European Journal of Taxonomy 769: 1–244
https://doi.org/10.5852/ejt.2021.769.1497
ISSN 2118-9773
www.europeanjournaloftaxonomy.eu
2021 · Kime R.D. & Enghoff H.

Monograph

urn:lsid:zoobank.org:pub:6384213C-8966-4349-A695-225C5CA0BC2F

Atlas of European millipedes 3: Order Chordeumatida (Class Diplopoda)

Richard Desmond KIME [1] & Henrik ENGHOFF [2,*]

[1] La Fontaine, La-Chapelle-Montmoreau, 24300 Nontron, France.
[2] Natural History Museum of Denmark, University of Copenhagen, Universitetsparken 25, 2100 Copenhagen Ø, Denmark.

[*] Corresponding author: henghoff@snm.ku.dk
[1] Email: deskime2@aol.com

[1] urn:lsid:zoobank.org:author:847CC68F-00BF-4DAB-8E53-B7A3384D66C1
[2] urn:lsid:zoobank.org:author:FB09A817-000D-43C3-BCC4-2BC1E5373635

Abstract. For each of the 534 species of the millipede order Chordeumatida known from Europe, available information on taxonomy, distribution and habitat is summarized, and the distribution in 50 × 50 km UTM/MGRS squares is shown on a map. Comparisons between Chordeumatida and the equally-sized order Julida are made with respect to distribution patterns and history of exploration.

Keywords. Distribution, map, UTM, MGRS, faunistics, taxonomy.

Kime R.D. & Enghoff H. 2021. Atlas of European millipedes 3: Order Chordeumatida (Class Diplopoda). *European Journal of Taxonomy* 769: 1–244. https://doi.org/10.5852/ejt.2021.769.1497

Contents

Introduction

The primary purpose of this atlas is to provide maps showing the known distribution of all European millipedes. The present volume (the last of three) deals with the 534 species belonging to the order Chordeumatida C.L. Koch, 1847, which are currently known from Europe. The other seven orders were treated by Kime & Enghoff (2011, 2017).

The Chordeumatida is the second-largest order of millipedes in Europe, only surpassed by the Julida Brandt, 1833. Representative European species of Chordeumatida are shown in Figs 1–4.

All in all, well over 1600 species of millipedes are currently known from Europe in the sense of this atlas (Fig. 5), but the European millipede fauna is by no means sufficiently known. Not only are new species being discovered and described virtually every year, but species concepts and delimitations are under continuous revisions – certain apparently well-known species become split, while others get synonymized, see for example Antić & Akkari (2020). In no other order is this as evident as in the Chordeumatida where such genera as *Craspedosoma* Leach, 1814, *Pyrgocyphosoma* Verhoeff, 1910 and *Rhymogona* Cook, 1896 apparently offer endless problems for taxonomists.

Taxonomic problems in Chordeumatida are not restricted to the species level; the higher classification within the order is extremely convoluted. Antić *et al.* (2018c: 299) described the situation well: "Of some 50 families within the order Chordeumatida, 19 contain only one genus, while even seven are monospecific. This fact suggests that it may be a matter of too many families, if we take into account that the number of species within the order is "only" a little more than 1100. On the other hand, it has been shown that some previously monotypic/monogeneric families were much later filled up with additional species or genera … It is obvious that the real number of species of chordeumatidans is much greater than the current number. Many of them are characterized by a small body and cryptic life-style, are very rare, inhabit some extreme environments, or everything mentioned. There are numerous examples among chordeumatidans where only one or several individuals are known, on the basis of which a taxon is described, while repeated attempts to collect additional material from the type localities were unsuccessful". Enghoff *et al.* (2015) agreed that probably too many families are currently recognized in the order, and that multiple major changes are foreseen. Phylogenetic analyses involving molecular data will hopefully help, but so far there have been very few such. An exception is the analysis of Mock *et al.* (2016), and if their results are representative, major changes are indeed to be expected: in

Fig. 1. A selection of European species of Chordeumatida C.L. Koch, 1847, family Craspedosomatidae Gray, 1843. **A**. *Nanogona polydesmoides* (Leach, 1814). **B**. *Rhymogona verhoeffi* (Bigler, 1913). **C**. *Craspedosoma raulinsii* Leach, 1814, in copula. **D**. *Atractosoma meridionale* Fanzago, 1876. **E**. *Bergamosoma canestrinii* (Fedrizzi, 1878), feeding on excrements of fox (*Vulpes vulpes* (Linnaeus, 1758)). Photo credits: Paul Richards, www.flickr.com/invertimages (A, C), Jörg Spelda (B, D), José Domingo Gilgado (E).

Fig. 2. A selection of European species of Chordeumatida C.L. Koch, 1847, various families. **A**. *Halleinosoma noricum* Verhoeff, 1913 (Trachygonidae Cook, 1896). **B**. *Syngonopodium aceris* Verhoeff, 1913 (Attemsiidae Verhoeff, 1899). **C**. *Xylophageuma zschokkei* Bigler, 1912 (Haaseidae Attems, 1899), in copula. **D**. *Haplogona oculodistincta* (Verhoeff, 1893) (Verhoeffiidae Verhoeff, 1899), in copula. **E**. *Haasea fonticulorum* (Verhoeff, 1910) (Haaseidae), in copula. Jörg Spelda has pointed out that on Figs 2C and 2E, both showing copulation in species of Haaseidae, the female is seen to be partially covered in a fine web (most evident in Fig. 2E), probably produced by the male's spinning glands and perhaps serving to 'strap down' the female to the ground. Photo credits: Jörg Spelda.

Fig. 3. A selection of European species of Chordeumatida C.L. Koch, 1847, various families. **A**. *Psichrosoma* cf. *breuli* (Mauriès, 1970) (Vandeleumatidae Mauriès, 1970). **B**. *Turdulisoma* cf. *helenreadae* Mauriès, 2015 (Haplobainosomatidae Verhoeff, 1909). **C**. *Hylebainosoma nontronense* Mauriès & Kime, 1999 (Haaseidae Attems, 1899). **D**. *Anamastigona pulchella* (Silvestri, 1894) (Anthroleucosomatidae Verhoeff, 1899). **E**. *Melogona gallica* (Latzel, 1884) (Chordeumatidae C.L. Koch, 1847). **F**. *Chordeuma proximum* Ribaut, 1913 (Chordeumatidae). **G**. *Ceratosphys amoena* Ribaut, 1920 (Opisthocheiridae Ribaut, 1913). **H**. *Mastigona mutabilis* (Latzel, 1884) (Mastigophorophyllidae Verhoeff, 1899). Photo credits: Paul Richards, www.flickr.com/invertimages (A–E, G), Trevor and Dilys Pendleton (F), Jörg Spelda (H).

Fig. 4. A selection of European subterranean species of Chordeumatida C.L. Koch, 1847, various families. **A**. *Schizmohetera curcici* Makarov, 2001, topotype (Neoatractosomatidae Verhoeff, 1901). **B**. *Serbosoma kucajense* (Ćurčić & Makarov, 1998), topotype (Anthroleucosomatidae Verhoeff, 1899). **C**. *Egonpretneria vudutschaljdi* Antić & Dražina, 2015 (Anthogonidae Ribaut, 1913). **D**. *Cornogonopus pavicevici* Antić, 2020, the latest addition to the European chordeumatidan fauna, holotype (Anthroleucosomatidae) **E**. *Haasia likana* (Strasser, 1966) (Anthogonidae). **F**. *Dyocerasoma intermedium* Makarov, Lučić, Mitić & Rađa, 2003 (Craspedosomatidae Gray, 1843). Photo credits: Marjan Komnenov (A), Dragan Antić (B, D), Tamara Čuković-Malenica (C), Tvrtko Dražina (E), Kazimir Muculinić (F).

their tree, taxa currently assigned to Attemsiidae Verhoeff, 1899, Hungarosomatidae Ceuca, 1974 and Neoatractosomatidae Verhoeff, 1901 are nested within a clade otherwise composed of genera assigned to the large family Craspedosomatidae Gray, 1843.

All millipede orders have many more species in southern Europe than further north. This is particularly pronounced in the case of Chordeumatida where the vast majority of species are confined to the Iberian, Italian and Balkan peninsulas, and very few species occur north of Germany. Only one of the European species, *Altajosoma golovatchi* (Shear, 1990) in the family Diplomaragnidae Attems, 1907, occurs naturally inside as well as outside Europe as here defined. Similarly, just one species, *Craspedosoma raulinsii* Leach, 1814 in the family Craspedosomatidae, has been artificially introduced to another continent (N America). In contrast to the two other large orders, Julida and Polydesmida, no European species of Chordeumatida is confined to hothouses or other indoor habitats.

Restricted distribution also characterizes higher-level taxa. Under the current classification, all European families of Chordeumatida are endemic, with the following exceptions: Chamaesomatidae Verhoeff, 1913 and Opisthocheiridae Ribaut, 1913 have two or one species, respectively, in North Africa; Anthroleucosomatidae Verhoeff, 1899 has many species in the Caucasus, Middle East and temperate Asia, even one in North America, and Diplomaragnidae is a predominantly C and E Asian family.

Fig. 5. Area codes as used in the atlas, from *Fauna Europaea* guidelines (de Jong *et al.* 2014: supplementary material 1), reproduced with permission. Note that MN (Montenegro) and SB (Serbia) are collectively shown as YU (Yugoslavia) on this map. Also note that CY (Cyprus) is not covered by the atlas.

Our knowledge of the distribution of many species is very good, though for others it is extremely sketchy or inadequate. There are many regional and point endemics. The maps are published in the knowledge that some of them do not show the full distribution of the species concerned. It is left to present and future myriapodologists to fill in those gaps that remain and to complete the ecological information and other data that are missing. The rich southern faunas are most in need of investigation, especially in Iberia.

Material and methods

Families, genera and species are arranged alphabetically. See Table 1 for a list of families of Chordeumatida. Subfamilies, tribes, subgenera and subspecies are not considered.

At family level, we follow the classification in Enghoff *et al.* (2015), except where noted. Within each family, genera and species are as a rule delimited as in *Fauna Europaea*, https://fauna-eu.org (de Jong *et al.* 2014), but MilliBase (Sierwald & Spelda 2020), has been particularly helpful for finding valid names and synonyms.

Subgenera have been suggested within many chordeumatidan genera. As a rule, names of subgenera are not considered here, unless the taxon in question has been regarded as a full genus at some point. Likewise, a large number of subspecies and varieties have been described for very many species of Chordeumatida, for example, in the genus *Craspedosoma*, see Hauser (2004a). Except in cases where a subspecific or varietal name has been employed at the full species level, such names are not included in the synonymies in the species descriptions. The interested reader is referred to MilliBase (Sierwald & Spelda 2020), and *Fauna Europaea* (https://fauna-eu.org).

There has been some confusion about the gender of several genus names of chordeumatidans. Names ending in *-gona* are feminine, whereas names ending in *-euma* and *-soma* are neuter, cf. Jeekel (1970). This influences the spelling of the species epithet, which, if it is an adjective, must agree in gender with the genus name. For example, *Anthogona variegata* Ribaut, 1913 (feminine) has sometimes been cited as *Anthogona variegatum* (neuter) which is wrong. Alternative spellings of this type have not been included in the lists of synonyms.

For each species, the text is arranged as follows:

The **valid name**. A list of species covered in the present atlas is provided in Table 2.

The **original combination**, if different.

Other synonyms. Whereas the synonymy does not pretend to be complete, we have tried to include all synonyms which may cause confusion (see above concerning names of subspecies and varieties). Where a name is followed by "auct." rather than an author name, it means that some authors used this name/combination, which is now not regarded as valid.

Distribution. The European distribution is given as a list of the geopolitical units from where the species has been reliably documented. The units and the abbreviations are, with one exception, the same as those used in *Fauna Europaea*, adopted and modified from the TDWG level 4 standard (Brummitt 2001), see Table 3 and Fig. 5. The exception concerns Serbia (SB) and Montenegro (MN) which in *Fauna Europaea* are treated as one unit ("Yugoslavia", YU). Despite recent political changes, records from Kosovo are ascribed to Serbia (SB), and records from Crimea are ascribed to Ukraine (UA). We have found several publications in which distributional data are erroneous with regard to present-day geopolitical units, including some which have been reiterated even as recently as 2012 in national inventories of species made after boundary changes. The Balkan countries have been particularly affected in this respect; this has complicated our work considerably and may have resulted in errors.

Table 1 (continued on next page). Suborders, superfamilies and families of Chordeumatida C.L. Koch, 1847, according to Enghoff *et al.* (2015) with recent modifications:

1. Family Anthogonidae Ribaut, 1913 has been reinstated and added to superfamily Anthroleucosomatoidea; it includes Acherosomatidae Verhoeff, 1929 and Biokoviellidae Mršić, 1992 as junior synonyms (Antić *et al.* 2015a, 2016).
2. Family Dalmatosomatidae Antić & Makarov, 2018, was described as new and placed in Branneroidea by Antić *et al.* (2018c).
3. Family Hungarosomatidae Ceuca,1974, was reinstated by Mock *et al.* (2016) but not assigned to a superfamily. Based on the discussion by Mock *et al.* (2016), it is here placed as Craspedosomatidea incertae sedis.

Families covered by the present volume are shown in **bold** and are followed by the number of known European species.

Order Chordeumatida Pocock, 1894
- Suborder Chordeumatidea Pocock, 1894
  - **Family Chordeumatidae** C.L. Koch, 1847 (23)
  - Family Speophilosomatidae Takakuwa, 1949
- Suborder Craspedosomatidea Cook, 1895
  - Superfamily Anthroleucosomatoidea Verhoeff, 1899
    - **Family Anthogonidae** Ribaut, 1913 (32)
    - **Family Anthroleucosomatidae** Verhoeff, 1899 (43)
    - **Family Vandeleumatidae** Mauriès, 1970 (15)
  - Superfamily Brannerioidea Cook, 1896
    - **Family Beticosomatidae** Mauriès, 2014 (1)
    - **Family Brachychaeteumatidae** Verhoeff, 1911 (8)
    - Family Branneriidae Cook, 1896
    - **Family Chamaesomatidae** Verhoeff, 1913 (33)
    - **Family Dalmatosomatidae** Antić & Makarov, 2018 (1)
    - Family Golovatchiidae Shear, 1992
    - **Family Heterolatzeliidae** Verhoeff, 1897 (4)
    - Family Kashmireumatidae Mauriès, 1982
    - Family Macrochaeteumatidae Verhoeff, 1914
    - Family Microlympiidae Shear & Leonard, 2003
    - Family Niponiosomatidae Verhoeff, 1941
    - Family Tingupidae Loomis, 1966
    - **Family Trachygonidae** Cook, 1896 (5)
  - Superfamily Cleidogonoidea Cook, 1896
    - Family Cleidogonidae Cook, 1896
    - **Family Entomobielziidae** Verhoeff, 1899 (4)
    - **Family Lusitaniosomatidae** Schubart, 1953 (1)
    - **Family Opisthocheiridae** Ribaut, 1913 (37)
    - Family Trichopetalidae Verhoeff, 1914
  - Superfamily Craspedosomatoidea Gray, 1843
    - **Family Attemsiidae** Verhoeff, 1899 (25)
    - **Family Craspedosomatidae** Gray, 1843 (190)
    - **Family Haplobainosomatidae** Verhoeff, 1909 (19)

Table 1 (continued). Suborders, superfamilies and families of Chordeumatida, according to Enghoff *et al.* (2015) with recent modifications:

1. Family Anthogonidae Ribaut, 1913 has been reinstated and added to superfamily Anthroleucosomatoidea; it includes Acherosomatidae Verhoeff, 1929 and Biokoviellidae Mršić, 1992 as junior synonyms (Antić *et al.* 2015a, 2016).
2. Family Dalmatosomatidae Antić & Makarov, 2018, was described as new and placed in Branneroidea by Antić *et al.* (2018c).
3. Family Hungarosomatidae Ceuca,1974, was reinstated by Mock *et al.* (2016) but not assigned to a superfamily. Based on the discussion by Mock *et al.* (2016), it is here placed as Craspedosomatidea incertae sedis.

Families covered by the present volume are shown in **bold** and are followed by the number of known European species.

Superfamily Haaseoidea Attems, 1899
Family Haaseidae Attems, 1899 (26)
Superfamily Neoatractosomatoidea Verhoeff, 1901
Family Cyrnosomatidae Mauriès, 2015 (3)
Family Guizhousomatidae Mauriès, 2005
Family Hoffmaneumatidae Golovatch, 1978
Family Kirkayakidae Özdikmen, 2008
Family Mastigophorophyllidae Verhoeff, 1899 (35)
Family Neoatractosomatidae Verhoeff, 1901 (22)
Superfamily Verhoeffioidea Verhoeff, 1899
Family Verhoeffiidae Verhoeff, 1899 (4)
Craspedosomatidea *incertae sedis*
Family Hungarosomatidae Ceuca, 1974 (2)
Suborder Heterochordeumatidea Shear, 2000
Superfamily Conotyloidea Cook, 1896
Family Adritylidae Shear, 1971
Family Conotylidae Cook, 1896
Superfamily Diplomaragnoidea Attems, 1907
Family Diplomaragnidae Attems, 1907 (1)
Superfamily Heterochordeumatoidea Pocock, 1894
Family Eudigonidae Verhoeff, 1914
Family Heterochordeumatidae Pocock, 1894
Family Megalotylidae Golovatch, 1978
Family Metopidiotrichidae Attems, 1907
Family Peterjohnsiidae Mauriès, 1987
Superfamily Pygmaeosomatoidea Carl, 1941
Family Lankasomatidae Mauriès, 1978
Family Pygmaeosomatidae Carl, 1941
Suborder Striariidea Cook, 1896
Superfamily Caseyoidea Verhoeff, 1909
Family Caseyidae Verhoeff, 1909
Family Urochordeumatidae Silvestri, 1909
Superfamily Striarioidea Bollman, 1893
Family Apterouridae Loomis, 1966
Family Buotidae Shear, 2009
Family Rhiscosomididae Silvestri, 1909
Family Striariidae Bollman, 1893

Table 2 (continued on the next 11 pages). Species covered by the present atlas.

Family ANTHOGONIDAE

1. *Anthogona britannica* Gregory, Jones & Mauriès, 1993
2. *Anthogona variegata* Ribaut, 1913
3. *Biokoviella mauriesi* Mršić, 1992
4. *Biokoviella mosorensis* Antić & Dražina, 2016
5. *Cranogona cornuta* Ribaut, 1913
6. *Cranogona dalensi* Mauriès, 1965
7. *Cranogona delicata* Mauriès, 1963
8. *Cranogona denticulata* Delmas, 1927
9. *Cranogona espagnoli* Vicente & Mauriès, 1980
10. *Cranogona orientale* Ribaut, 1913
11. *Cranogona pavida* Ribaut, 1951
12. *Cranogona touyaensis* Mauriès, 1975
13. *Cranogona uncinata* Ribaut, 1951
14. *Cranogona vasconica* Ribaut, 1913
15. *Egonpretneria brachychaeta* Strasser, 1966
16. *Egonpretneria vudutschajldi* Antić & Dražina, 2015
17. *Escualdosoma gourbaultae* (Mauriès, 1965)
18. *Haasia carinifera* (Strasser, 1935)
19. *Haasia cornuta* (Strasser, 1940)
20. *Haasia falsa* (Strasser, 1971)
21. *Haasia hadzii* (Strasser, 1966)
22. *Haasia jalzici* Antić & Dražina, 2015
23. *Haasia largescutata* (Strasser, 1935)
24. *Haasia likana* (Strasser, 1966)
25. *Haasia pretneri* (Strasser, 1940)
26. *Haasia stenopodium* (Strasser, 1966)
27. *Haasia tridentis* (Verhoeff, 1931)
28. *Haasia troglodytes* (Latzel, 1884)
29. *Macrochaetosoma bertiscea* Antić & Makarov, 2015
30. *Macrochaetosoma drinae* Strasser, 1962
31. *Macrochaetosoma troglomontanum* Absolon & Lang, 1933
32. *Vascanthogona vicenteae* Mauriès & Barraqueta, 1985

Family ANTHROLEUCOSOMATIDAE

33. *Anamastigona alba* (Strasser, 1960)
34. *Anamastigona albanensis* Mauriès, Golovatch & Stoev, 1997
35. *Anamastigona aspromontis* (Strasser, 1970)
36. *Anamastigona bilselii* (Verhoeff, 1940)
37. *Anamastigona delcevi* (Strasser, 1973)
38. *Anamastigona falcata* (Gulička, 1967)
39. *Anamastigona halophila* (Verhoeff, 1940)
40. *Anamastigona hauseri* (Strasser,1974)
41. *Anamastigona hispidula* (Silvestri, 1894)
42. *Anamastigona lepenicae* (Strasser, 1975)
43. *Anamastigona matsakisi* Mauriès & Karamouna, 1984
44. *Anamastigona mediterranea* Ćurčić, Makarov & Lymberakis, 2001
45. *Anamastigona meridionalis* Silvestri, 1898
46. *Anamastigona penicillata* (Attems, 1902)

Table 2 (continued). Species covered by the present atlas.

47. *Anamastigona pentelicona* (Verhoeff, 1925)
48. *Anamastigona pulchella* (Silvestri, 1894)
49. *Anamastigona radmani* Makarov, Rađa, Rađa, Tomić, Mitić & Ćurcić, 2007
50. *Anthroleucosoma banaticum* Verhoeff, 1899
51. *Anthroleucosoma spelaeum* Ceuca, 1964
52. *Banatosoma ocellatum* (Tabacaru, 1967)
53. *Belbogosoma bloweri* Ćurčić & Makarov, 2008
54. *Belbogosoma stribogi* Antić & Makarov, 2014
55. *Bulgardicus bucarestensis* Tabacaru & Giurginca, 2006
56. *Bulgardicus tranteevi* Strasser, 1960
57. *Bulgarosoma bureschi* Verhoeff, 1926
58. *Bulgarosoma superficiei* Strasser, 1975
59. *Camptogona delamarei* Mauriès, 1969
60. *Camptogona duboscqui* (Brölemann, 1903)
61. *Cornogonopus pavicevici* Antić, 2020
62. *Dacosoma motasi* Tabacaru, 1967
63. *Dazbogosoma naissi* Makarov & Ćurčić, 2012
64. *Krueperia nivalis* Verhoeff, 1900
65. *Perunosoma trojanicum* Ćurčić & Makarov, 2007
66. *Rhodoposoma rhodopinum* (Strasser, 1966)
67. *Serbosoma beljanicae* (Ćurčić & Makarov, 1998)
68. *Serbosoma crucis* (Strasser, 1960)
69. *Serbosoma kucajense* (Ćurčić & Makarov, 1998)
70. *Serbosoma lazarevense* (Ceuca, 1964)
71. *Serbosoma zagubicae* (Ćurčić & Makarov, 1998)
72. *Stygiosoma beroni* Gulička, 1967
73. *Svarogosoma bozidarcurcici* Makarov, 2003
74. *Troglodicus meridionalis* (Tabacaru, 1967)
75. *Troglodicus tridentifer* Gulička, 1967

Family ATTEMSIIDAE

76. *Allorhiscosoma sphinx* (Verhoeff, 1907)
77. *Attemsia coniuncta* Strasser, 1939
78. *Attemsia dolinensis* Verhoeff, 1909
79. *Attemsia falcifera* Verhoeff, 1899
80. *Attemsia likana* Strasser, 1966
81. *Attemsia stygia* (Latzel, 1884)
82. *Coelogonium cavernarum* Strasser, 1937
83. *Dendromonomeron oribates* (Latzel, 1884)
84. *Dimastosternum franzi* Attems, 1949
85. *Dimastosternum holdhausi* Attems, 1927
86. *Eurygonium alticola* (Strasser, 1937)
87. *Glomogonium karawankarum* Strasser, 1965
88. *Grassographia makolensis* Mršić, 1987
89. *Julialpium alabardatum* (Strasser, 1937)
90. *Mecogonopodium bohiniense* Strasser, 1933
91. *Mecogonopodium carpathicum* Mock & Tajovský, 2008
92. *Mecogonopodium zirianum* Mršić, 1987

Table 2 (continued). Species covered by the present atlas.

93. *Polyphematia moniliformis* (Latzel, 1884)
94. *Schubartia lohmanderi* Verhoeff, 1927
95. *Stiphrogonium attemsi* Strasser, 1937
96. *Symphyosphys serkoi* Strasser, 1939
97. *Syngonopodium aceris* Verhoeff, 1913
98. *Syngonopodium cornutum* Verhoeff, 1929
99. *Tylogonium hoelzeli* Strasser, 1959
100. *Tylogonium nivifidele* Strasser, 1937

Family BETICOSOMATIDAE
101. *Beticosoma longipenis* Mauriès, 1990

Family BRACHYCHAETEUMATIDAE
102. *Brachychaeteuma bagnalli* Verhoeff, 1911
103. *Brachychaeteuma bradeae* (Brölemann, H.K. Brade-Birks & S.G. Brade-Birks, 1917)
104. *Brachychaeteuma cadurcense* Mauriès, 1967
105. *Brachychaeteuma furcatum* Ribaut, 1956
106. *Brachychaeteuma melanops* H.K. Brade-Birks & S.G. Brade-Birks, 1919
107. *Brachychaeteuma peniculatum* Ribaut, 1948
108. *Brachychaeteuma plumosum* Ribaut, 1947
109. *Brachychaeteuma provinciale* Ribaut, 1956

Family CHAMAESOMATIDAE
110. *Asturasoma chapmani* Mauriès, 1981
111. *Asturasoma fowleri* Mauriès, 1981
112. *Chamaesoma broelemanni* Ribaut & Verhoeff, 1913
113. *Coiffaiteuma turdetanorum* Mauriès, 1964
114. *Krauseuma viscaianum* Mauriès & Barraqueta, 1985
115. *Marboreuma brouquissei* Mauriès, 1988
116. *Origmatogona catalonica* Ribaut, 1913
117. *Origmatogona jacetanorum* Mauriès, 1964
118. *Origmatogona kimeorum* Mauriès, 1990
119. *Origmatogona tinauti* Mauriès, 1990
120. *Origmatogona toniperezi* Mauriès, 2014
121. *Scutogona alba* Schubart, 1958
122. *Scutogona ferrolensis* Mauriès, 2015
123. *Scutogona jeanneli* Ribaut, 1913
124. *Scutogona minor* Enghoff & Reboleira, 2013
125. *Scutogona mutica* Ribaut, 1913
126. *Scutogona oculinigra* Mauriès & Vicente, 1977
127. *Scutogona suboculinigra* Mauriès, 2015
128. *Scutogona vivesi* Mauriès & Vicente, 1977
129. *Vascosoma coiffaiti* Mauriès, 1966
130. *Vascosoma duprei* Mauriès, 1990
131. *Verhoeffeuma minellii* Mauriès, 1990
132. *Verhoeffeuma spinosum* Strasser, 1937
133. *Xystrosoma beatense* Ribaut, 1927
134. *Xystrosoma cassagnaui* Mauriès, 1965

Table 2 (continued). Species covered by the present atlas.

135. *Xystrosoma catalonicum* Ribaut, 1927
136. *Xystrosoma coiffaiti* Mauriès, 1964
137. *Xystrosoma lusitanicum* Mauriès, 2015
138. *Xystrosoma murinum* Ribaut, 1927
139. *Xystrosoma pyrenaicum* Ribaut, 1927
140. *Xystrosoma santllorence* Serra & Mauriès, 2018
141. *Xystrosoma tectosagum* Ribaut, 1927
142. *Xystrosoma vasconicum* Mauriès & Barraqueta, 1985

Family CHORDEUMATIDAE
143. *Chordeuma consoranense* Ribaut, 1956
144. *Chordeuma iluronense* Ribaut, 1913
145. *Chordeuma inornatum* Ribaut, 1913
146. *Chordeuma intermedium* Ribaut, 1913
147. *Chordeuma montanum* Ribaut, 1956
148. *Chordeuma muticum* Ribaut, 1913
149. *Chordeuma proximum* Ribaut, 1913
150. *Chordeuma reflexum* Brolemann, 1927
151. *Chordeuma sylvestre* C.L.Koch, 1847
152. *Chordeuma trifidum* Ribaut, 1913
153. *Chordeuma utriculosum* Ribaut, 1913
154. *Chordeuma vasconicum* Ribaut, 1913
155. *Melogona broelemanni* (Verhoeff, 1897)
156. *Melogona gallica* (Latzel, 1884)
157. *Melogona scutellare* (Ribaut, 1913)
158. *Melogona transsilvanica* (Verhoeff, 1897)
159. *Melogona voigti* (Verhoeff, 1899)
160. *Mycogona germanica* (Verhoeff, 1892)
161. *Orthochordeumella fulva* (Rothenbühler, 1899)
162. *Orthochordeumella leclerci* Mauriès, 1985
163. *Orthochordeumella pallida* (Rothenbühler, 1899)
164. *Orthochordeumella pyrenaica* Mauriès, 1965
165. *Parachordeuma broelemanni* Ribaut, 1912

Family CRASPEDOSOMATIDAE
166. *Aspromontia ruffoi* Strasser, 1970
167. *Atractosoma abnorme* Verhoeff, 1900
168. *Atractosoma blechnorum* Verhoeff, 1936
169. *Atractosoma cavannae* Silvestri, 1898
170. *Atractosoma cecconii* Silvestri, 1898
171. *Atractosoma confine* Berlese, 1895
172. *Atractosoma divaricatum* Strasser, 1981
173. *Atractosoma ghidinii* Manfredi, 1935
174. *Atractosoma gibberosum* Verhoeff, 1900
175. *Atractosoma marinense* Verhoeff, 1932
176. *Atractosoma meridionale* Fanzago, 1876
177. *Atractosoma paolettii* (Strasser, 1977)
178. *Atractosoma ruffoi* Manfredi, 1940

Table 2 (continued). Species covered by the present atlas.

179. *Atractosoma tellinense* Brölemann, 1892
180. *Atractosoma troglobium* Manfredi, 1930
181. *Autaretia aliciae* Geoffroy & Mauriès, 2017
182. *Autaretia osellai* Strasser, 1978
183. *Basigona athesina* (Fedrizzi, 1877)
184. *Bergamosoma bergomatium* (Verhoeff, 1925)
185. *Bergamosoma canestrinii* (Fedrizzi, 1877)
186. *Bergamosoma grottoloi* (Strasser, 1973)
187. *Bergamosoma hessei* (Verhoeff, 1931)
188. *Bergamosoma plavis* (Strasser, 1960)
189. *Bergamosoma sevini* (Verhoeff, 1931)
190. *Bomogona helvetica* (Verhoeff, 1894)
191. *Bomogona lombardica* (Brölemann, 1892)
192. *Brentosoma nivale* Verhoeff, 1932
193. *Broelemanneuma furcatum* Ribaut, 1913
194. *Broelemanneuma gayi* Demange, 1968
195. *Broelemanneuma gineti* Ribaut, 1954
196. *Broelemanneuma palmatum* (Brölemann, 1902)
197. *Broelemanneuma pectiniger* (Brölemann, 1902)
198. *Carniosoma verhoeffi* (Attems, 1927)
199. *Chelogona carpathicum* (Latzel, 1882)
200. *Corsicosoma legeri* (Brölemann, 1903)
201. *Craspedosoma blaniulides* Latzel, 1900
202. *Craspedosoma brentanum* Verhoeff, 1926
203. *Craspedosoma doranum* Verhoeff, 1932
204. *Craspedosoma fontanellum* Attems, 1927
205. *Craspedosoma furculigerum* Verhoeff, 1936
206. *Craspedosoma italicum* Silvestri, 1903
207. *Craspedosoma levicanum* Fedrizzi, 1876
208. *Craspedosoma montenigrinum* Mršić, 1987
209. *Craspedosoma oropense* Verhoeff, 1936
210. *Craspedosoma raulinsii* Leach, 1814
211. *Craspedosoma ruborum* Verhoeff, 1930
212. *Craspedosoma slavum* Attems, 1929
213. *Craspedosoma taurinorum* Silvestri, 1898
214. *Craspedosoma trilobum* Silvestri, 1903
215. *Crossosoma brolemanni* Strasser, 1975
216. *Crossosoma casalei* Strasser, 1979
217. *Crossosoma cavernicola* (Manfredi, 1951)
218. *Crossosoma falciferum* Strasser, 1975
219. *Crossosoma fossum* Strasser, 1979
220. *Crossosoma mauriesi* Strasser, 1970
221. *Crossosoma parvum* Strasser, 1979
222. *Crossosoma peyerimhoffi* (Brölemann, 1902)
223. *Crossosoma phantasma* Strasser, 1970
224. *Crossosoma semipes* (Strasser, 1958)
225. *Dactylophorosoma albocarinatum* Manfredi, 1940

Table 2 (continued). Species covered by the present atlas.

226. *Dactylophorosoma nivisatelles* Verhoeff, 1900
227. *Dyocerasoma biokovense* Mršić, 1986
228. *Dyocerasoma drimicum* Mršić, 1985
229. *Dyocerasoma furcilliferum* (Verhoeff, 1897)
230. *Dyocerasoma insulanum* Attems, 1951
231. *Dyocerasoma intermedium* Makarov, Lučić, Mitić & Rađa, 2003
232. *Dyocerasoma lignivorum* (Verhoeff, 1899)
233. *Dyocerasoma narentanum* (Verhoeff, 1901)
234. *Dyocerasoma nivisatelles* (Verhoeff, 1897)
235. *Helvetiosoma blanci* (Faës, 1902)
236. *Helvetiosoma helveticum* (Verhoeff, 1900)
237. *Helvetiosoma montemorense* Faës, 1905
238. *Iulogona apenninorum* (Verhoeff, 1913)
239. *Iulogona hamuligera* (Verhoeff, 1913)
240. *Iulogona ligurina* (Verhoeff, 1910)
241. *Iulogona tirolensis* (Verhoeff, 1894)
242. *Janetschekella valesiaca* (Faës, 1902)
243. *Kelempekia martensi* Strasser, 1974
244. *Listrocheiritium bohemicum* (Rosický, 1876)
245. *Listrocheiritium cervinum* Verhoeff, 1925
246. *Listrocheiritium noricum* Verhoeff, 1913
247. *Listrocheiritium nubium* Verhoeff, 1915
248. *Listrocheiritium septentrionale* Gulićka, 1965
249. *Listrocheiritium styricum* Verhoeff, 1915
250. *Listrocheiritium susurrinum* Attems, 1926
251. *Litogona hyalops* (Latzel, 1889)
252. *Litogona mirabilis* (Manfredi, 1948)
253. *Manfredia aemiliana* (Manfredi,1932)
254. *Manfredia apuana* Strasser, 1971
255. *Manfredia concii* Manfredi, 1953
256. *Manfredia guareschii* Manfredi, 1950
257. *Manfredia lanzai* Manfredi, 1948
258. *Nanogona balazuci* (Schubart, 1958)
259. *Nanogona cebennica* (Ribaut, 1947)
260. *Nanogona davidi* (Demange, 1966)
261. *Nanogona digitata* (Ribaut, 1913)
262. *Nanogona polydesmoides* (Leach, 1814)
263. *Nanogona uncinata* (Ribaut, 1913)
264. *Ochogona apfelbecki* (Verhoeff, 1897)
265. *Ochogona attemsi* (Verhoeff, 1907)
266. *Ochogona brentana* (Verhoeff, 1927)
267. *Ochogona caroli* (Rothenbühler, 1900)
268. *Ochogona cervina* (Verhoeff, 1899)
269. *Ochogona condylocoxa* (Attems, 1899)
270. *Ochogona elaphron* (Attems, 1895)
271. *Ochogona euganeorum* (Verhoeff, 1927)
272. *Ochogona friulana* (Strasser, 1937)

Table 2 (continued). Species covered by the present atlas.

273. *Ochogona gallitarum* (Brölemann, 1900)
274. *Ochogona hanfi* (Attems, 1926)
275. *Ochogona holdhausi* (Attems, 1926)
276. *Ochogona jankowskii* (Jawłowski, 1938)
277. *Ochogona latzeli* (Attems, 1927)
278. *Ochogona manfredii* (Strasser, 1942)
279. *Ochogona phyllophaga* (Attems, 1899)
280. *Ochogona pusilla* (Verhoeff, 1893)
281. *Ochogona regalis* (Verhoeff, 1913)
282. *Ochogona triaina* (Attems, 1895)
283. *Oroposoma catascaphium* Verhoeff, 1936
284. *Oroposoma emiliae* Manfredi, 1953
285. *Oroposoma fagorum* Verhoeff, 1936
286. *Oroposoma granitivagum* Verhoeff, 1936
287. *Oroposoma nivale* (Faës, 1902)
288. *Oroposoma ticinense* Manfredi, 1957
289. *Oroposoma varallense* Verhoeff, 1936
290. *Paradactylophorosoma insulanum* (Attems, 1908)
291. *Pedemontia delmastroi* Mauriès, 1994
292. *Plectogona angusta* (Latzel, 1887)
293. *Plectogona bonzanoi* (Strasser, 1975)
294. *Plectogona franciscoloi* (Manfredi, 1953)
295. *Plectogona morisii* (Strasser, 1975)
296. *Plectogona sanfillipoi* (Manfredi, 1956)
297. *Plectogona vignai* (Strasser, 1970)
298. *Pterygophorosoma alticolum* (Verhoeff, 1894)
299. *Pterygophorosoma cornuigerum* (Verhoeff, 1900)
300. *Pyrgocyphosoma armigerum* Verhoeff, 1925
301. *Pyrgocyphosoma arvernum* (Ribaut & Brolemann, 1932)
302. *Pyrgocyphosoma aspidiorum* Verhoeff, 1931
303. *Pyrgocyphosoma balazuci* Mauriès & Kime, 1999
304. *Pyrgocyphosoma bidentatum* (Verhoeff, 1900)
305. *Pyrgocyphosoma brembanum* Verhoeff, 1931
306. *Pyrgocyphosoma brunatense* (Verhoeff, 1910)
307. *Pyrgocyphosoma centrale* (Silvestri, 1898)
308. *Pyrgocyphosoma dalmazzense* Verhoeff, 1930
309. *Pyrgocyphosoma dentatum* (Brölemann, 1892)
310. *Pyrgocyphosoma doriae* (Silvestri, 1898)
311. *Pyrgocyphosoma edrinum* Verhoeff, 1934
312. *Pyrgocyphosoma florentinum* (Silvestri, 1903)
313. *Pyrgocyphosoma fonticuli* Verhoeff, 1936
314. *Pyrgocyphosoma gattii* (Silvestri, 1898)
315. *Pyrgocyphosoma grassii* (Silvestri, 1898)
316. *Pyrgocyphosoma jucundum* (Brolemann, 1935)
317. *Pyrgocyphosoma ligusticum* (Silvestri, 1898)
318. *Pyrgocyphosoma longilamellatum* Verhoeff, 1931
319. *Pyrgocyphosoma marmorense* Verhoeff, 1932

Table 2 (continued). Species covered by the present atlas.

320. *Pyrgocyphosoma marrucinum* Manfredi, 1950
321. *Pyrgocyphosoma mevaniense* (Silvestri, 1894)
322. *Pyrgocyphosoma oppidicola* (Silvestri, 1898)
323. *Pyrgocyphosoma ormeanum* Verhoeff, 1930
324. *Pyrgocyphosoma picenum* Manfredi, 1953
325. *Pyrgocyphosoma pontremolense* Verhoeff, 1936
326. *Pyrgocyphosoma pracchiense* Verhoeff, 1932
327. *Pyrgocyphosoma quercuum* Verhoeff, 1936
328. *Pyrgocyphosoma ravinense* Verhoeff, 1936
329. *Pyrgocyphosoma reatinum* Strasser, 1977
330. *Pyrgocyphosoma renanum* Verhoeff, 1932
331. *Pyrgocyphosoma roccavionense* Verhoeff, 1937
332. *Pyrgocyphosoma savonense* (Verhoeff, 1910)
333. *Pyrgocyphosoma serianum* Verhoeff, 1937
334. *Pyrgocyphosoma serpentinum* Verhoeff, 1932
335. *Pyrgocyphosoma serravallense* Verhoeff, 1936
336. *Pyrgocyphosoma tendanum* Verhoeff, 1930
337. *Pyrgocyphosoma terminilli* Strasser, 1977
338. *Pyrgocyphosoma titianum* (Verhoeff, 1910)
339. *Pyrgocyphosoma tridentinum* (Silvestri, 1898)
340. *Pyrgocyphosoma vallicola* (Silvestri, 1898)
341. *Pyrgocyphosoma vallombrosae* (Silvestri, 1898)
342. *Pyrgocyphosoma zangherii* Manfredi, 1951
343. *Rhymogona hessei* (Ravoux, 1935)
344. *Rhymogona montivaga* (Verhoeff, 1894)
345. *Rhymogona serrata* (Bigler, 1912)
346. *Rhymogona verhoeffi* (Bigler, 1913)
347. *Rhymogona wehrana* (Verhoeff, 1910)
348. *Rothenbuehleria minima* (Rothenbühler, 1899)
349. *Rothenbuehleria tirolensis* Verhoeff, 1900
350. *Sardosoma franchettii* Manfredi, 1956
351. *Semiosoma bordei* Ribaut, 1913
352. *Semiosoma devillei* (Brölemann, 1901)
353. *Semiosoma minutum* (Berlese, 1894)
354. *Synischiosoma argentarium* Attems, 1927
355. *Synischiosoma murorum* (Silvestri, 1902)

Family CYRNOSOMATIDAE
356. *Cyrnosoma beroni* (Mauriès, 1969)
357. *Cyrnosoma coineaui* (Mauriès, 1969)
358. *Cyrnosoma strasseri* (Mauriès, 1969)

Family DALMATOSOMATIDAE
359. *Dalmatosoma agaricum* Antić & Makarov, 2018

Family DIPLOMARAGNIDAE
360. *Altajosoma golovatchi* (Shear, 1990)

Family ENTOMOBIELZIIDAE
361. *Entomobielzia getica* Ceuca, 1964
362. *Entomobielzia kimakowizii* (Verhoeff, 1897)

Table 2 (continued). Species covered by the present atlas.

