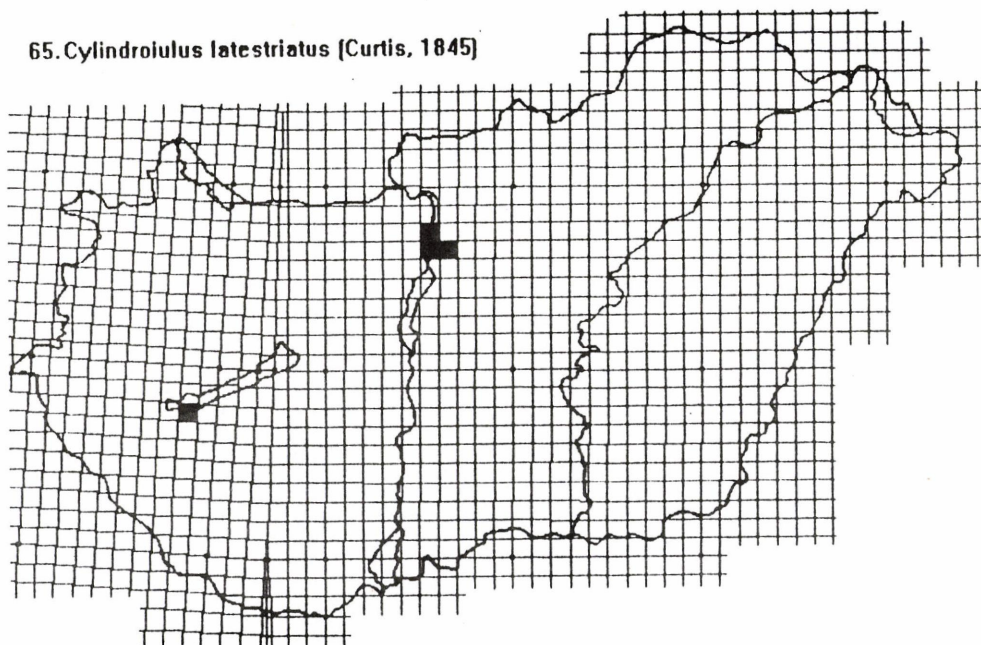


63. *Cylindroiulus abaligetanus* Verhoeff, 1901 ○

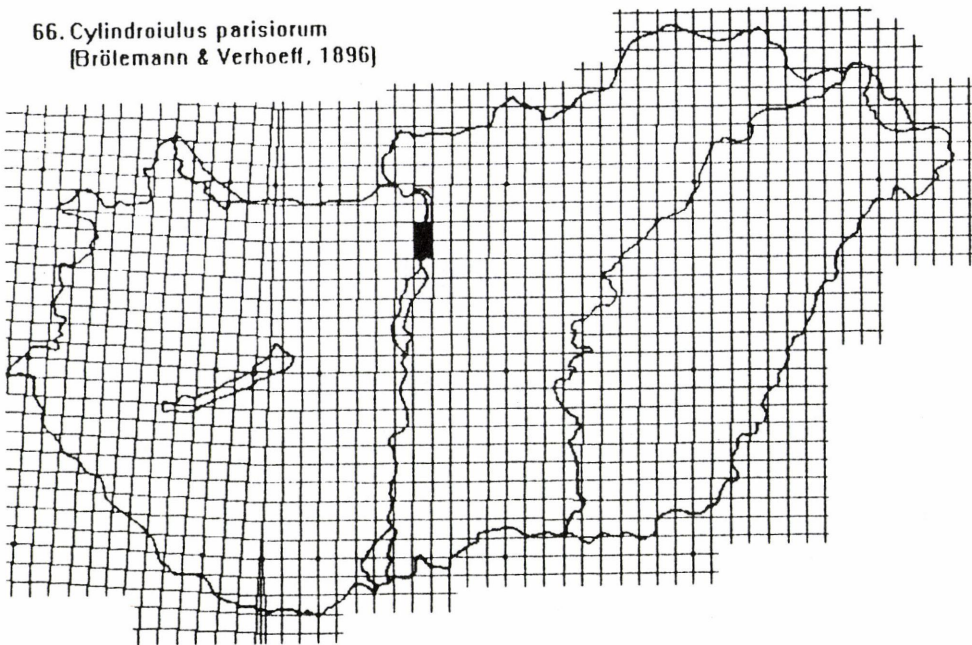
64. *Cylindroiulus horvathi* [Verhoeff, 1897] ■