363. *Entomobielzia varvarai* Ceuca, 1985
364. *Pseudoclis octocera* Attems, 1899

Family HAASEIDAE
365. *Haasea cyanopida* (Attems, 1903)
366. *Haasea faucium* (Verhoeff, 1931)
367. *Haasea filicis* (Verhoeff, 1929)
368. *Haasea flavescens* (Latzel, 1884)
369. *Haasea fonticulorum* (Verhoeff, 1910)
370. *Haasea germanica* (Verhoeff, 1901)
371. *Haasea gruberi* Antić & Akkari, 2020
372. *Haasea hungarica* (Verhoeff, 1928)
373. *Haasea inflata* (Verhoeff, 1907)
374. *Haasea intermedia* Mršić, 1985
375. *Haasea lacusnigri* (Gulička, 1968)
376. *Haasea makarovi* Antić & Akkari, 2020
377. *Haasea microcorna* (Strasser, 1971)
378. *Haasea musimontium* (Strasser, 1937)
379. *Haasea plasana* (Verhoeff, 1899)
380. *Haasea pretneri* (Strasser, 1966)
381. *Haasea vidinensis* (Strasser, 1973)
382. *Hylebainosoma birtei* (Ceuca, 1967)
383. *Hylebainosoma cavernicola* (Ceuca, 1967)
384. *Hylebainosoma gulickai* Tajovský, Mock & Papáč, 2014
385. *Hylebainosoma nontronense* Mauriès & Kime, 1999
386. *Hylebainosoma odici* (Ceuca, 1967)
387. *Hylebainosoma oltenicum* (Ceuca, 1967)
388. *Hylebainosoma tatranum* Verhoeff, 1899
389. *Xylophageuma vomrathi* Verhoeff, 1911
390. *Xylophageuma zschokkei* Bigler, 1912

Family HAPLOBAINOSOMATIDAE
391. *Cantabrosoma rogeri* Mauriès, 1970
392. *Cantabrosoma serrai* Mauriès & Vicente, 1977
393. *Galicisoma biltoni* Mauriès, 2015
394. *Galicisoma desmondkimei* Mauriès, 2015
395. *Guadarramasoma ramosae* Gilgado, Ledesma, Enghoff & Mauriès, 2017
396. *Haplobainosoma lusitanum* Verhoeff, 1899
397. *Pyreneosoma aranense* Mauriès, 2010
398. *Pyreneosoma barbieri* (Mauriès, 1971)
399. *Pyreneosoma bessoni* Mauriès, 1974
400. *Pyreneosoma birosense* Mauriès, 2010
401. *Pyreneosoma consoranense* Mauriès, 2010
402. *Pyreneosoma convenarense* Mauriès, 2010
403. *Pyreneosoma digitatum* Mauriès, 1959
404. *Pyreneosoma grandicoxae* Mauriès, 2010
405. *Pyreneosoma ribauti* Mauriès, 1959
406. *Pyreneosoma vicdessosense* Mauriès, 2010
407. *Turdulisoma galiciense* Mauriès, 2015

Table 2 (continued). Species covered by the present atlas.

408. *Turdulisoma helenreadae* Mauriès, 2015
409. *Turdulisoma turdulorum* Mauriès, 1964

Family HETEROLATZELIIDAE
410. *Heterolatzelia durmitorensis* Gulička, 1968
411. *Heterolatzelia karlstrasseri* Antić & Makarov, 2015
412. *Heterolatzelia nivalis* Verhoeff, 1897
413. *Massarilatzelia dugopoljica* Makarov & Rađa, 2011

Family HUNGAROSOMATIDAE
414. *Hungarosoma bokori* Verhoeff, 1928
415. *Hungarosoma inexpectatum* Ceuca, 1967

Family LUSITANIOSOMATIDAE
416. *Lusitaniosoma machadoi* Schubart, 1953

Family MASTIGOPHOROPHYLLIDAE
417. *Bucovinosoma capusei* Tabacaru, 1978
418. *Haploporatia cervina* Verhoeff, 1929
419. *Haploporatia eremita* Verhoeff, 1909
420. *Haploporatia similis* (Attems, 1895)
421. *Heterobraueria karoli* Verhoeff, 1897
422. *Heterobraueria scopifera* Verhoeff, 1898
423. *Karpatophyllon banaticum* Ceuca, 1989
424. *Karpatophyllon carpaticum* Ceuca, 1985
425. *Karpatophyllon dacicum* Ceuca, 1964
426. *Karpatophyllon polinskii* Jawłowski, 1928
427. *Mastigona bosniensis* (Verhoeff, 1897)
428. *Mastigona mutabilis* (Latzel, 1884)
429. *Mastigona transsylvanica* (Verhoeff, 1897)
430. *Mastigophorophyllon aberratum* Ceuca, 1985
431. *Mastigophorophyllon alpivagum* (Verhoeff, 1897)
432. *Mastigophorophyllon banarescui* Ceuca, 1976
433. *Mastigophorophyllon bulgaricum* Schubart, 1934
434. *Mastigophorophyllon carpaticum* Ceuca, 1976
435. *Mastigophorophyllon cirriferum* Verhoeff, 1899
436. *Mastigophorophyllon crinitum* Attems, 1926
437. *Mastigophorophyllon deubeli* Verhoeff, 1898
438. *Mastigophorophyllon jickelii* Verhoeff, 1900
439. *Mastigophorophyllon moldavicum* Ceuca, Crisan & Olaru, 1996
440. *Mastigophorophyllon parapenicilligerum* Crisan & Ceuca, 1998
441. *Mastigophorophyllon penicilligerum* Verhoeff, 1899
442. *Mastigophorophyllon saxonicum* Verhoeff, 1910
443. *Mastigophorophyllon serrulatum* Attems, 1926
444. *Paraporatia racovitzai* Ceuca, 1967
445. *Taurinosoma graniticola* Verhoeff, 1932
446. *Tessinosoma caelebs* Verhoeff, 1911
447. *Thaumaporatia apenninorum* Verhoeff, 1909
448. *Thaumaporatia apuana* Verhoeff, 1909

Table 2 (continued). Species covered by the present atlas.

449. *Thaumaporatia oropensis* Verhoeff, 1936
450. *Thaumaporatia plumigera* (Verhoeff, 1900)
451. *Thaumaporatia sorattina* Verhoeff, 1951

Family NEOATRACTOSOMATIDAE
452. *Epirosomella loebli* Strasser, 1976
453. *Fagina silvatica* (Attems, 1904)
454. *Microbrachysoma alpestre* Verhoeff, 1897
455. *Neoatractosoma herzegowinense* Verhoeff, 1901
456. *Neoatractosoma kleinenbergi* Silvestri, 1898
457. *Neoatractosoma strandi* Attems, 1927
458. *Osellasoma caoduroi* Mauriès, 1984
459. *Paeonisoma faucium* Verhoeff, 1932
460. *Pseudocraspedosoma alpivagum* (Verhoeff, 1901)
461. *Pseudocraspedosoma bensai* (Manfredi, 1935)
462. *Pseudocraspedosoma brentanum* (Verhoeff, 1930)
463. *Pseudocraspedosoma falteronense* (Manfredi, 1951)
464. *Pseudocraspedosoma grypischium* (Rothenbühler, 1900)
465. *Pseudocraspedosoma nemorense* Silvestri, 1898
466. *Pseudocraspedosoma peniculorum* (Verhoeff, 1910)
467. *Pseudocraspedosoma vestonense* (Verhoeff, 1934)
468. *Schizmohetera curcici* Makarov, 2001
469. *Schizmohetera olympica* Mauriès, 2003
470. *Schizmohetera sketi* Mršić, 1987
471. *Trimerophorella ornata* (Faës, 1902)
472. *Trimerophorella paradisia* Meyer, 1983
473. *Trimerophorella rhaetica* (Rothenbühler, 1901)

Family OPISTHOCHEIRIDAE
474. *Brachytropisoma giardinae* Silvestri, 1898
475. *Ceratosphys amoena* Ribaut, 1920
476. *Ceratosphys angelieri* Mauriès, 1964
477. *Ceratosphys bakeri* Mauriès, 1990
478. *Ceratosphys banyulensis* Brolemann, 1926
479. *Ceratosphys cryodeserti* Gilgado, Mauriès & Enghoff, 2015
480. *Ceratosphys deharvengi* Mauriès, 1978
481. *Ceratosphys escolai* Mauriès, 2013
482. *Ceratosphys fernandoi* Mauriès, 2014
483. *Ceratosphys flammeola* Mauriès, 2014
484. *Ceratosphys geronensis* Mauriès, 1963
485. *Ceratosphys guttata* Ribaut, 1956
486. *Ceratosphys hispanica* Ribaut, 1920
487. *Ceratosphys jabaliensis* Mauriès, 2013
488. *Ceratosphys mariacristinae* Mauriès, 2013
489. *Ceratosphys nivium* Ribaut, 1927
490. *Ceratosphys nodipes* (Attems, 1952)
491. *Ceratosphys occidentalis* Mauriès, 1976
492. *Ceratosphys picta* Ribaut, 1951

Table 2 (continued). Species covered by the present atlas.

493. *Ceratosphys poculifer* (Brolemann, 1920)
494. *Ceratosphys simoni* Ribaut, 1920
495. *Ceratosphys solanasi* (Mauriès & Vicente, 1978)
496. *Ceratosphys soutadei* Mauriès, 1969
497. *Ceratosphys toniserrai* Mauriès, 2013
498. *Ceratosphys vandeli* Mauriès, 1963
499. *Ceratosphys vicenteae* Mauriès, 1990
500. *Hispaniosoma racovitzai* Ribaut, 1913
501. *Marquetiella auriculata* (Ribaut, 1920)
502. *Marquetiella lunata* (Ribaut, 1920)
503. *Marquetiella pyrenaica* (Ribaut, 1905)
504. *Opisthocheiron canayerensis* Mauriès & Geoffroy, 1982
505. *Opisthocheiron cornutum* Ribaut, 1922
506. *Opisthocheiron elegans* Ribaut, 1922
507. *Opisthocheiron fallax* Ribaut, 1922
508. *Opisthocheiron lacazei* Brolemann, 1932
509. *Opisthocheiron penicillatum* Ribaut, 1913
510. *Sireuma nobile* Reboleira & Enghoff, 2014

Family TRACHYGONIDAE
511. *Acrochordum evae* Loksa, 1960
512. *Acrochordum flagellatum* Attems, 1899
513. *Acrochordeum plitvicense* (Verhoeff, 1929)
514. *Halleinosoma noricum* Verhoeff, 1913
515. *Trachygona capito* (Attems, 1894)

Family VANDELEUMATIDAE
516. *Alavasoma muniesai* Mauriès & Vicente, 1977
517. *Eopsychrosoma serrapradense* Serra & Mauriès, 2015
518. *Guipuzcosoma comasi* Vicente & Mauriès, 1980
519. *Hypnosoma exornatum* Ribaut, 1952
520. *Hypnosoma juberthieorum* Mauriès, 1968
521. *Hypnosoma pallidum* Ribaut, 1952
522. *Miniusoma litorea* Mauriès, 2015
523. *Niphatrogleuma wildbergeri* Mauriès, 1986
524. *Psichrosoma baeticaense* Mauriès, 2013
525. *Psichrosoma breuili* (Mauriès, 1970)
526. *Psichrosoma tarraconense* Mauriès, 1970
527. *Strangulogona lugoensis* Mauriès, 2015
528. *Typhlopsychrosoma fadriquei* (Mauriès & Vicente, 1977)
529. *Vandeleuma hispanicum* Ceuca, 1967
530. *Vandeleuma vasconicum* Mauriès, 1966

Family VERHOEFFIIDAE
531. *Haplogona carynthiaca* (Strasser, 1967)
532. *Haplogona gestri* (Silvestri, 1898)
533. *Haplogona oculodistincta* (Verhoeff, 1893)
534. *Haplogona rothenbuehleri* (Verhoeff, 1900)

Table 3. Geopolitical units in Europe as used in the present atlas and in *Fauna Europaea*.

AD	Andorra
AL	Albania
AT	Austria
BA	Bosnia-Herzegovina
BE	Belgium
BG	Bulgaria
BY	Belarus
CH	Switzerland
CZ	Czech Republic
DE	Germany
DK-DEN	Danish mainland
DK-FOR	Faroe Islands
EE	Estonia
ES-BAL	Balearic Islands
ES-CNY	Canary Islands
ES-SPA	Spanish mainland
FI	Finland
FR-COR	Corsica
FR-FRA	French mainland
GB-CI	Channel Islands
GB-GI	Gibraltar
GB-GRB	Great Britain, including Shetlands, Orkneys, Hebrides and Isle of Man
GB-NI	Northern Ireland
GR-CYC	Cyclades Islands
GR-DOD	Dodecanese Islands
GR-GRC	Greek mainland, including Ionian Islands, Evia, Sporades and North Aegean Islands
GR-KRI	Crete, including small adjacent islands
HR	Croatia
HU	Hungary
IE	Republic of Ireland
IS	Iceland
IT-ITA	Italian mainland
IT-SAR	Sardinia
IT-SI	Sicily, including all neighbouring Italian islands
LI	Liechtenstein
LT	Lithuania
LU	Luxembourg
LV	Latvia
MC	Monaco
MD	Republic of Moldova
MN	Montenegro
MK	North Macedonia
MT	Malta
NL	The Netherlands
NO-NOR	Norwegian mainland and inshore islands
NO-SVA	Svalbard, Jan Mayen and Bear Island
PL	Poland
PT-AZO	Azores Islands
PT-MDR	Madeira Islands
PT-POR	Portuguese mainland
PT-SEL	Selvagens Islands
RO	Romania
RU-FJL	Franz Josef Land
RU-KGD	Kaliningrad Region
RU-NOZ	Novaya Zemlya
RU-RUC	Central European Russia
RU-RUE	East Central Russia
RU-RUN	North European Russia
RU-RUS	South European Russia
RU-RUW	Northwest Russia
SB	Serbia
SE	Sweden
SI	Slovenia
SK	Slovakia
SM	San Marino
TR-TUE	European Turkey, including Imroz I.-Gökceada, but not islands in the Sea of Marmara
UA	Ukraine
VA	Vatican City

Habitat. Ecological information is given if known. It has, however, not been possible to examine every paper that has been published throughout Europe to find if such details are given. The habitat sections for each species are thus highly heterogeneous. When a paper includes an important contribution to the knowledge of the ecology of a species, we have quoted it, otherwise the information is an amalgam of that found in the original description and subsequent publications, together with our own experience in the field and unpublished information provided by colleagues. Publications which were particularly useful with regard to habitat information include Ribaut (1913), Schubart (1934), Pedroli-Christen (1993), Lee (2006), Berg *et al.* (2008), Gruber (2009), Reip *et al.* (2012) and Hauser & Voigtländer (2019).

A large number of chordeumatidan millipedes live in forests. For the forest types (or other vegetation types) we have in general used the Latin names of the trees etc. involved (e.g., *Quercus-Carpinus* forest) rather than, e.g., 'oak-hornbeam forest' or '*Querceto-Carpinetum*'. The latter types of descriptive terms have, however, been included in some cases where this information is in the form of a citation of particular papers.

Many chordeumatidans are restricted to mountains, even above the tree line, and we have tried to include known altitude ranges, expressed as 'meters above sea level' (m a.s.l.). The ranges given are simply a compilation of what we have been able to trace in the literature.

Very many chordeumatidan species live underground, either in caves (i.e., cavities big enough for human collectors to enter) or in smaller underground spaces, especially the so-called 'mesovoid shallow substratum' = 'meso-cavernous shallow stratum' = milieu superficiel souterrarine = MSS (see Eusébio *et al.* 2021). Some are confined to such habitats and are known as troglobionts, others (troglophiles and trogloxenes) may also occur in surface habitats. See Sendra *et al.* (2020) for a review of the classification of underground habitats. We have avoided any attempt to classify the species according to their degree of 'subterraneousness' and simply have written 'Cave' under habitat where applicable.

Remarks. May include notes on taxonomy and distribution, and/or may refer to particular studies on, e.g., reproduction, life cycle etc. Again, we do not claim completeness of coverage.

The maps

The maps record the presence of the species in unit fields corresponding to 50 × 50 km squares of the UTM grid, or more precisely the Military Grid Reference System, MGRS. It should be noted that some of the 'squares' are actually not square because they are truncated on the left or right side where the UTM/MGRS longitudinal projection zones meet. Henceforward, the unit fields will nevertheless be referred to as '50 km squares'. Four different base maps are used:

- all of Europe, for species occurring north of ca 48° N (and/or the Macaronesian Islands, just three species);
- southwestern Europe, for species confined to the Iberian Peninsula and southern to central France;
- south-central Europe, for species confined to Italy and neighbouring areas;
- southeastern Europe, for species confined to the Balkans and neighbouring areas.

For referring a locality to the correct 50 km square, physical UTM maps were used, as well as GISsurfer (https://mappingsupport.com/p2/gissurfer.php). Where a locality was given with longitude and latitude, Legal Land Converter (https://legallandconverter.com/p50.html) was used. For batch conversion of lat long coordinates, Earthpoint (https://Earthpoint.us) was used.

The maps were made by André J. van Loon (EIS Kenniscentrum Insecten, Leiden, Netherlands), based on lists of 50 × 50 km MGRS coordinates, using the 'Klasse' software distributed by the Nederlandse Entomologische Vereniging (Netherlands Entomological Society).

A map is presented for each species: each species name is preceded by a number, which refers to the number of the corresponding map. Squares in which precisely located records occur are shown by blue dots in the centre of the 50 km square concerned. Because a record may refer to a corner of a 50 km square the centre of which is in another country/region some species seem to occur in countries from where they have not been recorded. Some records referable only to, e.g., a province, occasionally a country, are shown using a blue circle located at the centre of the province or similar in question. There are particularly many circles in France, representing numerous département-level records for this country. No distinction is made between old and new records; this is mainly because the number of specialist recorders has been relatively small and because they have operated over different time periods in many of the countries concerned. There are few recent records from some countries and few old records from others. Under these circumstances, using different symbols for different time periods would give a false impression of distribution changes. Moreover, there is little evidence that millipede distributions have changed much over the past century, with the possible exception of a few introduced or pioneer species. The coverage map (Fig. 6) shows all the 50 km squares from which records included in this volume have been reported. Thus, while interpreting the distribution of the species indicated on the maps it should be borne in mind that the coverage has been far from uniform at the European scale and, indeed, within individual countries. While there are exceptions, there has been a marked tendency for collectors to concentrate on the more interesting mountainous areas, especially in areas of known endemism, and to pay scant attention to the less biodiverse lowland plains. Even on the basis of units of 50 km × 50 km squares, many squares have no records at all, especially in the larger countries. The records derive from numerous publications, as well as from several colleagues who have generously provided information (for a list of these, see Kime & Enghoff 2017: 173). Many records

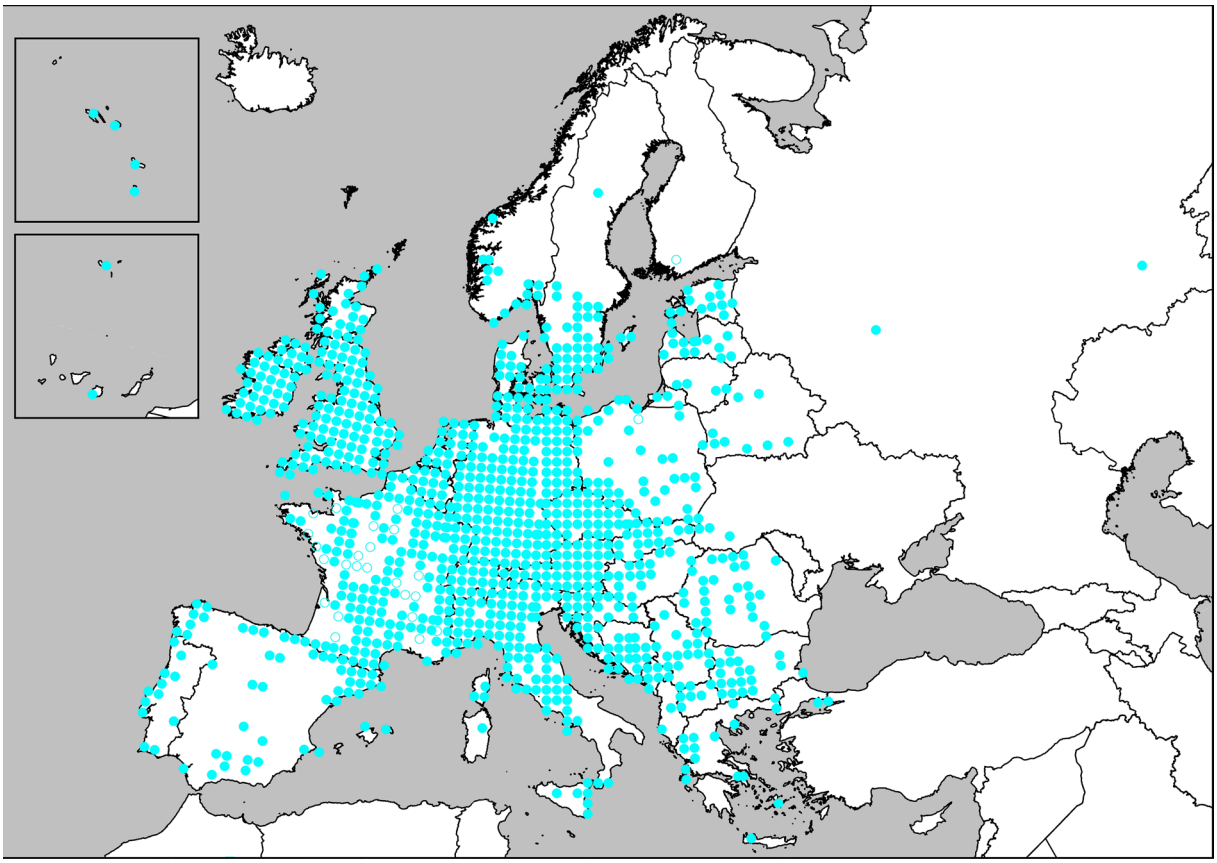


Fig. 6. Map showing all the 50 km squares which provided records in this volume.

were extracted from Edaphobase (https://portal.edaphobase.org/), and some vouchered records were extracted from the Global Biodiversity Information Facility (www.gbif.org), but records based only on "Human observation" were not considered.

In most calcareous regions, speleologists have been very active; in some of these there are far more records of cavernicolous species than of species living in the vegetation, litter and soil. There are many true troglobionts, but, at the same time, many of the species that were first found in caves are strongly pigmented and are either known to occur, or most probably occur, on the surface.

In this atlas, 'Europe' extends from the Azores to the Ural Mountains in Russia: the European part of Russia is delimited as in *Fauna Europaea* (de Jong *et al*. 2014) which does not include the Caucasus area. In the Aegean area, this atlas covers all the islands belonging to Greece, while Cyprus and Asia Minor are not included. Only the European part of Turkey is covered. In the Atlantic, records from the Azores, Madeira and the Canary Islands are listed (just three species).

We have clearly not been able to find every published record and we have not been able to place some localities. Ambiguous or doubtful records have either been omitted or commented upon.

Results

Family **Anthogonidae** Ribaut, 1913

Including Acherosomatidae Verhoeff, 1929 (= Haasiidae Hoffman, 1980), Biokoviellidae Mršić, 1992, and Macrochaetosomatinae Mršić, 1992, following Antić *et al.* (2015a, 2016). All 32 species live in (S) W and SE Europe.

Genus *Anthogona* Ribaut, 1913

1. ***Anthogona britannica*** Gregory, Jones & Mauriès, 1993

Distribution

GB-GRB.

Habitat

Collected from a variety of habitats including coastal cliffs, grassland, vegetated shingle and woodland, the majority of records from leaf litter samples below deciduous trees such as *Quercus* L., *Fraxinus* L. and *Corylus* L. or a ground cover of *Hedera* L.

2. ***Anthogona variegata*** Ribaut, 1913

Distribution

ES-SPA, FR-FRA.

Habitat

Collected from different habitats including woodland, leaf litter of deciduous forest dominated by *Fagus* L., *Quercus* and *Carpinus* L. Under moss at 1500 m a.s.l., at the upper forest limit. Accidentally in cave.

Genus ***Biokoviella*** Mršić, 1992

This genus was revised by Antić *et al.* (2016).

3. ***Biokoviella mauriesi*** Mršić**,** 1992

Distribution

HR.

Habitat

Deep, cold caves at 1300 m a.s.l. and above.

4. ***Biokoviella mosorensis*** Antić & Dražina, 2016

Distribution

HR.

Habitat

Cold caves.

Genus *Cranogona* Ribaut, 1913

5. ***Cranogona cornuta*** Ribaut, 1913

Distribution

ES-SPA.

Habitat

Cave.

6. ***Cranogona dalensi*** Mauriès, 1965

Distribution

FR-FRA, GB-GRB.

Habitat

In France, found in soil in an open habitat. In Wales, found at a colliery spoil heap.

7. ***Cranogona delicata*** Mauriès, 1963

Distribution

FR-FRA.

Habitat

A high mountain species.

8. ***Cranogona denticulata*** Delmas, 1927

Distribution

FR-FRA.

Habitat

Epigean.

9. ***Cranogona espagnoli*** Vicente & Mauriès, 1980

Distribution

ES-SPA.

Habitat

Cave.

10. ***Cranogona orientale*** Ribaut, 1913

Distribution

FR-FRA.

Habitat

Cave.

11. ***Cranogona pavida*** Ribaut, 1951

Distribution

FR-FRA.

Habitat

A high mountain species.

12. ***Cranogona touyaensis*** Mauriès, 1975

Distribution

FR-FRA.

Habitat

Cave.

13. ***Cranogona uncinata*** Ribaut, 1951

Distribution

FR-FRA.

Habitat

Among moss and leaf litter under *Buxus* L. and *Corylus*.

14. ***Cranogona vasconica*** Ribaut, 1913

Distribution

FR-FRA.

Habitat

Cave.

Genus *Egonpretneria* Strasser, 1966

15. ***Egonpretneria brachychaeta*** Strasser, 1966

Distribution

HR.

Habitat

Cave.

16. ***Egonpretneria vudutschajldi*** Antić & Dražina, 2015
Fig. 4C

Distribution

HR.

Habitat

Cave.

Genus ***Escualdosoma*** Mauriès, 1965

Cranogona subgenus *Escualdosoma* Mauriès, 1965.

17. ***Escualdosoma gourbaultae*** (Mauriès, 1965)

Cranogona (*Escualdosoma*) *gourbaultae* Mauriès, 1965.

Distribution

FR-FRA.

Habitat

Cave.

Genus ***Haasia*** Bollman, 1893

Olotyphlops Silvestri, 1897.
Acherosoma Verhoeff, 1929.

18. ***Haasia carinifera*** (Strasser, 1935)

Acherosoma cariniferum Strasser, 1935.

Distribution

SI.

Habitat

Cave.

19. ***Haasia cornuata*** (Strasser, 1940)

Acherosoma cornuatum Strasser, 1940.

Distribution

SI.

Habitat

Cave.

20. ***Haasia falsa*** (Strasser, 1971)

Achersoma falsum Strasser, 1971.

Distribution

SI.

Habitat

Cave.

21. ***Haasia hadzii*** (Strasser, 1966)

Acherosoma hadzii Strasser, 1966.

Distribution

SI.

Habitat

Cave.

22. ***Haasia jalzici*** Antić & Dražina, 2015

Distribution

HR.

Habitat

Cave.

23. ***Haasia largescutata*** (Strasser, 1935)

Acherosoma largescutatum Strasser, 1935.

Distribution

SI.

Habitat

Cave.

24. ***Haasia likana*** (Strasser, 1966)
Fig. 4E

Acherosoma likanum Strasser, 1966.

Distribution

HR.

Habitat

Cave.

25. ***Haasia pretneri*** (Strasser, 1940)

Acherosoma pretneri Strasser, 1940.

Distribution

HR.

Habitat

Cave.

26. ***Haasia stenopodium*** (Strasser, 1966)

Acherosoma stenopodium Strasser, 1966.

Distribution

HR, SI.

Habitat

Cave.

27. ***Haasia tridentis*** (Verhoeff, 1931)

Acherosoma tridentis Verhoeff, 1931.

Distribution

SI.

Habitat

Cave.

28. ***Haasia troglodytes*** (Latzel, 1884)

Craspedosoma troglodytes Latzel, 1884.
Acherosoma verhoeffii Manfredi, 1935.
Acherosoma circoniense Strasser, 1935.
Olotyphlops troglodytes auct.
Scotherpes troglodytes auct.

Distribution

SI.

Habitat

Cave.

Genus *Macrochaetosoma* Absolon & Lang, 1933

29. ***Macrochaetosoma bertiscea*** Antić & Makarov, 2015

Distribution

MN.

Habitat

Cave.

30. ***Macrochaetosoma drinae*** Strasser, 1962

Distribution

BA.

Habitat

Cave.

31. ***Macrochaetosoma troglomontanum*** Absolon & Lang, 1933

Macrochaetosoma bifurcatum Ćurčić & Makarov, 2001.

Distribution

AL, BA, HR, MN.

Habitat

Cave.

Genus *Vascanthogona* Mauriès & Barraqueta, 1985

32. ***Vascanthogona vicenteae*** Mauriès & Barraqueta, 1985

Distribution

ES-SPA.

Habitat

A stand of *Pinus radiata* D.Don.

Family **Anthroleucosomatidae** Verhoeff, 1899

This family is most diverse in the Balkans (Antić *et al.* 2020) and also in the Caucasus region where it is the only family of Chordeumatida (Antić & Makarov 2016). A few among the 43 European species occur in Italy and Corsica, and one (*Anamastigona pulchella* (Silvestri, 1894)) is relatively widespread

in W Europe and is one of the few chordeumatidans which have been introduced to Macaronesia, in casu Madeira. Further species are known from the Altai Mts, Siberia, and NW North America (Shear 1988; Shear & Leonard 2004). This is the only European chordeumatidan family represented by an indigenous species in N America.

Genus ***Anamastigona*** Silvestri, 1898

Prodicus Attems, 1899.
Paraprodicus Verhoeff, 1940.
Antrodicus Gulička, 1967.

The largest and most widespread genus in the family, from Italy to Israel, and with a few outposts for *Anamastigona pulchella*. Reviewed by Vagalinski & Golovatch (2016).

33. ***Anamastigona alba*** **(**Strasser, 1960)

Prodicus albus Strasser, 1960.

Distribution

BG.

Habitat

Cave.

34. ***Anamastigona albanensis*** Mauriès, Golovatch & Stoev, 1997

Distribution

AL.

Habitat

Under stones among scrub and ruins.

35. ***Anamastigona aspromontis*** (Strasser, 1970)

Prodicus aspromontis Strasser, 1970.

Distribution

IT-ITA.

Habitat

320–1950 m a.s.l.

Remarks

Synonymized under *A. meridionalis* by Golovatch & Makarov (2011) but resurrected by Vagalinski & Golovatch (2016).

36. ***Anamastigona bilselii*** (Verhoeff, 1940)

Prodicus bilselii Verhoeff, 1940.

Distribution

BG, GR-GRC, TR-TUE.

Habitat

Mixed broad-leaved forest, e.g., *Fagus*, *Aesculus* L. *Tilia* L., *Acer* L., *Juglans* L., *Pinus* L. forest; urbanized areas.

Remarks

Prodicus halophilus Verhoeff, 1940, is possibly a synonym of this species, see Vagalinski & Golovatch (2016).

37. ***Anamastigona delcevi*** **(**Strasser, 1973)

Prodicus delcevi Strasser, 1973.

Distribution

BG.

38. ***Anamastigona falcata*** **(**Gulička, 1967)

Antrodicus falcatus Gulička, 1967.
Prodicus falcatus auct.

Distribution

BG.

Habitat

Cave.

39. ***Anamastigona halophila*** (Verhoeff, 1940)

Prodicus halophilus Verhoeff, 1940.

Distribution

TR-TUE.

Habitat

On the seacoast, at base of dry hill.

Remarks

Possibly a synonym of *A. bilselii*, see Golovatch & Makarov (2011) and Vagalinski & Golovatch (2016).

40. ***Anamastigona hauseri*** (Strasser, 1974)

Prodicus hauseri Strasser, 1974.

Distribution

GR-GRC.

Habitat

140 m a.s.l.

41. ***Anamastigona hispidula*** (Silvestri, 1894)

Craspedosoma hispidulum Silvestri, 1894.
Prodicus napolitanus Attems, 1899.
Prodicus apenninorum Verhoeff, 1930.
Prodicus hiemalis Verhoeff, 1941.
Prodicus hispidulus auct.

Distribution

IT-ITA.

Habitat

Among small stones and dead leaves.

42. ***Anamastigona lepenicae*** (Strasser, 1975)

Prodicus lepenicae Strasser, 1975.

Distribution

BG.

Habitat

Cave.

43. ***Anamastigona matsakisi*** Mauriès & Karamouna, 1984

Distribution

GR-CYC.

Habitat

Macquis with *Juniperus phoenicea* L.

44. ***Anamastigona mediterranea*** Ćurčić, Makarov & Lymberakis, 2001

Distribution

GR-KRI.

Habitat

800 m a.s.l.

45. ***Anamastigona meridionalis*** Silvestri, 1898

Prodicus meridionalis auct.

Distribution

IT-SI.

Habitat

1500 m a.s.l.

46. ***Anamastigona penicillata*** **(**Attems, 1902)

Prodicus penicillatus Attems, 1902.
Paraprodicus pennicillatus auct.

Distribution

GR-KRI.

Habitat

In leaf litter at the base of wild *Olea* L. trees.

47. ***Anamastigona pentelicona*** (Verhoeff, 1925)

Prodicus penteliconus Verhoeff, 1925.

Distribution

GR-GRC.

Habitat

450 m a.s.l.

48. ***Anamastigona pulchella*** (Silvestri, 1894)
Fig. 3D

Craspedosoma pulchellum Silvestri, 1894.
Prodicus attemsii Verhoeff, 1900.
Anamastigona attemsi auct.
Prodicus macchiae Verhoeff, 1930.

Distribution

CH, DE, FR-FRA, GB-GRB, GB-NI, IE, IT-ITA, MC, PT-MDR.

Habitat

Among stones and leaf litter (Silvestri 1903). The finds from Northern Ireland are from woodland (Anderson 1996); those from Germany, Great Britain and France all seem to be synanthropic (Lindner *et al.* 2010; Gregory *et al.* 2015; Geoffroy in litt.). On Madeira, *A. pulchella* is common in the indigenous laurel forest (laurisilva) where it was mostly found under leaf litter, but also under stones, under moss on stones, under bark, in a bracket fungus, and in dead wood; at night it was observed crawling on tree trunks (HE pers. obs.).

49. ***Anamastigona radmani*** Makarov, Rađa, Rađa, Tomić, Mitić & Ćurcić, 2007

Distribution

HR.

Habitat

Maquis, near a spring (Makarov pers. com.). Some specimens were found submerged.

Genus *Anthroleucosoma* Verhoeff, 1899

50. ***Anthroleucosoma banaticum*** Verhoeff, 1899

Distribution

RO.

Habitat

Deep inside caves on rotting vegetation.

51. ***Anthroleucosoma spelaeum*** Ceuca, 1964

Distribution

RO.

Habitat

Cave.

Genus *Banatosoma* Ćurčić & Makarov, 2000

52. ***Banatosoma ocellatum*** (Tabacaru, 1967)

Bulgarosoma ocellatum Tabacaru, 1967.

Distribution

RO.

Habitat

Cave.

Genus *Belbogosoma* Ćurčić & Makarov, 2008

53. ***Belbogosoma bloweri*** Ćurčić & Makarov, 2008

Distribution

SB.

Habitat

Cave.

54. ***Belbogosoma stribogi*** Antić & Makarov, 2014

Distribution

SB.

Habitat

Cave.

Genus ***Bulgardicus*** Strasser, 1960

The assignment of this genus to Anthroleucosomatidae is dubious (Antić *et al.* 2020).

55. ***Bulgardicus bucarestensis*** Tabacaru & Giurginca, 2006

Distribution

RO.

Habitat

Under pieces of tree-bark on the soil in a wet and shady clump of trees.

56. ***Bulgardicus tranteevi*** Strasser, 1960

Distribution

BG.

Habitat

Cave.

Genus *Bulgarosoma* Verhoeff, 1926

57. ***Bulgarosoma bureschi*** Verhoeff, 1926

Distribution

BG.

Habitat

Cave.

58. ***Bulgarosoma superficiei*** Strasser, 1975

Distribution

BG.

Habitat

Epigean (as the name implies); found at 1200–1950 m a.s.l. Bachvarova *et al.* (2017) reported it from the yard of a summer house, under plywood, and from leaf litter under scattered *Pinus* and deciduous trees. Dragan Antić (pers. com.) found several specimens on the buried surface of stones.

Remarks

This species may not belong in *Bulgarosoma*, but in a different genus (Antić *et al.* 2020).

Genus ***Camptogona*** Brolemann, 1935

The assignment of this genus to Anthroleucosomatidae is dubious (Antić *et al.* 2020).

59. ***Camptogona delamarei*** Mauriès, 1969

Distribution

FR-COR.

Habitat

Fagus forest at 1200 m a.s.l.

60. ***Camptogona duboscqui*** (Brölemann, 1903)

Ceratosoma dubosqui Brölemann, 1903.
Cranogona dubosqui auct.

Distribution

FR-COR.

Genus *Cornogonopus* Antić, 2020

61. ***Cornogonopus pavicevici*** Antić, 2020
Fig. 4D

Distribution

SB.

Habitat

Cave.

Genus *Dacosoma* Tabacaru, 1967

62. ***Dacosoma motasi*** Tabacaru, 1967

Distribution

RO.

Habitat

Cave.

Genus *Dazbogosoma* Makarov & Ćurčić, 2012

63. ***Dazbogosoma naissi*** Makarov & Ćurčić, 2012

Distribution

SB.

Habitat

Cave.

Genus *Krueperia* Verhoeff, 1900

64. ***Krueperia nivalis*** Verhoeff, 1900

Distribution

GR-GRC.

Habitat

Close to a snowfield.

Remarks

Very poorly known. Described on the basis of a female.

Genus *Perunosoma* Ćurčić & Makarov, 2007

65. ***Perunosoma trojanicum*** Ćurčić & Makarov, 2007

[*Protoserbosoma tuberculata* Makarov, Mitić & Tomić, 2005. Nomen nudum, see Remarks.]

Distribution

SB.

Habitat

Cave.

Remarks

Dragan Antić has called our attention to the strange case of "*Protoserbosoma tuberculata* Makarov, Mitić & Tomić, 2005" which was recorded from Prekonoška Cave in a faunal list for caves and cavities in the northwestern part of the Svrljiške Mountains, East Serbia (Nešić *et al.* 2007). However, a genus and species of this name has never been described, and both names are obviously nomina nuda. Prekonoška Cave is the type locality for *Perunosoma trojanicum*, and the nomen nudum almost certainly refers to this species.

Genus *Rhodoposoma* Ćurčić & Makarov, 2000

66. ***Rhodoposoma rhodopinum*** (Strasser, 1966)

Bulgarosoma rhodopinum Strasser, 1966.

Distribution

BG.

Habitat

Cave.

Genus *Serbosoma* Ćurčić & Makarov, 2000

67. ***Serbosoma beljanicae*** (Ćurčić & Makarov, 1998)

Bulgarosoma beljanicae Ćurčić & Makarov, 1998.

Distribution

SB.

Habitat

Cave.

68. ***Serbosoma crucis*** (Strasser, 1960)

Bulgarosoma crucis Strasser, 1960.

Distribution

SB.

Habitat

Cave.

69. ***Serbosoma kucajense*** (Ćurčić & Makarov, 1998)
Fig. 4B

Bulgarosoma kucajensis Ćurčić & Makarov, 1998.

Distribution

SB.

Habitat

Cave.

70. ***Serbosoma lazarevense*** (Ceuca, 1964)

Bulgarosoma crucis lazarevensis Ceuca, 1964.

Distribution

SB.

Habitat

Cave.

Remarks

Ćurčić & Makarov (1997) described the post-embryonic development of this species.

71. ***Serbosoma zagubicae*** (Ćurčić & Makarov, 1998)

Bulgarosoma zagubicae Ćurčić & Makarov, 1998.

Distribution

SB.

Habitat

Cave.

Genus *Stygiosoma* Gulička, 1967

72. ***Stygiosoma beroni*** Gulička, 1967

Distribution
BG.

Habitat
Cave.

Genus *Svarogosoma* Makarov, 2003

73. ***Svarogosoma bozidarcurcici*** Makarov, 2003

Distribution
SB.

Habitat
Cave.

Genus *Troglodicus* Gulička, 1967

74. ***Troglodicus meridionalis*** (Tabacaru, 1967)

Bulgarosoma meridionale Tabacaru, 1967.

Distribution
BG.

Habitat
Cave.

75. ***Troglodicus tridentifer*** Gulička, 1967

Distribution
BG.

Habitat
Cave.

Family **Attemsiidae** Verhoeff, 1899

Gruber (2009) provided habitat information on many species of this family which is endemic to a small area covering Austria, S Germany, Slovenia, N Croatia, NE Italy and Slovakia. It contains 25 species.

Genus *Allorhiscosoma* Verhoeff, 1907

76. ***Allorhiscosoma sphinx*** (Verhoeff, 1907)

Rhiscosoma sphinx Verhoeff, 1907.

Distribution
SK.

Habitat
Forest.

Genus *Attemsia* Verhoeff, 1895

77. ***Attemsia coniuncta*** Strasser, 1939

Distribution

HR.

Habitat

Cave.

78. ***Attemsia dolinensis*** Verhoeff, 1909

Distribution

IT-ITA, SI.

Habitat

Partly cavernicolous on the karst.

79. ***Attemsia falcifera*** Verhoeff, 1899

Attemsia pretneri Strasser, 1933.

Distribution

HR, SI.

Habitat

Partly cavernicolous on the karst.

80. ***Attemsia likana*** Strasser, 1966

Attemsia coninucta likana Strasser, 1966.

Distribution

HR.

Habitat

Cave in karst.

81. ***Attemsia stygia*** (Latzel, 1884)

Craspedosoma stygium Latzel, 1884.
Attemsia meerausi Verhoeff, 1931.
Attemsia wolfi Verhoeff, 1931.
Attemsia trevisioli Manfredi, 1940.

Distribution

SI.

Habitat

In caves and on the surface on karst.

Genus *Coelogonium* Strasser, 1937

82. ***Coelogonium cavernarum*** Strasser, 1937

Distribution

SI.

Habitat

Cave, subalpine.

Genus ***Dendromonomeron*** Verhoeff, 1912

Heterohaasea Verhoeff, 1900.

83. ***Dendromonomeron oribates*** (Latzel, 1884)

Craspedosoma oribates Latzel, 1884.
Rhiscosoma alpestre Latzel, 1884 (?).
Heterohaasea (*Dendromonomeron*) *lignivagum* Verhoeff, 1912.
Dendromonomeron lignivagum auct.

Distribution

AT, DE.

Habitat

Submontane to alpine; altitude range 450–2400 m a.s.l.; from submontane-montane broad-leaved and mixed forests to subalpine and alpine biotopes.

Remarks

The taxonomy of *D. oribates/lignivagum* is complex, a revision of the type material is desirable (Thaler 1984; Mršić 1987a). As to the status of the name *Rhiscosoma alpestre*, see Gruber (2009).

Genus *Dimastosternum* Attems, 1926

84. ***Dimastosternum franzi*** Attems, 1949

Distribution

AT.

Habitat

Montane to high subalpine; altitudinal range up to 1950 m a.s.l.; *Corylus* and *Alnus viridis* (Chaix) DC. leaf litter, *Rhododendron* L., high perennial herbs.

85. ***Dimastosternum holdhausi*** Attems, 1927

Distribution

AT.

Habitat

Montane to high subalpine, 1800 m a.s.l.

Genus *Eurygonium* Strasser, 1937

86. ***Eurygonium alticola*** (Strasser, 1937)

Schubartia (*Eurygonium*) *alticolum* Strasser, 1937.

Distribution
SI.

Habitat
Alpine, epigeic.

Genus *Glomogonium* Strasser, 1965

87. ***Glomogonium karawankarum*** Strasser, 1965

Distribution
AT, SI.

Habitat
Montane, 1000–(?)1400 m a.s.l.; caves.

Genus *Grassographia* Mršić, 1987

88. ***Grassographia makolensis*** Mršić, 1987

Distribution
SI.

Habitat
Epigeic.

Genus *Julialpium* Strasser, 1937

89. ***Julialpium alabardatum*** (Strasser, 1937)

Attemsia (*Julialpium*) *alabardatum* Strasser, 1937.

Distribution
SI.

Habitat
Alpine, epigeic.

Genus *Mecogonopodium* Strasser, 1933

90. ***Mecogonopodium bohiniense*** Strasser, 1933

Distribution
SI.

Habitat
Cave.

91. ***Mecogonopodium carpathicum*** Mock & Tajovský, 2008

Distribution

SK.

Habitat

Cave.

92. ***Mecogonopodium zirianum*** Mršić, 1987

Distribution

SI.

Habitat

Cave.

Genus ***Polyphematia*** Verhoeff, 1912

Polyphemus Attems, 1899, pre-occupied name.

93. ***Polyphematia moniliformis*** (Latzel, 1884)

Craspedosoma moniliforme Latzel, 1884.
Polyphemus moniliformis auct.
Syngonopodium styricum Verhoeff, 1913.
Polyphematia bicornis Verhoeff, 1935.
Polyphematia dactylocoxa Strasser, 1939.
Polyphematia monilicorne Verhoeff, 1939.
Polyphematia antrobius Attems, 1949.

Distribution

AT, SI.

Habitat

Subalpine, partly caves. Submontane to alpine, 400–1600 m a.s.l., one cave find above 2300 m a.s.l. Mainly in caves, also in crevices, rarely on the surface. Most frequent cave millipede in Austria.

Genus ***Schubartia*** Verhoeff, 1927

Biplicogonium Strasser, 1939.

94. ***Schubartia lohmanderi*** Verhoeff, 1927

Schubartia verhoeffi Strasser, 1937.

Disitribution

HR, IT-ITA, SI.

Habitat

On the surface and in caves.

Genus *Stiphrogonium* Strasser, 1937

95. ***Stiphrogonium attemsi*** Strasser, 1937

Distribution

SI.

Habitat

Subalpine, cave.

Genus *Symphyosphys* Strasser, 1939

96. ***Symphyosphys serkoi*** Strasser, 1939

Distribution

AT, SI.

Habitat

Subalpine, cave.

Genus *Syngonopodium* Verhoeff, 1913

97. ***Syngonopodium aceris*** Verhoeff, 1913
Fig. 2B

Distribution

AT.

Habitat

Submontane to montane, 550–1250 m a.s.l. Most finds from caves and cave entrances, but also on the surface, under thick *Acer* and *Fagus* litter between limestone boulders.

98. ***Syngonopodium cornutum*** Verhoeff, 1929

Distribution

AT.

Habitat

Submontane to alpine, 550–2000 m a.s.l. Most finds from caves but also, e.g., a montane *Picea* A.Dietr. forest at 1200 m a.s.l.

Genus *Tylogonium* Strasser, 1937

99. ***Tylogonium hoelzeli*** Strasser, 1959

Distribution

AT.

Habitat

Montane, 1100 m a.s.l.; on permafrost ground; in soil on calcareous gravel; cave, MSS.

100. ***Tylogonium nivifidele*** Strasser, 1937

Distribution

AT, SI.

Habitat

Montane to subalpine, 1100–1700 m a.s.l. Caves, partly containing snow and ice; wet gravel at the edge of snow cover.

Family **Beticosomatidae** Mauriès, 2014

A monotypic family.

Genus *Beticosoma* Mauriès, 1990

Originally assigned to Chamaesomatidae (Mauriès 1990a), this monotypic genus was transferred to a new family by Mauriès (2014).

101. ***Beticosoma longipenis*** Mauriès, 1990

Distribution

ES-SPA.

Family **Brachychaeteumatidae** Verhoeff, 1911

A family with only one genus and eight species, endemic to W Europe with one (*Brachychaeteuma bradeae*) extending into C Europe.

Genus ***Brachychaeteuma*** Verhoeff, 1911

Iacksoneuma H.K. Brade-Birke & S.G. Brade-Birks, 1917.

A difficult genus (like many other chordeumatidan genera), see Blower (1986).

102. ***Brachychaeteuma bagnalli*** Verhoeff, 1911

Distribution

BE, DE, FR-FRA, GB-GRB, GB-NI, IE.

Habitat

In Britain and Ireland an urban and suburban species living in the litter and upper soil layers. Also in caves in Germany and a limestone area in Belgium.

Remarks

Although this species and *B. bradeae* are usually well distinguishable, this is not always so (Blower 1986). The record of *B. bagnalli* from France (Dept Rhône) may be doubtful (J.-J. Geoffroy pers. com.).

103. ***Brachychaeteuma bradeae*** **(**Brölemann, H.K. Brade-Birks & S.G. Brade-Birks, 1917)

Iacksoneuma bradeae Brölemann, H.K. Brade-Birks & S.G. Brade-Birks, 1917.
Brachychaeteuma quartum Brade-Birks, 1918.
Brachychaeteuma bluncki Verhoeff, 1925.
Brachychaeteuma verhoeffi Schubart, 1930.
Brachychaeteuma herrioti Demange, 1962. **Syn. nov.**, J.-P. Mauriès, see Remarks.

Distribution

AT, CH, CZ, DE, DK-DEN, FR-FRA, GB-GRB, NL, NO-NOR, RO, SE, SK.

Habitat

Woodlands, also on cultivated sites (synanthropic), up to 600 m a.s.l. in Switzerland. In caves in France.

Remarks

See Proudlove (2011) for a discussion of the authorship of this species and the generic name *Iacksoneuma*.

The distinction between this species and *B. bagnalli* is not always entirely clear (Blower 1986). Blower (1986) also pointed out the great similarity of *B. herrioti* Demange, 1962 with *B. bradeae* (ssp. *hussoni* Schubart & Husson, 1936), and J.-P. Mauriès (unpublished) has confirmed the identity of the type specimens of *B. herrioti* with *B. bradeae* (J.-J. Geoffroy in litt.).

104. ***Brachychaeteuma cadurcense*** Mauriès, 1967

Brachychaeteuma caduriense auct. (misspelling).

Distribution

FR-FRA.

Habitat

Cave.

105. ***Brachychaeteuma furcatum*** Ribaut, 1956

Distribution

FR-FRA.

106. ***Brachychaeteuma melanops*** H.K. Brade-Birks & S.G. Brade-Birks, 1918

Distribution

DE, FR-FRA, GB-GRB, IE.

Habitat

In most places strongly associated with cultivated sites in urban and suburban locations. Also in woodlands and cave entrances in France.

107. ***Brachychaeteuma peniculatum*** Ribaut, 1948

Distribution

FR-FRA.

Habitat

Cave.

108. ***Brachychaeteuma plumosum*** Ribaut, 1947

Distribution

FR-FRA.

Habitat

Cave.

109. ***Brachychaeteuma provinciale*** Ribaut, 1956

Distribution

FR-FRA.

Habitat

In a garden.

Family **Chamaesomatidae** Verhoeff, 1913

Including Origmatogonidae Verhoeff, 1914. The convoluted history of this family was briefly reviewed by Enghoff & Reboleira (2013). The vast majority of the 33 European species occurs in the SW, one (*Chamaesoma broelemanni*) is distributed over most of France, and the two species of *Verhoeffeuma* Strasser, 1937 occur in NE Italy and Slovenia. The family also has two species from North Africa: *Meinerteuma lucasii* (Silvestri, 1896) and *Origmatogona strinatii* Manfredi, 1956 (Manfredi 1956; Akkari *et al.* 2010).

Genus *Asturasoma* Mauriès, 1981

110. ***Asturasoma chapmani*** Mauriès, 1981

Distribution

ES-SPA.

Habitat

Cave.

111. ***Asturasoma fowleri*** Mauriès, 1981

Distribution

ES-SPA.

Habitat

Cave.

Genus *Chamaesoma* Ribaut & Verhoeff, 1913

112. ***Chamaesoma broelemanni*** Ribaut & Verhoeff, 1913

Chamaesoma brölemanni Ribaut & Verhoeff, 1913.
Chamaesoma brolemanni auct.

Distribution

FR-FRA, LU.

Habitat

Under very wet leaf litter (Ribaut in Verhoeff 1913), *Quercus* forest with *Carpinus* (David 1989).

Remarks

According to the International Code of Zoological Nomenclature (ICZN 1999), Article 32.5.2.1 the spelling 'brölemanni' must be emended to 'broelemanni', not 'brolemanni'. David (1989) analyzed the postembryonic development and life cycle of *C. broelemanni*.

Genus *Coiffaiteuma* Mauriès, 1964

113. ***Coiffaiteuma turdetanorum*** Mauriès, 1964

Distribution

PT-POR.

Genus *Krauseuma* Mauriès & Barraqueta, 1985

114. ***Krauseuma viscaianum*** Mauriès & Barraqueta, 1985

Distribution

ES-SPA.

Habitat

A stand of *Pinus radiata*.

Genus *Marboreuma* Mauriès, 1988

115. ***Marboreuma brouquissei*** Mauriès, 1988

Distribution

ES-SPA.

Habitat

A cave at 2900 m a.s.l.

Genus *Origmatogona* Ribaut, 1913

116. ***Origmatogona catalonica*** Ribaut, 1913

Distribution

ES-SPA.

Habitat

Cave.

117. ***Origmatogona jacetanorum*** Mauriès, 1964

Distribution

ES-SPA.

Habitat

Epigeic and troglophile.

118. ***Origmatogona kimeorum*** Mauriès, 1990

Distribution

FR-FRA.

Habitat

Found in leaf litter of a *Quercus* woodland.

Remarks

A depigmented species found after heavy rain at the end of a prolonged period of drought; probably cavernicolous.

119. ***Origmatogona tinauti*** Mauriès, 1990

Distribution

ES-SPA.

Habitat

Cave.

120. ***Origmatogona toniperezi*** Mauriès, 2014

Distribution

ES-SPA.

Habitat

Cave.

Genus *Scutogona* Ribaut, 1913

121.**?** ***Scutogona alba*** Schubart, 1958

Distribution

FR-FRA.

Habitat

Cave.

Remarks

A dubious species, based on a juvenile specimen and only tentatively referred to *Scutogona*. The holotype is probably a juvenile of the craspedosomatid genus *Broelemanneuma* (Mauriès 2015a).

122. ***Scutogona ferrolensis*** Mauriès, 2015

Distribution

ES-SPA.

Habitat

Soil between boulders.

123. ***Scutogona jeanneli*** Ribaut, 1913

Distribution

FR-FRA.

Habitat

Cave.

124. ***Scutogona minor*** Enghoff & Reboleira, 2013

Distribution

PT-POR.

Habitat

Cave.

125. ***Scutogona mutica*** Ribaut, 1913

Distribution

ES-SPA, FR-FRA.

Habitat

Cave.

126. ***Scutogona oculinigra*** Mauriès & Vicente, 1977

Distribution

ES-SPA.

Habitat

Cave.

127. ***Scutogona suboculinigra*** Mauriès, 2015

Distribution

ES-SPA.

Habitat

Quercus forest.

128. ***Scutogona vivesi*** Mauriès & Vicente, 1977

Distribution

ES-SPA.

Habitat

Cave.

Genus *Vascosoma* Mauriès, 1966

129. ***Vascosoma coiffaiti*** Mauriès, 1966

Distribution

ES-SPA, FR-FRA.

Habitat

Cave.

130. ***Vascosoma duprei*** Mauriès, 1990

Distribution

FR-FRA.

Habitat

Cave.

Genus *Verhoeffeuma* Strasser, 1937

131. ***Verhoeffeuma minellii*** Mauriès, 1990

Distribution

IT-ITA.

Habitat

Cave.

132. ***Verhoeffeuma spinosum*** Strasser, 1937

Distribution

SI.

Habitat

Cave, on wet, decaying wood.

Genus ***Xystrosoma*** Ribaut, 1927

Speudosoma Ribaut, 1927.

133. ***Xystrosoma beatense*** Ribaut, 1927

Distribution

FR-FRA.

134. ***Xystrosoma cassagnaui*** Mauriès, 1965

Distribution

FR-FRA.

Habitat

Quercus-Castanea forest, in förna. Also in a small cave.

135. ***Xystrosoma catalonicum*** Ribaut, 1927

Distribution

FR-FRA.

136. ***Xystrosoma coiffaiti*** Mauriès, 1964

Distribution

ES-SPA.

137. ***Xystrosoma lusitanicum*** Mauriès, 2015

Distribution

PT-POR.

138. ***Xystrosoma murinum*** Ribaut, 1927

Distribution

FR-FRA.

139. ***Xystrosoma pyrenaicum*** Ribaut, 1927

Distribution

FR-FRA.

140. ***Xystrosoma santllorence*** Serra & Mauriès, 2018

Distribution

ES-SPA.

Habitat

A holm oak (*Quercus ilex* L.) forest with heliophilous species (*Quercetum ilicis galloprovinciale arbutesotum*).

Remarks

Serra & Mauriès (2018) described the ecology and ontogenesis of this species.

141. ***Xystrosoma tectosagum*** Ribaut, 1927

Distribution

FR-FRA.

142. ***Xystrosoma vasconicum*** Mauriès & Barraqueta, 1985

Distribution

ES-SPA.

Habitat

A stand of *Pinus radiata*.

Family **Chordeumatidae** C.L. Koch, 1847

The 23 species of this family pretty much cover all of the warmer parts of Europe, even extending into southern Scandinavia (although these occurrences may be due to introduction).

Genus *Chordeuma* C. L. Koch, 1847

143. ***Chordeuma consoranense*** Ribaut, 1956

Distribution

FR-FRA.

Habitat

1000 m a.s.l., among mosses.

144. ***Chordeuma iluronense*** Ribaut, 1913

Distribution

FR-FRA.

145. ***Chordeuma inornatum*** Ribaut, 1913

Distribution

FR-FRA.

146. ***Chordeuma intermedium*** Ribaut, 1913

Distribution

FR-FRA.

Habitat

Fagus forest. Accidental in caves.

147. ***Chordeuma montanum*** Ribaut, 1956

Distribution

FR-FRA.

Habitat

1500 m a.s.l., at the edge of a permanent snow field.

148. ***Chordeuma muticum*** Ribaut, 1913

Distribution

FR-FRA.

Habitat

Prefers high altitudes.

149. ***Chordeuma proximum*** Ribaut, 1913
Fig. 3F

Distribution

FR-FRA, GB-CI, GB-GRB, GB-NI, IE.

Habitat

A typical woodland animal, maybe with a preference for acidic soils. Most often found in leaf litter, e.g., *Quercus*, *Carpinus*, *Fagus*. An annual species in southern UK, maybe biannual further north (Blower 1985).

150. ***Chordeuma reflexum*** Brolemann, 1927

Distribution

FR-FRA.

Remarks

The species was based on a single male described from Aulus-les-Bains. It has never been found again and is probably a teratological form of *Chordeuma montanum* (Mauriès pers. com.).

151. ***Chordeuma sylvestre*** C.L. Koch, 1847

Distribution

AT, BE, CH, CZ, DE, FR-FRA, GB-GRB, HU, IE, IT-ITA, LU, NL, PL.

Habitat

A hygrophilous species. Most types of forest and woodland, prefers chalky soils but also on acidic ones, waste ground and maritime habitats, typically in the leaf litter, often on rocky ground. 193–2500 m a.s.l. in Switzerland. In Calabria (S Italy) it is confined to woodland above 1200 m a.s.l.

Remarks

Most recently recorded from Ireland (University College Dublin campus) by Gaul & Tighe (2021) who regarded it likely that this occurrence is due to recent introduction.

152. ***Chordeuma trifidum*** Ribaut, 1913

Distribution

FR-FRA.

Habitat

Forest.

153. ***Chordeuma utriculosum*** Ribaut, 1913

Distribution

FR-FRA.

Habitat

Forest in valleys as well as at higher altitudes.

154. ***Chordeuma vasconicum*** Ribaut, 1913

Distribution

ES-SPA, FR-FRA.

Habitat

Pinus radiata plantation. Cave.

Genus ***Melogona*** Cook, 1895

Microchordeuma Verhoeff, 1897.
Chordeumella Verhoeff, 1897.

155. ***Melogona broelemanni*** (Verhoeff, 1897)

Microchordeuma (*Chordeumella*) *broelemanni* Verhoeff, 1897.
Microchordeuma albanicum Verhoeff, 1901.
Chordeumella broelemanni auct.

Distribution

AL, AT, BA, BG, CZ, DE, GR-GRC, HR, HU, MK, RO, SB, SI.

Habitat

Wooded and bushy habitats, thermophile broad-leaved forests, mixed forests, moist alluvial floodplains in rural situations, 8–900 m a.s.l.

156. ***Melogona gallica*** (Latzel, 1884)
Fig. 3E

Chordeuma gallicum Latzel, 1884.
Microchordeuma gallicum auct.
Chordeumella gallica auct.

Distribution

BE, CH, CZ, DE, DK-DEN, FR-FRA, GB-CI, GB-GRB, GB-NI, IE, LU, NL, NO-NOR.

Habitat

Broad-leaved forests, e.g., *Quercus*, *Carpinus*, *Fagus*, *Betula* L.; also coniferous forests, orchards, grassland, accidental in gardens and caves. Found from 380–530 m a.s.l. in Switzerland.

The life cycle is annual, at least in the southern part of the distribution area (David 1984), maybe biannual in Cheshire, UK (Blower 1985).

Remarks

Probably introduced in northern Europe.

157. ***Melogona scutellaris*** (Ribaut, 1913)

Chordeumella scutellare Ribaut, 1913.
Microchordeuma scutellare auct.

Distribution

BE, CH, FR-FRA, GB-GRB, GB-NI, IE, IT-ITA.

Habitat

No very strong link with any habitat type although most records are from woodland, and in the United Kingdom there is also a strong association with suburban sites. 360–2315 m a.s.l. in Switzerland.

Remarks

The Italian population in Piedmont was described as *M. scutellare taurinorum* Verhoeff, 1930.

158. ***Melogona transsilvanica*** (Verhoeff, 1897)

Microchordeuma transsilvanicum Verhoeff, 1897.

Distribution

AT, CZ, DE, HU, RO.

Habitat

Woodland, often with anthropogenic influence.

159. ***Melogona voigtii*** (Verhoeff, 1899)

Microchordeuma voigtii Verhoeff, 1899.

Distribution

AT, BE, CH, CZ, DE, DK-DEN, GB-GRB, NL, NO-NOR, PL, SE.

Habitat

Broad-leaved forest, e.g., *Fagus*, *Fraxinus*, orchards, shrubland, grassland, gardens, occasionally coniferous forests. From 400–480 m a.s.l. in Switzerland. Most finds are from synanthropic sites.

Remarks

Probably introduced to the northern part of its distribution area. Tajovský (1996) described the life cycle of *M. voigti* in a suburban forest in South Bohemia.

Genus ***Mycogona*** Cook, 1895

Orthochordeuma Verhoeff, 1897.

160. ***Mycogona germanica*** (Verhoeff, 1892)

Chordeuma germanicum Verhoeff, 1892.
Orthochordeuma germanicum auct.

Distribution

AT, BE, CH, CZ, DE, FR-FRA, LU, NL, NO-NOR, PL.

Habitat

Broad-leaved forest incl. *Fagus*, *Fraxinus*, *Acer*, *Quercus*, montane *Abies*-*Picea* forest, *Picea* and *Pinus* plantations. In S Hessen (Germany) one of the few millipedes in *Picea* monocultures, raised bog, shrub, heathland, grassland, cave. Found from 620–780 m a.s.l. in Switzerland. One synanthropic find in Norway (2014, Kjell Magne Olsen leg. and det., HE conf.).

Genus ***Orthochordeumella*** Verhoeff, 1900

Allochordeuma Rothenbühler, 1900.

161. ***Orthochordeumella fulva*** (Rothenbühler, 1899)

Chordema pallidum fulvum Rothenbühler, 1899.
Allochordeumella pallidum fulvum auct.

Distribution

CH, DE, FR-FRA.

Habitat

Mainly in broad-leaved forests. Found from 320–1440 m a.s.l. in Switzerland.

162. ***Orthochordeumella leclerci*** Mauriès, 1985

Distribution

FR-FRA.

Habitat

A subterranean species, found along an underground river and in one other cave.

163. ***Orthochordeumella pallida*** (Rothenbühler, 1899)

Chordeuma pallidum Rothenbühler, 1899.
Allochordeuma pallidum auct.
Orthochordeumella pallida cebennica Liechtenstein in Brolemann, 1935.
Orthochordeumella cebennica auct.

Distribution

AT, BE, CH, DE, FR-FRA, GB-GRB, LU, SE.

Habitat

Largely montane and also subalpine, up to 2740 m a.s.l. in Switzerland but found in lowland parts of Northeastern France and Belgium in particular. Generally in woodland. Synanthropic in northern Germany, Sweden (one find, 2018, Freddy Persson leg., HE det.) and Scotland (Davidson & Weddle 2021)

Remarks

The species has a very unusual distribution. The taxon *cebennica*, regarded as a full species, e.g., by Mauriès (1985), has been found several times in the Cevennes region. It is troglophile – most of the records are from caves.

164. ***Orthochordeumella pyrenaica*** Mauriès, 1965

Distribution

FR-FRA.

Genus *Parachordeuma* Ribaut, 1912

Genus *Parachordeuma* Ribaut, 1912

165. ***Parachordeuma broelemanni*** Ribaut, 1912

Distribution

FR-FRA.

Habitat

Cave.

Family **Craspedosomatidae** Gray, 1843

By far the most species-rich family of Chordeumatida in Europe, and also with a particularly complicated taxonomy. Although much work has been done on some genera, several others are badly in need of revision, and several nominal species, of which only some have been included here, remain doubtful. The vast majority of the 189 species occur in Italy, especially N Italy, and adjoining countries, but several species occur further west, north and east. *Craspedosoma raulinsii* Leach, 1814 is the most widespread European species of the order, extending from France and the British Isles into southern Scandinavia, C and E Europe, with a few outliers (introductions?) in C Sweden and Russia.

Genus *Aspromontia* Strasser, 1970

166. ***Aspromontia ruffoi*** Strasser, 1970

Distribution

IT-ITA.

Habitat

1300 m a.s.l.

Genus ***Atractosoma*** Fanzago, 1876

Calatractosoma Verhoeff, 1900.
Paratractosoma Ceuca, 1973 (invalidly proposed).
Lessinosoma Strasser, 1977.

A genus very much in need of a revision.

167. ***Atractosoma abnorme*** Verhoeff, 1900

Distribution

IT-ITA.

Habitat

In a quarry.

168. ***Atractosoma blechnorum*** Verhoeff, 1936

Mesatractosoma blechnorum auct.

Distribution

IT-ITA.

Habitat

Forest with *Castanea* Mill., *Alnus* Mill., *Rubus* L. and ferns, 150–400 m a.s.l.

169. ***Atractosoma cavannae*** Silvestri, 1898

Distribution

IT-ITA.

170. ***Atractosoma cecconii*** Silvestri, 1898

Atractosoma berlesei Verhoeff, 1900.

Distribution

IT-ITA.

Habitat

Mixed forest, ravines, caves.

171. ***Atractosoma confine*** Berlese, 1895

Distribution

IT-ITA.

Habitat

Mountains, under stones.

172. ***Atractosoma divaricatum*** Strasser, 1981

Distribution

IT-ITA.

Habitat

Cave.

173. ***Atractosoma ghidinii*** Manfredi, 1935

Lessinosoma ghidinii auct.

Distribution

IT-ITA.

Habitat

Caves, also in a military shelter.

174. ***Atractosoma gibberosum*** Verhoeff, 1900

Paratractosoma chappuisi Ceuca, 1973.
Calatractosoma gibberosum auct.

Distribution

CH, IT-ITA.

Habitat

Mountains, under stones, also in caves.

175. ***Atractosoma marinense*** Verhoeff, 1932

Distribution

IT-ITA, SM.

Habitat

Mountains 450–700 m a.s.l.

Remarks

Regarded as synonymous with *A. cecconii* by Strasser (1981), but listed as a separate species by Strasser & Minelli (1984).

176. ***Atractosoma meridionale*** Fanzago, 1876
Fig. 1D

Distribution

CH, DE, HR, IT-ITA, SI.

Habitat

Forests, mainly cool ones; a pronounced mountain forest anmal, only above the timber line when wood debris is present; 1000–2600 m a.s.l. in Switzerland.

177. ***Atractosoma paolettii*** (Strasser, 1977)

Lessinosoma paolettii Strasser, 1977.

Distribution

IT-ITA.

Habitat

Cave.

178. ***Atractosoma ruffoi*** Manfredi, 1940

Distribution

IT-ITA.

Habitat

Caves, but also epigeically; broad-leaved forest 500–1000 m a.s.l.

179. ***Atractosoma tellinense*** Brölemann, 1892

Distribution

IT-ITA.

Habitat

Collected at 1820–2550 m a.s.l.

180. ***Atractosoma troglobium*** Manfredi, 1930

Paratractosoma jeannelli Ceuca, 1973.

Distribution

IT-ITA.

Habitat

Cave.

Genus *Autaretia* Strasser, 1978

181. ***Autaretia aliciae*** Geoffroy & Mauriès, 2017

Distribution

FR-FRA.

Habitat

Cave.

182. ***Autaretia osellai*** Strasser, 1978

Distribution

IT-ITA.

Habitat

Epigean, 2500–2900 m a.s.l.

Genus *Basigona* Cook, 1895

183. ***Basigona athesina*** (Fedrizzi, 1877)

Megalosoma athesinum Fedirzzi, 1877.
Atractosoma athesina auct.

Distribution

CH?, IT-ITA.

Habitat

In very warm places (Fedrizzi 1877).

Remarks

The two records from CH are very doubtful and probably concern other species.

Genus ***Bergamosoma*** Hoffman, 1980

Megalosoma Fedrizzi, 1878.
Prionosoma Berlese, 1882.

184. ***Bergamosoma bergomatium*** (Verhoeff, 1925)

Prionosoma bergomatium Verhoeff, 1925.
Prionosoma pavani Manfredi, 1948.

Distribution

IT-ITA.

Habitat

Castenea growth with *Corylus*, under leaf litter and gravel.

185. ***Bergamosoma canestrinii*** (Fedrizzi, 1877)
Fig. 1E

Megalosoma canestrinii Fedrizzi, 1877.
Prionosoma baldense Verhoeff, 1934.
Atractosoma canestrinii auct.
Craspedosoma canestrinii auct.
Prionosoma canestrinii auct.

Distribution

AT, CH, DE, IT-ITA.

Habitat

Rocky areas with shallow soil, alpine meadows with *Dryas octopetala* L. on south-facing slopes. Also subalpine, strictly calcicole and found from 1000–2460 m a.s.l. in Switzerland. Occasionally in caves, once in a botanic garden.

Remarks

Found feeding on fox (*Vulpes vulpes* (Linnaeus, 1758)) excrements in the Swiss National Park (J.D. Gilgado pers. com., see Fig. 1E).

186. ***Bergamosoma grottoloi*** (Strasser, 1973)

Prionosoma grottoloi Strasser, 1973.

Distribution

IT-ITA.

Habitat

Cave, 700 m a.s.l.

187. ***Bergamosoma hessei*** (Verhoeff, 1931)

Prionosoma hessei Verhoeff, 1931.

Distribution

IT-ITA.

Habitat

Among rubble in a ravine. The subspecies *B. hessei lavonense* (Strasser, 1973), listed as a separate species in MilliBase, was described from a cave.

188. ***Bergamosoma plavis*** (Strasser, 1960)

Prionosoma plavis Strasser, 1960.

Distribution

IT-ITA.

Habitat

Cave (accidentally?).

189. ***Bergamosoma sevini*** (Verhoeff, 1931)

Prionosoma sevini Verhoeff, 1931.

Distribution

IT-ITA.

Habitat

Among rubble, under cut tree branches.

Genus ***Bomogona*** Cook, 1895

Ornithogona Cook, 1896.
Limnalpium Verhoeff, 1921.
Dorasoma Verhoeff, 1932.

Revised by Pedroli-Christen & Mauriès (1992).

190. ***Bomogona helvetica*** (Verhoeff, 1894)

Atractosoma helveticum Verhoeff, 1894.
Atractosoma dentatum Faës, 1902.
Ceratosoma (*Limnalpium*) *verbani* Verhoeff, 1910.
Dorasoma quercuum Verhoeff, 1932.
Dorasoma serratum Verhoeff, 1932.
Ornithogona helvetica auct.
Dorasoma helveticum auct.

Distribution

CH, IT-ITA.

Habitat

A wide variety of mainly damp habitats such as forests in gorges or sheltered ravines, principally in the montane zone, from 240–2100 m a.s.l. in Switzerland. One find from a mole's nest.

191. ***Bomogona lombardica*** (Brölemann, 1892)

Atractosoma lombardica Brölemann, 1892.
Ceratosoma (*Limnalpium*) *luganense* Verhoeff, 1921.
Ceratosoma ruscorum Vergoeff, 1921.
Ceratosoma larii Verhoeff, 1921.
Ceratosoma fontis Verhoeff, 1932.

Distribution

CH, IT-ITA.

Habitat

Warm forests, e.g., *Fagus*, and open waste land and subalpine meadows from 275–1600 m a.s.l. in Switzerland.

Genus *Brentosoma* Verhoeff, 1932

192. ***Brentosoma nivale*** Verhoeff, 1932

Distribution

IT-ITA.

Habitat

2350 m a.s.l.

Genus ***Broelemanneuma*** Verhoeff, 1905

Ribauteuma Verhoeff, 1929.

193. ***Broelemanneuma furcatum*** Ribaut, 1913

Distribution

FR-FRA.

Habitat

Cave.

194. ***Broelemanneuma gayi*** Demange, 1968

Distribution

FR-FRA.

Habitat

Cave.

195. ***Broelemanneuma gineti*** Ribaut, 1954

Distribution

FR-FRA.

Habitat

Cave.

196. ***Broelemanneuma palmatum*** (Brölemann, 1902)

Ceratosoma pectiniger var. *palmata* Brölemann, 1902.

Distribution

FR-FRA.

Habitat

Cave.

197. ***Broelemanneuma pectiniger*** (Brölemann, 1902)

Ceratosoma pectiniger Brölemann, 1902.

Distribution

FR-FRA.

Habitat

Caves, 900–1750 m a.s.l.

Genus *Carniosoma* Verhoeff, 1927

198. ***Carniosoma verhoeffi*** (Attems, 1927)

Ceratosoma verhoeffi Attems, 1927.
Carniosoma abietum Verhoeff, 1929.
Carniosoma fagorum Strasser, 1937.
Asandalum fagorum auct.

Distribution

HR, IT-ITA, SI.

Habitat

Under bark of *Abies* Mill., also in litter under ferns; *Fagus* forest at 1040 m a.s.l.

Genus ***Chelogona*** Cook, 1895

Tatrasoma Verhoeff, 1910.

199. ***Chelogona carpathica*** (Latzel, 1882)

Craspedosoma carpathicum Latzel, 1882.

Distribution

PL, SK.

Habitat

High mountains.

Genus ***Corsicosoma*** Brolemann, 1935

Corsiphilus Verhoeff, 1943.

200. ***Corsicosoma legeri*** (Brölemann, 1903)

Craspedosoma legeri Brölemann, 1903.
Corsiphilus legeri auct.

Distribution

FR-COR.

Habitat

2200 m a.s.l.

Genus *Craspedosoma* Leach, 1814

201. ***Craspedosoma blaniulides*** Latzel, 1900

Distribution

FR-COR.

Remarks

A dubious species (Mauriès 1969), maybe a form of *C. raulinsii* (J.-J. Geoffroy pers. com.).

202. ***Craspedosoma brentanum*** Verhoeff, 1926

Distribution

IT-ITA.

Habitat

Thicket of *Robinia* L., *Clematis* L., *Castanea* and *Rubus*, gravel under litter.

203. ***Craspedosoma doranum*** Verhoeff, 1932

Distribution

IT-ITA.

Habitat

In *Quercus* and *Populus* L. litter, also in mole nests; up to 1900 m.a.s.l.

204. ***Craspedosoma fontanellum*** Attems, 1927

Distribution

IT-ITA.

205. ***Craspedosoma furculigerum*** Verhoeff, 1936

Distribution

IT-ITA.

Habitat

Rocky slopes, *Castanea-Robinia* forest.

206. ***Craspedosoma italicum*** Silvestri, 1903

Craspedosoma rawlinsii var. *italicum* Silvestri, 1903.

Distribution

IT-ITA.

207. ***Craspedosoma levicanum*** Fedrizzi, 1876

Distribution

IT-ITA.

Remarks

A dubious species, see Spelda (2008).

208. ***Craspedosoma montenigrinum*** Mršić, 1987

Distribution

MN.

209. ***Craspedosoma oropense*** Verhoeff, 1936

Distribution

IT-ITA.

Habitat

Under *Aspidium* Sw. and *Rhododendron* litter, 1750–1850 m a.s.l.

210. ***Craspedosoma raulinsii*** Leach, 1814
Fig. 1C

Craspedosoma raulinsii Leach, 1814.
Craspedosoma rawlinsii Leach, 1815.
Craspedosoma simile Verhoeff, 1891.
Craspedosoma transsilvanicum Verhoeff, 1897.
Craspedosoma alemannicum Verhoeff, 1910.
Craspedosoma suevicum Verhoeff, 1910.
Craspedosoma wehranum Verhoeff, 1910.
Craspedosoma simile vomrathi Verhoeff, 1910.
Craspedosoma simile germanicum Verhoeff, 1910.
Craspedosoma vomrathi auct.
Craspedosoma germanicum auct.

Distribution

AT, BA, BG, BE, BY, CH, CZ, DE, DK-DEN, FI, FR-COR?, FR-FRA, GB-GRB, GB-NI, HR, HU, IE, IT-ITA, LT, LU, LV, NL, NO-NOR, PL, RO, RU-KGD, RU-RUC, SB, SE, SI, SK. Introduced in North America.

Habitat

Mostly in woodland, e.g., *Alnus* swamps, prefers high humidity, often on sandy soils; sometimes in coniferous forests and more open habitats. A pioneer species in abandoned lignite (brown coal) mining areas (Hauser & Voigtländer 2019). Its pioneering properties are also reflected in the isolated occurrences in Russia and North-Central Sweden. Up to 1540 m a.s.l. in Switzerland.

Remarks

This is the only species of Chordeumatida which has been introduced to another continent. See McAlpine & Shear (2018) for a discussion of the occurrence in North America and the spelling of the species epithet (also see Dolejš & Kocourek 2019 on the spelling issue).

Craspedosoma raulinsii is highly variable, and a very large number of subspecies, varieties and subvarieties have been described. The taxa *alemannicum* Verhoeff, 1910, *germanicum* Verhoeff, 1910, *vomrathi* Verhoeff, 1910, and *transsilvanicum* have all been regarded as separate species by some authors, e.g., in the well-known handbook by Schubart (1934). Spelda (1991) and Hauser (2004a) analysed the extremely complex taxonomy of this group of taxa. As a result, Hauser (2004a) recognized a number of subspecies, regarded *germanicum* as a group of morphologically indistinguishable hybrids between various other subspecies, and provided extensive lists of synonyms. See also under *C. blaniulides*.

This species seems recently to have expanded its range in northeastern Europe. It had not been recorded from Estonia until 2010, but is now widespread in the country (Sammet *et al.* 2018). It is also a newcomer in the fauna of Latvia where it is now common in a variety of habitats (Spuņģis 2010). The first record from Russia outside the Kaliningrad region was from a park in Moscow and is probably due to a recent introduction (Golovatch & Matyukhin 2011).

211. ***Craspedosoma ruborum*** Verhoeff, 1930

Distribution

IT-ITA.

Habitat

Under *Rubus* litter.

212. ***Craspedosoma slavum*** Attems, 1929

Craspedosoma aegonotum Attems, 1927.
Craspedosoma rawlinsii auct.

Distribution

AT, BA, HR, IT-ITA, SI.

Habitat

In valleys.

Remarks

The synonymy *aegonotum* = *slavum* was proposed by Mršić (1987b, 1994) who, however, used the younger, better known name *slavum*, as did Hauser (2004a), and so do we, awaiting a proper revision of *C. aegonotum*.

213. ***Craspedosoma taurinorum*** Silvestri, 1898

Distribution

AT, CH, DE, FR-FRA, IT-ITA.

Habitat

Most often low altitude forests, but up to 2900 m a.s.l.

214. ***Craspedosoma trilobum*** Silvestri, 1903

Distribution

IT-ITA

Remarks

A dubious species (Spelda 2008).

Genus ***Crossosoma*** Ribaut, 1913

Cryossoma Manfredi, 1951.

215. ***Crossosoma brolemanni*** Strasser, 1975

Distribution

FR-FRA.

Habitat

Cave at 1500 m a.s.l.

216. ***Crossosoma casalei*** Strasser, 1979

Distribution

IT-ITA.

Habitat

Cave.

217. ***Crossosoma cavernicola*** (Manfredi, 1951)

Cryossoma cavernicola Manfredi, 1951.

Distribution

FR-FRA, IT-ITA.

Habitat

Caves at 620–2435 m a.s.l.

218. ***Crossosoma falciferum*** Strasser, 1975

Distribution

IT-ITA.

Habitat

Caves at 1250–2005 m a.s.l.

219. ***Crossosoma fossum*** Strasser, 1979

Distribution

IT-ITA.

Habitat

Fagus forest at 1200 m a.s.l., 50 cm below ground among rubble under leaf litter.

220. ***Crossosoma mauriesi*** Strasser, 1970

Distribution

FR-FRA, IT-ITA.

Habitat

Cave.

221. ***Crossosoma parvum*** Strasser, 1979

Distribution

IT-ITA.

Habitat

Cave.

222. ***Crossosoma peyerimhoffi*** (Brölemann, 1902)

Ceratosoma peyerimhoffi Brölemann, 1902.

Distribution

FR-FRA.

Habitat

Cave.

223. ***Crossosoma phantasma*** Strasser, 1970

Distribution

IT-ITA.

Habitat

Cave.

224. ***Crossosoma semipes*** (Strasser, 1958)

Antroherposoma semipes Strasser, 1958.

Distribution

IT-ITA.

Habitat

Cave.

Genus *Dactylophorosoma* Verhoeff, 1900

225. ***Dactylophorosoma albocarinatum*** Manfredi, 1940

Distribution

IT-ITA.

Habitat

Found in a cave – probably an accidental occurrence.

226. ***Dactylophorosoma nivisatelles*** Verhoeff, 1900

Distribution

CH, IT-ITA.

Habitat

Subalpine to subnival, altitude range 1300–3000 m a.s.l., exceptionally down to 700 m a.s.l.; subalpine coniferous forests, dwarf bush vegetation, *Alnus viridis* thickets, high alpine grass heaths, subnival grassland fragments and gravelly soils.