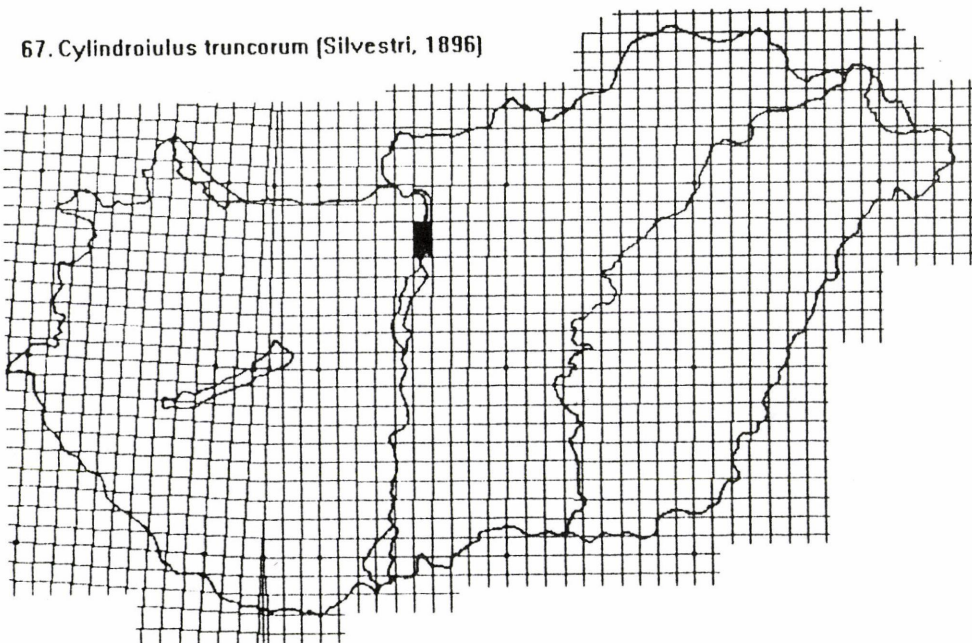
65. *Cylindroiulus latestriatus* [Curtis, 1845]



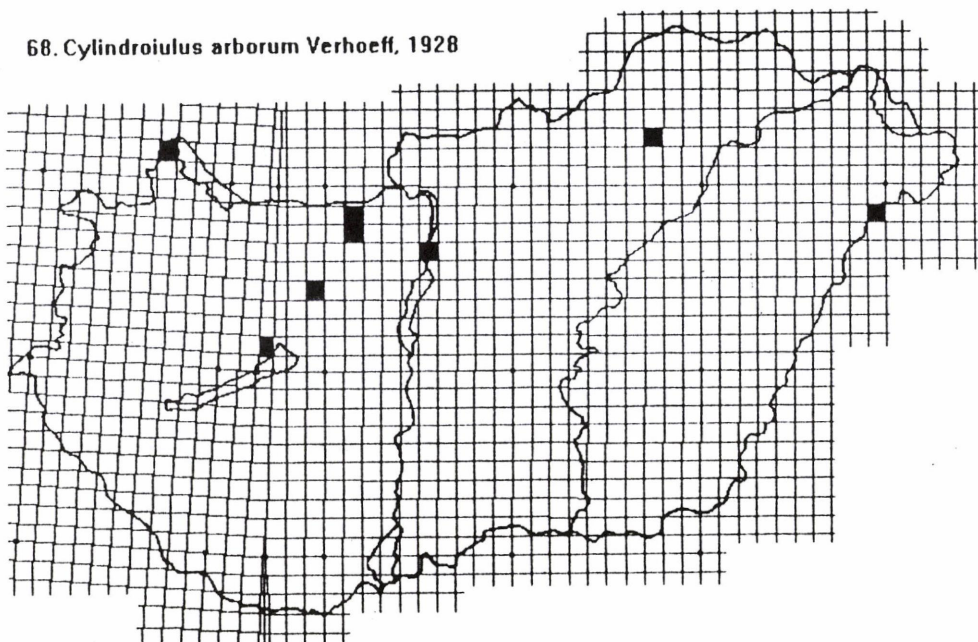
66. *Cylindroiulus parisiorum*
[Brölemann & Verhoeff, 1896]



67. *Cylindroiulus truncorum* [Silvestri, 1896]

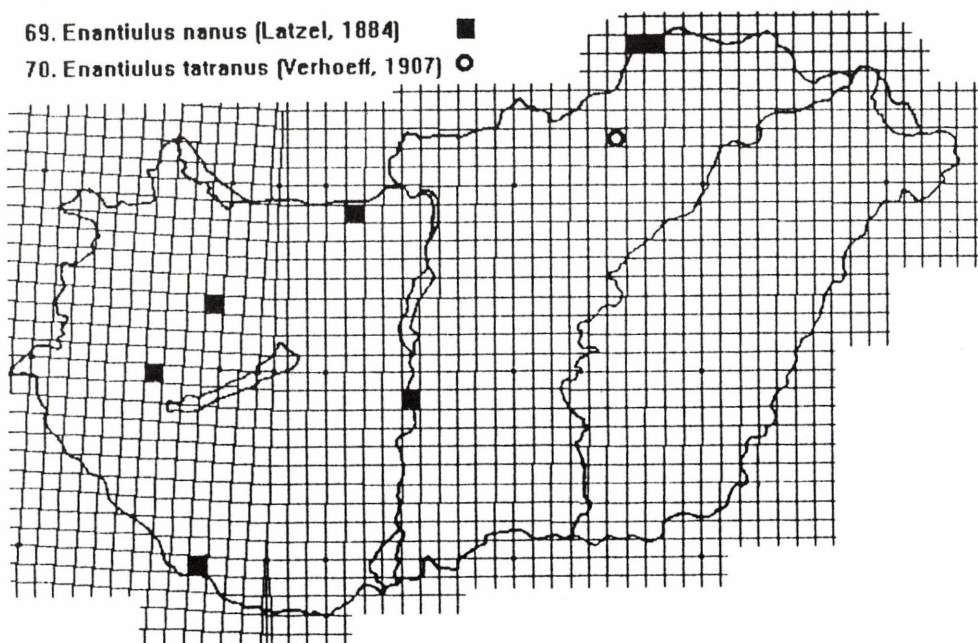


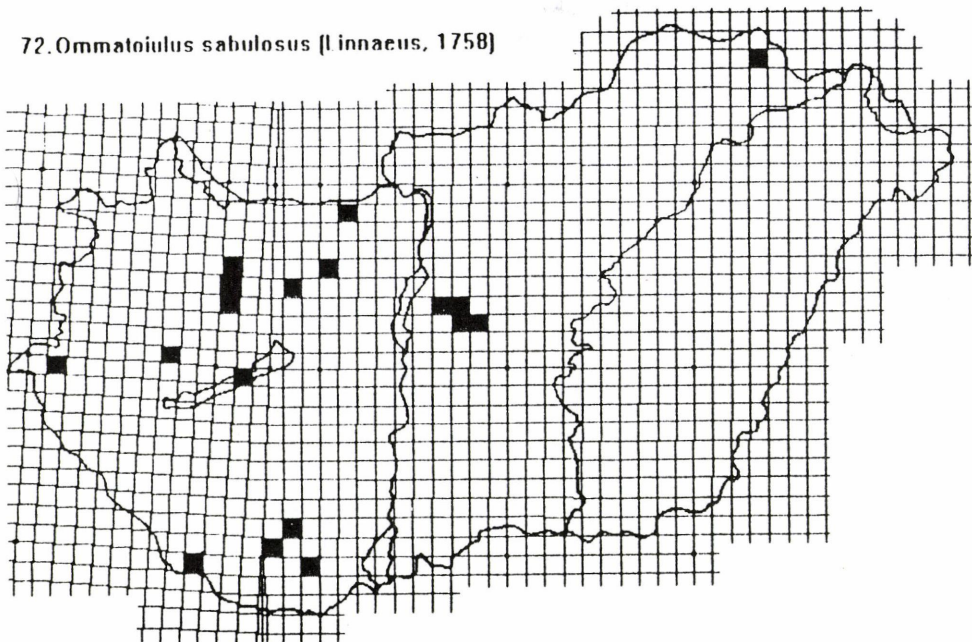
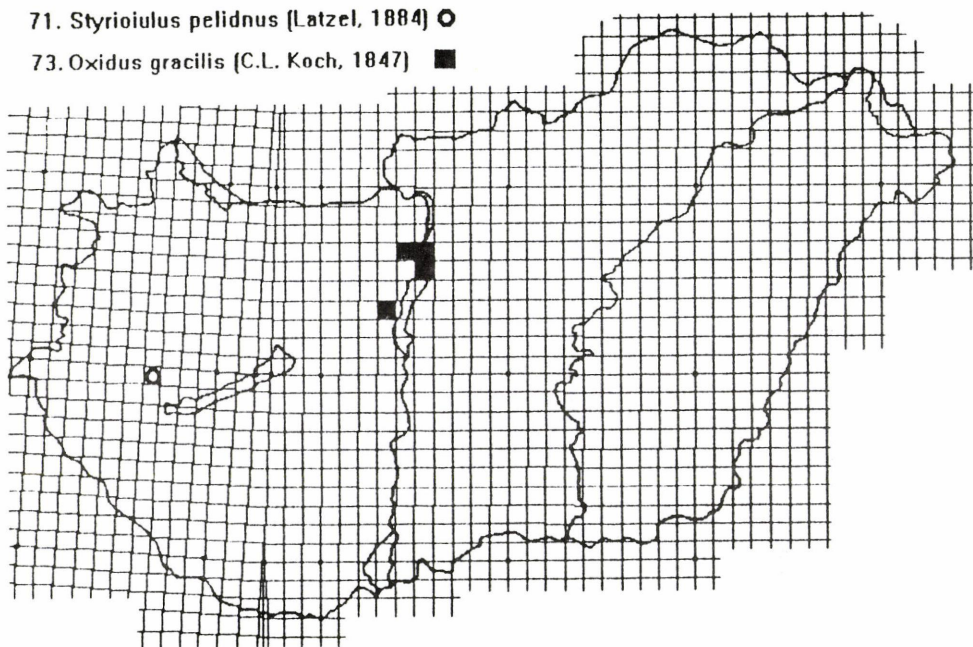
68. *Cylindroiulus arborum* Verhoeff, 1928