Genus *Dyocerasoma* Verhoeff, 1897

227. ***Dyocerasoma biokovense*** Mršić, 1986

Distribution

HR.

Habitat

Cave.

228. ***Dyocerasoma drimicum*** Mršić, 1985

Distribution

SB.

Habitat

At the source of the river Beli Drim.

229. ***Dyocerasoma furcilliferum*** (Verhoeff, 1897)

Polymicrodon furcilliferum Verhoeff, 1897.

Distribution

BA.

Habitat

Cave.

230. ***Dyocerasoma insulanum*** Attems, 1951

Distribution

HR.

Habitat

Cave.

231. ***Dyocerasoma intermedium*** Makarov, Lučić, Mitić & Rađa, 2003
Fig. 4F

Distribution

HR.

Habitat

Cave.

232. ***Dyocerasoma lignivorum*** (Verhoeff, 1899)

Polymicrodon lignivorum Verhoeff, 1899.

Distribution

BA, RO, SB.

Habitat

In decaying stumps of *Fagus* and *Picea*; also recorded from a cave in Romania.

233. ***Dyocerasoma narentanum*** (Verhoeff, 1901)

Polymicrodon narentanum Verhoeff, 1901.

Distribution

BA.

Habitat

Cave.

234. ***Dyocerasoma nivisatelles*** (Verhoeff, 1897)

Polymicrodon nivisatelles Verhoeff, 1897.

Distribution

BA.

Habitat

Caves, one record is from 2100 m a.s.l.

Genus *Helvetiosoma* Verhoeff, 1910

235. ***Helvetiosoma blanci*** **(**Faës, 1902)

Craspedosoma blanci Faës, 1902.

Distribution

CH.

Habitat

A north-facing scree at 1960 m a.s.l.

Remarks

Possibly another synonym of *H. helveticum*.

236. ***Helvetiosoma helveticum*** (Verhoeff, 1900)

Craspedosoma helveticum Verhoeff, 1900.
Prionosoma helveticum auct.
Helvetiosoma alemannicum Verhoeff, 1911.
Helvetiosoma cornigerum Bigler, 1912.
Helvetiosoma jurassicum Verhoeff, 1911.

Distribution

CH, DE, FR-FRA.

Habitat

In gorges, rough valleys and screes, 400–2300 m a.s.l.; also broad-leaved forest at 330 m a.s.l.

Remarks

Pedroli-Christen (1993) provisionally included *H. helveticum*, *H. jurassicum* and *H. cornigerum* in her concept of *H. alemannicum* and noted that this complex may constitute one polytypic species. We adopt this view but follow Spelda (2008) in using the older name *helveticum*.

237. ***Helvetiosoma montemorense*** (Faës, 1905)

Craspedosoma montemorense Faës, 1905.

Distribution

CH.

Habitat

Found at 2250–2600 m a.s.l., under rocks.

Genus ***Iulogona*** Cook, 1896

Oxydactylon Verhoeff, 1897.

238. ***Iulogona apenninorum*** (Verhoeff, 1913)

Oxydactylon apenninorum Verhoeff, 1897.

Distribution

IT-ITA.

Habitat

Under decaying brackens (*Pteridium* Gled. ex Scop.) on limestone.

239. ***Iulogona hamuligera*** (Verhoeff, 1913)

Oxydactylon tirolense hamuligerum Verhoeff, 1913.

Distribution

IT-ITA.

Habitat

Under *Castanea* litter on sandstone.

240. ***Iulogona ligurina*** (Verhoeff, 1910)

Oxydactylon ligurinum Verhoeff, 1910.

Distribution

IT-ITA.

Habitat

Broad-leaved forest, under litter.

241. ***Iulogona tirolensis*** (Verhoeff, 1894)

Atractosoma tirolense Verhoeff, 1894.
Oxydactylon tirolense auct.

Distribution

AT, CH, DE, FR-FRA, IT-ITA.

Habitat

Broad-leaved and conifer forests and wooded pastures, occasionally in more open habitats, 275–2150 m a.s.l.

Genus *Janetschekella* Schubart, 1954

242. ***Janetschekella valesiaca*** (Faës, 1902)

Atractosoma valesiacum Faës, 1902.
Janetschekella nivalis Schubart, 1954.

Distribution

CH, FR-FRA, IT-ITA.

Habitat

High-alpine, subnival to nival, 1600–3450 m a.s.l.

Genus *Kelempekia* Strasser, 1974

243. ***Kelempekia martensi*** Strasser, 1974

Distribution

GR-GRC.

Habitat

900 m a.s.l.

Genus *Listrocheiritium* Verhoeff, 1913

244. ***Listrocheiritium bohemicum*** (Rosický, 1876)

Craspedosoma bohemicum Rosický, 1876.

Distribution

AT.

Remarks

A dubious species, possibly a synonym of *Ochogona caroli*.

245. ***Listrocheiritium cervinum*** Verhoeff, 1925

Distribution

AT, DE.

Habitat

(Montane-)high subalpine to alpine, up to 2700 m a.s.l. Under stones on sandy, raw soils, screes, also in mixed forests, rarely in dwarf bush vegetation.

Remarks

The status of this species vis-à-vis *L. styricum* and *L. sussurinum* needs clarification (Gruber 2009).

246. ***Listrocheiritium noricum*** Verhoeff, 1913

Distribution

AT.

Habitat

(Sub)montane, 700–1200 m a.s.l.; under *Acer* and *Fagus* leaf litter.

247. ***Listrocheiritium nubium*** Verhoeff, 1915

Distribution

AT.

Habitat

(Colline-)submontane to low subalpine, 300–1400 (1600?) m a.s.l.; mainly in submontane-montane mixed forests with *Acer*, *Carpinus*, *Fagus*, *Pinus*, *Tilia*; also on an alp and in stunted woodland.

248. ***Listrocheiritium septentrionale*** Gulička, 1965

[*Listricheiritium nibelungiacum* Attems, 1949; nomen nudum.]

Distribution

AT, CZ.

Habitat

Picea forest, forested scree.

Remarks

See Spelda (1996) concering the name *Listrocheiritium niebelungiacum*.

249. ***Listrocheiritium styricum*** Verhoeff, 1915

Listrocheiritium styriacum Verhoeff, 1929.

Distribution

AT.

Habitat

Submontane to montane, 470–1260 m a.s.l.; montane coniferous, mixed and broad-leaved forests on calcareous soil.

Remarks

The status of this species vis-à-vis *L. cervinum* and *L. sussurinum* needs clarification (Gruber 2009).

250. ***Listrocheiritium susurrinum*** Attems, 1926

Distribution

AT.

Habitat

Montane to alpine. Once in a cave.

Remarks

The status of this species vis-à-vis *L. styricum* and *L. cervinum* needs clarification (Gruber 2009).

Genus ***Litogona*** Silvestri, 1897

Antroverhoeffia Strasser, 1970.

251. ***Litogona hyalops*** (Latzel, 1889)

Atractosoma hyalops Latzel, 1889.
Antroherposoma hyalops auct.
Ceratosoma hyalops auct.

Distribution

IT-ITA.

Habitat

Cave.

252. ***Litogona mirabilis*** (Manfredi, 1948)

Antroherposoma mirabile Manfredi, 1948.
Antroverhoeffia mirabilis auct.

Distribution

IT-ITA.

Habitat

Caves at 220–700 m a.s.l.

Genus *Manfredia* Verhoeff, 1940

253. ***Manfredia aemiliana*** (Manfredi, 1932)

Atractosoma aemilianum Manfredi, 1932.

Distribution

IT-ITA.

Habitat

Found in a cave, but probably epigean.

254. ***Manfredia apuana*** Strasser, 1971

Distribution

IT-ITA.

Habitat

Cave.

255. ***Manfredia concii*** Manfredi, 1953

Distribution

IT-ITA.

Habitat

Cave.

256. ***Manfredia guareschii*** Manfredi, 1950

Distribution

IT-ITA.

Habitat

Found in a cave, but probably epigean.

257. ***Manfredia lanzai*** Manfredi, 1948

Distribution

IT-ITA.

Habitat

Cave.

Genus ***Nanogona*** Cook, 1895

Grypogona Cook, 1895.
Polymicrodon Verhoeff, 1897.

258. ***Nanogona balazuci*** (Schubart, 1958)

Polymicrodon balazuci Schubart, 1958.

Distribution

FR-FRA.

Habitat

Cave.

259. ***Nanogona cebennica*** (Ribaut, 1947)

Polymicrodon cebennicus Ribaut, 1947.

Distribution

FR-FRA.

Habitat

A wide range of habitats including deciduous woodlands, caves and crevices.

260. ***Nanogona davidi*** (Demange, 1966)

Polymicrodon davidi Demange, 1966.

Distribution

FR-FRA.

Habitat

Cave.

261. ***Nanogona digitata*** (Ribaut, 1913)

Polymicrodon digitatum Ribaut, 1913.

Distribution

FR-FRA.

Habitat

Cave.

262. ***Nanogona polydesmoides*** (Leach, 1814)
Fig. 1A

Craspedosoma polydesmoides Leach, 1814.
Atractosoma latzeli Verhoeff, 1891.
Polymicrodon polydesmoides auct.
Craspedosoma latzeli auct.
Grypogona latzeli auct.

Distribution

BE, DE, DK-DEN, FR-FRA, GB-GRB, GB-NI, IE, IT-ITA, NO-NOR, SE.

Habitat

A wide range of habitats including deciduous woodlands, caves, waste ground; very often caves and crevices in limestone and karstic areas; troglophile; also *Picea* plantation, grassland. Probably introduced in the northern part of the distribution area.

263. ***Nanogona uncinata*** (Ribaut, 1913)

Polymicrodon uncinatum Ribaut, 1913.

Distribution

FR-FRA.

Habitat

Cave.

Genus ***Ochogona*** Cook, 1895

Ceratosoma Verhoeff, 1897.
Triakontazona Verhoeff, 1897.
Euceratosoma Verhoeff, 1899.
Beskidia Jawłowski, 1938.
Illyriosoma Strasser, 1942.
Asandalum Attems, 1959.

264. ***Ochogona apfelbecki*** (Verhoeff, 1897)

Ceratosoma apfelbecki Verhoeff, 1897.
Asandalum apfelbecki auct.
Triakontazona apfelbecki auct.

Distribution

BA.

Habitat

Forest, brushwood, under litter.

265. ***Ochogona attemsi*** (Verhoeff, 1907)

Ceratosoma attemsi Verhoeff, 1907.
Asandalum attemsi auct.
Triakontazona attemsi auct.

Distribution

SI.

Habitat

Picea-Fagus forest at 950 m a.s.l., under *Picea* bark.

266. ***Ochogona brentana*** (Verhoeff, 1927)

Ceratosoma brentanum Verhoeff, 1927.
Asandalum brentanum auct.
Triakontazona brentanum auct.

Distribution

AT, DE, IT-ITA.

Habitat

Limestone rock with *Salix* L. thicket; among moss and *Quercus*, *Carpinus*, *Corylus*, *Castanea* litter; low growth of *Quercus*, *Castanea* and *Corylus*, in soil and gravel.

267. ***Ochogona caroli*** (Rothenbühler, 1900)

Ceratosoma caroli Rothenbühler, 1900.
Asandalum caroli auct.

Ceratosoma karoli auct.
Triakontazona caroli auct.

Distribution

AT, CH, CZ, DE, HU, IT-ITA, PL, SI, SK.

Habitat

Forests (*Abies*, *Fagus*, *Fraxinus*, *Larix* Mill., *Picea*, *Pinus*, *Quercus*); *Alnus viridus* thickets, dwarf-scrub heath, xeric pastures, screes, once in a cave; 860–2740 m a.s.l. in Switzerland.

Meyer (1979) studied the ecology of *O. caroli* at 2050 m a.s.l. in Tyrol, Austria and found that the lifecycle spans three years.

Remarks

Craspedosoma bohemicum Rosický, 1876, now *Listrocheiritium b.*, is possibly a senior synonym of *O. caroli*, see, e.g., Tajovský (2001), but it is listed separately in this atlas.

268. ***Ochogona cervina*** (Verhoeff, 1899)

Ceratosoma cervinum Verhoeff, 1899.
Asandalum cervinum auct.
Octeicosisoma cervinum auct.
Triakontazona cervinum auct.

Distribution

HR.

Habitat

Forest, under wet litter.

Remarks

See under *Hungarosoma bokori* (Hungarosomatidae).

269. ***Ochogona condylocoxa*** (Attems, 1899)

Atractosoma condylocoxa Attems, 1899.
Ceratosoma condylocoxa Attems, 1899.
Asandalum condylocoxa auct.
Triakontazona condylocoxa auct.

Distribution

AT, HR, SI.

270. ***Ochogona elaphron*** (Attems, 1895)

Atractosoma elaphron Attems, 1895.
Ceratosoma elaphron auct.
Asandalum elaphron auct.
Triakontazona elaphron auct.

Distribution

AT, HU.

Habitat

Colline to low subalpine, 200–1800 m a.s.l. Mainly broad-leaved mixed forests, montane mixed forests, *Abies* forests; lives in leaf litter, once in a cave.

271. ***Ochogona euganeorum*** (Verhoeff, 1927)

Ceratosoma euganeorum Verhoeff, 1927.
Asandalum euganeorum auct.

Distribution

IT-ITA.

Habitat

In *Castanea* coppice forest.

272. ***Ochogona friulana*** (Strasser, 1937)

Ceratosoma friulanum Strasser, 1937.
Asandalum friulana auct.

Distribution

IT-ITA.

Habitat

Mixed forest dominated by *Castanea*, under thick litter, 240–420 m a.s.l.

273. ***Ochogona gallitarum*** (Brölemann, 1900)

Ceratosoma gallitarum Brölemann, 1900.

Distribution

FR-FRA, IT-ITA.

Habitat

Montane and subalpine.

274. ***Ochogona hanfi*** (Attems, 1926)

Ceratosoma hanfi Attems, 1926.
Asandalum hanfi auct.

Distribution

AT.

Habitat

Montane to high subalpine, 1500–1800 m a.s.l.; one find possibly in a raised bog.

275. ***Ochogona holdhausi*** (Attems, 1926)

Ceratosoma holdhausi Attems, 1926.
Asandalum holdhausi auct.

Distribution

AT.

Habitat

(Montane-)high subalpine to alpine, 1700 m a.s.l.; once in grassland (*Caricetum curvulae*).

276. ***Ochogona jankowskii*** (Jawłowski, 1938)

Beskidia jankowskii Jawłowski, 1938.

Distribution

PL, UA.

Habitat

Forests (*Abies*, *Acer*, *Alnus*, *Fagus*, *Picea*), 600–700 m a.s.l.

Remarks

This species was reviewed and redescribed by Wytwer & Golovatch (2004).

277. ***Ochogona latzeli*** (Attems, 1927)

Ceratosoma latzeli Attems, 1927.
Asandalum latzeli auct.
Ornithogona latzeli auct.

Distribution

HR.

Habitat

In moist *Fagus* litter.

278. ***Ochogona manfredii*** (Strasser, 1942)

Ceratosoma manfredii Strasser, 1942.
Asandalum manfredii auct.
Triakontazona manfredii auct.

Distribution

HR.

Habitat

Fagus forest and naked slope at 1200–1273 m a.s.l.

279. ***Ochogona phyllophaga*** (Attems, 1899)

Atractosoma phyllophagum Attems, 1899.
Asandalum phyllophagum auct.
Ceratosoma phyllophaghum auct.

Distribution

HU.

Remarks

A poorly known species, possibly a senior synonym of *O. caroli*, see Gruber (2009). The location of the type locality was recently clarified by Korsós & Lazányi (2020).

280. ***Ochogona pusilla*** (Verhoeff, 1893)

Atractosoma pusillum Verhoeff, 1893.
Ceratosoma pusillum auct.
Triakontazona pusilla auct.

Distribution

AT, HR, IT-ITA, SI.

Habitat

Forests with *Corylus*, *Fagus*, *Picea*, *Quercus*, 370–900 m a.s.l.

281. ***Ochogona regalis*** (Verhoeff, 1913)

Ceratosoma regale Verhoeff, 1913.
Asandalum triaina regale auct.

Distribution

AT, DE.

Habitat

Mixed subalpine forest.

Remarks

The delimitation of this taxon vis-à-vis *O. triaina* requires clarification (Reip *et al.* 2016).

282. ***Ochogona triaina*** (Attems, 1895)

Atractosoma triaina Attems, 1895.
Asandalum triaina auct.
Ceratosoma triaina auct.
Triakontazona triaina auct.

Distribution

AT, DE, HR, HU.

Habitat

Pasture, forest fringe.

Remarks

The delimitation of this taxon vis-à-vis *O. regalis* requires clarification (Reip *et al.* 2016).

Genus *Oroposoma* Verhoeff, 1936

283. ***Oroposoma catascaphium*** Verhoeff, 1936

Distribution

IT-ITA.

Habitat

Shady slope with ferns and leaf litter, 320 m a.s.l.

284. ***Oroposoma emiliae*** Manfredi, 1953

Distribution

IT-ITA.

Habitat

Cave.

285. ***Oroposoma fagorum*** Verhoeff, 1936

Distribution

IT-ITA.

Habitat

Forest (*Fagus* with *Acer* and conifers), 1000–1050 m a.s.l.

286. ***Oroposoma granitivagum*** Verhoeff, 1936

Distribution

CH, IT-ITA.

Habitat

Alpine and subalpine, (820–)1745–2580 m a.s.l., especially in litter of *Vaccinium* L.

Remarks

Pedroli-Christen (1993) did not distinguish *O. granitivagum* and *O. nivale*.

287. ***Oroposoma nivale*** (Faës, 1902)

Atractosoma nivale Faës, 1902.

Distribution

CH.

Habitat

Under stone in snow, 2450 m a.s.l. (the information under *O. granitivagum* may in part refer to *O. nivale*).

Remarks

See under *O. granitivagum*.

288. ***Oroposoma ticinense*** Manfredi, 1957

Distribution

CH.

Habitat

Originally described from a cave, but also found from 353–1870 m a.s.l. in open and wooded habitats.

289. ***Oroposoma varallense*** Verhoeff, 1936

Distribution

IT-ITA.

Habitat

Shady slope among rubble with *Castanea* litter and *Aspidium* ferns.

Genus ***Paradactylophorosoma*** Attems, 1908

Dactylophorosoma subgenus *Paradactylophorosoma* Attems, 1908.
Paradactylosoma Verhoeff, 1930.

290. ***Paradactylophorosoma insulanum*** (Attems, 1908)

Dactylophorosoma (*Paradactylophorosoma*) *insulanum* Attems, 1908.
Paradactylosoma macchiae Verhoeff, 1930.

Distribution

IT-ITA.

Habitat

Dense macchia, under *Pteridium* and *Aspidium* ferns; in a hollow *Castanea*.

Genus *Pedemontia* Mauriès, 1994

291. ***Pedemontia delmastroi*** Mauriès, 1994

Distribution

IT-ITA.

Habitat

Forest, 250–335 m a.s.l.

Genus ***Plectogona*** Silvestri, 1897

Antroherposoma Verhoeff, 1898.
Antromanfredia Strasser, 1975.

292. ***Plectogona angusta*** (Latzel, 1887)

Atractosoma angustum Latzel, 1887.
Antroherposoma angustum auct.

Distribution

IT-ITA.

Habitat

Caves at 2230–2260 m a.s.l.

293. ***Plectogona bonzanoi*** (Strasser, 1975)

Antroherposoma bonzanoi Strasser, 1975.

Distribution

IT-ITA.

Habitat

Caves at 850–1350 m a.s.l.

294. ***Plectogona franciscoloi*** (Manfredi, 1953)

Antroherposoma franciscoloi Manfredi, 1953.

Distribution

IT-ITA.

Habitat

Cave.

295. ***Plectogona morisii*** (Strasser, 1975)

Antroherposoma morisiii Strasser, 1975.

Distribution

IT-ITA.

Habitat

Caves at 983–1045 m a.s.l.

296. ***Plectogona sanfillipoi*** (Manfredi, 1956)

Antroherposoma sanfillipoi Manfredi, 1956.

Distribution

IT-ITA.

Habitat

Caves at 525–836 m a.s.l.

297. ***Plectogona vignai*** (Strasser, 1970)

Antroherposoma vignai Strasser, 1970.

Distribution

IT-ITA.

Habitat

Cave at 770 m a.s.l.

Genus ***Pterygophorosoma*** Verhoeff, 1897

Orotrechosoma Verhoeff, 1900.

This genus was reviewed by Spelda (2001).

298. ***Pterygophorosoma alticolum*** (Verhoeff, 1894)

Atractosoma alticolum Verhoeff, 1894.
Craspedosoma alticolum auct.
Orotrechosoma alticolum auct.
Pterygophorosoma alticola auct.

Distribution

CH, IT-ITA.

Habitat

An alpine-nival species. Found from 2000–3090 m a.s.l., in waterlogged soil close to snowfields; also under stones and on a north-facing slope at the foot of a depression.

299. ***Pterygophorosoma cornuigerum*** (Verhoeff, 1900)

Orotrechosoma cornuigerum Verhoeff, 1900.

Distribution

IT-ITA.

Habitat

High alpine, 2000–2600 m.

Genus ***Pyrgocyphosoma*** Verhoeff, 1910

Eucharisoma Brolemann, 1935.

This large, predominantly Italian genus was reviewed by Spelda (2008). It is not clear in all cases whether a taxon is to be regarded as a species or a subspecies. All taxa with a separate entry in Spelda (2008) are here listed as species although some may turn out to be subspecies or synonyms of other species.

300. ***Pyrgocyphosoma armigerum*** Verhoeff, 1925

Distribution

IT-ITA.

Habitat

Castanea forest with *Corylus*, under litter and gravel.

301. ***Pyrgocyphosoma arvernum*** (Ribaut & Brolemann, 1932)

Craspedosoma arvernum Ribaut & Brolemann, 1932.

Distribution

FR-FRA.

302. ***Pyrgocyphosoma aspidiorum*** Verhoeff, 1931

Pyrgocyphosoma dentatum aspidiorum Verhoeff, 1931.

Distribution

IT-ITA.

Habitat

Brook ravine and slope, under *Corylus*, *Fraxinus*, *Clematis* and *Aspidium*; 420–710 m a.s.l.

303. ***Pyrgocyphosoma balazuci*** Mauriès & Kime, 1999

Distribution

FR-FRA.

Habitat

Found in a cave, but also epigeically.

304. ***Pyrgocyphosoma bidentatum*** (Verhoeff, 1900)

Craspedosoma oppidicola bidentatum Verhoeff, 1900.

Distribution

IT-ITA.

Habitat

Ravines, under litter and stones.

305. ***Pyrgocyphosoma brembanum*** Verhoeff, 1931

Pyrgocyphosoma armigerum brembanum Verhoeff, 1931.

Distribution

IT-ITA.

Habitat

Gravelly ground under *Alnus* and *Tussilago* L. litter; ravine, under limestone rocks and litter (*Corylus*, *Fraxinus*).

306. ***Pyrgocyphosoma brunatense*** (Verhoeff, 1910)

Craspedosoma brunatense Verhoeff, 1910.

Distribution

IT-ITA.

307. ***Pyrgocyphosoma centrale*** (Silvestri, 1898)

Craspedosoma centrale Silvestri, 1898.

Distribution

IT-ITA.

308. ***Pyrgocyphosoma dalmazzense*** Verhoeff, 1930

Distribution

FR-FRA, IT-ITA.

Habitat

Under decaying mushrooms.

309. ***Pyrgocyphosoma dentatum*** (Brölemann, 1892)

Craspedosoma dentatum Brölemann, 1892.

Distribution

CH, IT-ITA.

Habitat

Thermophile forest, 260–400 m a.s.l. and montane zone (1080 m a.s.l.)

310. ***Pyrgocyphosoma doriae*** (Silvestri, 1898)

Craspedosoma doriae Silvestri, 1898.

Distribution

IT-ITA.

Habitat

Woodland soil.

Remarks

Also recorded from FR-FRA and MC, but these records are doubtful (J.-J. Geoffroy pers. com.)

311. ***Pyrgocyphosoma edrinum*** Verhoeff, 1934

Pyrgocyphosoma tridentinum edrinum Verhoeff, 1934.

Distribution

IT-ITA.

312. ***Pyrgocyphosoma florentinum*** (Silvestri, 1903)

Craspedosoma florentinum Silvestri, 1903.

Distribution

IT-ITA.

Habitat

600–650 m a.s.l. (Spelda 2008).

Remarks

Described from Florence, this species was re-collected at Monte Amiata, considerably further south, by Spelda (2008) who speculated that the type locality might not have been precise or that this species is widely distributed in the lower parts of Tuscany south of Florence.

313. ***Pyrgocyphosoma fonticuli*** Verhoeff, 1936

Distribution

IT-ITA.

Habitat

Brushwood with *Corylus*, *Quercus*, *Crataegus* L., *Rubus*, *Pteridium*.

314. ***Pyrgocyphosoma gattii*** (Silvestri, 1898)

Craspedosoma gattii Silvestri, 1898.

Distribution

IT-ITA.

315. ***Pyrgocyphosoma grassii*** (Silvestri, 1898)

Craspedosoma grassii Silvestri, 1898.

Distribution

IT-ITA.

316. ***Pyrgocyphosoma jucundum*** (Brolemann, 1935)

Craspedosoma doriae jucumdum Brolemann, 1935.

Distribution

FR-FRA, MC.

Habitat

Woodland.

317. ***Pyrgocyphosoma ligusticum*** (Silvestri, 1898)

Craspedosoma ligusticum Silvestri, 1898.
Craspedosoma apenninorum Verhoeff, 1920.

Distribution

IT-ITA.

318. ***Pyrgocyphosoma longilamellatum*** Verhoeff, 1931

Pyrgocyphosoma dentatum longilamellatum Verhoeff, 1931.

Distribution

IT-ITA.

Habitat

Ravines under various types of litter, also among rubble; 225–300 m a.s.l.

319. ***Pyrgocyphosoma marmorense*** Verhoeff, 1932

Pyrgocyphosoma oppidicola marmorense Verhoeff, 1932.

Distribution

IT-ITA.

Habitat

Under rocks in moist ravine.

320. ***Pyrgocyphosoma marrucinum*** Manfredi, 1950

Distribution

IT-ITA.

Habitat

Epigeically at 700 m a.s.l.; in a cave at 1367 m a.s.l.

321. ***Pyrgocyphosoma mevaniense*** (Silvestri, 1894)

Atractosoma mevaniense Silvestri, 1894.
Craspedosoma mevaniense auct.

Distribution

IT-ITA.

322. ***Pyrgocyphosoma oppidicola*** (Silvestri, 1898)

Craspedosoma oppidicola Silvestri, 1898.

Distribution

IT-ITA.

Habitat

Under leaf and twig litter.

323. ***Pyrgocyphosoma ormeanum*** Verhoeff, 1930

Pyrgocyphosoma dalmazzense ormeanum Verhoeff, 1930.

Distribution

IT-ITA.

Habitat

Castanea forest, 800–950 m a.s.l.

324. ***Pyrgocyphosoma picenum*** Manfredi, 1953

Distribution

IT-ITA.

Habitat

In submersed moss. Manfredi (1953) discussed this unusual habitat.

325. ***Pyrgocyphosoma pontremolense*** Verhoeff, 1936

Distribution

IT-ITA.

Habitat

Shady ravine with *Alnus*, *Rubus* and *Castanea*.

326. ***Pyrgocyphosoma pracchiense*** Verhoeff, 1932

Distribution

IT-ITA.

Habitat

Rocky ravine with leaf litter (*Fagus*, *Carpinus*, *Fraxinus*, *Corylus*, *Alnus*, *Rubus*).

327. ***Pyrgocyphosoma quercuum*** Verhoeff, 1936

Pyrgocyphosoma fonticuli quercuum Verhoeff, 1936.

Distribution
IT-ITA.

Habitat
Brushwood with *Quercus*, *Castanea*, *Rubus*, *Acer*.

328. ***Pyrgocyphosoma ravinense*** Verhoeff, 1936

Pyrgocyphosoma tridentinum ravinense Verhoeff, 1936.

Distribution
IT-ITA.

Habitat
Ravine with *Corylus* and *Alnus*.

329. ***Pyrgocyphosoma reatinum*** Strasser, 1977

Pyrgocyphosoma oppidicola reatinum Strasser, 1977.

Distribution
IT-ITA.

Habitat
720 m a.s.l.

330. ***Pyrgocyphosoma renanum*** Verhoeff, 1932

Distribution
IT-ITA.

Habitat
Ravines at 630–640 m a.s.l. in brushwood of *Quercus*, *Castanea*, *Carpinus*, *Fraxinus*, *Rubus*, *Clematis*.

331. ***Pyrgocyphosoma roccavionense*** Verhoeff, 1937

Distribution
IT-ITA.

Habitat
Ravines, under wet *Castanea* leaf litter.

332. ***Pyrgocyphosoma savonense*** (Verhoeff, 1910)

Craspedosoma savonense Verhoeff, 1910.

Distribution
IT-ITA.

333. ***Pyrgocyphosoma serianum*** Verhoeff, 1937

Pyrgocyphosoma dentatum serianum Verhoeff, 1937.

Distribution

IT-ITA.

Habitat

Ravines in karst.

334. ***Pyrgocyphosoma serpentinum*** Verhoeff, 1932

Distribution

IT-ITA.

Habitat

Small valley, among twigs, *Alnus* leaf litter and rubble covered with *Rubus*.

335. ***Pyrgocyphosoma serravallense*** Verhoeff, 1936

Distribution

IT-ITA.

Habitat

Deep ravine with brushwood of *Robinia*, *Rubus*, *Crataegus* and *Euonymus* L.

336. ***Pyrgocyphosoma tendanum*** Verhoeff, 1930

Craspedosoma doriae tendanum auct.

Distribution

IT-ITA.

Habitat

Under bark of decaying *Castanea* stump.

337. ***Pyrgocyphosoma terminilli*** Strasser, 1977

Pyrgocyphosoma oppidicola terminilli Strasser, 1977.

Distribution

IT-ITA.

Habitat

1500–1800 m a.s.l.

338. ***Pyrgocyphosoma titianum*** (Verhoeff, 1910)

Craspedosoma titianum Verhoeff, 1910.

Distribution

DE.

Habitat

Seems to be associated with cool watercourses (Spelda 1991).

339. ***Pyrgocyphosoma tridentinum*** (Silvestri, 1898)

Craspedosoma tridentinum Silvestri, 1898.

Distribution

IT-ITA.

Habitat

Ravine with *Corylus*, *Alnus*, *Equisetum* L., etc.; 650 m a.s.l.

340. ***Pyrgocyphosoma vallicola*** (Silvestri, 1898)

Craspedosoma vallicola Silvestri, 1898.

Distribution

IT-ITA.

341. ***Pyrgocyphosoma vallombrosae*** (Silvestri, 1898)

Craspedosoma vallombrosae Silvestri, 1898.
Craspedosoma vittigerum Verhoeff, 1900.
Pyrgocyphosoma vittigerum auct.

Distribution

IT-ITA.

Habitat

Forest.

342. ***Pyrgocyphosoma zangherii*** Manfredi, 1951

Distribution

IT-ITA.

Genus ***Rhymogona*** Cook, 1896

Macheirophoron Verhoeff, 1897.

This genus epitomizes the difficulties with interpreting morphological variation in terms of a meaningful taxonomy. *Rhymogona* has been regarded as a monospecific genus or a "ring species" (Pedroli-Christen & Scholl 1996a, 1996b), but we here follow Spelda (2005) and recognize five separate species.

343. ***Rhymogona hessei*** (Ravoux, 1935)

Macheirophoron montivagum hessei Ravoux, 1935.

Distribution

FR-FRA.

Habitat

Forest soils.

344. ***Rhymogona montivaga*** (Verhoeff, 1894)

Atractosoma montivaga Verhoeff, 1894.
Macheirophoron montivagum silvaticum Rothenbühler, 1910.
Macheirophoron alemannicum Verhoeff, 1910.
Macheirophoron cervinum Verhoeff, 1910.
Macheirophoron aelleni Schubart, 1960.
Macheirophoron montivagum auct.
Macheirophoron silvaticum auct.

Distribution

CH, DE, FR-FRA.

Habitat

Hygrophilous, mostly found in cool and especially humid forests (*Abieti-Fagetum*, at lower altitudes less frequent, in *Abieti-Fagetum*, *Pruno-Fraxinetum* and *Aceri-Fagetum*. Large altitudinal amplitude: 340–2314 m a.s.l.

Remarks

The synonymy list only includes taxa which at some point have been regarded as full species (cf. remarks on subspecies in the Introduction).

345. ***Rhymogona serrata*** (Bigler, 1912)

Macheirophoron serratum Bigler, 1912.

Distribution

CH, DE.

Habitat

Fagus woodland.

346. ***Rhymogona verhoeffi*** (Bigler, 1913)
Fig. 1B

Macheirophoron verhoeffi Bigler, 1913.

Distribution

DE.

Habitat

Abandoned garden; broad-leaved forest; forest dominated by *Picea*.

347. ***Rhymogona wehrana*** (Verhoeff, 1910)

Distribution

DE.

Habitat

Same types as *R. verhoeffi*.

Genus ***Rothenbuehleria*** Verhoeff, 1900

Atractosoma tellinense Brölemann, 1892 (q.v.) was tentatively associated with *Rothenbuehleria* by Verhoeff (1900), but for the time being this species should be listed under its original genus (J. Spelda pers. com.).

348. ***Rothenbuehleria minima*** (Rothenbühler, 1899)

Atractosoma minimum Rothenbühler, 1899.

Distribution

AT, CH, IT-ITA.

Habitat

Rather xeric habitats; 1100–2400 m a.s.l.

349. ***Rothenbuehleria tirolensis*** Verhoeff, 1900

Rothenbuehleria minimum var. *tirolense* Verhoeff, 1900.

Distribution

IT-ITA.

Habitat

Castanea forest, partly in decaying mushrooms.

Genus *Sardosoma* Manfredi, 1956

350. ***Sardosoma franchettii*** Manfredi, 1956

Distribution

IT-SAR.

Habitat

Cave.

Genus *Semiosoma* Ribaut, 1913

351. ***Semiosoma bordei*** Ribaut, 1913

Distribution

FR-FRA.

Habitat

Cave.

352. ***Semiosoma devillei*** (Brölemann, 1901)

Ceratosoma devillei Brölemann, 1901.

Distribution

FR-FRA.

Habitat

Cave.

353. ***Semiosoma minutum*** (Berlese, 1894)

Atractosoma minutum Berlese, 1894.

Distribution

IT-ITA.

Habitat

In soil and among mosses.

Genus *Synischiosomaa* Verhoeff, 1910

354. ***Synischiosoma argentarium*** Attems, 1927

Distribution

IT-ITA.

355. ***Synischiosoma murorum*** (Silvestri, 1902)

Prionosoma murorum Silvestri, 1902.
Synischiosoma buchneri Verhoeff, 1936.
Synischiosoma darwinii Verhoeff, 1943.
Synischiosoma romanum Strasser, 1958.

Distribution

IT-ITA.

Habitat

Castanea woodland with *Hedera* and *Ruscus* L.; garden.

Family **Cyrnosomatidae** Mauriès, 2015

A monogeneric family, endemic to Corsica, with three species. The name, invalidly proposed by Mauriès (2003), was validated by the same author (Mauriès 2015b)

Genus ***Cyrnosoma*** Mauriès, 2015

Neoatractosoma subgenus *Cyrnosoma* Mauriès, 1969, invalidly proposed.

The name of the genus was validated by Mauriès (2015b).

356. ***Cyrnosoma beroni*** (Mauriès, 1969)

Neoatractosoma (*Cyrnosoma*) *beroni* Mauriès, 1969.

Distribution

FR-COR.

Habitat

Epigean, 2200 m a.s.l.

357. ***Cyrnosoma coineaui*** (Mauriès, 1969)

Neoatractosoma (*Cyrnosoma*) *coineaui* Mauriès, 1969.

Distribution

FR-COR.

Habitat

Cave.

358. ***Cyrnosoma strasseri*** (Mauriès, 1969)

Neoatractosoma (*Cyrnosoma*) *strasseri* Mauriès, 1969.

Distribution

FR-COR.

Habitat

Epigean, 700 m a.s.l.

Family **Dalmatosomatidae** Antić & Makarov, 2018

A family with only one included species.

Genus *Dalmatosoma* Antić & Makarov, 2018

359. ***Dalmatosoma agaricum*** Antić & Makarov, 2018

Distribution

HR.

Habitat

Cave.

Family **Diplomaragnidae** Attems, 1907

A mainly Central and East Asian family, with only a marginal occurrence of one species within the area considered here (Shear 1990).

Genus *Altajosoma* Gulička 1972

360. ***Altajosoma golovatchi*** (Shear, 1990)

Diplomaragna golovatchi Shear, 1990.

Distribution

RU-RUE.

Habitat

Found in leaf litter in *Pinus*, *Betula* and *Ulmus* forests (Shear 1990).

Remarks

This is the only chordeumatidan species which occurs inside the area covered by the atlas as well as outside. In addition to the 'European' sites, *A. golovatchi* also occurs further east, in western Siberia (Shear 1990).

Family **Entomobielziidae** Verhoeff, 1899

Endemic to Romania; four species.

Genus ***Entomobielzia*** Verhoeff, 1898

Bielzia Verhoeff, 1897, preoccupied.
Bielziana Strand, 1928.

361. ***Entomobielzia getica*** Ceuca, 1964

Distribution

RO.

Habitat

Forest.

362. ***Entomobielzia kimakowizii*** (Verhoeff, 1897)

Bielzia kimakowizii Verhoeff, 1897.

Distribution

RO.

363. ***Entomobielzia varvarai*** Ceuca, 1985

Distribution

RO.

Habitat

A mountain species preferring litter of coniferous and deciduous trees, sometimes mixed with gravel.

Remarks

Ceuca (1985) gave the type locality as "la forêt de Slătioara, située au nord de notre pays". There are several places of that name in northern Romania, but the type locality is tentatively interpreted as the village Slătioara in Strâmtura Commune, Maramures County.

Genus *Pseudoclis* Attems, 1899

364. ***Pseudoclis octocera*** Attems, 1899

Distribution

RO.

Family **Haaseidae** Attems, 1899

Orobainosomidae Verhoeff, 1899.

Twenty-six species, all in C and E Europe, except *Hylebainosoma nontronensis* in the West.

Genus ***Haasea*** Verhoeff, 1895

Xiphogona Cook, 1895.
Orobainosoma Verhoeff, 1897.
Rhopalogona Silvestri, 1898.
Deuterohaasea Verhoeff, 1898.

Antić & Akkari (2020) reviewed this genus taxonomically and faunistically, with the results that several older records, especially of the widespread *H. flavescens*, have been assigned to other species.

365. ***Haasea cyanopida*** (Attems, 1903)

Orobainosoma cyanopidum Attems, 1903.
Orobainosoma noricum Verhoeff, 1913.
Haasea norica auct.

Distribution

AT, DE.

Habitat

Submontane to low subalpine, 385–1700 (2000?) m a.s.l.; submontane-montane mixed and coniferous forests; under *Fagus* and *Acer* leaf litter, also under moss and bark on tree trunk, once in a cave.

366. ***Haasea faucium*** (Verhoeff, 1931)

Orobainosoma faucium Verhoeff, 1931.

Distribution

SI.

Habitat

Recorded from three pits, also found epigeically.

367. ***Haasea filicis*** (Verhoeff, 1929)

Orobainosoma filicis Verhoeff, 1929.

Distribution

AT.

Habitat

Montane to low subalpine, 650–1500 m a.s.l.; coniferous forest, under dense cover of ferns.

368. ***Haasea flavescens*** (Latzel, 1884)

Craspedosoma flavescens Latzel, 1884.
Orobainosoma flavescens auct.
Orobainosma pinivagum Verhoeff, 1901.
Haasea pinivaga auct.

Distribution

AT, CH, CZ, DE, FR-FRA, HU, LU, PL, SK.

Habitat

A eurytopic species. Found in forests at 430–2250 m a.s.l. in Switzerland; most common in coniferous, broad-leaved and mixed forests, under bark, litter and stones; also in caves.

Remarks

Records of this species from BH, HR, IT-ITA and SI were referred to other species by Antić & Akkari (2020). Records from LU, as well as some (but far from all) records from CZ are dubious (Antić & Akkari 2020). Meyer & Singer (1997) studied populations and phenology of this species.

369. ***Haasea fonticulorum*** (Verhoeff, 1910)
Fig. 2E

Distribution

AT, CH, HR, IT-ITA, SI.

Habitat

Verhoeff (1910) stated he found this species in a very wet, fibrous moss sprinkled with spring-water. A very unusual habitat for millipedes after which he named the new species (*fonticulus* = little fountain or spring). Subsequently found in forests, dwarf bush vegetation grassland, screes and periglacial areas. From 240–2830 m a.s.l. in Switzerland. Meyer (1979) studied the ecology of *H. fonticulorum* at 2050 m a.s.l. in Tyrol, Austria and found that the lifecycle spans three years. See also caption to Fig. 2.

370. ***Haasea germanica*** (Verhoeff, 1901)

Orobainosoma germanicum Verhoeff, 1901.

Distribution

AT, CZ, DE, RO.

Habitat

Alnus and *Picea* forests, also in screes and caves, up to 950 m a.s.l.

Remarks

The records from RO, as well as some of those from CZ should be considered with caution (Antić & Akkari 2020).

371. ***Haasea gruberi*** Antić & Akkari, 2020

Distribution

AT.

Habitat

One high alpine find; one in rather dry *Fagus* forest with *Quercus pubescens* Willd. (Antić & Akkari 2020).

372. ***Haasea hungarica*** Verhoeff, 1928

Orobainosoma hungaricum Verhoeff, 1928.