69. *Enantiulus nanus* (Latzel, 1884) ■

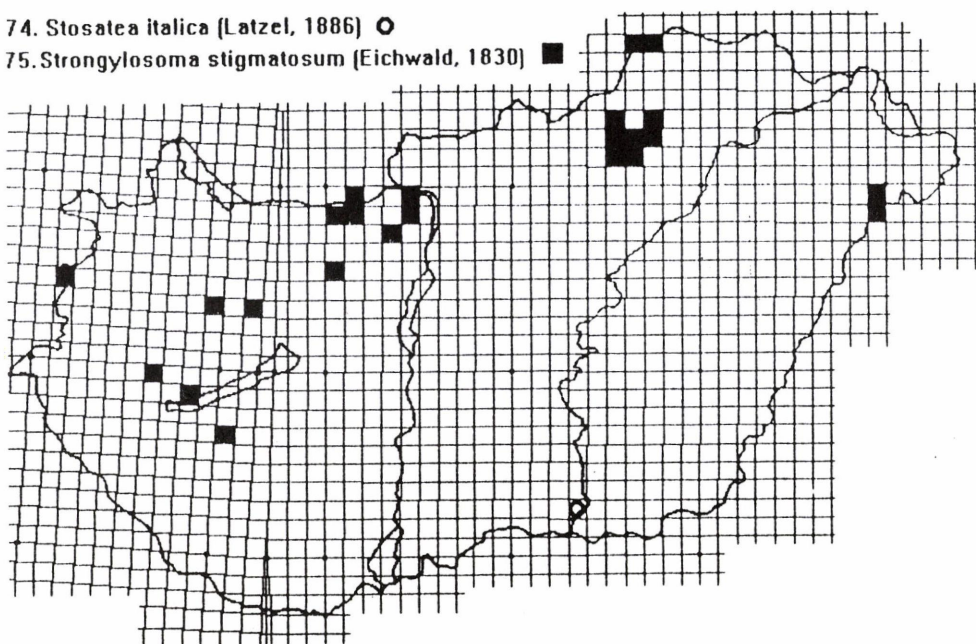
70. *Enantiulus tatarus* (Verhoeff, 1907) ○



72. *Ommatoiulus sabulosus* [Linnaeus, 1758]71. *Styrioiulus pelidnus* [Latzel, 1884] ○73. *Oxidus gracilis* [C.L. Koch, 1847] ■