Distribution

AT, HU, RO, SB, SI.

Habitat

Many finds are from caves, but some are epigean, from forest with, e.g., *Castanea*, *Fagus*, *Quercus*.

373. ***Haasea inflata*** (Verhoeff, 1907)

Orobainosoma inflatum Verhoeff, 1927.

Distribution

AT, HR, SI.

Habitat

Forests.

374. ***Haasea intermedia*** Mršić, 1985

Haasea lacusnigri intermedia Mršić, 1985.

Distribution

SB.

Remarks

The status of this species is questionable (Antić & Akkari 2020).

375. ***Haasea lacusnigri*** (Gulička, 1968)

Orobainosoma lacusnigri Gulička, 1968.

Distribution

MN.

Habitat

Abies-Picea forest, 1450 m a.s.l.

376. ***Haasea makarovi*** Antić & Akkari, 2020

Distribution

SB.

Habitat

Cave.

377. ***Haasea microcorna*** (Strasser, 1971)

Orobainosoma lacusnigri microcornum Strasser, 1971.

Distribution

SB.

Habitat

Cave.

378. ***Haasea musimontium*** (Strasser, 1937)

Orobainosoma musimontium Strasser, 1937.

Distribution

IT-ITA.

Habitat

Fagus forest, in litter and on tree stump.

379. ***Haasea plasana*** (Verhoeff, 1899)

Orobainosoma plasanum Verhoeff, 1899.

Distribution

BA, SB.

Habitat

One find is from pitfall traps.

380. ***Haasea pretneri*** (Strasser, 1966)

Orobainosoma pretneri Strasser, 1966.

Distribution

SI.

Habitat

Cave.

381. ***Haasea vidinensis*** (Strasser, 1973)

Orobainosoma vidinense Strasser, 1973.
Haasea guidononveilleri Makarov, 2008.

Distribution

BG, SB.

Habitat

Cave.

Genus ***Hylebainosoma*** Verhoeff, 1899

Romanosoma Ceuca, 1967 (invalidly proposed).
Romanosoma Mauriès, 2015.

This genus was revised by Tajovský *et al.* (2014).

382. ***Hylebainosoma birtei*** (Ceuca, 1967)

Romanosoma? birtei Ceuca, 1967.

Distribution

RO.

Habitat

Cave.

Remarks

A doubtful species, known only from a subadult male. Tajovský *et al.* (2014) regarded this specimen as most probably representing another species in the genus, or even a different genus. The allocation to *Hylebainosoma* is thus highly provisional.

383. ***Hylebainosoma cavernicola*** (Ceuca, 1967)

Romanosoma cavernicola Ceuca, 1967.

Distribution

RO.

Habitat

Cave at 800 m a.s.l.

384. ***Hylebainosoma gulickai*** Tajovský, Mock & Papáč, 2014

Distribution

SK

Habitat

Caves with entrances at 460–770 m a.s.l., mostly on wood.

385. ***Hylebainosoma nontronense*** Mauriès & Kime, 1999
Fig. 3C

Distribution

FR-FRA, GB-GBR.

Habitat

Forests and woodland on acidic soil in France (*Castanea*, *Quercus*, *Betula*, *Pinus*, *Pteridium*); in UK found in woodland (in *Fagus* leaf litter, under logs, heathland, and an unkempt cemetery).

Remarks

Telfer *et al.* (2015) discussed whether this species is native or introduced to the UK.

386. ***Hylebainosoma odici*** (Ceuca, 1979)

Romanosoma odici Ceuca, 1979.

Distribution

RO.

Habitat

In litter close to cave entrance at 800 m a.s.l.

387. ***Hylebainosoma oltenicum*** (Ceuca, 1967)

Romanosoma oltenica Ceuca, 1967.

Distribution

RO.

Habitat

Epigean, found under stones, 430 m a.s.l.

388. ***Hylebainosoma tatranum*** Verhoeff, 1899

Distribution

CZ, HU, PL, SK.

Habitat

Various surface and underground habitats on different bedrocks such as granite, limestone, basalt or flysh, 230–2300 m a.s.l., deciduous and coniferous forests, the dwarf *Pinus* zone above the timberline, alpine meadows and ridges with stony deposits and moraines; not in lowland or synanthropic habitats (Tajovský *et al* 2014).

Genus *Xylophageuma* Verhoeff, 1911

389. ***Xylophageuma vomrathi*** Verhoeff, 1911

Distribution

DE.

Habitat

Humid forest ravines; also on decaying wood in a cave.

390. ***Xylophageuma zschokkei*** Bigler, 1912
Fig. 2C

Distribution

BE, CH, FR-FRA.

Habitat

In cool ravines and shady, humid forests, especially under *Abies* bark, sometimes in cave entrances; from 410–1240 m a.s.l. in Switzerland.

Remarks

The record from Belgium (not shown on the map) refers to a single female found in a well (Kime 2004). See also caption to Fig. 2.

Family **Haplobainosomatidae** Verhoeff, 1909

All 19 species are endemic in the Iberian Peninsula or the Pyrenees; *Haplobainosoma lusitanum* is one of the few chordeumatidans which have been introduced to Macaronesia, in casu the Azores.

Genus *Cantabrosoma* Mauriès, 1970

391. ***Cantabrosoma rogeri*** Mauriès, 1970

Distribution

ES-SPA.

392. ***Cantabrosoma serrai*** Mauriès & Vicente, 1977

Distribution

ES-SPA.

Habitat

Cave.

Genus *Galicisoma* Mauriès, 2015

393. ***Galicisoma biltoni*** Mauriès, 2015

Distribution

ES-SPA.

Habitat

Quercus forest.

394. ***Galicisoma desmondkimei*** Mauriès, 2015

Distribution

ES-SPA, PT-POR.

Habitat

Mixed forest.

Genus *Guadarramasoma* Gilgado, Ledesma, Enghoff & Mauriès, 2017

395. ***Guadarramasoma ramosae*** Gilgado, Ledesma, Enghoff & Mauriès, 2017

Distribution

ES-SPA.

Habitat

High altitude (1600–2200 m a.s.l.). Collected in traps set in the mesovoid shallow stratum (MSS); it is uncertain whether it also occurs on the surface (Gilgado *et al.* 2017).

Genus *Haplobainosoma* Verhoeff, 1899

396. ***Haplobainosoma lusitanum*** Verhoeff, 1899

Distribution

PT-AZO (Fayal, Pico, Terceira, San Miguel, Santa Maria), PT-POR.

Habitat

Abundant in MSS in central Portucal (Eusébio *et al.* 2021). Also in caves; epigean in the Azores.

Genus ***Pyreneosoma*** Mauriès, 1959

Aragosoma Mauriès, 1971.

An endemic Pyrenean genus found at high altitudes, reviewed by Mauriès (2010).

397. ***Pyreneosoma aranense*** Mauriès, 2010

Distribution

ES-SPA.

Habitat

Shelter under granitic rock.

398. ***Pyreneosoma barbieri*** (Mauriès, 1971)

Aragosoma barbieri Mauriès 1971.

Distribution

ES-SPA, FR-FRA.

Habitat

Caves.

399. ***Pyreneosoma bessoni*** Mauriès, 1974

Distribution

FR-FRA.

Habitat

Caves.

400. ***Pyreneosoma birosense*** Mauriès, 2010

Distribution

FR-FRA.

Habitat

2300–2500 m a.s.l.

401. ***Pyreneosoma consoranense*** Mauriès, 2010

Distribution

FR-FRA.

Habitat

Scree at base of shale cliff, 2250–2300 m a.s.l.

402. ***Pyreneosoma convenarense*** Mauriès, 2010

Distribution

ES-SPA, FR-FRA.

Habitat

Under granitic rocks, 2140–2540 m a.s.l.

403. ***Pyreneosoma digitatum*** Mauriès, 1959

Distribution

FR-FRA.

Habitat

Most finds epigeic, one in a cave, one at 2500 m a.s.l.

404. ***Pyreneosoma grandicoxae*** Mauriès, 2010

Distribution

ES-SPA.

Habitat

Cave.

405. ***Pyreneosoma ribauti*** Mauriès, 1959

Distribution

ES-SPA, FR-FRA.

Habitat

Epigeic, 2200–2400 m a.s.l.

406. ***Pyreneosoma vicdessosense*** Mauriès, 2010

Distribution

FR-FRA.

Habitat

Shale cliff, 2500 m a.s.l.

Genus ***Turdulisoma*** Mauriès, 1964

Fig. 3B

The genus was revised by Mauriès (2015a). In addition to the species listed below, two possibly undescribed species of *Turdulisoma* have recently been found in Wales, UK (Gregory 2018; Owen & Gregory 2021).

407. ***Turdulisoma galiciense*** Mauriès, 2015

Distribution

ES-SPA.

Habitat

Quercus forest (?).

408. ***Turdulisoma helenreadae*** Mauriès, 2015

Distribution

ES-SPA, PT-POR.

Habitat

Forest (*Alnus*, *Pinus*), cultivated, irrigated woodland.

409. ***Turdulisoma turdulorum*** Mauriès, 1964

Distribution

PT-POR.

Family **Heterolatzeliidae** Verhoeff, 1897

This small NW Balkan family (four species) was revised by Makarov *et al.* (2011), see also Antić *et al.* (2015c).

Genus *Heterolatzelia* Verhoeff, 1897

410. ***Heterolatzelia durmitorensis*** Gulička, 1968

Heterolatzelia cornutum Gulička, 1968.

Distribution

MN.

Habitat

Abies-Picea forest. 1450–2240 m a.s.l.

411. ***Heterolatzelia karlstrasseri*** Antić & Makarov, 2015

Distribution

BA.

Habitat

Cave.

412. ***Heterolatzelia nivalis*** Verhoeff, 1897

Distribution

BA, MN.

Habitat

In dolines and pits at 1200–2100 m a.s.l.

Genus *Massarilatzelia* Makarov & Rađa, 2011

413. ***Massarilatzelia dugopoljica*** Makarov & Rađa, 2011

Distribution

HR.

Habitat

Cave.

Family **Hungarosomatidae** Ceuca, 1974

A monogeneric family of uncertain status with a circum-Pannonic distributon (Mock *et al.* 2016; Antić *et al.* 2018c).

Genus *Hungarosoma* Verhoeff, 1928

414. ***Hungarosoma bokori*** Verhoeff, 1928

Distribution

AT, CZ, HU, SK.

Habitat

Caves, as well as epigeically in forests of *Tilia-Fraxinus*, *Quercus-Carpinus* and *Fagus*.

Remarks

Males are rare, and parthenogenesis has been suggested for this species, supported by the presence of bacteria of *Wolbachia* Hertig, 1936 (Mock *et al.* 2016).

The status of this species, as that of the genus and the family, is uncertain: Antić *et al.* (2018c) pointed out that the gonopods of *H. bokori* fully coincide with those of *Ochogona* (*Octeicosisoma*) *cervina* (Verhoeff, 1899), currently placed in Craspedosomatidae. The taxonomic consequences of this insight, however, still remain to be formalized.

415. ***Hungarosoma inexpectatum*** Ceuca, 1967

Distribution

RO.

Habitat

Collected in garden soil.

Family **Lusitaniosomatidae** Schubart, 1953

Another family with only one included species.

Genus *Lusitaniosoma* Schubart, 1953

416. ***Lusitaniosoma machadoi*** Schubart, 1953

Distribution

PT-POR.

Family **Mastigophorophyllidae** Verhoeff, 1899

Thirty-five species. Endemic in C and E Europe, with two species (*Mastigona bosniensis* and *Matigophorophyllon saxonicum*) extending north into the Baltic countries.

Genus *Bucovinosoma* Tabacaru, 1978

417. ***Bucovinosoma capusei*** Tabacaru, 1978

Distribution

RO.

Genus *Haploporatia* Verhoeff, 1897

418. ***Haploporatia cervina*** Verhoeff, 1929

Distribution

AT.

Habitat

Submontane, 450–600 m a.s.l.

419. ***Haploporatia eremita*** Verhoeff, 1909

Heteroporatia macrodon Wernitzsch, 1910.

Distribution

AT, CZ, DE, HU, PL, SK.

Habitat

Forests, hygrophilous, petrophile, not above 1200 m a.s.l.

420. ***Haploporatia similis*** (Attems, 1895)

Craspedosoma simile Attems, 1895.
Heteroporatia carniolense Verhoeff, 1897.
Heteroporatia simile auct.
Haploporatia carniolensis auct.

Distribution

AT, BA, HR, IT-ITA, SI.

Habitat

Forests, e.g., *Castanaea*, *Carpinus*, *Fagus*, *Fraxinus*, *Quercus*, *Tilia*, *Acer*, *Picea*, up to 900 m a.s.l.

Genus *Heterobraueria* Verhoeff, 1897

421. ***Heterobraueria karoli*** Verhoeff, 1897

Distribution

RO.

Habitat

Under decaying wood at a forest stream.

422. ***Heterobraueria scopifera*** Verhoeff, 1898

Mastigophorophyllon scopiferum auct.

Distribution

RO.

Habitat

Alpine.

Genus *Karpatophyllon* Jawłowski, 1928

423. ***Karpatophyllon banaticum*** Ceuca, 1989

Distribution

RO.

Habitat

Under stones near broad-leaved forest.

424. ***Karpatophyllon carpaticum*** Ceuca, 1985

Distribution

RO.

Habitat

Forest at 500 m a.s.l.

425. ***Karpatophyllon dacicum*** Ceuca, 1964

Distribution

RO.

426. ***Karpatophyllon polinskii*** Jawłowski, 1928

Distribution

PL, RO, UA.

Habitat

Rocky riverbank, mixed forest, on felled *Fagus* trunk, 500–720 m a.s.l.

Genus ***Mastigona*** Cook, 1895

Poratia Verhoeff, 1895, preoccupied.
Macrotrichus Silvestri, 1896.
Heteroporatia Verhoeff, 1897.

427. ***Mastigona bosniensis*** (Verhoeff, 1897)

Heteroporatia bosniensis Verhoeff, 1897.
Heteroporatia mehelyi Verhoeff, 1897.
Heteroporatia bosniensis var. *vihorlatica* Attems, 1899.
Heteroporatia vihorlatica auct.
Mastogona vihorlatica auct.
Mastigona mehelyi auct.

Distribution

AT, BA, BG, BY, CZ, DE, HR, HU, IT-ITA, MD, PL, RO, RU-KGD, SB, SI, SK, UA.

Habitat

Euryoecious: arable land, forests, quarries, along streams; up to at least 1000 m a.s.l.

Remarks

The variability and synonymy of this widespread species were addressed by Hauser (2004b) and Lazányi & Korsós (2009).

428. ***Mastigona mutabilis*** (Latzel, 1884)
Fig. 3H

Craspedosoma mutabile Latzel, 1884.
Heteroporatia alpestre Verhoeff, 1897.
Poratia mutabilis auct.
Heteroporatia mutabilis auct.
Macrotrichus mutabilis auct.

Distribution

AT, CH, CZ, DE, HR, HU, IT-ITA, SI.

Habitat

Forest, e.g., *Larix*, also alpine; from 1350–1570 m a.s.l. in Switzerland.

Remarks

The record of *M. mutabilis* from HU is based on a drawing by Sziráki (1966), who, however, provided no details of the find (E. Lazányi pers. com.).

429. ***Mastigona transsylvanica*** (Verhoeff, 1897)

Heteroporatia transsylvanica Verhoeff, 1897.
Mastigophorophyllon transsilvanicum Attems, 1900.

Distribution

BG, RO, HU.

Habitat

Forest edges, hedges, in leaf litter and decaying wood, once in a cave; 200–1500 m a.s.l.

Genus *Mastigophorophyllon* Verhoeff, 1897

430. ***Mastigophorophyllon aberratum*** Ceuca, 1985

Distribution

RO.

Habitat

Conifer forest litter.

431. ***Mastigophorophyllon alpivagum*** (Verhoeff, 1897)

Heteroporatia alpivagum Verhoeff, 1897.
Mastogophorophyllon alpestre ssp. *bohemicum* Attems, 1900.
Mastogophorophyllon bohemicum auct.

Distribution

RO.

Habitat

Under stones and moss, 200 m a.s.l.

Remarks

The identity of the subspecies *bohemicum*, described from "Böhmen" without further information, remains uncertain (Tajovský 2001).

432. ***Mastigophorophyllon banarescui*** Ceuca, 1976

Distribution

RO.

Habitat

1800 m a.s.l.

433. ***Mastigophorophyllon bulgaricum*** Schubart, 1934

Distribution

BG.

Habitat

Old *Abies-Picea* forest; 1500 m a.s.l.

434. ***Mastigophorophyllon carpaticum*** Ceuca, 1976

Distribution

RO.

435. ***Mastigophorophyllon cirriferum*** Verhoeff, 1899

Distribution

PL, SK.

Habitat

Forests, near streams, also alpine, 1800–2000 m a.s.l.

436. ***Mastigophorophyllon crinitum*** Attems, 1926

Distribution

RO, UA.

437. ***Mastigophorophyllon deubeli*** Verhoeff, 1898

Distribution

RO.

438. ***Mastigophorophyllon jickelii*** Verhoeff, 1900

Distribution

RO.

439. ***Mastigophorophyllon moldavicum*** Ceuca, Crisan & Olaru, 1996

Distribution

RO.

440. ***Mastigophorophyllon parapenicilligerum*** Crisan & Ceuca, 1998

Distribution

RO.

441. ***Mastigophorophyllon penicilligerum*** Verhoeff, 1899

Distribution

RO.

Habitat

Forest, near small stream.

442. ***Mastigophorophyllon saxonicum*** Verhoeff, 1910

Distribution

BY, CZ, DE, EE, LT, LV, PL, RO, RU-KGD, UA.

Habitat

Humid broad-leaved forests, *Alnus* swamps, also meadows.

Remarks

Apparently a species in decline; thus, there are no newer finds from Estonia (Sammet *et al.* 2018), nor from Latvia (Spuņģis 2010) or Germany (Reip *et al.* 2012).

443. ***Mastigophorophyllon serrulatum*** Attems, 1926

Distribution

RO, UA.

Habitat

Among *Pinus* and *Alnus viridis*. Ca 1550 m a.s.l.

Genus *Paraporatia* Ceuca, 1967

444. ***Paraporatia racovitzai*** Ceuca, 1967

Distribution

RO.

Genus *Taurinosoma* Verhoeff, 1932

445. ***Taurinosoma graniticola*** Verhoeff, 1932

Distribution

IT-ITA.

Habitat

In a deep gorge, under wet leaf litter, 700–750 m a.s.l.

Genus *Tessinosoma* Verhoeff, 1911

446. ***Tessinosoma caelebs*** Verhoeff, 1911

Tessinosoma ligurinum Verhoeff, 1930.

Distribution

CH, IT-ITA.

Habitat

Forest, e.g., *Alnus*, *Castanea*, *Quercus*, *Corylus*, *Populus*; from 193–800 m a.s.l.

Remarks

The lack of males from the northern part of the distribution area of this species was interpreted by Verhoeff (1921) as "klimatisch-geographisches Parthenogenese". This seems to have been the first time that the phenomenon "geographical parthenogenesis" was recognized (see Enghoff 1994).

Genus *Thaumaporatia* Verhoeff, 1900

447. ***Thaumaporatia apenninorum*** Verhoeff, 1909

Distribution

IT-ITA.

Habitat

Castanea forest, under leaf litter and wilted fruit shells.

448. ***Thaumaporatia apuana*** Verhoeff, 1909

Distribution

IT-ITA.

Habitat

Mixed broad-leaved forest, *Alnus*, under leaf litter.

449. ***Thaumaporatia oropensis*** Verhoeff, 1936

Distribution

IT-ITA.

Habitat

1000–1050 m a.s.l., forested ravine with stream.

450. ***Thaumaporatia plumigera*** **(**Verhoeff, 1900)

Heteroporatia plumigerum Verhoeff, 1900.

Distribution

IT-ITA.

Habitat

Under moist moss cushions in open *Picea* forest.

451. ***Thaumaporatia sorattina*** Verhoeff, 1951

Distribution

IT-ITA.

Family **Neoatractosomatidae** Verhoeff, 1901

Including Faginidae Attems, 1926. Twenty-two species. Endemic in southern C Europe and the Balkans.

Genus *Epirosomella* Strasser, 1976

452. ***Epirosomella loebli*** Strasser, 1976

Distribution

GR-GRC.

Habitat

Sifted under *Rhododendron*.

Genus *Fagina* Attems, 1904

453. ***Fagina silvatica*** (Attems, 1904)

Heterolatzelia sylvatica Attems, 1904.

Distribution

BA.

Habitat

Fagus and *Abies* forest.

Genus *Microbrachysoma* Verhoeff, 1897

454. ***Microbrachysoma alpestre*** Verhoeff, 1897

Distribution

BA.

Habitat

1650 m a.s.l., above the tree limit, under deeply embedded stones close to snow.

Genus *Neoatractosoma* Silvestri, 1898

455. ***Neoatractosoma herzegowinense*** Verhoeff, 1901

Distribution

BA, MN.

Habitat

Fagus forest.

456. ***Neoatractosoma kleinenbergi*** Silvestri, 1898

Distribution

IT-SI.

457. ***Neoatractosoma strandi*** Attems, 1927

Distribution

IT-ITA.

Genus *Osellasoma* Mauriès, 1984

458. ***Osellasoma caoduroi*** Mauriès, 1984

Distribution

IT-ITA.

Habitat

Cave, 1600 m a.s.l.

Genus *Paeonisoma* Verhoeff, 1932

459. ***Paeonisoma faucium*** Verhoeff, 1932

Distribution

MK.

Habitat

Probably cave.

Genus ***Pseudocraspedosoma*** Silvestri, 1898

Trimerophoron Rothenbühler, 1900.
Mesotrimeron Verhoeff, 1912.

460. ***Pseudocraspedosoma alpivagum*** (Verhoeff, 1901)

Trimerophoron grypischium alpivagum Verhoeff, 1901.
Trimerophoron alpivagum auct.

Distribution

IT-ITA.

461. ***Pseudocraspedosoma bensai*** (Manfredi, 1935)

Trimerophoron bensai Manfredi, 1935.

Distribution

IT-ITA.

Habitat

Cave.

462. ***Pseudocraspedosoma brentanum*** (Verhoeff, 1930)

Trimerophoron brentanum Verhoeff, 1930.

Distribution

IT-ITA.

Habitat

Mixed forest, 950 m a.s.l., under moss.

463. ***Pseudocraspedosoma falteronense*** (Manfredi, 1951)

Trimerophoron falteronense Manfredi, 1951.

Distribution

IT-ITA.

464. ***Pseudocraspedosoma grypischium*** (Rothenbühler, 1900)

Trimerophoron grypischium Rothenbühler, 1900.
Trimerophoron grypischium germanicum Verhoeff, 1901.
Trimerophoron germanicum auct.

Distribution

AT, CH, DE, IT-ITA.

Habitat

From 540–2950 m a.s.l. in Switzerland, preferring the alpine and subapine levels. Forest and open vegetation including screes.

465. ***Pseudocraspedosoma nemorense*** Silvestri, 1898

Trimerophoron nemorense auct.

Distribution

IT-ITA.

Habitat

Cave.

466. ***Pseudocraspedosoma peniculorum*** **(**Verhoeff, 1910)

Trimerophoron peniculorum Verhoeff, 1910.
Mesotrimeron peniculorum auct.

Distribution

IT-ITA.

Habitat

Limestone canyon with bushes, 750 m a.s.l., in litter among limestone rubble (Verhoeff 1910).

467. ***Pseudocraspedosoma vestonense*** (Verhoeff, 1934)

Trimerophorom vestonense Verhoeff, 1934.

Distribution

IT-ITA.

Habitat

In dark humus.

Genus *Schizmohetera* Mršić, 1987

468. ***Schizmohetera curcici*** Makarov, 2001
Fig. 4A

Distribution

MK.

Habitat

Cave.

469. ***Schizmohetera olympica*** Mauriès, 2003

Distribution

GR-GRC.

Habitat

Epigean, 700–2100 m a.s.l.

470. ***Schizmohetera sketi*** Mršić, 1987

Distribution

MK.

Habitat

Cave.

Genus *Trimerophorella* Verhoeff, 1902

471. ***Trimerophorella ornata*** (Faës, 1902)

Craspedosoma ornatum Faës, 1902.

Distribution

CH.

Habitat

2200 m a.s.l.

472. ***Trimerophorella paradisia*** Meyer, 1983

Distribution

IT-ITA.

Habitat

High alpine grassland, 2900 m a.s.l.

473. ***Trimerophorella rhaetica*** (Rothenbühler, 1901)

Trimerophoron rhaeticum Rothenbühler, 1901.
Trimerophorella nivicomes Verhoeff, 1902.
Trimerophorella glaciei Verhoeff, 1912.

Distribution

AT, CH, IT-ITA.

Habitat

Mostly found at alpine levels (grass heaths, rocky slopes, periglacial areas, subnival grassland fragments, *Loiseleuria* Desv. heaths), open coniferous forests. Altitude range 1100–2950 m a.s.l.

Remarks

Records from Italy are dubious (Gruber 2009). Meyer (1990) reported a four-year life cycle for this species.

Family **Opisthocheiridae** Ribaut, 1913

In addition to the 37 SW European species, this family includes *Ceratosphys maroccana* Mauriès, 1985, from North Africa (see Mauriès 1985). *Ceratosphys poculifer* is one the few chordeumatidans which have been introduced to Macaronesia, in casu the Canary Islands.

Genus *Brachytropisoma* Silvestri, 1898

474. ***Brachytropisoma giardinae*** Silvestri, 1898

Distribution

IT-SI.

Genus ***Ceratosphys*** Ribaut, 1920

Fuentea Brolemann, 1920.
Proceratosphys Mauriès & Vicente, 1977.

Mauriès (2012, 2014) gave an overview of this genus and a key to its then known species.

475. ***Ceratosphys amoena*** Ribaut, 1920
Fig. 3G

Ceratosphys confusa Ribaut, 1955.
Ceratosphys dentata Ribaut, 1956.
Ceratosphys taurus Ribaut, 1956.

Distribution

BE, FR-FRA, GB-GBR.

Habitat

Largely montane, in woods which are wet and/or have deep litter. In *Fagus* woodland in Wales.

Remarks

Telfer *et al.* (2015) discussed whether this species is native or introduced to the UK. Five subspecies have been described from the Pyrenees and the Montagne Noire in France, but only *C. amoena* ssp. *confusa* has been found outside France: in Belgium and Wales (Telfer *et al.* 2015).

476. ***Ceratosphys angelieri*** Mauriès, 1964

Distribution

PT-POR.

477. ***Ceratosphys bakeri*** Mauriès, 1990

Distribution

PT-POR.

Habitat

Found in a shrubby area (*Ulex densus* Welw. ex Webb and *Quercus coccifera* L.).

478. ***Ceratosphys banyulensis*** Brolemann, 1926

Distribution

FR-FRA.

Habitat

Close to the Mediterranean Sea.

479. ***Ceratosphys cryodeserti*** Gilgado, Mauriès & Enghoff, 2015

Distribution

ES-SPA.

Habitat

Abundant in the mesovoid shallow stratum at 2500 to more than 3000 m a.s.l. in almost completely barren areas (cold deserts), but also on the surface (Gilgado *et al.* 2015b).

480. ***Ceratosphys deharvengi*** Mauriès, 1978

Ceratosphys deharvingi Mauriès, 1978

Distribution

ES-SPA.

Habitat

At 1500 m a.s.l.

Remarks

The species was named after L. Deharveng, hence the emendation of the species epithet (e.g., Mauriès 1990b, 2012) is justified.

481. ***Ceratosphys escolai*** Mauriès, 2013

Distribution

ES-BAL (Mallorca).

Habitat

Cave.

482. ***Ceratosphys fernandoi*** Mauriès, 2014

Distribution

ES-SPA.

Habitat

Cave.

483. ***Ceratosphys flammeola*** Mauriès, 2014

Distribution
ES-SPA.

Habitat
Cave.

484. ***Ceratosphys geronensis*** Mauriès, 1963

Distribution
ES-SPA.

485. ***Ceratosphys guttata*** Ribaut, 1956

Distribution
ES-SPA, FR-FRA.

Habitat
Cold and humid soils above the tree line. 2350–2450 m a.s.l.

486. ***Ceratosphys hispanica*** Ribaut, 1920

Distribution
ES-SPA.

Habitat
Cave.

487. ***Ceratosphys jabaliensis*** Mauriès, 2013

Distribution
ES-SPA.

Habitat
Cave.

488. ***Ceratosphys mariacristinae*** Mauriès, 2013

Ceratosphys n. sp. – Enghoff & Vicente 2000.

Distribution
ES-BAL (Menorca).

489. ***Ceratosphys nivium*** Ribaut, 1927

Distribution
ES-SPA, FR-FRA.

Habitat
Alpine slopes under snow cover for much of the year. At 2400 m a.s.l. in Spain.

490. ***Ceratosphys nodipes*** (Attems, 1952)

Hispaniodesmus nodipes Attems, 1952.

Distribution

ES-SPA.

Habitat

Collected at 1400 m a.s.l. A similar form (*Ceratosphys* aff. *nodipes*) has been found in a cave (Mauriès 2013).

491. ***Ceratosphys occidentalis*** Mauriès, 1976

Ceratosphys nivium occidentalis Mauriès, 1976

Distribution

(ES-SPA?), FR-FRA.

Habitat

Lake shore at 2350 m a.s.l.

Remarks

Possibly also in Spain, Jaca region (Mauriès 1990b).

492. ***Ceratosphys picta*** Ribaut, 1951

Distribution

ES-SPA, FR-FRA.

Habitat

An accidental cavernicole.

493. ***Ceratosphys poculifer*** (Brolemann, 1920)

Fuentea poculifer Brolemann, 1920.

Distribution

ES-CAN (Gran Canaria), ES-SPA.

Habitat

On Gran Canaria, found on shady rock, under moss and in soil on gravelly slope, under *Adenocarpus* DC. bush, 1300–1450 m a.s.l.

494. ***Ceratosphys simoni*** Ribaut, 1920

Distribution

FR-FRA.

Habitat

2400–2800 m a.s.l.

495. ***Ceratosphys solanasi*** (Mauriès & Vicente, 1977)

Proceratosphys solanasi Mauriès & Vicente, 1977

Distribution

ES-SPA.

Habitat

Cave.

496. ***Ceratosphys soutadei*** Mauriès, 1969

Distribution

ES-SPA.

Habitat

A cryophilous species, collected at the surface of a snowfield at 2800 m a.s.l., and in the MSS at 2500 m a.s.l.

497. ***Ceratosphys toniserrai*** Mauriès, 2013

Distribution

ES-SPA.

Habitat

1240 m a.s.l.

498. ***Ceratosphys vandeli*** Mauriès, 1963

Distribution

FR-FRA.

Habitat

2400 m a.s.l.

499. ***Ceratosphys vicenteae*** Mauriès, 1990

Distribution

ES-SPA.

Habitat

700 m a.s.l.

Genus *Hispaniosoma* Ribaut, 1913

500. ***Hispaniosoma racovitzai*** Ribaut, 1913

Distribution

ES-SPA, FR-FRA.

Habitat

Cave.

Genus ***Marquetiella*** Jeekel, 1969

Marquetia Ribaut, 1905, preoccupied.

501. ***Marquetiella auriculata*** (Ribaut, 1920)

Marquetia auriculata Ribaut, 1920.

Distribution

FR-FRA.

Habitat

Leaf litter.

502. ***Marquetiella lunata*** (Ribaut, 1920)

Marquetia lunata Ribaut, 1920.

Distribution

ES-SPA, FR-FRA.

Habitat

Deciduous, mixed and coniferous forests, 950–1450 m a.s.l.

503. ***Marquetiella pyrenaica*** (Ribaut, 1905)

Marquetia pyrenaica Ribaut, 1905.

Distribution

FR-FRA.

Habitat

Leaf litter.

Genus *Opisthocheiron* Ribaut, 1913

504. ***Opisthocheiron canayerensis*** Mauriès & Geoffroy, 1982

Distribution

FR-FRA.

Habitat

Deep caves, a long way from their entrances.

505. ***Opisthocheiron cornutum*** Ribaut, 1922

Distribution

FR-FRA.

Habitat

Under leaf litter and logs.

506. ***Opisthocheiron elegans*** Ribaut, 1922

Distribution

ES-SPA, FR-FRA.

Habitat

Woodland, mainly in decomposing leaf litter. Known to climb plants.

507. ***Opisthocheiron fallax*** Ribaut, 1922

Distribution

FR-FRA.

508. ***Opisthocheiron lacazei*** Brolemann, 1932

Distribution

FR-FRA.

Habitat

In a ravine.

509. ***Opisthocheiron penicillatum*** Ribaut, 1913

Distribution

ES-SPA, FR-FRA.

Habitat

Under leaf litter. Accidentally in caves.

Genus *Sireuma* Reboleira & Enghoff, 2014

510. ***Sireuma nobile*** Reboleira & Enghoff, 2014

Distribution

PT-POR.

Habitat

Cave, 350 m a.s.l.

Family **Trachygonidae** Cook, 1896

Endemic to a small area extending from Switzerland to Slovakia, Hungary and Croatia. Three genera, five species.

Genus ***Acrochordum*** Attems, 1899

Gottscheeosoma Verhoeff, 1927.
Heteracrochordum Loksa, 1960 (described as subgenus of *Acrochordum*).

511. ***Acrochordum evae*** Loksa, 1960

Heteracrochordum evae auct.

Distribution

HU, SK.

Habitat

Fagus forest on limestone; humus soil in bottom of sinkhole in limestone; litter and soil on forested slope of volcanic bedrock, 150–275 m a.s.l.

Remarks

Recently recorded from SK (Mock *et al.* 2019). The morphology and taxonomy of this species is subject of an ongoing study by A. Mock *et al.*

512. ***Acrochordum flagellatum*** Attems, 1899

Gottscheeosoma scabrum Verhoeff, 1927.
Acrochordeum tarnowanum Strasser, 1942.

Distribution

AT, BA, HR, SI.

Habitat

In *Fagus-Picea* forest at 1280 m a.s.l., under pieces of *Abies* bark on the ground.

513. ***Acrochordum plitvicense*** (Verhoeff, 1929)

Gottscheeosoma plitvicense Verhoeff, 1929.

Distribution

HR.

Habitat

On a resupinate fungus on a moist *Fagus* log.

Genus *Halleinosoma* Verhoeff. 1913

514. ***Halleinosoma noricum*** Verhoeff, 1913
Fig. 2A

Distribution

AT, CH, DE.

Habitat

Submontane to montane, altitude range 560–1480 m a.s.l.; mainly in mixed *Fagus* forests; found under deeply embedded stones, under logs and leaf litter (*Fagus*, *Acer*), under calcareous rocks.

Remarks

Possibly a synonym of *Trachygona capito*; see Gruber (2009). The only other species described in the genus *Halleinosoma* is possibly as well a synonym of *Trachygona capito* (q.v.). The records from Switzerland may refer to a different species (J. Spelda pers. com.).

Genus ***Trachygona*** Cook, 1896

Trachysoma Attems, 1895, preoccupied.

515. ***Trachygona capito*** (Attems, 1894)

Trachysoma capito Attems, 1894.
? *Halleinosoma styricum* Verhoeff, 1929.

Distribution

AT.

Habitat

Submontane to subalpine; altitude range 350–1700 m a.s.l.; in *Fagus* leaf litter, under high herbs and *Pinus mugo* Turra., in *Picea* forest/plantation, in mixed deciduous forest.

Remarks

See Gruber (2009) concerning the status of *Halleinosoma styricum*.

Family **Vandeleumatidae** Mauriès, 1970

See Serra & Mauriès (2015) for a discussion of this endemic SW European family. Fifteen species.

Genus ***Alavasoma*** Mauriès & Vicente, 1977

The systematic position of this genus is unclear. Originally described in Anthogonidae (Mauriès & Vicente 1977), it was listed in Vandeleumatidae by Spelda (2015). We provisionally keep it in this family although Mauriès (2014) did not include it in this list of vandeleumatid genera.

516. ***Alavasoma muniesai*** Mauriès & Vicente, 1977

Distribution

ES-SPA.

Habitat

Cave.

Genus *Eopsychrosoma* Serra & Mauriès, 2015

517. ***Eopsychrosoma serrapradense*** Serra & Mauriès, 2015

Distribution

ES-SPA.

Habitat

Quercus woodland (*Quercetum mediterraneo-montanum*); mostly in the upper soil layers, only sparsely in pitfall traps.

Genus *Guipuzcosoma* Vicente & Mauriès, 1980

518. ***Guipuzcosoma comasi*** Vicente & Mauriès, 1980

Distribution

ES-SPA.

Habitat

Cave.

Genus ***Hypnosoma*** Ribaut, 1952

Mauriès (1968) reviewed this genus, noting that species of *Hypnosoma* aren't rare in leaf litter and under stones in *Quercus-Picea* forest on the northern slopes of the central Pyrenees.

519. ***Hypnosoma exornatum*** Ribaut, 1952

Distribution

FR-FRA.

Habitat

Abies forest. Found in autumn in 'cocoons' attached to leaf axils of hypnaceous mosses.

520. ***Hypnosoma juberthieorum*** Mauriès, 1968

Distribution

FR-FRA.

521. ***Hypnosoma pallidum*** Ribaut, 1952

Distribution

ES-SPA, FR-FRA.

Habitat

In leaf litter in spring; in autumn enclosed in 'cocoons' attached to leaf axils of *Hypnum* Hedw. mosses.

Genus *Miniusoma* Mauriès, 2015

522. ***Miniusoma litorea*** Mauriès, 2015

Distribution

PT-POR.

Habitat

Coastal dune system.

Genus ***Niphatrogleuma*** Mauriès, 1986

The assignment of this genus to Vandeleumatidae is highly provisional (Mauriès 1986).

523. ***Niphatrogleuma wildbergeri*** Mauriès, 1986

Distribution

CH.

Habitat

Cave at 2455 m a.s.l.

Genus ***Psichrosoma*** Mauriès, 2013

Psychrosoma Mauriès, 1970, preoccupied.

An unidentified, apparently undescribed species of *Psichrosoma*, has been found in Wales, UK (Gregory 2018; Owen & Gregory 2021). See Fig. 3A.

524. ***Psichrosoma baeticaense*** Mauriès, 2013

Typhlopsychrosoma baeticaense auct.

Distribution

ES-SPA.

Habitat

Described from caves and subsequently found in the MSS (Gilgado *et al.* 2015c).

525. ***Psichrosoma breuili*** (Mauriès, 1970)

Psychrosoma breuili Mauriès, 1970.
Typhlopsychrosoma breuili auct.

Distribution

ES-SPA.

Habitat

Cave.

526. ***Psichrosoma tarraconense*** (Mauriès, 1970)

Psychrosoma tarraconense Mauriès, 1970.
Typhlopsychrosoma tarraconense auct.

Distribution

ES-SPA.

Habitat

Cave.

Genus *Strangulogona* Mauriès, 2015

527. ***Strangulogona lugoensis*** Mauriès, 2015

Distribution

ES-SPA.

Habitat

Small woodland.

Genus ***Typhlopsychrosoma*** Mauriès, 1982

Psychrosoma subgen. *Typhlopsychrosoma* Mauriès, 1982, cf. Gilgado *et al.* (2015c) and Serra & Mauriès (2015).

528. ***Typhlopsychrosoma fadriquei*** (Mauriès & Vicente, 1977)

Psychrosoma fadriquei Mauriès & Vicente, 1977.

Distribution

ES-SPA.

Habitat

Cave.

Genus *Vandeleuma* Mauriès, 1966

529. ***Vandeleuma hispanicum*** Ceuca, 1967

Distribution

ES-SPA.

Habitat

Cave.

530. ***Vandeleuma vasconicum*** Mauriès, 1966

Distribution

ES-SPA, FR-FRA.

Habitat

Cave.

Family **Verhoeffiidae** Verhoeff, 1899

A monotypic family endemic to south C Europe: one genus, four species.

Genus ***Haplogona*** Cook, 1895

Latzelia Verhoeff, 1895, preoccupied.
Verhoeffia Brölemann, 1895.
Protochordeuma Silvestri, 1898.

531. ***Haplogona carynthiaca*** (Strasser, 1967)

Verhoeffia carynthiaca Strasser, 1967.

Distribution

AT.

Habitat

Montane, 1100 m a.s.l., in fern roots.

532. ***Haplogona gestri*** (Silvestri, 1898)

Protochordeuma gestri Silvestri, 1898.
Verhoeffia gestri auct.
Verhoeffia gestroi auct.

Distribution

IT-ITA.

Habitat

Laurus L. and *Castanea* litter.

533. ***Haplogona oculodistincta*** (Verhoeff, 1893)
Fig. 2D

Chordeuma oculodistinctum Verhoeff, 1893.
Verhoeffia oculodistincta auct.
Chordeuma gracense Attems, 1895.
Verhoeffia illyrica Verhoeff, 1899.
Latzelia illyrica auct.

Distribution

AT, CZ, HR, IT-ITA, SI, SK.

Habitat

In valleys and low highlands, in ravines, screes, gorges, in forest soil under litter and stones, e.g., *Castanea*, *Fraxinus*, *Acer*, *Fagus*, *Picea*. Synanthropic in Vienna. Regarded by Strasser (1959) as an expansive species which may occupy suboptimal habitats.

534. ***Haplogona rothenbuehleri*** (Verhoeff, 1900)

Verhoeffia rothenbuehleri Verhoeff, 1900.

Distribution

AT, IT-ITA, SI.

Habitat

Castanea forest, in moss cushions.