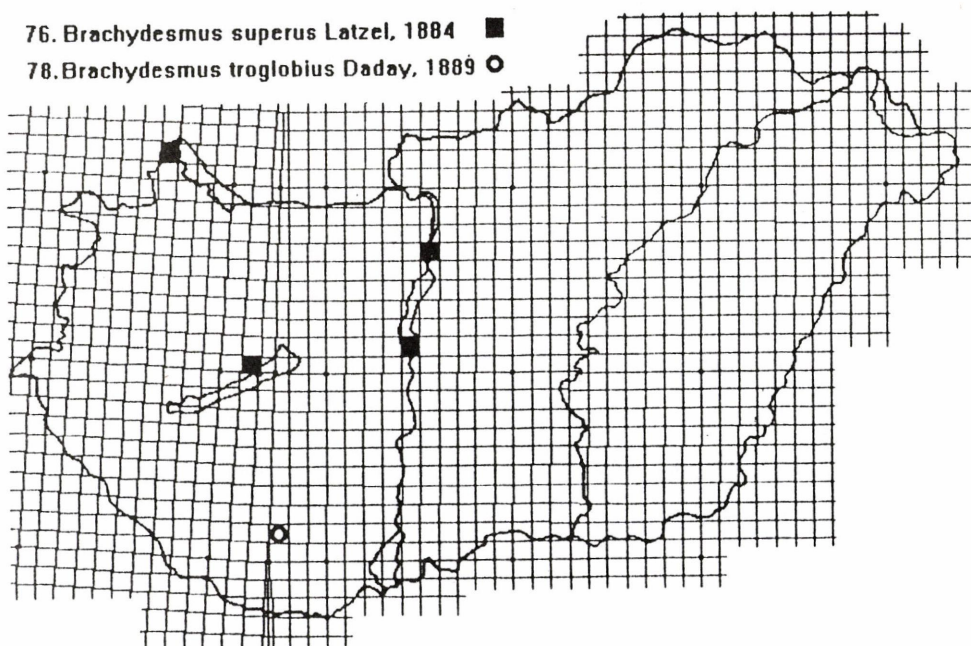
74. *Stosatea italica* (Latzel, 1886) ○

75. *Strongylosoma stigmatosum* (Eichwald, 1830) ■



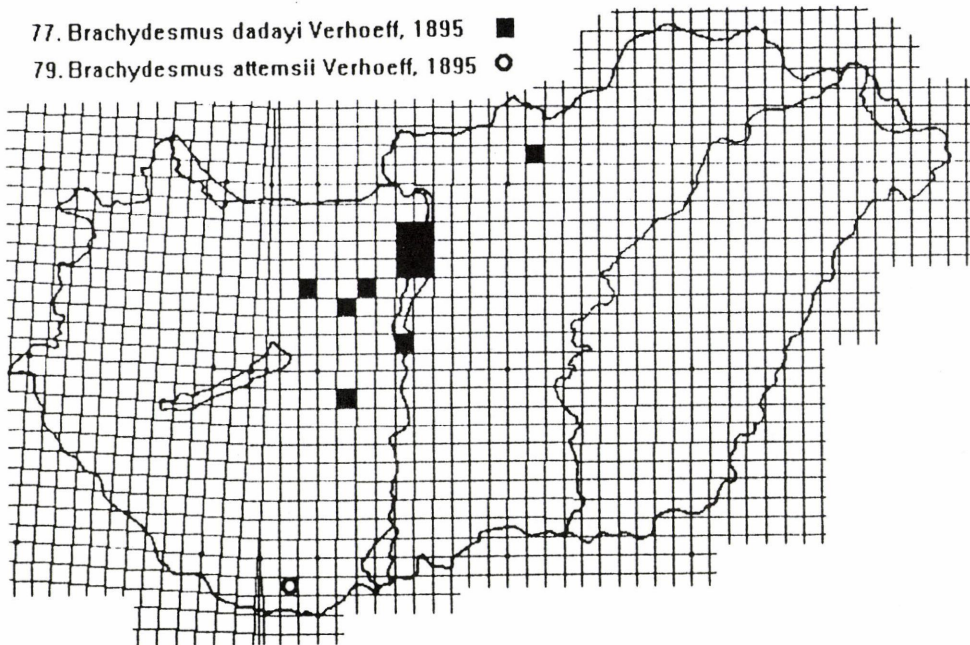
76. *Brachydesmus superus* Latzel, 1884 ■