Discussion

Comparison with the order Julida

With 534 European species, the Chordeumatida rival the order Julida which was treated by Kime & Enghoff (2017) who included 593 European species of the order. A comparison between the two orders therefore invites itself. Table 4 compares the two orders with regard to the numbers of species, numbers of 50 km square records, number and proportion of species recorded from only one 50 km square, and number and proportion of purely subterranean species, i.e., species recorded only from caves or MSS. The additional species of Julida listed in Table 5 are not considered for this comparison.

An important difference between Julida and Chordeumatida is that the Julida includes very many (92 ~ 15% of the total) species endemic to the Macaronesian archipelagos (Azores, Madeira, Canary Islands) whereas the Chordeumatida have no Macaronesian endemics (and very few Macaronesian records altogether). Table 4 includes a column for Julida without Macaronesian endemics (i.e., the genera *Acipes* Attems, 1937 (7 species, 12 records), *Thalassisobates* Verhoeff, 1908 (1 species, 1 record), *Cylindroiulus* Verhoeff, 1894 (32 species, 36 records) and *Dolichoiulus* Verhoeff, 1900 (52 species, 53 records). The numbers in this column are thus more comparable with those for Chordeumatida.

The data in Table 4 show that

- Chordeumatida is the largest family of millipedes in continental Europe, i.e., not counting the endemic Macaronesian julidans;
- there are much fewer 50 km square records of Chordeumatida than of Julida;
- the chordeumatidan species known from the highest number of 50 km squares (*Craspedosoma raulinsii*) has twice as high a share (12.2%) of the total number of 50 km square records as the julidan species with the highest number of such records (*Ommatoiulus sabulosus* (Linnaeus, 1758), 6.1%);
- no less than 53.7% of the chordeumatidan species have been recorded from only one 50 km square. For the non-Macaronesian julids, the corresponding percentage is 29.6%;
- Chordeumatida are much more concentrated in southern Europe than Julida: only 6.4% of the chordeumatidan species occur N of ca 48° N vs 13.8% of the non-Macaronesian Julida;
- the percentage of species known only from caves or other underground habitats is much higher (34.7%) in Chordeumatida than in Julida (20.0%).

Given the much lower number of records of Chordeumatida, it is not surprising that the relative number of species known only from one 50 km square is higher than in the Julida. Nevertheless, it is clear that species of Chordeumatida as a rule are particularly localized. Figure 7 visualizes this: the frequency distribution of numbers of 50 km squares per species is much more concave for Chordeumatida than for Julida. The high percentage of underground species certainly contributes to this picture. Another factor that might play a role is that Chordeumatida are not so easy to find, and certainly not at all easy to work with taxonomically. This may be reflected in the graph shown in Fig. 8 where the distribution per decade of the year in which the valid name of each species was published. Although the two orders show very much the same pattern (a maximum around the year 1900, a low in the 1940s and 50s – probably an effect of the second World War – , another low around the year 2000, but luckily increased activity in the 2010s), the description of julidan species started much earlier than that of chordeumatidans: thirty-one julidan species had been given names described before 1870, compared with only three chordeumatidan ones.

The European millipede fauna – updates on other orders

Volumes 1 and 2 of the atlas (Kime & Enghoff 2011, 2017) covered 492 and 593 species, respectively. With the 534 species treated in the present, last volume, a total of 1619 European millipede species have

Table 4. A numerical comparison of Chordeumatida and Julida. Data on Julida from Kime & Enghoff (2017). Macaronesian endemics constitute a significant proportion (15%) of the julidan species. As there are no Macaronesian endemics in the Chordeumatida, the numbers for Julida without Macaronesian endemics are more comparable to those for Chordeumatida. See main text.

	Julida	**Julida without Macaronesian endemics**	**Chordeumatida**
No. of species	593	500	534
No. of 50 km squares records	13229	13129	3600
Average no. of 50 km squares per species	22.3	26.3	6.7
Max. no. of 50 km squares per species	796 *Ommatoiulus sabulosus*, 6.0 % of all records	796 *Ommatoiulus sabulosus*, 6.1 % of all records	438 *Craspedosoma raulinsii*, 12.2% of all records
No. and percentage of species recorded from only one 50 km square	236 (39.8%)	148 (29.6%)	285 (53.7%)
No. and percentage of species recorded N of ca 48° N	69 (11.6%)	69 (13.8%)	34 (6.4%)
No. of species with habitat information	528	436	461
No. and percentage of species recorded only from caves/MSS (out of species with habitat information)	96 (18.2%)	87 (20.0%)	160 (34.7%)

been mapped. Whereas the present volume claims to cover knowledge on European Chordeumatida up to and including 2020, the previous volumes are no longer completely up to date. Volumes 1 and 2 included information available by the end of 2007 (Kime & Enghoff 2011) and by the end of 2014, respectively, but in an appendix Kime & Enghoff (2017) gave some post-2014 updates concerning Julida. Table 5 summarizes these, as well as other additions and deletions. A different type of change concerns the transfer of a species from one genus to another (e.g., Vagalinski & Lazányi 2018); such changes are not included in Table 5, nor are new records of a species to a particular geographical area.

Altogether, 67 species have been added, while seven have been deleted (including one of those which was added!), bringing the total number of known European millipede species up to 1679.

Acknowledgements

The Atlas of European millipedes has very much been a team effort. The acknowledgements in the previous volumes (Kime & Enghoff 2011, 2017) include names of the numerous persons who have contributed to the atlas in one way or another over the years. The support of these persons has continued to be important for the present volume as well.

Additional specific support for this volume has been generously given by several colleagues:

Records of species, information on taxonomy, distribution and habitat, as well as other useful comments were provided by Dragan Antić (who painstakingly read through all the species accounts and, together

Table 5 (continued on next three pages). Additions to and deletions from the European millipede fauna since Kime & Enghoff (2017, order Julida), including species mentioned in appendix 1 to that paper, and Kime & Enghoff (2011, remaining orders except Chordeumatida).

Order	Family	Species	Added / Distribution	Deleted	Reference
1. Callipodida	Dorypetalidae	*Lusitanipus xanin* Gilgado, 2020	new species / ES-SPA		Gilgado *et al*. (2020)
2. Callipodida	Schizopetalidae	*Acanthopetalum rhodopinum* Stoev, 2008	new species / BG		Stoev (2008)
3. Glomerida	Glomeridae	*Glomeris apuana* Verhoeff, 1911	resurrected / IT-ITA		Wesener (2015)
4. Glomerida	Glomeridae	*Glomeris jugoslavica* Kovačević, 1923	overlooked, dubious / HR		Kovačević (1923)
5. Glomerida	Glomeridae	*Glomeris larii* Verhoeff, 1921		synonym of *G. klugii* Brandt, 1833	Wesener & Conrad (2016)
6. Glomerida	Glomeridae	*Glomeris malmivaga* Verhoeff, 1912		synonym of *G. ornata* C.L. Koch, 1847	Wesener (2015)
7. Glomerida	Glomeridae	*Hyleoglomeris faberi* Makarov, Ćurčić, Antić, Tomić, Ćurcić, Ilić & Lučić, 2013	new species / SB		Makarov *et al.* (2013)
8. Glomerida	Glomeridae	*Hyleoglomeris insularis* Golovatch, 2013	new species / GR-DOD		Golovatch (2013a)
9. Glomerida	Glomeridae	*Hyleoglomeris subreducta* Golovatch, 2013	new species / GR-GRC		Golovatch (2013a)
10. Glomerida	Glomeridae	*Hyleoglomeris translucida* Golovatch, 2013	new species / GR-DOD		Golovatch (2013a)
11. Julida	Blaniulidae	*Archiboreoiulus serbansarbui* Giurginca, Vănoaica, Šustr & Tajovský, 2020	new species / RO		Giurginca *et al.* (2020)
12. Julida	Blaniulidae	*Cibiniulus slovacus* Antić, Mock & Enghoff, 2015	new species / SK		Antić *et al*. (2015b)
13. Julida	Blaniulidae	*Thassoblaniulus radjai* Antić & Enghoff, 2015	new species / AL		Antić *et al.* (2015b)
14. Julida	Julidae	*Byzantorhopalum clavamum* Vagalinski & Lazányi, 2018	new species / GR-GRC		Vagalinski & Lazányi (2018)
15. Julida	Julidae	*Cylindroiulus villumi* Reboleira & Enghoff, 2018	new species / PT-POR		Reboleira & Enghoff (2018)
16. Julida	Julidae	*Cyphobrachyiulus graeus* Vagalinski & Lazányi, 2018	new species / GR-CYC		Vagalinski & Lazányi (2018)
17. Julida	Julidae	*Cyphobrachyiulus spartanus* Vagalinski & Lazányi, 2018	new species / GR-GRC		Vagalinski & Lazányi (2018)
18. Julida	Julidae	*Graecoiulus skopelius* Vagalinski & Lazányi, 2018	new species / GR-GRC		Vagalinski & Lazányi (2018)

Table 5 (continued).

Order	Family	Species	Added / Distribution	Deleted	Reference
19. Julida	Julidae	*Hylopachyiulus corylorum* (Verhoeff, 1907)	resurrected / HR, IT-ITA, SI		Antić *et al*. (2018b)
20. Julida	Julidae	*Hylopachyiulus ocellatus* Antić & Akkari, 2018	new species / HR		Antić *et al*. (2018b)
21. Julida	Julidae	*Italoiulus poseidoni* Vagalinski & Lazányi, 2018	new species / GR-CYC		Vagalinski & Lazányi (2018)
22. Julida	Julidae	*Julus alexandrae* Evsyukov, 2016	new species / RU-RUS		Evsyukov (2016)
23. Julida	Julidae	*Ommatoiulus alacygni* Akkari & Enghoff, 2017	new species / PT-POR		Akkari & Enghoff (2017)
24. Julida	Julidae	*Ommatoiulus avatar* Akkari & Enghoff, 2015	new species / ES-SPA		Akkari *et al*. (2015)
25. Julida	Julidae	*Ommatoiulus camurus* Akkari & Enghoff, 2017	new species / PT-POR		Akkari & Enghoff (2017)
26. Julida	Julidae	*Ommatoiulus cervinus* (Verhoeff, 1910)		synonym of *O. moreleti* (Lucas, 1860)	Akkari & Enghoff (2017)
27. Julida	Julidae	*Ommatoiulus cingulatus* (Attems, 1927)		synonym of *O. lusitanus* (Verhoeff, 1895)	Akkari & Enghoff (2017)
28. Julida	Julidae	*Ommatoiulus denticulatus* Akkari & Enghoff, 2017	new species / PT-POR		Akkari & Enghoff (2017)
29. Julida	Julidae	*Ommatoiulus litoralis* Akkari & Enghoff, 2017	new species / PT-POR		Akkari & Enghoff (2017)
30. Julida	Julidae	*Ommatoiulus longicornis* Akkari & Enghoff, 2018	new species / ES-SPA		Akkari *et al*. (2018)
31. Julida	Julidae	*Ommatoiulus staglae* Akkari & Enghoff, 2017	new species / PT-POR		Akkari & Enghoff (2017)
32. Julida	Julidae	*Ommatoiulus stellaris* Akkari & Enghoff, 2017	new species / PT-POR		Akkari & Enghoff (2017)
33. Julida	Julidae	*Omobrachyiulus strasseri* Vagalinski & Lazáyi, 2018	new species / GR-CYC		Vagalinski & Lazányi (2018)
34. Julida	Julidae	*Typhloiulus balcanicus* Antić, 2017	new species / SB		Antić *et al*. (2017)
35. Julida	Julidae	*Typhloiulus bulgaricus* Vagalinski, Stoev & Enghoff, 2015	new species / BG		Vagalinski *et al.* (2015)
36. Julida	Julidae	*Typhloiulus clavatus* Antić, 2018	new species / HR		Antić *et al*. (2018a)
37. Julida	Julidae	*Typhloiulus gracilis* Antić, 2018	new species / HR		Antić *et al.* (2018a)

Table 5 (continued).

Order	Family	Species	Added / Distribution	Deleted	Reference
38. Julida	Julidae	*Typhloiulus opisthonodus* Antić, 2018	new species / HR		Antić *et al.* (2018a)
39. Julida	Julidae	*Typhloiulus orpheus* Vagalinski, Stoev & Enghoff, 2015	new species / BG		Vagalinski *et al.* (2015)
40. Julida	Julidae	*Typhloiulus parvulus* Antić & Dražina, 2018	new species / HR		Antić *et al.* (2018a)
41. Julida	Julidae	*Typhloiulus rhodopinus* Vagalinski, Stoev & Enghoff, 2015	new species / BG, GR-GRC		Vagalinski *et al.* (2015)
42. Julida	Julidae	*Typhloiulus staregai* Strasser, 1973		synonym of *T. strictus* (Latzel, 1882)	Vagalinski *et al.* (2015)
43. Platydesmida	Androgнathidae	*Dolistenus garciaparisi* Recuero & Rodríguez-Flores, 2020	new species / ES-SPA		Recuero & Rodríguez-Flores (2020)
44. Platydesmida	Andrognathidae	*Dolistenus iberoalbus* Mauriès, 2015	new species / PT-POR, ES-SPA		Mauriès (2015a)
45. Platydesmida	Andrognathidae	*Ebenostenus iberoniger* Mauriès, 2015	new species / ES-SPA		Mauriès (2015a)
46. Polydesmida	Paradoxosomatidae	*Boreviulisoma barrocalense* Reboleira & Enghoff, 2013	new species / PT-POR		Reboleira & Enghoff (2013)
47. Polydesmida	Paradoxosomatidae	*Metonomastus petrovi* Antić *et al.,* 2018	new species / BG		Antić *et al.* (2018d)
48. Polydesmida	Paradoxosomatidae	*Metonomastus radjai* Antić *et al.,* 2018	new species / HR		Antić *et al.* (2018d)
49. Polydesmida	Paradoxosomatidae	*Strongylosoma kordylamythrum* Attems, 1898	new record / RU-RUS		Evsyukov & Golovatch, 2013
50. Polydesmida	Polydesmidae	*Archipolydesmus altibaeticus* Gilgado & Enghoff, 2015	new species / ES-SPA		Gilgado *et al.* (2015a)
51. Polydesmida	Polydesmidae	*Archipolydesmus cordubaensis* Mauriès, 2013	new species / ES-SPA		Mauriès (2013)
52. Polydesmida	Polydesmidae	*Archipolydesmus foliatus* Gilgado & Enghoff, 2015	new species / ES-SPA		Gilgado *et al.* (2015a)
53. Polydesmida	Polydesmidae	*Archipolydesmus giennensis* Mauriès, 2014	new species / ES-SPA		Mauriès (2014)
54. Polydesmida	Polydesmidae	*Brachydesmus femoralis* Makarov, 2008	new species / SB		Makarov (2008)
55. Polydesmida	Polydesmidae	*Brachydesmus mulaomerovici* Makarov, Ćurčić & Antić, 2013	new species / BA		Antić *et al.* (2013b)
56. Polydesmida	Polydesmidae	*Brachydesmus sjenicae* Makarov & Antić, 2013	new species / SB		Antić *et al.* (2013a)
57. Polydesmida	Polydesmidae	*Brachydesmus verrucosus* Makarov, Ćurčić & Antić, 2013	new species / MK		Antić *et al.* (2013b)

Table 5 (continued).

Order	Family	Species	Added / Distribution	Deleted	Reference
58. Polydesmida	Polydesmidae	*Polydesmus asturiensis* Djursvoll, 2019	new species / ES-SPA		Djursvoll (2019)
59. Polydesmida	Polydesmidae	*Polydesmus biscayensis* Djursvoll, 2019	new species / ES-SPA		Djursvoll (2019)
60. Polydesmida	Polydesmidae	*Schizomeritius andalusius* Djursvoll, 2008	new species / ES-SPA		Djursvoll (2008)
61. Polydesmida	Polydesmidae	*Schizomeritius esgrimidor* Djursvoll, 2008	new species / ES-SPA		Djursvoll (2008)
62. Polydesmida	Polydesmidae	*Schizomeritius ortizi* Djursvoll, 2008	new species / ES-SPA		Djursvoll (2008)
63. Polydesmida	Trichopolydesmidae	*Caucasodesmus svetlanae* Golovatch & VandenSpiegel, 2015	new species / UA (Crimea)		Golovatch & VandenSpiegel (2015)
64. Polydesmida	Trichopolydesmidae	*Caucasodesmus tauricus* Golovatch, 2011	new species / UA (Crimea)		Golovatch (2011)
65. Polydesmida	Trichopolydesmidae	*Caucasodesmus turbanovi* Golovatch & VandenSpiegel, 2015	new species / UA (Crimea)		Golovatch & VandenSpiegel (2015)
66. Polydesmida	Trichopolydesmidae	*Balkanodesmus biokovensis* Antić & Reip, 2014	new species / HR		Antić *et al*. (2014)
67. Polydesmida	Trichopolydesmidae	*Galliocookia gracilis* Golovatch, 2013	new species / GR-DOD		Golovatch (2013b)
68. Polydesmida	Trichopolydesmidae	*Solentanodesmus insularis* Antić & Reip, 2014	new species / HR		Antić *et al*. (2014)
69. Polydesmida	Trichopolydesmidae	*Sphaeroparia simplex* Golovatch, 2013	new species / GR-CYC		Golovatch (2013b)
70. Polydesmida	Trichopolydesmidae	*Sphaeroparia simplex* Golovatch, 2013		synonym of *Simplogonopus rubellus* (Attems, 1902) (= *Polydesmus r.* in atlas.)	Vagalinski *et al*. (2019)
71. Polydesmida	Trichopolydesmidae	*Velebitodesmus cavernicolus* Antić & Reip, 2014	new species / HR		Antić *et al*. (2014)
72. Polyxenida	Polyxenidae	*Propolyxenus trivittatus* (Verhoeff, 1941)		synonym of *P. argentifer* (Verhoeff 1921)	Short *et al*. (2020)
73. Polyzoniida	Hirudisomatidae	*Hirudisoma espadanense* Mauriès, 2018	new species / ES-SPA		Mauriès (2018)
74. Polyzoniida	Hirudisomatidae	*Hirudisoma brusteli* Mauriès, 2018	new species / ES-SPA		Mauriès (2018)

with Nesrine Akkari, placed their then unpublished distribution maps for species of *Haasea* at our disposal), Peter Decker (who extracted numerous records from Edaphobase), Jean-Jacques Geoffroy (including département-level distribution maps for all French species), José Domingo Gilgado, Eszter Lazányi, Slobodan Makarov, Jean-Paul Mauriès, Andrej Mock, Kjell Magne Olsen, Freddy Persson, Jörg Spelda, Karel Tajovský and Boyan Vagalinski.

Access to literature was greatly facilitated by Hans Reip. Help with nomenclatorial subtleties was provided by Verner Michelsen. Free access to the batch conversion functionality of Earthpoint.us was granted by Bill Clark.

Habitus photos of chordeumatidans were placed at our disposal by Dragan Antić, Tamara Čuković-Malenica, Tvrtko Dražina, José Domingo Gilgado, Marjan Komnenov, Kazimir Muculinić, Trevor and Dilys Pendleton, Paul Richards, and Jörg Spelda.

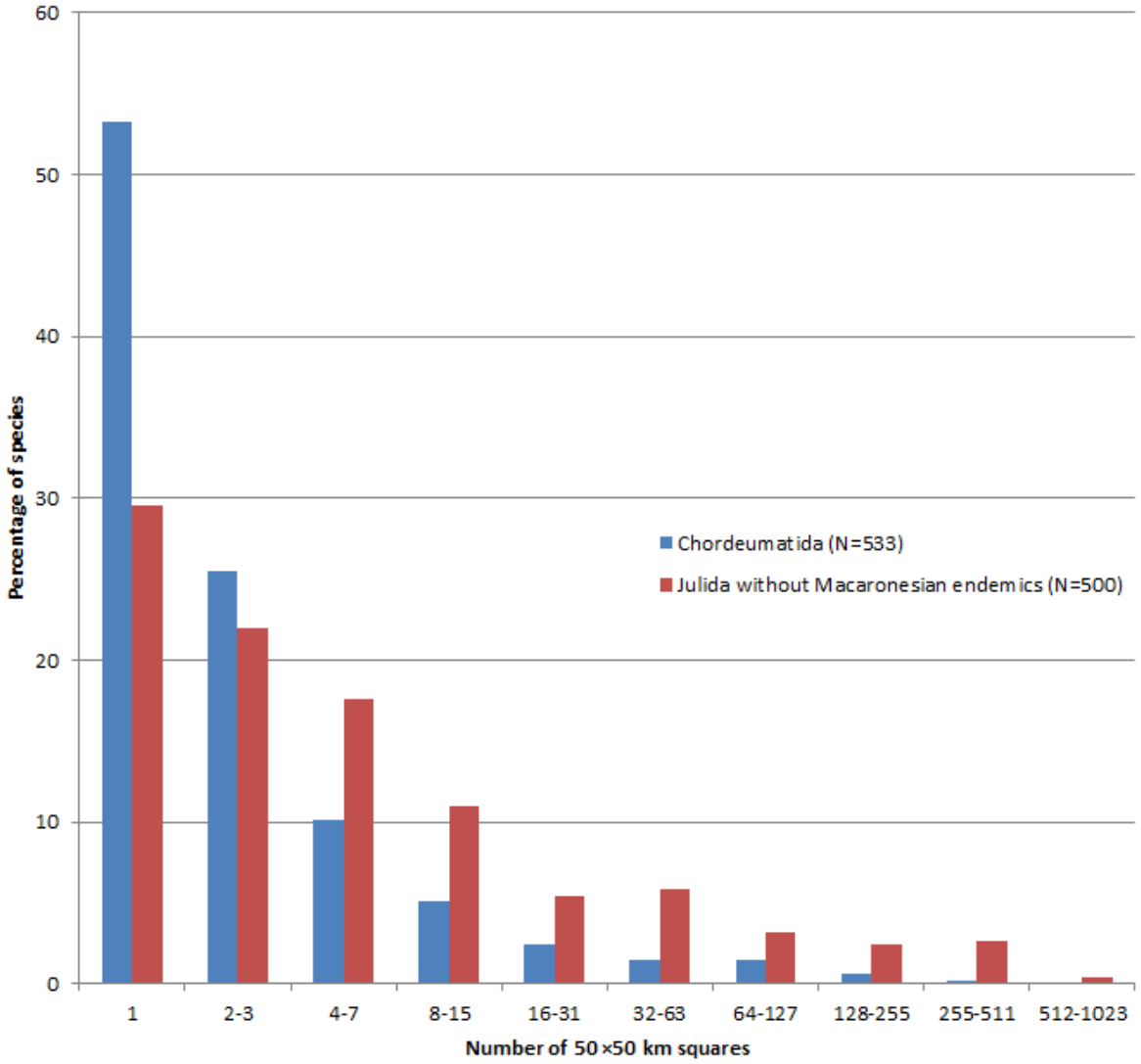


Fig. 7. Percentage of species recorded from 1, 2–3, 4–7 … > 512-1023 50 km squares of European Chordeumatida C.L. Koch, 1847 (blue columns) and Julida Brandt, 1833 without Macaronesian endemics (red columns, data from Kime & Enghoff 2017).

Dragan Antić and Jörg Spelda in addition bravely took it upon themselves to act as the editor's referees and in this capacity corrected several errors as well as made numerous constructive suggestions. Likewise, editor Nesrine Akkari suggested several important improvements. Kristiaan Hoedemakers provided exceptionally careful desk editing, and Radka Rosenbaumova helped with botanical nomenclature.

Last, but absolutely not least, the maps, without which the atlas would not be an atlas, were kindly produced by André J. van Loon (EIS Kenniscentrum Insecten, Leiden, Netherlands)

With the help of these persons, and the ones listed in previous volumes, the Atlas of European Millipedes has been completed – although, inevitably and fortunately, new species will continue to be discovered in Europe, new records will be made, errors will be corrected, and the status of more or less doubtful species will (hopefully) become resolved.

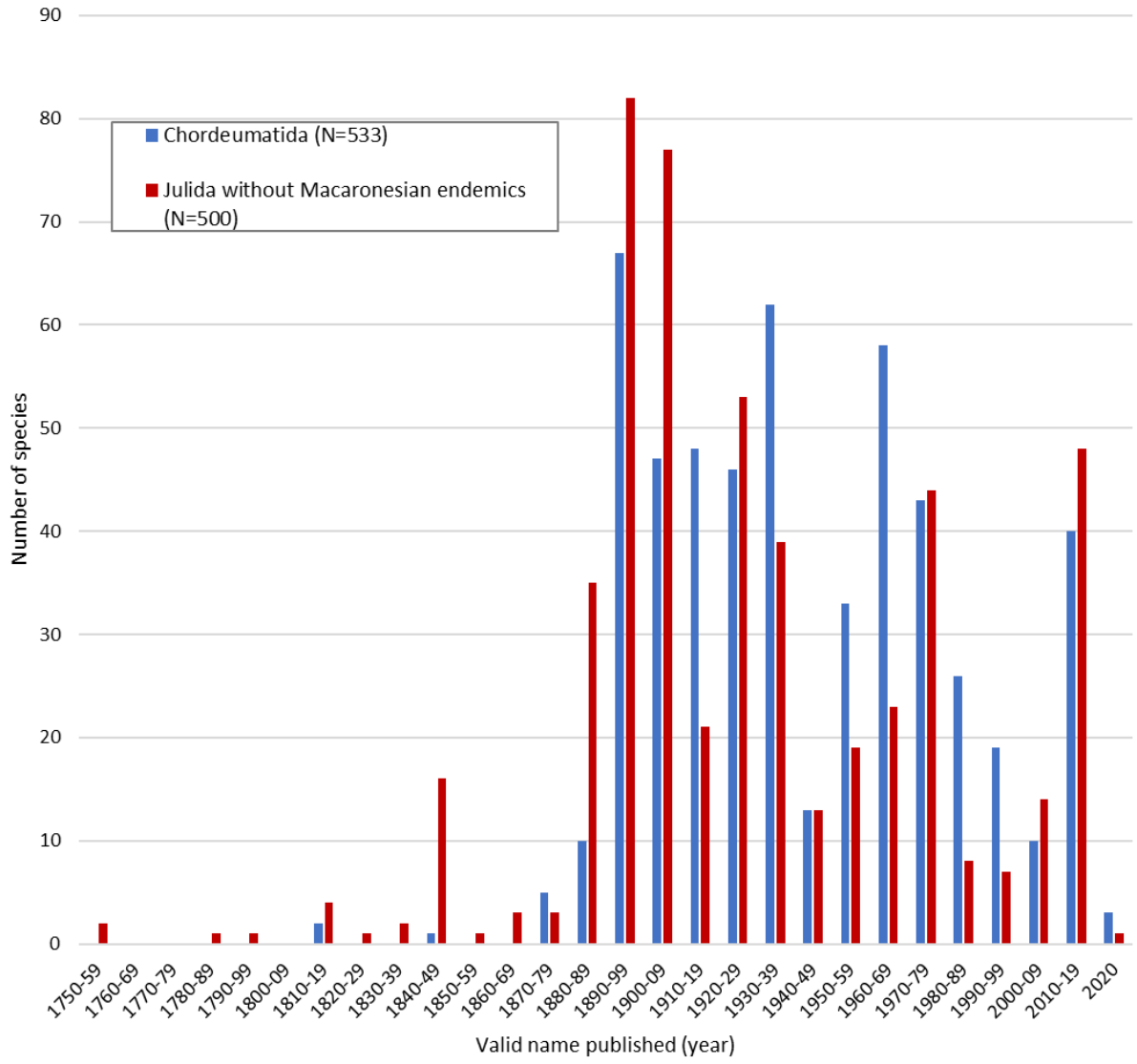


Fig. 8. Year (decade) of publication of valid names of European Chordeumatida C.L. Koch, 1847 (blue columns) and Julida Brandt, 1833 without Macaronesian endemics (red columns, data from Kime & Enghoff 2017 and from Table 5 of the present work).

References

Akkari N. & Enghoff H. 2017. Revision of the genus *Ommatoiulus* Latzel, 1884 (Julida, Diplopoda) in Portugal, with description of six new species. *European Journal of Taxonomy* 295: 1–42. https://doi.org/10.5852/ejt.2017.295

Akkari N., Enghoff H., Stoev P. & Mauriès J.-P. 2010. On the identity of *Basigona lucasii* Silvestri, 1896, a poorly known millipede from Tunisia, with notes on the North African Chordeumatida (Diplopoda: Chordeumatida: Chamaesomatidae). *Zootaxa* 2427: 64–68. https://doi.org/10.11646/zootaxa.2427.1.7

Akkari N., Enghoff H. & Metscher B. 2015. A new dimension in documenting new species: high-detail imaging for myriapod taxonomy and first 3D cybertype of a new millipede species (Diplopoda, Julida, Julidae). *PLoS ONE* 10 (8): e0135243. https://doi.org/10.1371/journal.pone.0135243

Akkari N., Gilgado J.D., Ortuño V. & Enghoff H. 2018. Out of the dark void: *Ommatoiulus longicornis* n. sp., a new julid from Spain (Julida, Diplopoda) with notes on troglobiomorphic traits in millipedes. *Zootaxa* 4420 (3): 415–429. https://doi.org/10.11646/zootaxa.4420.3.7

Anderson R. 1996. *Anamastigona pulchellum* Silvestri (Chordeumatida: Anthroleucosomatidae) an addition to the fauna of northern Europe, recorded from Ireland. *Bulletin of the British Myriapod Group* 12: 7–11.

Antić D. & Akkari N. 2020. *Haasea* Verhoeff, 1895 – a genus of tumultuous history and chaotic records – redefinition, revision of taxonomy and geographic distributions, with descriptions of two new species from Austria and Serbia (Diplopoda, Chordeumatida, Haaseidae). *Zootaxa* 4798 (1): 1–77. https://doi.org/10.11646/zootaxa.4798.1.1

Antić D.Ž. & Makarov S.E. 2016. The Caucasus as a major hotspot of biodiversity: evidence from the millipede family Anthroleucosomatidae (Diplopoda, Chordeumatida). *Zootaxa* 4211 (1): 1–205. https://doi.org/10.11646/zootaxa.4211.1.1

Antić D.Ž., Ćurčić B.P.M., Mitić B.M., Tomić V.T., Lučić L.R., Dudić B.D., Stojanović D.Z. & Makarov S.E. 2013a. A new cave diplopod of the genus *Brachydesmus* Heller, 1858 from southwest Serbia (Diplopoda: Polydesmida: Polydesmidae. *Archives of Biological Science, Belgrade* 65 (2): 745–750. https://doi.org/10.2298/ABS1302745A

Antić D.Ž., Ćurčić B.P.M., Tomić V.T., Rađa T., Rađa B., Milinčić M.A. & Makarov S.E. 2013b. Two new species of *Brachydesmus* Heller, 1858 from the Balkan Peninsula (Diplopoda: Polydesmida: Polydesmidae). *Archives of Biological Science, Belgrade* 65 (3): 1233–1243. https://doi.org/10.2298/ABS1303233A

Antić D.Ž., Reip H.S., Dražina T., Rađa T. & Makarov S.E. 2014. Three new monotypic genera of Trichopolydesmidae from Croatia, Balkan Peninsula (Diplopoda, Polydesmida). *Zootaxa* 3884 (2): 101–121. https://doi.org/10.11646/zootaxa.3884.2.1

Antić D., Dražina T., Rađa T., Tomić V.T. & Makarov S.E. 2015a. Review of the family Anthogonidae (Diplopoda, Chordeumatida), with descriptions of three new species from the Balkan Peninsula. *Zootaxa* 3948 (2): 151–181. https://doi.org/10.11646/zootaxa.3948.2.1

Antić D.Ž., Mock A. & Enghoff H. 2015b. Two new species of the millipede family Blaniulidae (Diplopoda, Julida) from caves in eastern and southeastern Europe. *Zootaxa* 3985 (4): 523–540. https://doi.org/10.11646/zootaxa.3985.4.3

Antić D.Ž, Tomić V.T., Rađa T., Lučić L.R., Dudić B.D. & Makarov S.E. 2015c. A new species of the family Heterolatzeliidae from the Balkan Peninsula (Diplopoda, Chordeumatida). *Zootaxa* 3904 (1): 147–150. https://doi.org/10.11646/zootaxa.3904.1.20

Antić D.Ž., Dražina T., Rađa T., Lučić L.R. & Makarov S.E. 2016. Taxonomic status of the family Biokoviellidae Mršić, 1992 (Diplopoda, Chordeumatida): reconsideration, with a description of one new species. *European Journal of Taxonomy* 205: 1–23. https://doi.org/10.5852/ejt.2016.205

Antić D.Ž., Dudić B.D., Gajić M.R. & Lučić L.R. 2017. The first hydrophilous cave-dwelling millipede from Serbia – *Typhloiulus balcanicus* sp. nov. (Diplopoda, Julida, Julidae). *Zootaxa* 4226 (1): 137–143. https://doi.org/10.11646/zootaxa.4226.1.8

Antić D.Ž., Dražina T., Rađa T. Lučić L.R., & Makarov S.E. 2018a. Review of the genus *Typhloiulus* Latzel, 1884 in the Dinaric region, with a description of four new species and the first description of the male of *Typhloiulus insularis* Strasser, 1938 (Diplopoda, Julida, Julidae). *Zootaxa* 4455 (2): 258–294. https://doi.org/10.11646/zootaxa.4455.2.2

Antić D.Ž., Rađa T. & Akkari N. 2018b. Revision of the genus *Hylopachyiulus* Attems, 1904, with the description of a new species from Croatia (Diplopoda, Julida, Julidae). *Zootaxa* 4531 (2): 225–241. https://doi.org/10.11646/zootaxa.4531.2.4

Antić D.Ž, Rađa T. & Makarov S.E. 2018c. Dalmatosomatidae, a new monotypic family, and *Dalmatosoma agaricum* gen. et sp. nov. (Diplopoda: Chordeumatida: Craspedosomatidea) from Croatia, Balkan Peninsula. *Zootaxa* 4403 (2): 289–306. https://doi.org/10.11646/zootaxa.4403.2.4

Antić D.Ž., Vagalinski B., Stoev P. & Golovatch S. 2018d. Two new species of the millipede genus *Metonomastus* Attems, 1937 from the Balkan Peninsula (Diplopoda, Polydesmida, Paradoxosomatidae). *ZooKeys* 786: 43–57. https://doi.org/10.3897/zookeys.786.28386

Antić D.Ž., Stojanović D.Z. & Makarov S.E. 2020. *Cornogonopus* – a new monotypic cave-dwelling genus of the family Anthroleucosomatidae (Diplopoda, Chordeumatida) from Serbia, the Balkan Peninsula. *Biologia Serbica* 42 (1): 32–47. https://doi.org/10.5281/zenodo.4147289

Bachvarova D., Vagalinsky B., Doichninov A. & Stoev P. 2017. New records of millipedes and centipedes from Bulgaria, with an annotated checklist of the Bulgarian myriapods. *Zootaxa* 4263 (3): 507–526. https://doi.org/10.11646/zootaxa.4263.3.4

Berg M.P., Soesbergen M., Tempelman D. & Wijnhoven H. 2008. *Verspreidingsatlas Nederlandse landpissebedden, duizendpoten en miljoenpoten*. Stichting European Invertebrate Survey, Leiden and Vrije Universiteit, Afdeling Dierecologie, Amsterdam.

Blower J.G. 1985. Millipedes. *Synopses of the British Fauna (New Series)* 35: 1–242.

Blower J.G. 1986. Distribution and variation of the species of *Brachychaeteuma* occurring in Britain and Ireland. *Bulletin of the British Myriapod Group* 3: 43–48.

Brummitt R.K. 2001. *World Geographic Scheme for Recording Plant Distributions. Edition 2*. Published for the International Working Group on Taxonomic Databases for Plant Sciences (TDWG) by the Hunt Institute for Botanitcal Documentation, Carnegie Mellon University, Pittsburgh. Available from https://github.com/tdwg/wgsrpd/blob/master/109-488-1-ED/2nd%20Edition/TDWG_geo2.pdf [accessed 10 Mar. 2021].

Ceuca T. 1985. Diplopodes nouveaux dans la faune de la Roumanie (Diplopoda – Ascospermophora). *Studia Universitatis Babeş-Bolyai Biologia* 30: 35–46.

Ćurčić B.P.M. & Makarov S.E. 1997. Postembryonic development of *Bulgarosoma lazarevensis* – a cave-dwelling millipede from Yugoslavia (Diplopoda, Chordeumatida: Anthroleucosomatidae). *Entomologica scandinavica Supplement* 51: 163–165.

David J.-F. 1984. Le cycle annuel du diplopode *Microchordeuma gallicum* (Latzel, 1884). *Bulletin de la Société zoologique de France* 104 (1): 61–70.

David J.-F. 1989. Le cycle biologique de *Chamaesoma brolemanni* Ribaut & Verhoeff, 1913 (Diplopoda, Craspedosomatida) en forêt d'Orléans (France). *Bulletin du Museum national d'histoire naturelle, Paris, 4e série 11, section A* 3: 639–647.

Davidson M.B. & Weddle R.B. 2021. *Cylindroiulus dahli* Demange, 1970 (Julidae) & *Orthochordeumella pallida* (Rothenbühler, 1899) (Chordeumatida): two millipedes new to Britain and *Propolydesmus testaceus* (C.L. Koch, 1847) (Polydesmidae) a millipede new to Scotland. *Bulletin of the British Myriapod and Isopod Group* 33: 19–26.

de Jong Y., Verbeek M., Michelsen V., de Place Bjørn P., Los W., Steeman F., Bailly N., Basire C., Chylarecki P., Stloukal E., Hagedorn G., Wetzel F.T., Glöckler F., Kroupa A., Korb G., Hoffmann A., Häuser C., Kohlbecker A., Müller A., Güntsch A., Stoev P. & Penev L. 2014. Fauna Europaea – all European animal species on the web. *Biodiversity Data Journal* 2: e4034. https://doi.org/10.3897/BDJ.2.e4034

Djursvoll P. 2008. Revision of the Iberian millipede genus *Schizomeritus* Verhoeff, 1931 (Diplopoda: Polydesmidae), with the description of three new species. *International Journal of Myriapodology* 1: 111–122.

Djursvoll P. 2019. Two new species of *Polydesmus* Latreille, 1802/1803 from northern Spain with reinstatements of two species, and a key to the Iberian *Polydesmus* species (Diplopoda, Polydesmida, Polydesmidae). *ZooKeys* 888: 51–65 https://doi.org/10.3897/zookeys.888.37816

Dolejš P. & Kocourek P. 2019. Bohumil Němec and his millipede collection at the National Museum in Prague (Czechia), with notes on *Craspedosoma rawlinsii simplex* Němec, 1896. *Schubartiana* 8: 25–35.

Enghoff H. 1994. Geographical parthenogenesis in millipedes. *Biogeographica* 70 (1): 25–31.

Enghoff H. & Reboleira A.S.P.S. 2013. A new cave-dwelling millipede of the genus *Scutogona* from central Portugal (Diplopoda, Chordeumatida, Chamaesomatidae). *Zootaxa* 3736 (2): 175–186. https://doi.org/10.11646/zootaxa.3736.2.5

Enghoff H. & Vicente M. 2000. Millipedes of the Balearic Islands, including a revision of the species described by L. Koch in 1881 (Diplopoda). *Steenstrupia* 25: 195–200.

Enghoff H., Golovatch S., Short M., Stoev P. & Wesener T. 2015. Diplopoda – Taxonomic overview. *In*: Minelli A. (ed.) The Myriapoda 2. *Treatise on Zoology – Anatomy, Taxonomy, Biology*: 363–453. Brill, Leiden and Boston. https://doi.org/10.1163/9789004188273_017

Eusébio R., Enghoff H., Solodovnikov A., Michelsen A., Barranco P., Sendra A. & Reboleira A.S.P.S. 2021. Temporal and spatial dynamics of arthropod groups in terrestrial subsurface habitats in central Portugal. *Zoology* 147: 125931. https://doi.org/10.1016/j.zool.2021.125931

Evsyukov A.P. 2016. A new species of the millipede genus *Julus* from the Rostov-on-Don Region, southern Russia (Diplopoda: Julida: Julidae). *Arthropoda Selecta* 25 (3): 241–245. https://doi.org/10.15298/arthsel.25.3.02

Evsyukov A.P. & Golovatch S.I. 2013. Millipedes (Diplopoda) of the Rostov-on-Don Region, southern Russia. *Arthropoda Selecta* 22 (3): 207–215. https://doi.org/10.15298/arthsel.22.3.03

Fedrizzi G. 1877. Miriapodi del Trentino raccolti e classificati. I. I Chilognathi. *Annuario della Società dei Naturalisti in Modena, Serie 2* 11: 80–110.

Gaul W. & Tighe A.J. 2021. Morphological and genetic confirmation of the millipede *Chordeuma sylvestre* C. L. Koch, 1847 new to Ireland. *Bulletin of the British Myriapod and Isopod Group* 33: 52–62. https://doi.org/10.1101/2020.05.17.100263

Gilgado J.D., Enghoff H., Tinaut A. & Ortuño V.M. 2015a. Hidden biodiversity in the Iberian mesovoid shallow substratum (MSS): new and poorly known species of the millipede genus

Archipolydesmus Attems, 1898 (Diplopoda, Polydesmidae). *Zoologischer Anzeiger* 258: 13–38. https://doi.org/10.1016/j.jcz.2015.06.001

Gilgado J.D., Enghoff H., Tinaut A., Mauriès J.P. & Ortuño V.M. 2015b. Sierra Nevada (Granada, Spain): a high-altitude biogeographical crossroads for millipedes (Diplopoda), with data on its MSS fauna and description of a new species of the genus *Ceratosphys* Ribaut, 1920 (Chordeumatida: Opisthocheiridae). *Zootaxa* 4044 (3): 391–410. https://doi.org/10.11646/zootaxa.4044.3.4

Gilgado J.D., Enghoff H. & Ortuño V.M. 2015c. The hypogean Iberian genus *Typhlopsychrosoma* Mauriès, 1982 (Diplopoda, Chordeumatida, Vandeleumatidae): distribution map, key to species, first record in a Mesovoid Shallow Substratum (MSS) and detailed iconography of *T. baeticaense* (Mauriès 2013). *Zootaxa* 3927 (2): 337-346. https://doi.org/10.11646/zootaxa.3937.2.5

Gilgado J.D., Ledesma E., Enghoff H., Mauriès J.-P. & Ortuño V.M. 2017. A new genus and species of Haplobainosomatidae (Diplopoda: Chordeumatida) from the MSS of the Sierra de Guadarrama National Park, central Spain. *Zootaxa* 4347 (3): 492–510. https://doi.org/10.11646/zootaxa.4347.3.4

Gilgado J.D., Martínez-Pillado V. & Prieto C. 2020. A new green-coloured *Lusitanipus* Mauriès, 1978 from the Iberian Peninsula (Diplopoda: Callipodida: Dorypetalidae). *European Journal of Taxonomy* 714: 1–14. https://doi.org/10.5852/ejt.2020.714

Giurginca A., Vănoaica L., Šustr V. & Tajovský K.2020 A new species of the genus *Archiboreoiulus* Brolemann, 1921 (Diplopoda, Julida) from Movile Cave (Southern Dobrogea, Romania). *Zootaxa* 4802 (3): 463–476. https://doi.org/10.11646/zootaxa.4802.3.4

Golovatch S. 2011. The millipede genus *Caucasodesmus* Golovatch, 1985, with the description of a new species from the Crimea, Ukraine (Polydesmida, Diplopoda, Trichopolydesmidae). *ZooKeys* 93: 1–8. https://doi.org/10.3897/zookeys.93.1159

Golovatch S. 2013a. Three new species of the millipede genus *Hyleoglomeris* Verhoeff, 1910 from the Aegean region of Greece (Diplopoda, Glomerida, Glomeridae). *Biodiversity Data Journal* 1: e1000. https://doi.org/10.3897/BDJ.1.e1000

Golovatch S.I. 2013b. A reclassification of the millipede superfamily Trichopolydesmoidea, with descriptions of two new species from the Aegean region (Diplopoda, Polydesmida). *ZooKeys* 340: 63–78. https://doi.org/10.3897/zookeys.340.6295

Golovatch S.I. & Makarov S.S.E. 2011. Two new, easternmost species of the millipede genus *Anamastigona* Silvestri, 1898 from Israel and the Caucasus (Diplopoda, Chordeumatida, Anthroleucosomatidae). *Arthropoda Selecta* 20 (1): 11–20. https://doi.org/10.15298/arthsel.20.1.02

Golovatch S.I. & Matyukhin A.B. 2011. New records of millipedes (Diplopoda), mainly from bird nests, in European Russia. *Arthropoda Selecta* 20 (2): 115–116. https://doi.org/10.15298/arthsel.20.2.02

Golovatch S.I. & VandenSpiegel D. 2015. Two new species of the millipede genus *Caucasodesmus* Golovatch, 1985 from the Crimea, Russia (Diplopoda, Polydesmida, Trichopolydesmidae). *Russian Entomological Journal* 24 (1): 1–6. https://doi.org/10.15298/rusentj.24.1.01

Gregory S. 2018. More sites for lumpy-bumpy millipedes in South Wales. *British Myriapod and Isopod Group Newsletter* 37: 4–5.

Gregory S.J., Davidson M., Owen C. & Anderson R. 2015. *Anamastigona pulchella* (Silvestri, 1894) – first British records for England, Scotland and Wales (Chordeumatida: Anthroleucosomatidae). *Bulletin of the British Myriapod and Isopod Group* 28: 31–37.

Gruber J. 2009. Diplopoda (Doppelfüsser). *In*: Rabitsch W. & Essl F. (eds) *Endemiten - Kostbarkeiten in Österreichs Pflanzen- und Tierwelt*: 512–541. Naturwissenschaftlicher Verein für Kärnten und Umweltbundesamt GmbH, Klagenfurt und Wien.

Hauser H. 2004a. Untersuchungen zur Systematik und Biogeografie der *Craspedosoma rawlinsii* Leach-Gruppe (Diplopoda: Chordeumatida: Craspedosomatidae). *Entomologische Nachrichten und Berichte* Beiheft 9: 1–33.

Hauser H. 2004b. Zur Taxonomie und Systematik von *Mastigona bosniensis* (Verhoeff, 1897) und *Mastigona vihorlatica* (Attems, 1899) (Diplopoda, Chordeumatida, Mastigophorophyllidae). *Entomologische Nachrichten und Berichte* 48 (2–3): 215–218.

Hauser H. & Voigtländer K. 2019. *Doppelfüßer (Diplopoda) Deutschlands*. *Verhalten Ökologie Verbreitung Lebendbestimmung*. DJN, Deutscher Jugendbund für Naturbeobachtung, Göttingen.

ICZN. 1999. *International Code of Zoological Nomenclature.* Fourth Edition. The International Trust for Zoological Nomenclature, London, UK.

Jeekel C.A.W. 1970. Nomenclator generum et familiarum Diplopodorum. A list of the genus and family-group names in the Class Diplopoda from the 10th edition of Linnaeus, 1758, to the end of 1957. *Monografieën van de Nederlandse Entomologische Verenigung* 5: i–xii + 1–412.

Kime R.D. 2004. The Belgian millipede fauna (Diplopoda). *Bulletin de l'Institut royal des Sciences naturelles de Belgique, Entomologie* 74: 35–68.

Kime R.D. & Enghoff H. 2011. Atlas of European millipedes (Class Diplopoda). Volume 1. Orders Polyxenida, Glomerida, Platydesmida, Siphonocryptidae, Polyzoniida, Callipodida, Polydesmida. *Fauna Europaea Evertebrata* 3. Pensoft, Sofia and Moscow.

Kime R.D. & Enghoff H. 2017. Atlas of European millipedes 2: Order Julida (Class Diplopoda). *European Journal of Taxonomy* 346: 1–299. https://doi.org/10.5852/ejt.2017.346

Korsós Z. & Lazányi E. 2020. Present status of the millipede fauna of Hungary, with a review of three species of *Brachyiulus* Berlése, 1884 (Diplopoda). *Opuscula Zoologica Budapest* 51 (Supplementum 2): 87–103. https://doi.org/10.18348/opzool.2020.S2.87

Kovačević Ž. 1923. Prinos poznavanju Glomerida Hrvatske. *Glasnik Hrvatskog Prirodoslovnog Društva* 35: 566–577.

Lazányi E. & Korsós Z. 2009. Millipedes (Diplopoda) of the Aggtelek National Park, Northeast Hungary. *Opuscula Zoologica Budapest* 40 (1): 35–46.

Lee P. 2006. *Atlas of the millipedes (Diplopoda) of Britain and Ireland*. Series Faunistica 59. Pensoft, Sofia.

Lindner E.N., Reip H.S. & Spelda J. 2010. *Anamastigona pulchella* (Silvestri, 1898) (Diplopoda: Chordeumatida: Anthroleucosomatidae) – ein für Deutschland neuer Tausendfüsser. *Schubartiana* 4: 1–8.

Makarov S.E. 2008. A new species of the diplopod subgenus *Absurdodesmus* Mršić, 1988 from a cave in the Tara Mountain, West Serbia (Diplopoda, Polydesmidae). *In*: Pavićević D. & Perreau M. (eds) *Advances in the Studies of the Fauna of the Balkan Peninsula. Papers Dedicated to the Memory of Guido Nonveiller*: 81–84. Institute for Nature Conservation of Serbia, Belgrade.

Makarov S.E., Ćurčić B.P.M., Tomić V.T., Rađa T., Rađa B., Ćurčić S.B., Mitić B.M. & Lučić L.R. 2011. Revision of the family Heterolatzeliidae (Diplopoda, Chordeumatida). *Zootaxa* 2994: 33–44. https://doi.org/10.11646/zootaxa.2994.1.3

Makarov S.E., Ćurčić B.P.M., Antić D.Ž, Tomić V.T., Ćurcić S.B., Ilić B. & Lučić L.R. 2013. A new cave species of the genus *Hyleoglomeris* Verhoeff, 1910, from the Balkan Peninsula (Diplopoda: Glomerida: Glomeridae). *Archives of Biological Science, Belgrade* 65 (1): 341–344. https://doi.org/10.2298/ABS1301341M

Manfredi P. 1953. Miriapodi Italiani – VIII contribute. *Atti della Società italiana di scienze naturali, e del Museo civile di storia naturale* 92: 117–122.

Manfredi P. 1956. Miriapodi cavernicoli del Marocco, delle Sardegna e del Piemonte. *Atti della Società Italiana di Scienze Naturali* 95: 197–222.

Mauriès J.-P. 1968. Notes sur les Diplopodes Pyrénéens: IV. Le genre endémique *Hypnosoma* Ribaut, 1952. *Bulletin de la Société d'Histoire naturelle de Toulouse* 104: 399–404.

Mauriès J.-P. 1969. Contribution à la faune épigée et cavernicole de Corse: Diplopodes récoltés par P. Beron. *Annales de Spéléologie* 24: 505–527.

Mauriès J.-P. 1985. Polydesmide et Craspedosomides cavernicoles nouveaux de France et du Maroc (Myriapoda – Diplopoda). *International Journal of Speleology* 14: 51–62. https://doi.org/10.5038/1827-806X.14.1.6

Mauriès J.-P. 1986. Un Diplopode cavernicole relictuel des Alpes calcaires suisses: *Niphatrogleuma wildbergeri*, n. g., n. sp. (Craspedosomida, Cleidogonoidea). *Revue suisse de Zoologie* 93 (1): 249–256. https://doi.org/10.5962/bhl.part.79693

Mauriès J.-P. 1990a. Révision des Origmatogonidae. Taxons nouveaux de France et d'Espagne (Diplopoda, Craspedosomida, Chamaesomidae, Opisthocheiridae). *Bulletin de la Société d'Histoire naturelle de Toulouse* 148: 47–57.

Mauriès J.-P. 1990b. Diplopodes de la Péninsule Ibérique: Deux espèces nouvelles du genre *Ceratosphys* Ribaut, 1920 (Diplopoda, Craspedosomida, Opisthocheiridae). *Miscellània zoológica Barcelona* 14: 115–123.

Mauriès J.-P. 2003. *Schizmohetera olympica* sp.n. from Greece, with a reclassification of the superfamily Neoatractosomatoidea (Diplopoda: Chordeumatidae). *Arthropoda Selecta* 12: 9–16.

Mauriès J.-P. 2010. Révision du genre endémique *Pyreneosoma* Mauriès, 1959: historique, nouveautés (Diplopoda, Craspedosomatida, Haplobainosomatidae). *Bulletin de la Société d'Histoire naturelle de Toulouse* 146: 21–46.

Mauriès J.-P. 2012. Le genre *Ceratosphys* Ribaut, 1920: trois nouveaux taxa de Catalogne et des Îles Baléares (Diplopoda, Craspedosomatida, Opisthocheiridae). *Bulletin de la Société d'Histoire naturelle de Toulouse* 148: 47–57.

Mauriès J.-P. 2013. Trois espèces nouvelles de diplopodes cavernicoles de l'Andalousie (Espagne) (Diplopoda: Polydesmida: Polydesmidae; Chordeumatida: Vandeleumatidae, Opisthocheiridae). *Athropoda Selecta* 22 (2): 97–112. https://doi.org/10.15298/arthsel.22.2.01

Mauriès J.-P. 2014. Quatre espèces nouvelles de Diplopodes cavernicoles de l'Andalousie (Espagne) (Diplopoda: Polydesmida: Polydesmidae; Chordeumatida: Chamaesomatidae, Opisthocheiridae). *Arthropoda Selecta* 23 (1): 33–50. https://doi.org/10.15298/arthsel.23.1.03

Mauriès J.-P. 2015a. Diplopodes platydesmides et polyzonides collectés dans le Nord-ouest de la Péninsule Ibérique par les missions britanniques de 1993 et 2004. *Russian Entomological Journal* 24 (4): 325–341. https://doi.org/10.15298/rusentj.24.4.08

Mauriès J.-P. 2015b. Taxa nouveaux de Diplopodes Craspedosomatides collectés dans le nord-ouest de la Péninsule ibérique par les missions britanniques de 1993 et 2004 (Diplopoda, Craspedosomatida). *Bulletin de la Société d'Histoire naturelle de Toulouse* 150: 27–57.

Mauriès J.-P. 2018. Le genre *Hirudisoma* Fanzago, 1881 dans la péninsule Ibérique: description de deux espèces atypiques, *Hirudisoma espadanensis* n. sp. et *H. brusteli* n. sp. du Levant d'Espagne.

(Diplopoda, Polyzonida, Hirudisomatidae). *Bulletin de la Société d'Histoire naturelle de Toulouse* 154: 41–55.

Mauriès J.-P. & Vicente M.C. 1977. Diplópodos cavernícolas nuevos y poco conocidos de España recoletados par A. Lagar. Descripción de tres géneros nuevos. *Miscellania Zoologica* 4 (1): 109–134.

McAlpine D.F. & Shear W.A. 2018. The millipede *Craspedosoma raulinsii* Leach, 1814 (Chordeumatida: Craspedosomatidae) in North America with comments on the derivation of its binomial name. *Zootaxa* 4455 (2): 389–394. https://doi.org/10.11646/zootaxa.4455.2.8

Meyer E. 1979. Life cycles and ecology of high alpine Nematophora. *In*: Camatini M. (ed.) *Myriapod Biology*: 295–306 Academic Press, London.

Meyer E. 1990. Altitude-related changes of life histories of Chordeumatida in the Central Alps (Tyrol, Austria). *In*: Minelli A. (ed.) *Proceedings of the 7th International Congress of Myriapodology*: 311–322. E.J. Brill, Leiden.

Meyer E. & Singer A. 1997. Verteilung, Aktivität und Besiedlungsdichte von Diplopoden in Wäldern Vorarlsbergs (Österreich). *Berichte des naturwissenschaftlich-medizinischen Vereins Innsbruck* 84: 287–306.

Mock A., Tajovský K., Žurovcová M., Jarošová A., Kocourek P., Gruber J., Angyal D. & Spelda J. 2016. *Hungarosoma bokori* Verhoeff, 1928 (Diplopoda: Chordeumatida): new insights into its taxonomy, systematics, molecular genetics, biogeography and ecology. *Zootaxa* 4178 (2): 234–256. https://doi.org/10.11646/zootaxa.4178.2.4

Mock A., Haľková B. & Tajovský K. 2019. Unique external morphology of millipedes of the family Trachygonidae (Diplopoda, Chordeumatida): case study on *Heteracrochordum evae* (Loksa, 1960). *In*: Dányi L., Korsós Z. & Lazányi E. (eds) *18th International Congress of Myriapodology, 25–31 August 2019, Budapest, Hungary. Program and Abstracts*: 46. Hungarian Natural History Museum and Hungarian Biological Society, Budapest.

Mršić N. 1987a. Attemsiidae (Diplopoda) of Yugoslavia. *Razprave IV. Razreda Sazu* 27: 101–168.

Mršić N. 1987b. Genus *Ochogona* Cook 1895 (Craspedosomatidae, Diplopoda) of Yugoslavia. *Bulletin du Muséum d'Histoire naturelle de Belgrade, Série B, Sciences biologiques* 42: 51–74.

Mršić N. 1994. The Diplopoda (Myriapoda) of Croatia. *Razprave IV. Razreda Sazu* 35 (12): 219–296.

Nešić C., Pavićević D. & Belij S. 2007. Results of the complex speleological research of northwest part of the Svrljiške Mountains. *Protection of Nature: Journal of The Institute for Nature Conservation of Serbia* 57 (1–2): 47–62. [In Serbian.]

Owen C. & Gregory S. 2021. Three apparently undescribed silk millipedes (Diplopoda: Chordeumatida) recorded from south Wales. *Bulletin of the British Myriapod and Isopod Group* 33: 9–18.

Pedroli-Christen A. 1993. Faunistique des mille-pattes de Suisse (Diplopoda). *Documenta Faunistica Helvetiae* 14: 1–245.

Pedroli-Christen A. & Mauriès J.-P. 1992. Un genre oublié d'Atractosomatinae des Alpes italo-suisses, *Bomogona* Cook, 1895 - statut, contenu, chorologie (Diplopoda, Craspedosomatida). *Bulletin du Muséum national d'histoire naturelle, 4e Série, Section A, Zoologie* 14: 457–472.

Pedroli-Christen A. & Scholl A. 1996a: The taxa of *Rhymogona* (Diplopoda, Craspedosomatidae): a ring species. Part one: genetic analysis of population structure. *Mémoires du Muséum national d'histoire naturelle, Paris* 169: 45–51.

Pedroli-Christen A. & Scholl A. 1996b: *Rhymogona* (Diplopoda, Craspedosomatidae), un genre monospécifique. Deuxième Partie: Révision basée sur les résultats morphologiques, génétiques et faunistiques. *Mémoires du Muséum national d'histoire naturelle, Paris* 169: 53–60.

Proudlove G.S. 2011. Notes on authorship, type material and current systematic position of the diplopod taxa described by Hilda K. Brade-Birks and S. Graham Brade-Birks. *Bulletin of the British Myriapod and Isopod Group* 25: 2–13.

Reboleira A.S.P.S. & Enghoff H. 2013. The genus *Boreviulisoma* Brolemann, 1928 – an Iberian-N African outlier of a mainly tropical tribe of millipedes (Diplopoda: Polydesmida: Paradoxosomatidae). *Zootaxa* 3646 (5): 516–528. https://doi.org/10.11646/zootaxa.3646.5.2

Reboleira A.S.P.S. & Enghoff H. 2018. First continental troglobiont *Cylindroiulus* millipede (Diplopoda, Julida, Julidae). *ZooKeys* 795: 93–103. https://doi.org/10.3897/zookeys.795.27619

Recuero E. & Rodríguez-Flores P.C. 2020. A new Mediterranean species of *Dolistenus* (Diplopoda, Platydesmida, Andrognathidae), with an updated key for the genus and the first contribution for a barcode database of European Platydesmida. *Zootaxa* 4718 (1): 123–133. https://doi.org/10.11646/zootaxa.4718.1.10

Reip H., Decker P., Voigtländer K., Lindner E.N., Hannig K. & Spelda J. 2012. Seltene Myriapoden Deutschlands (Diplopoda, Chilopoda). *Scubartiana* 5: 49–112.

Reip H.S., Spelda J., Voigtländer K., Decker P. & Lindner E.N. 2016. Rote Liste und Gesamtartenliste der Doppelfüßer (Myriapoda: Diplopoda) Deutschlands. *In*: Gruttke H., Balzer S., Binot-Hafke M., Haupt H., Hofbauer N., Ludwig G., Matzke-Hajek G. & Ries M. (eds) Rote Liste der gefährdeten Tiere, Pflanzen und Pilze Deutschlands. Band 4: Wirbellose Tiere (Teil 2). *Naturschutz und Biologische Vielfalt* 70 (4): 301–324. Bundesamt für Naturschutz, Bonn.

Ribaut H. 1913. Biospeologica XXVIII Ascospermophora (Myriopodes) (Première Série). *Archives de Zoologie expérimentale et générale 5e Série* 10: 399–478.

Sammet K., Ivask M. & Kurina O. 2018. A synopsis of Estonian myriapod fauna (Myriapoda: Chilopoda, Diplopoda, Symphyla and Pauropoda). *ZooKeys* 793: 63–96. https://doi.org/10.3897/zookeys.793.28050

Schubart O. 1934. Tausendfüssler oder Myriapoda I: Diplopoda. *Die Tierwelt Deutschlands* 28. Fischer, Jena.

Sendra A., Antić D., Barranco P., Borko Š., Christian E., Delić T., Fadrique F., Faille A., Galli L., Gasparo F., Georgiev D., Giachino P.M. Kováč L., Lukić M., Marcia P., Miculinić K., Nicolosi G., Palero F., Paragamian K., Pérez T., Polak S., Prieto C.E., Turbanov I., Vailati D. & Reboleira A.S.P.S. 2020. Flourishing in subterranean ecosystems: Euro-Mediterranean Plusiocampinae and tachycampoids (Diplura, Campodeidae). *European Journal of Taxonomy* 591: 1–138. https://doi.org/10.5852/ejt.2020.591

Serra A. & Mauriès J.P. 2015. Ecologie, ontogenèse et description d'un Diplopode édaphique de Catalogne: *Eopsychrosoma serrapradense* n. g., n. sp. (Diplopoda, Chordeumatida, Craspedosomatidea, Vandeleumatidae). *Bulletin de la Société d'Histoire naturelle de Toulouse* 151: 15–28.

Serra A. & Mauriès J.P. 2018. Contribution à la connaissance des Chamaesomatinae, avec description, ontogenèse et écologie de *Xystrosoma santllorence* n. sp. (Diplopoda, Chordeumida, Craspedosomatidea, Chamaesomatidae). *Bulletin de la Société d'Histoire naturelle de Toulouse* 154: 57–70.

Shear W.A. 1988. Systematic position of the milliped species *Alloiopus solitarius* Attems and the genus *Ghilarovia* Gulicka (Chordeumatida, Anthroleucosomatidae). *Myriapodologica* 2: 51–58.

Shear W.A. 1990. On the Central and East Asian milliped family Diplomaragnidae (Diplopoda, Chordeumatida, Diplomaragnoidea). *American Museum Novitates* 2977: 1– 40.

Shear W.A. & Leonard W.P. 2004. The millipede family Anthroleucosomatidae new to North America: *Leschius mcallisteri*, n.gen., n.sp. (Diplopoda: Chordeumatida: Anthroleucosomatidae). *Zootaxa* 609: 1–7. https://doi.org/10.11646/zootaxa.609.1.1

Short M., Vahtera V., Wesener T. & Golovatch S.I. 2020. The millipede family Polyxenidae (Diplopoda, Polyxenida) in the faunas of the Crimean Peninsula and Caucasus, with notes on other European Polyxenidae. *Zootaxa* 4772 (2): 306–332. https://doi.org/10.11646/zootaxa.4772.2.4

Sierwald P. & Spelda J. 2020. MilliBase. Available from http://www.millibase.org [accessed 28 May 2020]. https://doi.org/10.14284/370

Silvestri F. 1903. *Anamastigona pulchellum* Silvestri. *In*: Berlese A. (ed.) *Acari, Myriopoda et Scorpiones hucusque in Italia reperta* 98 (2). https://doi.org/10.5962/bhl.title.69269

Spelda J. 1991. Zur Faunistik und Systematik der Tausendfüssler (Myriapoda) Südwestdeutschlands. *Jahreshefte der Gesellschaft für Naturkunde Württemberg* 146: 211–232.

Spelda J. 1996. Millipedes as aids for the reconstruction of glacial refugia (Myriapoda: Diplopoda). *Mémoires du Muséum national d'histoire naturelle, Paris* 169: 151–161.

Spelda J. 2001. Review of the millipede genus *Pterygophorosoma* Verhoeff, 1897 (Diplopoda, Chordeumatida, Craspedosomatidae). *Andrias* 15: 29–48.

Spelda J. 2005. Improvements in the knowledge of the myriapod fauna of southern Germany between 1988 and 2005 (Myriapoda: Chilopoda, Diplopoda, Pauropoda, Symphyla). *Peckiana* 4: 101–129.

Spelda J. 2008. The genus *Pyrgocyphosoma* Verhoeff, 1910 (Diplopoda, Chordeumatida: Craspedosomatidae): New aspects on systematics, distribution and ecology. *Schubartiana* 3: 5–48.

Spelda J. 2015. Clase Diplopoda Orden Chordeumatida. *Revista IDE@ - SEA* 26A: 1–15.

Spuņģis V. 2010. Fauna of millipedes (Diplopoda) in Latvia with notes on occurrence, habitat preference and abundance. *Latvijas Entomologs* 48: 107–115.

Stoev P. 2008. A new species of *Acanthopetalum* Verhoeff, 1900 (Diplopoda: Callipodida: Schizopetalidae) from Bulgaria, with a review of the *A. richii* (Gray, 1832) group. *International Journal of Myriapodology* 2: 155–170. Available from https://brill.com/view/journals/ijm/1/2/article-p155.xml [accessed 8 Sep. 2021].

Strasser K. 1959. Phänologische Studien an Diplopoden und Bemerkungen über einige nordadriatische Arten. *Annalen des naturhistorischen Museum in Wien* 63: 461–467.

Strasser K. 1981. Über italienische, besonders cavernicole Diplopoden, III. *Bollettino del museo civico di storia naturale di Verona* 8: 221–233.

Strasser K. & Minelli A. 1984. Elenco dei diplopodi d'Italia – A checklist of Italian Diplopods. *Societa Veneziana di Scienze Naturali Lavori* 9 (2): 193–212.

Sziráki Gy. 1966. *Classification Key for Hungarian female Diplopods*. PhD thesis, Eötvös Loránd University, Faculty of Science, Department of Systematic Zoology and Ecology. [In Hungarian.]

Tajovský K. 1996. Life-cycle of the millipede *Melogona voigti* (Verhoeff, 1899) from a suburban forest in South Bohemia. *Mémoires du Muséum national d'histoire naturelle, Paris* 169: 509–514.

Tajovský K. 2001. Millipedes (Diplopoda) of the Czech Republic. *Myriapodologica Czecho-Slovaca* 1: 11–24.

Tajovský K., Mock A. & Papáč V. 2014. The genus *Hylebainosoma* Verhoeff, 1899 (Diplopoda, Chordeumatida, Haaseidae): Redescription of *Hylebainosoma tatranum*, description of a new troglobiont

species and notes to the *Hylebainosoma–Romanosoma* species group. *Zootaxa* 3764 (5): 501–523. https://doi.org/10.11646/zootaxa.3764.5.1

Telfer M.G., Gregory S.J., Kime R.D., Owen C. & Spelda J. 2015: *Ceratosphys amoena* Ribaut, 1920 and *Hylebainosoma nontronensis* Mauriès & Kime, 1999 new to Britain (Diplopoda: Chordeumatida). *Bulletin of the British Myriapod and Isopod Group* 28: 15–30.

Thaler K. 1984. Fragmenta faunistic tirolensia – VI (Arachnida: Arenei, Opiliones; Myriapoda: Diplopoda, Chilopoda; Insecta: Coleoptera, Carabidae). *Berichte des naturhistorischen-medizinischen Vereins Innsbruck* 71: 97–118.

Vagalinsky B. & Golovatch S. I. 2016. Two new species of *Anamastigona* from Cyprus and an updated key to species of the genus (Diplopoda: Chordeumatida: Anthroleucosomatidae). *European Journal of Taxonomy* 227: 1–19. https://doi.org/10.5852/ejt.2016.227

Vagalinski B. & Lazányi E. 2018. Revision of the millipede tribe Brachyiulini Verhoeff, 1909 (Diplopoda: Julida: Julidae), with descriptions of new taxa. *Zootaxa* 4421 (1): 1–142. https://doi.org/10.11646/zootaxa.4421.1.1

Vagalinski B., Stoev P. & Enghoff H. 2015. A review of the millipede genus *Typhloiulus* Latzel, 1884 (Diplopoda: Julida: Julidae), with a description of three new species from Bulgaria and Greece. *Zootaxa* 3999 (3): 334–362. https://doi.org/10.11646/zootaxa.3999.3.2

Vagalinski B., Golovatch S.I., Akkari N. & Stoev P. 2019. *Simplogonopus rubellus* (Attems, 1902) gen. n., comb. n. (Diplopoda: Polydesmida: Trichopolydesmidae): Revealing the identity of an enigmatic Eastern-Mediterranean millipede. *Acta Zoologica Bulgarica* 71 (3): 325–334.

Verhoeff K.W. 1900. Beiträge zur Kenntniss paläarktischer Myriopoden. XIII. Aufsatz: Zur vergleichenden Morphologie, Phylogenie, Gruppen- und Art-Systematik der Ascospermophora. *Archiv für Naturgeschichte* 66 (1): 347–402.

Verhoeff K.W. 1910. Über Diplopoden. 11.-15. (31.-35.) Aufsatz: Beiträge zur Kenntnis der Glomeriden, Juliden, Ascospermorpha und Lysiopetaliden, sowie zur Fauna Siziliens, Untersuchungen über Art- und Gruppensystematik; Morphologie, nachembryonale Entwicklung. *Nova acta Academiae Caesareae Leopoldino-Carolinae Germanicae Naturae Curiosorum* 92 (2): 139–448.

Verhoeff K.W. 1913. Zwei neue Gattungen der Trachyzona n. superfam. der Ascospermophora. *Zoologischer Anzeiger* 42: 125–143.

Verhoeff K.W. 1921. Über Diplopoden der Riviera und einige alpenländische Chilognathan (92. Diplopoden-Aufsatz). *Archiv für Naturgeschichte* 87A (2): 1–110.

Wesener T. 2015. Integrative redescription of a forgotten Italian pill millipede endemic to the Apuan Alps—*Glomeris apuana* Verhoeff, 1911 (Diplopoda, Glomerida, Glomeridae). *Zootaxa* 4039 (2): 391–400. https://doi.org/10.11646/zootaxa.4039.2.11

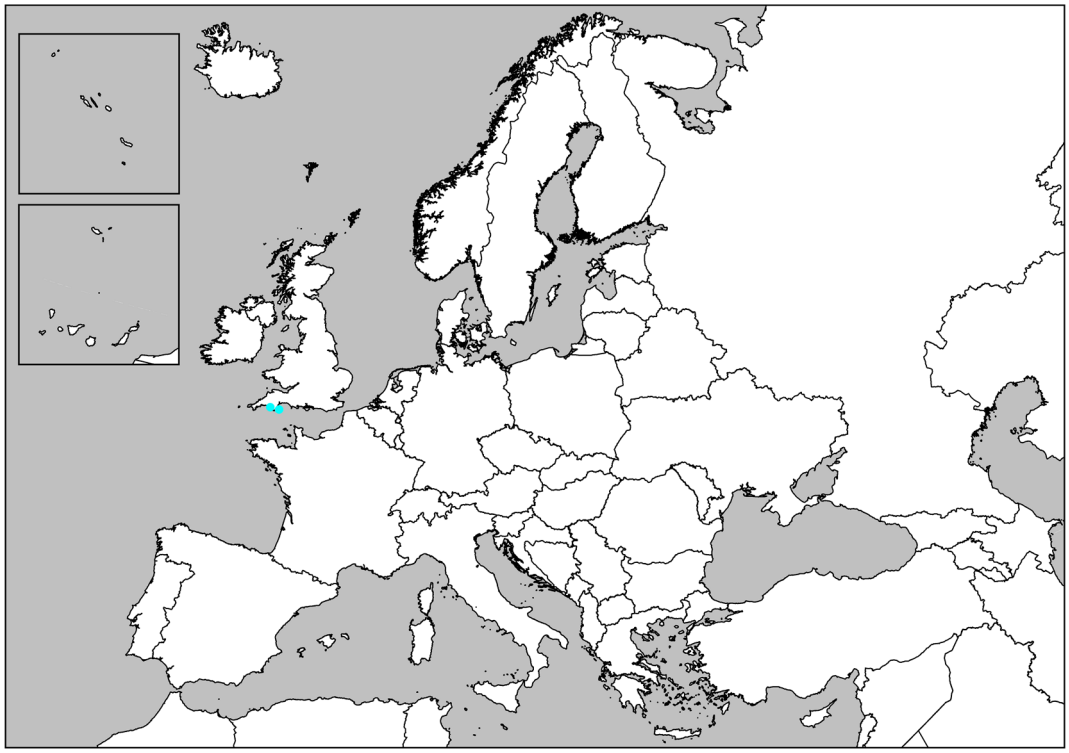
Wesener T. & Conrad C. 2016. Local hotspots of endemism or artifacts of incorrect taxonomy? The Status of microendemic pill millipede species of the genus *Glomeris* in northern Italy (Diplopoda, Glomerida). *PLoS ONE* 11 (9): e0162284. https://doi.org/10.1371/journal.pone.0162284

Wytwer J. & Golovatch S.I. 2004. Redescription of the East Carpathian millipedes *Ochogona (Beskidia) jankowskii* (Jawłowski, 1938) (Diplopoda, Chordeumatida, Craspedosomatidae). *Fragmenta faunistica* 47 (1): 39–45. https://doi.org/10.3161/00159301FF2004.47.1.039

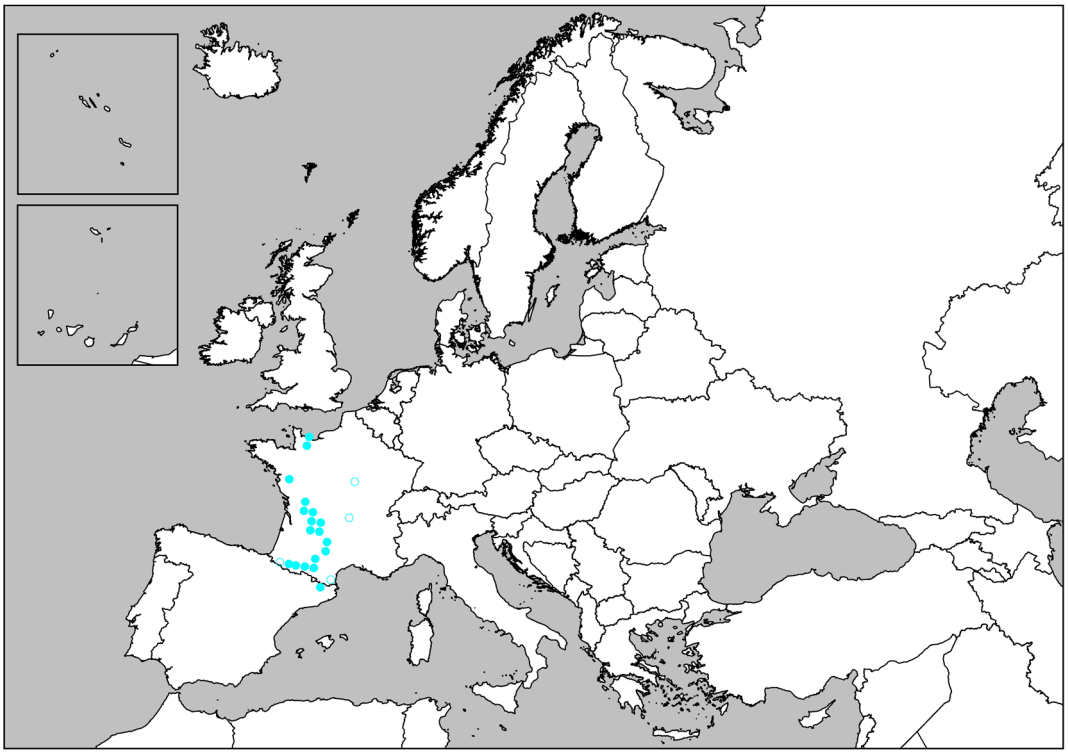
Manuscript received: 27 November 2020
Manuscript accepted: 10 May 2021

Published on: 22 September 2021
Topic editor: Nesrine Akkari
Desk editor: Kristiaan Hoedemakers

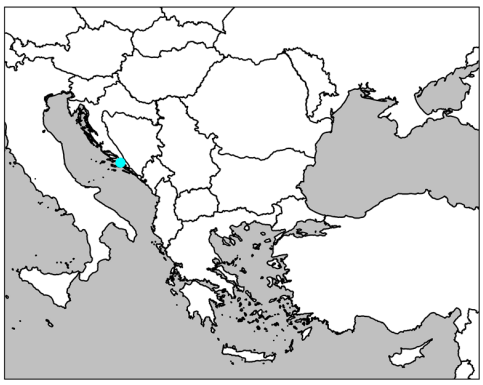
Appendix 1: maps



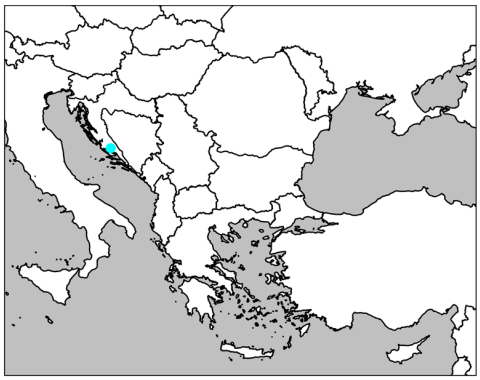
1. *Anthogona britannica* Gregory, Jones & Mauriès, 1993



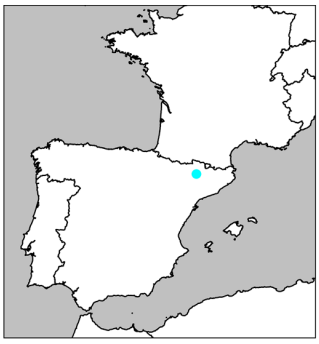
2. *Anthogona variegata* Ribaut, 1913



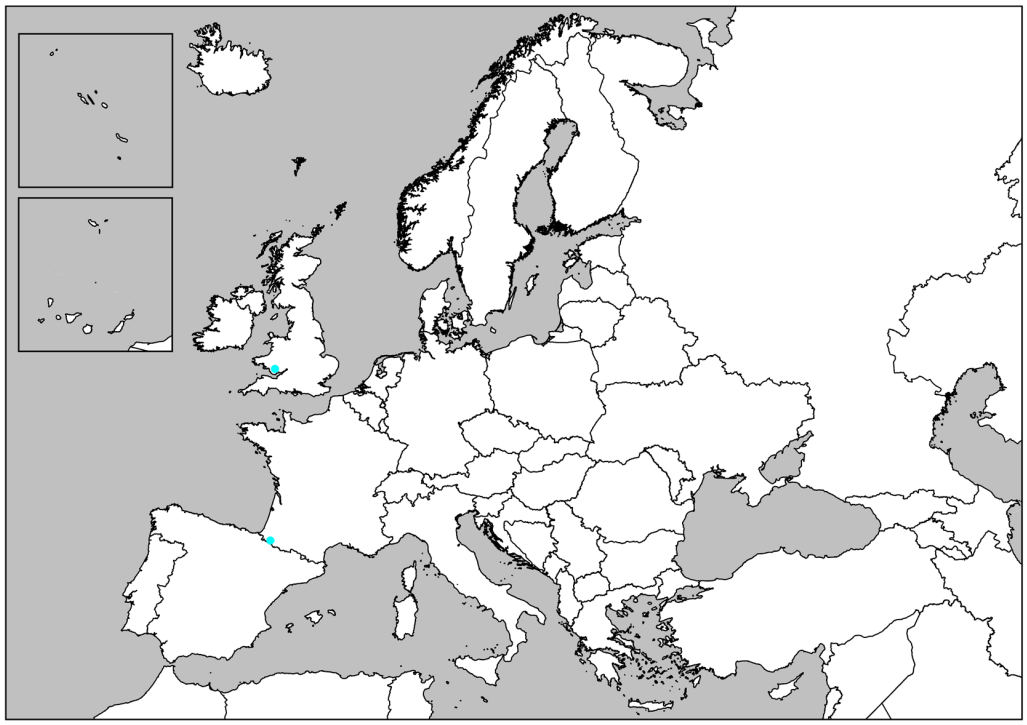
3. *Biokoviella mauriesi* Mršić, 1992



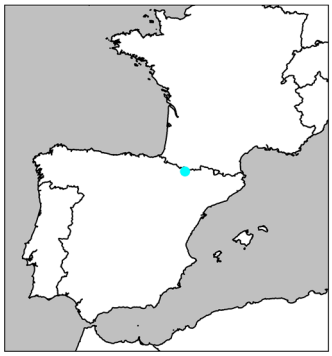
4. *Biokoviella mosorensis* Antić & Dražina, 2016



5. *Cranogona cornuta* Ribaut, 1913

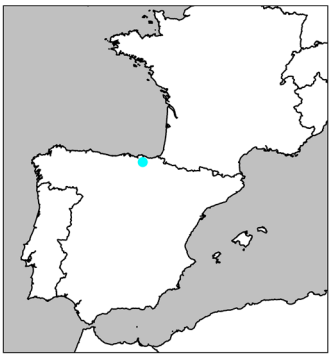


6. *Cranogona dalensi* Mauriès, 1965

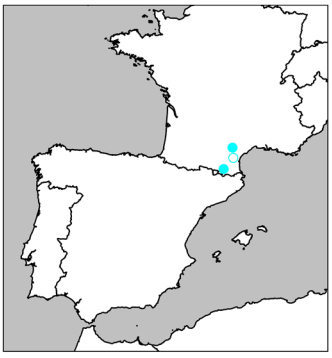


7. *Cranogona delicata*
Mauriès, 1963

8. *Cranogona denticulata*
Delmas, 1927

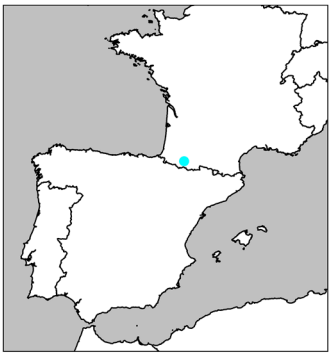


9. *Cranogona espagnoli*
Vicente & Mauriès, 1980

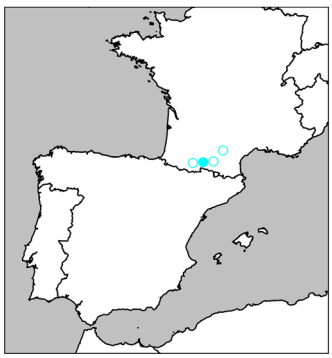


10. *Cranogona orientale*
Ribaut, 1913

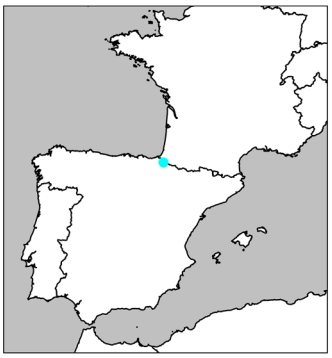
11. *Cranogona pavida*
Ribaut, 1951



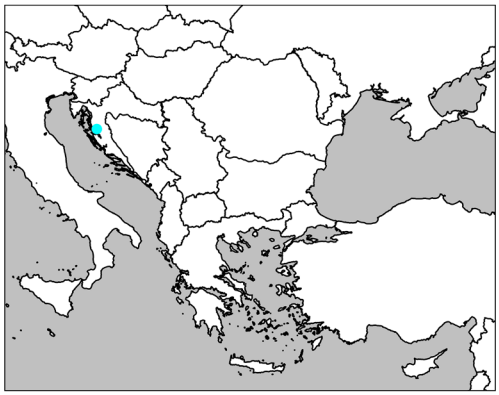
12. *Cranogona touyaensis*
Mauriès, 1975