78. *Brachydesmus troglolobius* Daday, 1889 ○

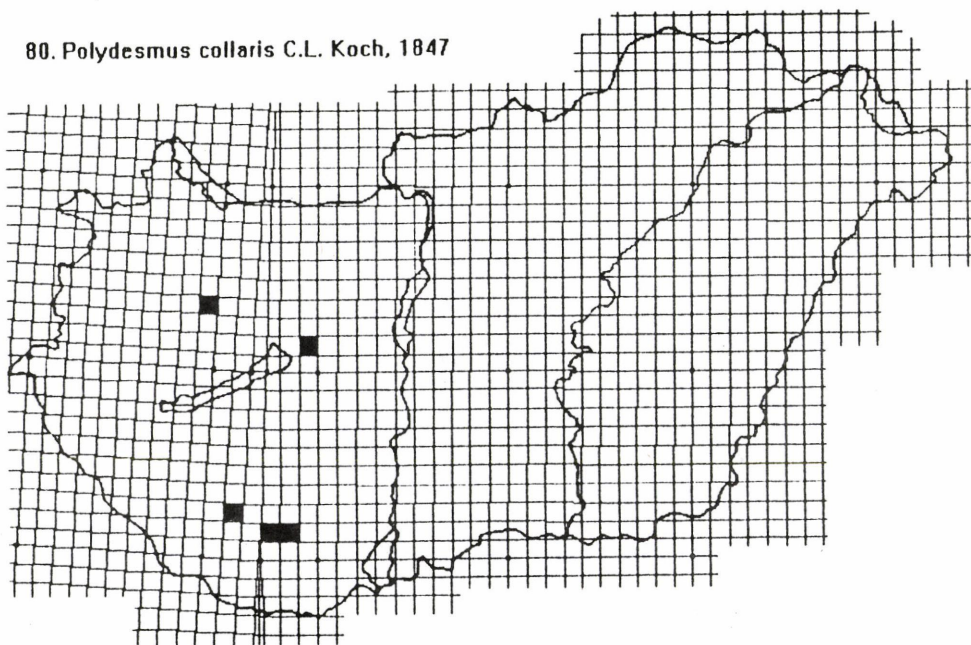


77. *Brachydesmus dadayi* Verhoeff, 1895 ■

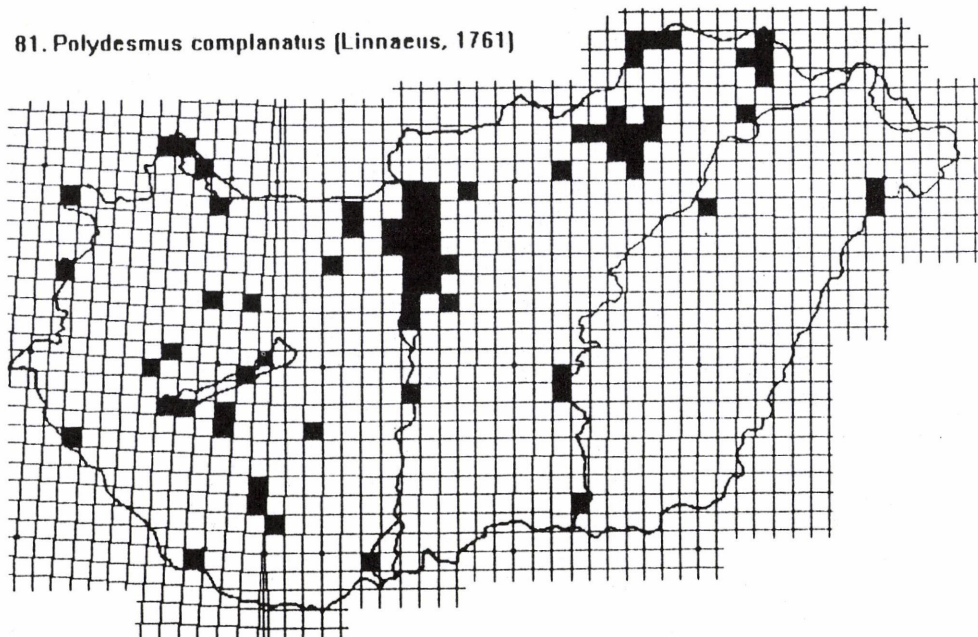
79. *Brachydesmus attemsii* Verhoeff, 1895 ○



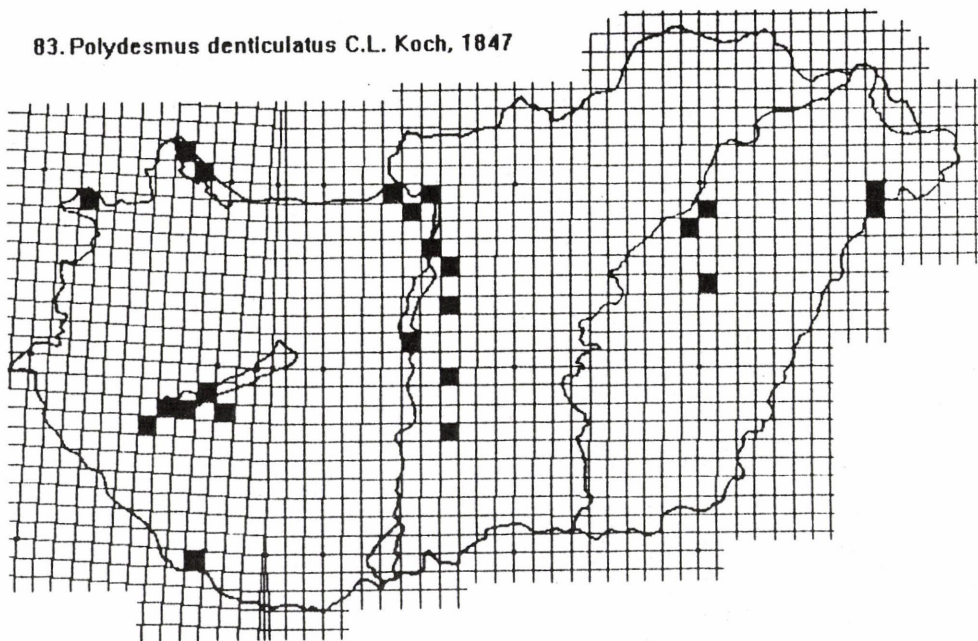
80. *Polydesmus collaris* C.L. Koch, 1847

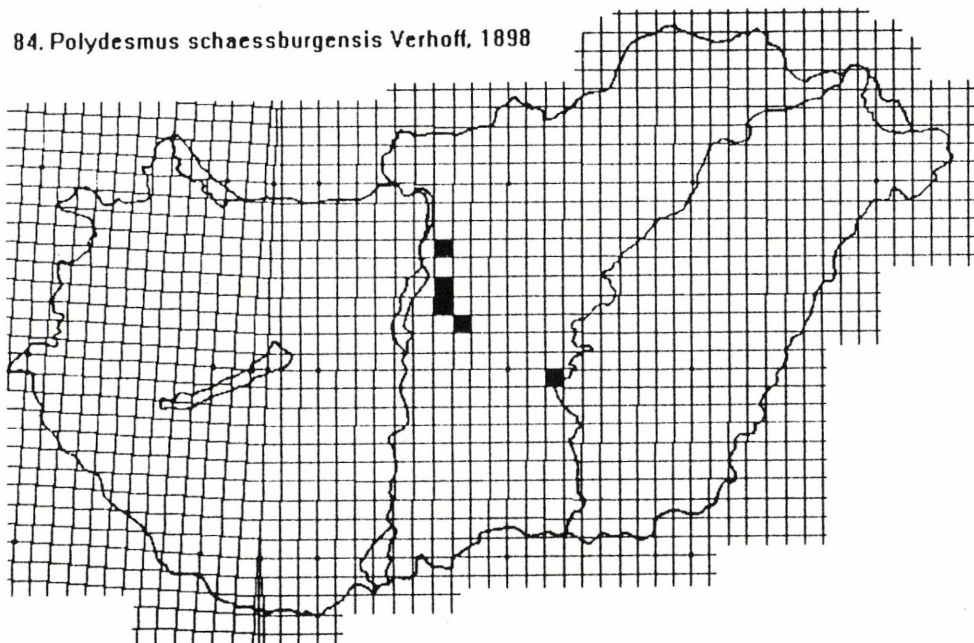


81. *Polydesmus complanatus* [Linnaeus, 1761]



83. *Polydesmus denticulatus* C.L. Koch, 1847



84. *Polydesmus schaessburgensis* Verhoff, 189882. *Polydesmus polonicus* Latzel, 1884 ○86. *Polydesmus edentulus* C.L.Koch, 1847 ■