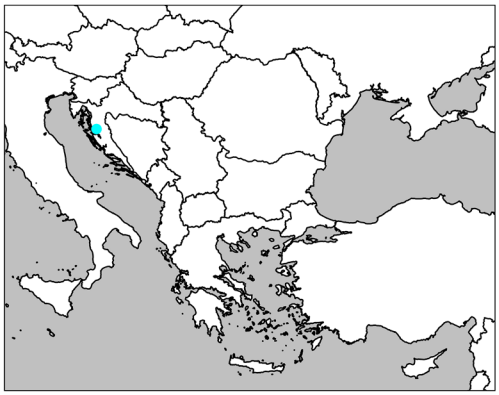
13. *Cranogona uncinata*
Ribaut, 1951



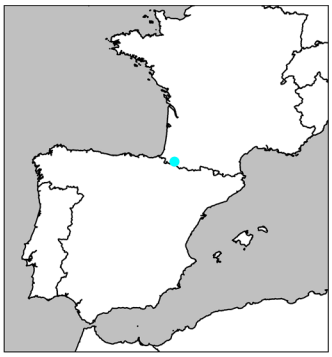
14. *Cranogona vasconica*
Ribaut, 1913



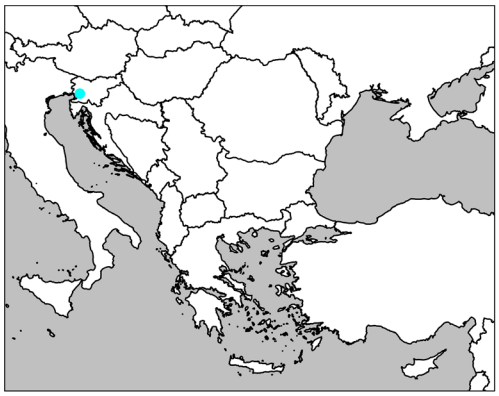
15. *Egonpretneria brachychaeta* Strasser, 1966



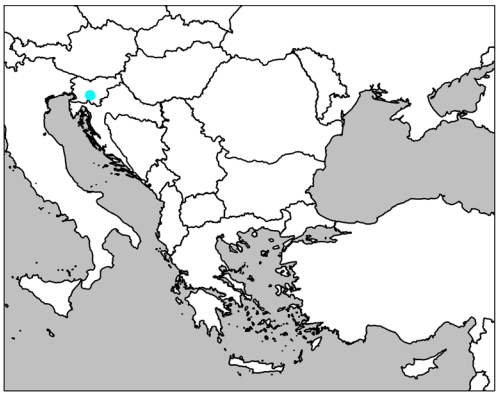
16. *Egonpretneria vudutschajldi* Antić & Dražina, 2015



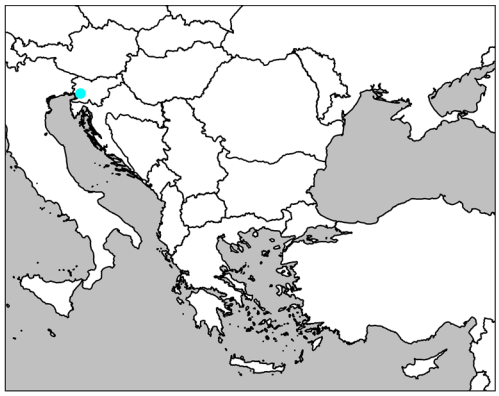
17. *Escualdosoma gourbaultae* (Mauriès, 1965)



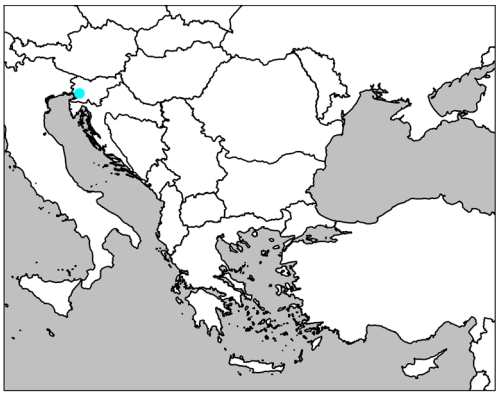
18. *Haasia carinifera* (Strasser, 1935)



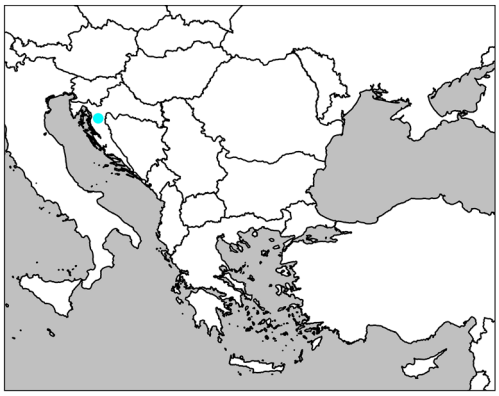
19. *Haasia cornuata* (Strasser, 1940)



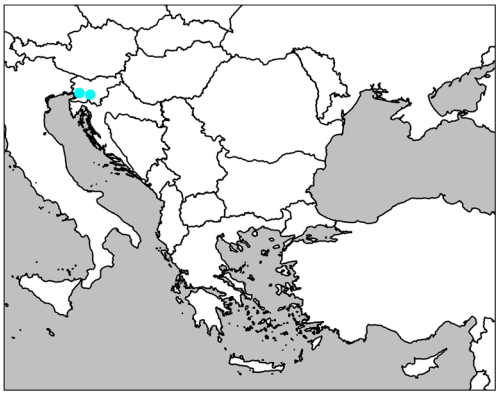
20. *Haasia falsa* (Strasser, 1971)



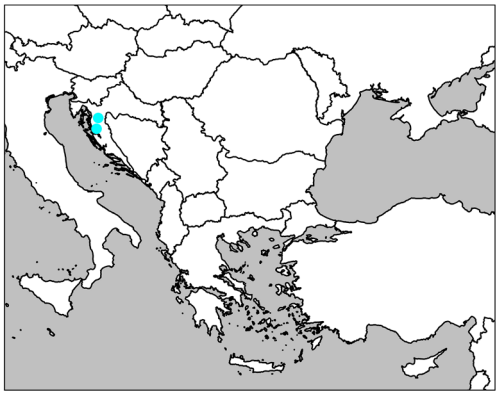
21. *Haasia hadzii* (Strasser, 1966)



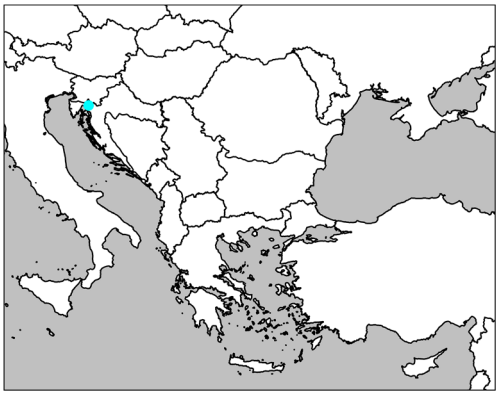
22. *Haasia jalzici* Antić & Dražina, 2015



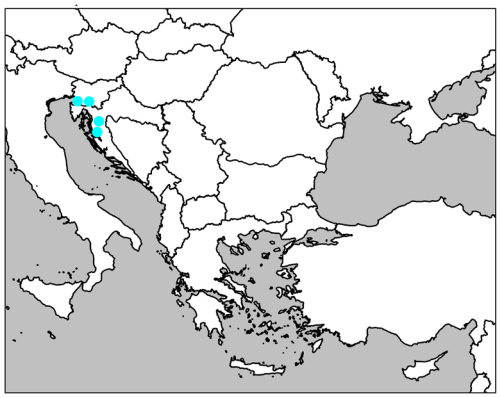
23. *Haasia largescutata* (Strasser, 1935)



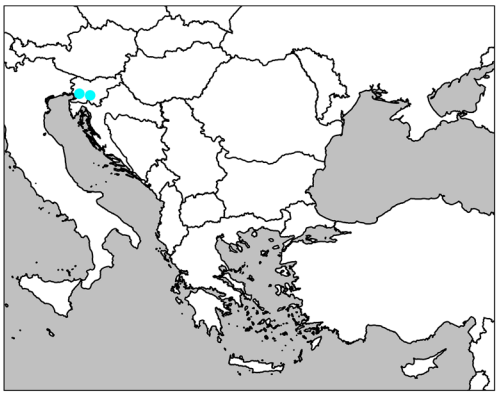
24. *Haasia likana* (Strasser, 1966)



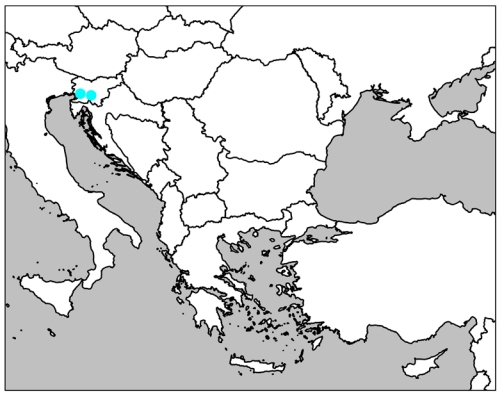
25. *Haasia pretneri* (Strasser, 1940)



26. *Haasia stenopodium* (Strasser, 1966)

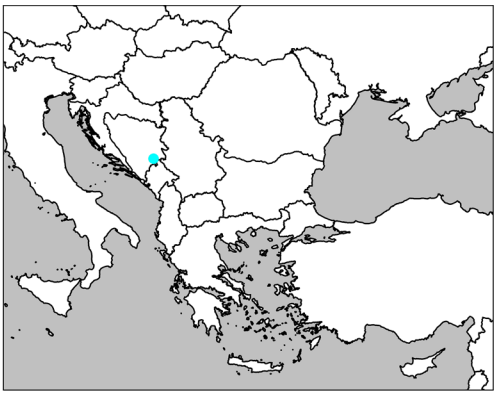


27. *Haasia tridentis* (Verhoeff, 1931)

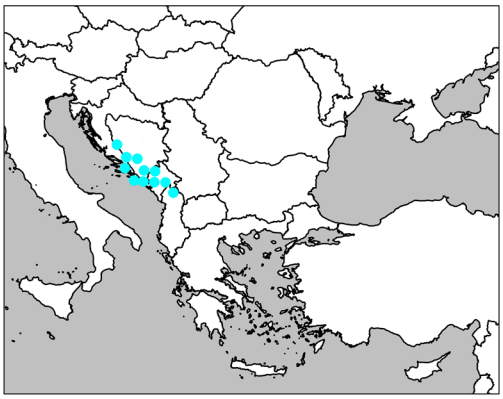


28. *Haasia troglodytes* (Latzel, 1884)

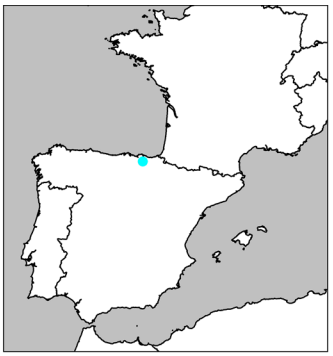
29. *Macrochaetosoma bertiscea* Antić & Makarov, 2015



30. *Macrochaetosoma drinae* Strasser, 1962



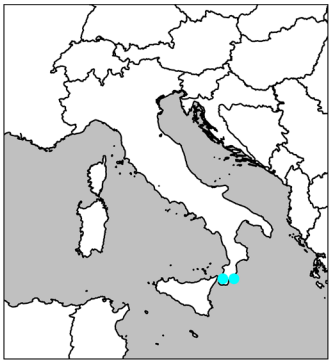
31. *Macrochaetosoma troglomontanum* Absolon & Lang, 1933



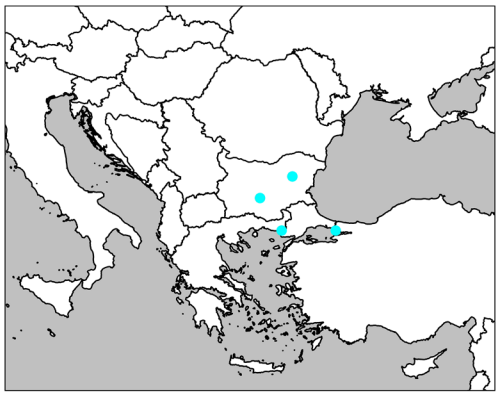
32. *Vascanthogona vicenteae* Mauriès & Barraqueta, 1985

33. *Anamastigona alba* (Strasser, 1960)

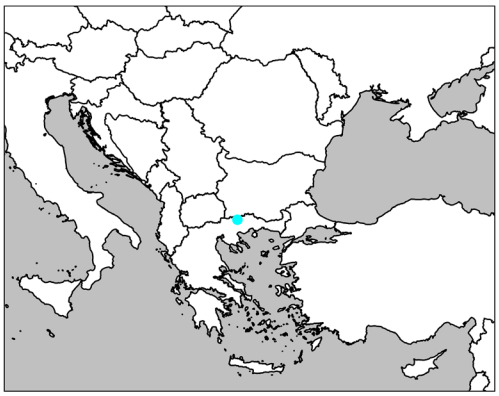
34. *Anamastigona albanensis* Mauriès, Golovatch & Stoev, 1997



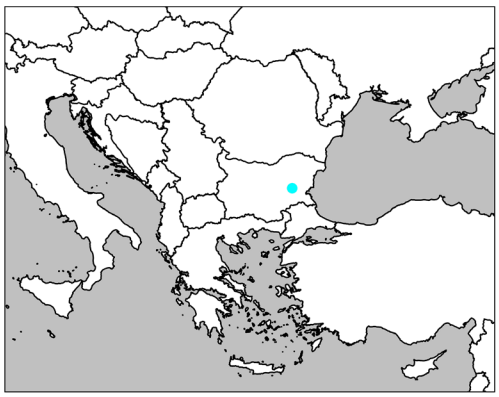
35. *Anamastigona aspromontis* (Strasser, 1970)



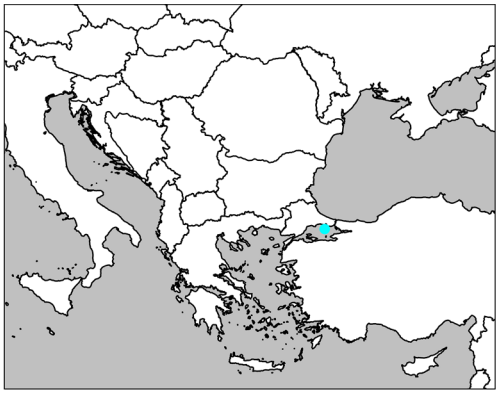
36. *Anamastigona bilselii* (Verhoeff, 1940)



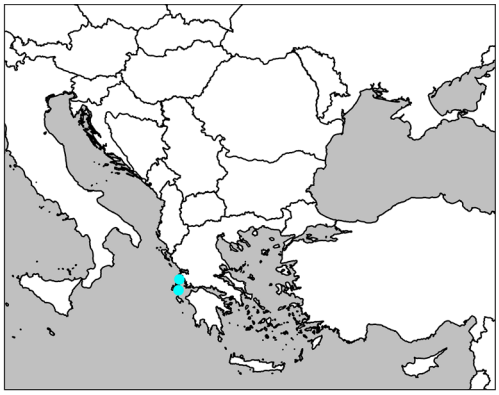
37. *Anamastigona delcevi* (Strasser, 1973)



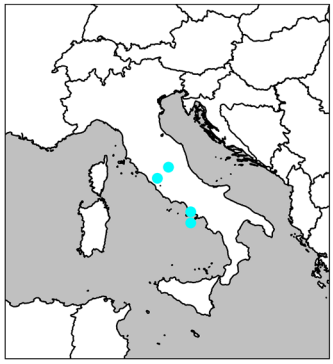
38. *Anamastigona falcata* (Gulička, 1967)



39. *Anamastigona halophila* (Verhoeff, 1940)

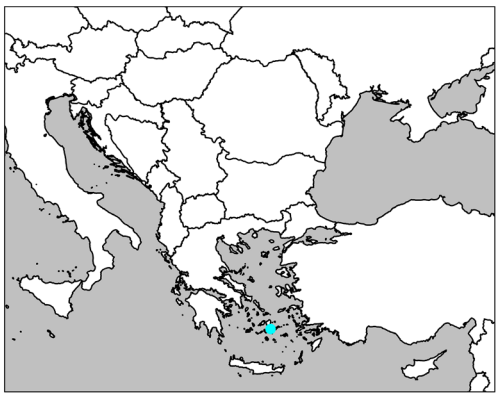


40. *Anamastigona hauseri* (Strasser,1974)

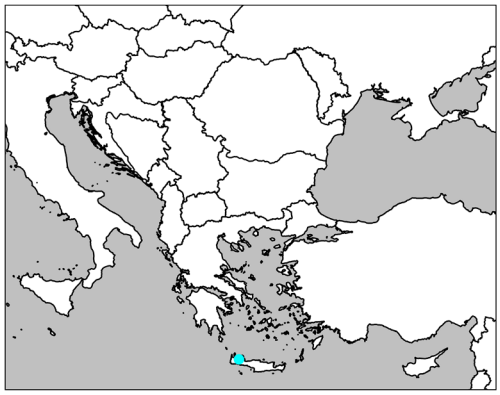


41. *Anamastigona hispidula* (Silvestri, 1894)

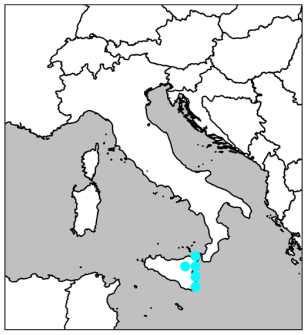
42. *Anamastigona lepenicae* (Strasser, 1975)



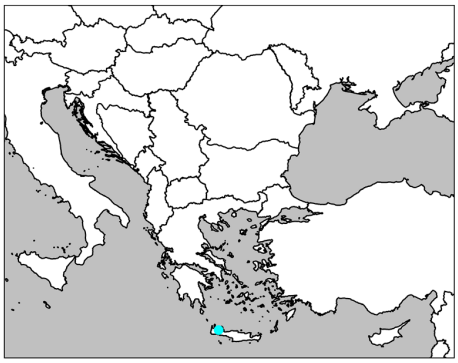
43. *Anamastigona matsakisi* Mauriès & Karamouna, 1984



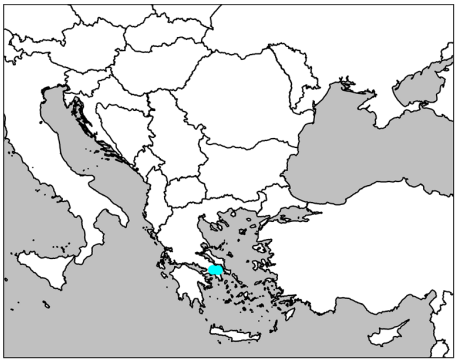
44. *Anamastigona mediterranea* Ćurčić, Makarov & Lymberakis, 2001



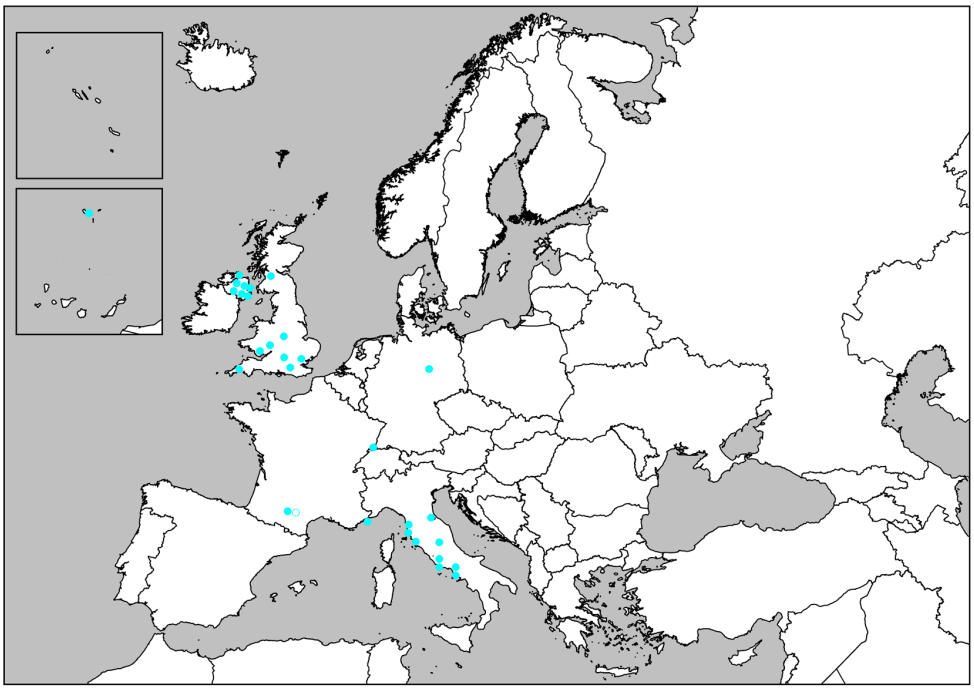
45. *Anamastigona meridionalis* Silvestri, 1898



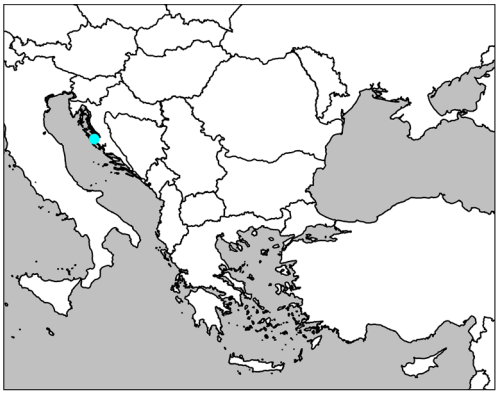
46. *Anamastigona penicillata* (Attems, 1902)



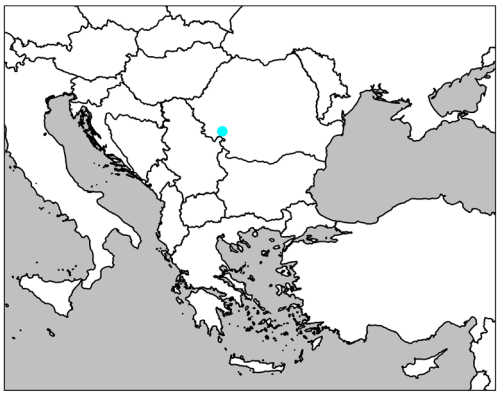
47. *Anamastigona pentelicona* (Verhoeff, 1925)



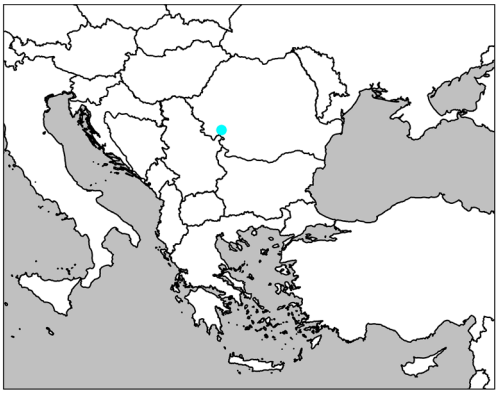
48. *Anamastigona pulchella* (Silvestri, 1894)



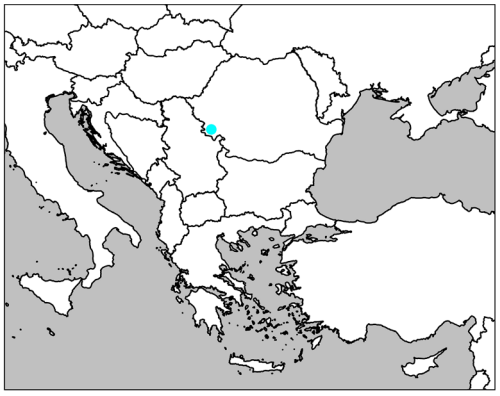
49. *Anamastigona radmani* Makarov, Rađa, Rađa, Tomić, Mitić & Ćurcić, 2007



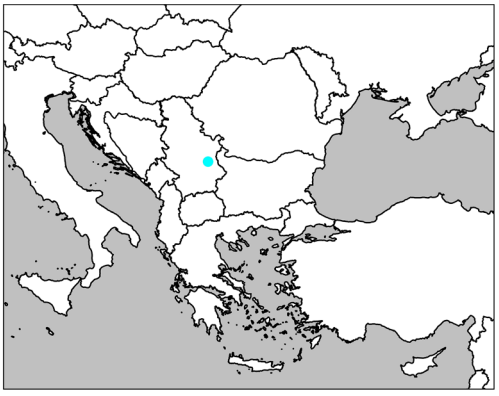
50. *Anthroleucosoma banaticum* Verhoeff, 1899



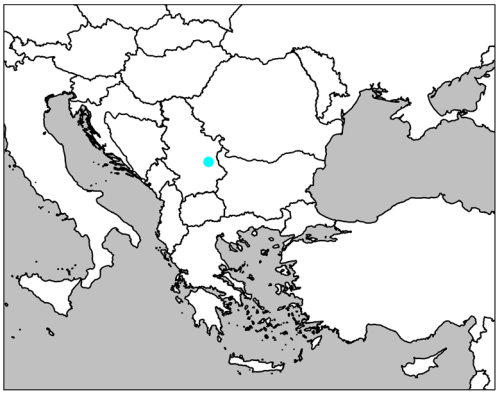
51. *Anthroleucosoma spelaeum* Ceuca, 1964



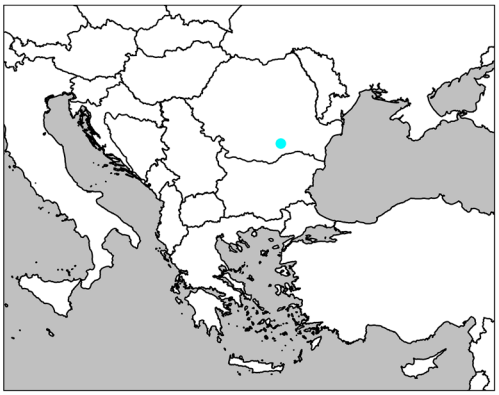
52. *Banatosoma ocellatum* (Tabacaru, 1967)



53. *Belbogosoma bloweri* Ćurčić & Makarov, 2008

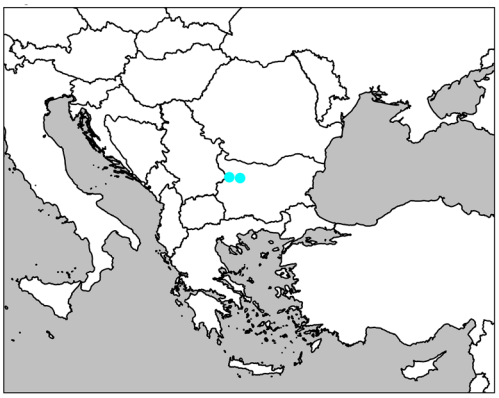


54. *Belbogosoma stribogi* Antić & Makarov, 2014



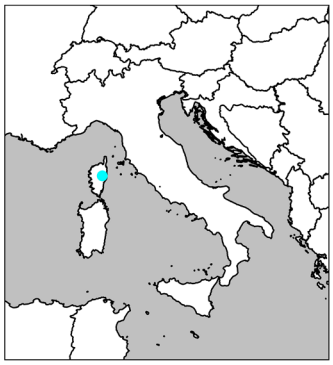
55. *Bulgardicus bucarestensis* Tabacaru & Giurginca, 2006

56. *Bulgardicus tranteevi* Strasser, 1960

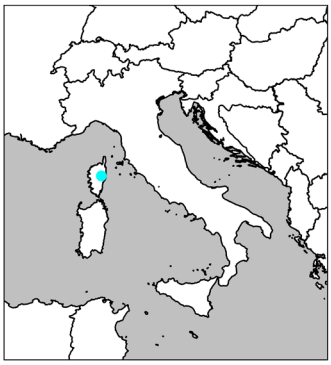


57. *Bulgarosoma bureschi* Verhoeff, 1926

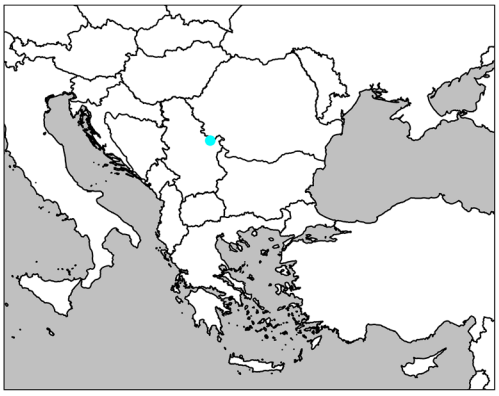
58. *Bulgarosoma superficiei* Strasser, 1975



59. *Camptogona delamarei* Mauriès, 1969



60. *Camptogona duboscqui* (Brölemann, 1903)



61. *Cornogonopus pavicevici* Antić, 2020

62. *Dacosoma motasi* Tabacaru, 1967

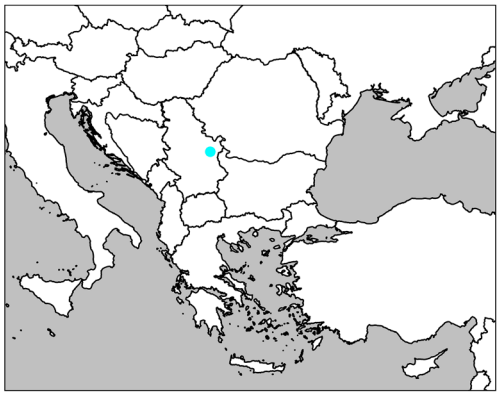
63. *Dazbogosoma naissi* Makarov & Ćurčić, 2012

64. *Krueperia nivalis* Verhoeff, 1900

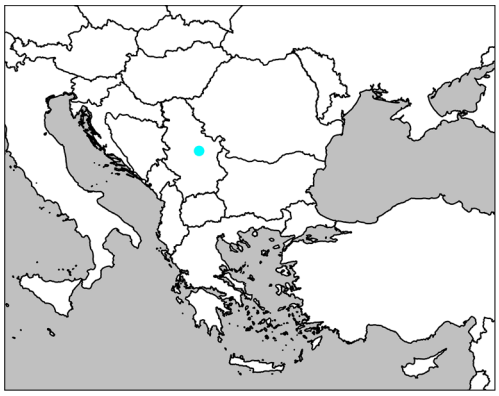
65. *Perunosoma trojanicum* Ćurčić & Makarov, 2007

66. *Rhodoposoma rhodopinum* (Strasser, 1966)

67. *Serbosoma beljanicae* (Ćurčić & Makarov, 1998)



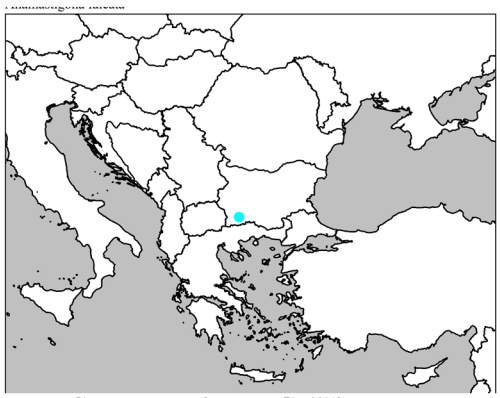
68. *Serbosoma crucis* (Strasser, 1960)



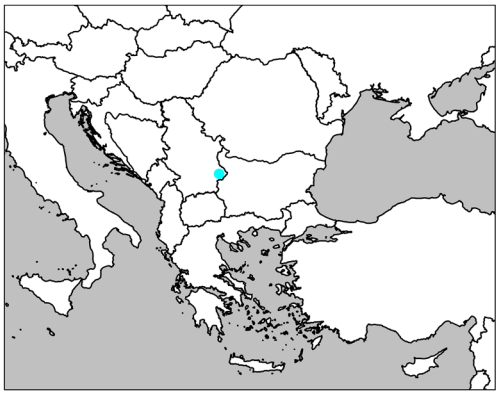
69. *Serbosoma kucajense* (Ćurčić & Makarov, 1998))

70. *Serbosoma lazarevense* (Ceuca, 1964)

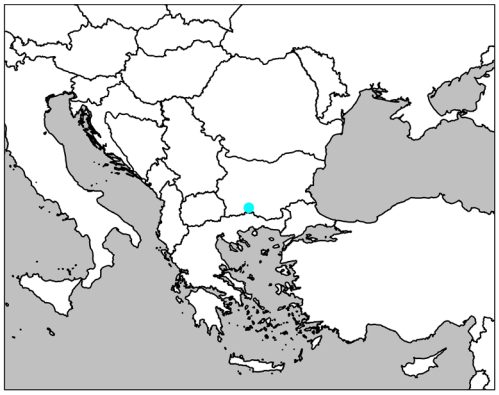
71. *Serbosoma zagubicae* (Ćurčić & Makarov, 1998)



72. *Stygiosoma beroni* Gulička, 1967

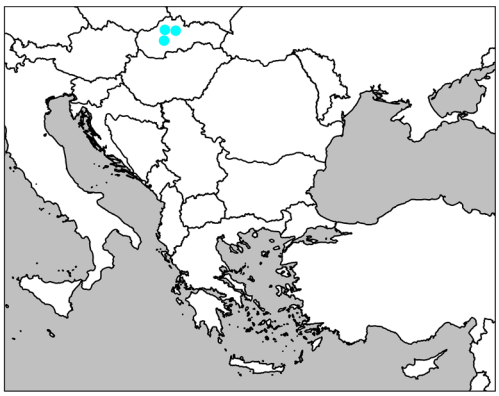


73. *Svarogosoma bozidarcurcici* Makarov, 2003

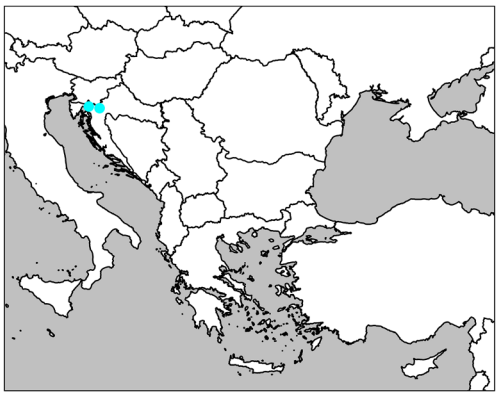


74. *Troglodicus meridionalis* (Tabacaru, 1967)

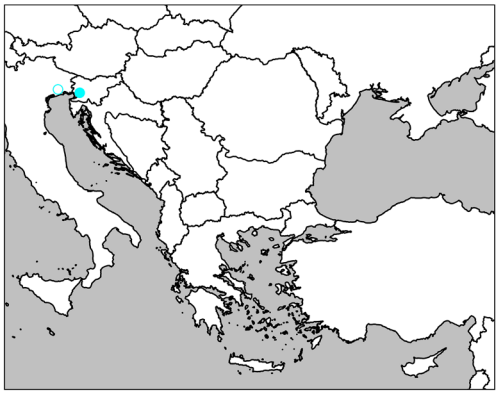
75. *Troglodicus tridentifer* Gulička, 1967



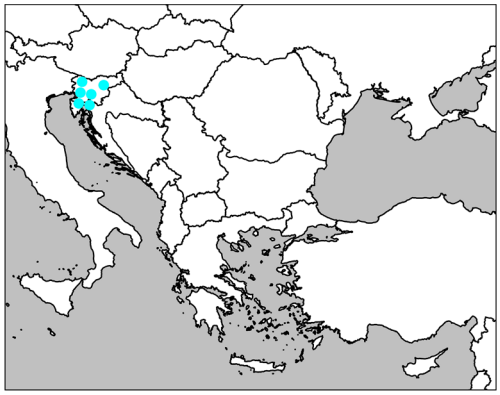
76. *Allorhiscosoma sphinx* (Verhoeff, 1907)



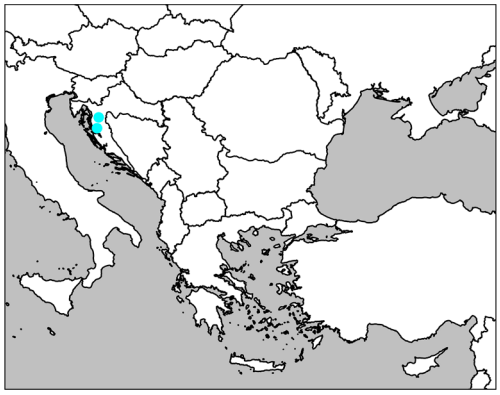
77. *Attemsia coniuncta* Strasser, 1939



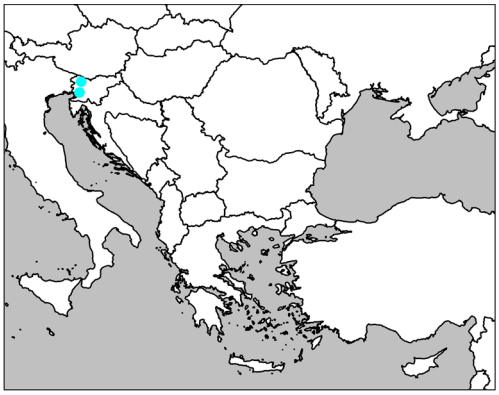
78. *Attemsia dolinensis* Verhoeff, 1909



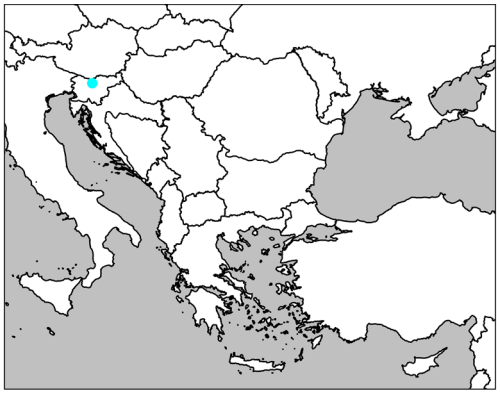
79. *Attemsia falcifera* Verhoeff, 1899



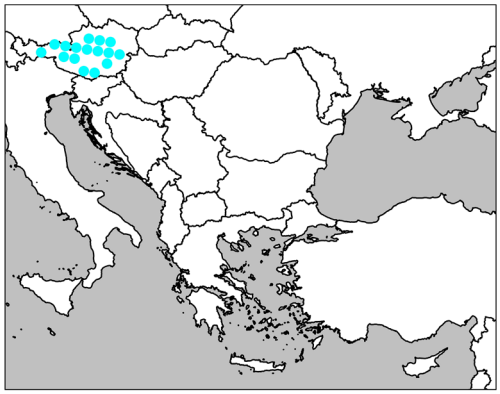
80. *Attemsia likana* Strasser, 1966



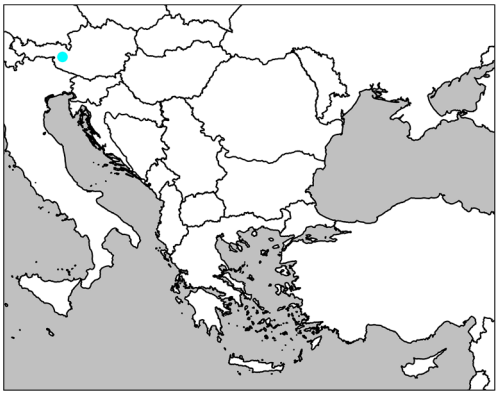
81. *Attemsia stygia* (Latzel, 1884)



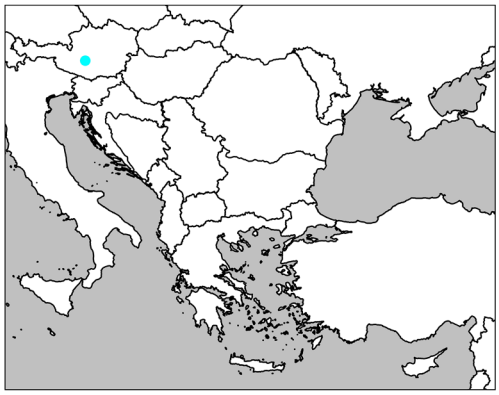
82. *Coelogonium cavernarum* Strasser, 1937



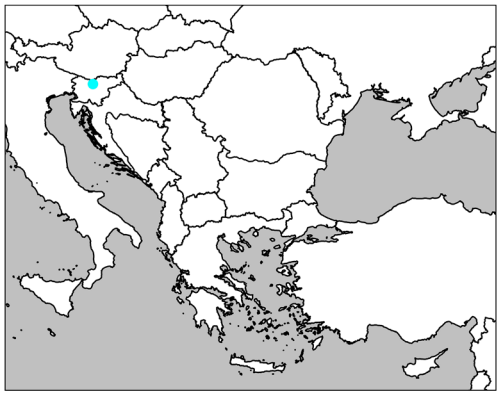
83. *Dendromonomeron oribates* (Latzel, 1884)



84. *Dimastosternum franzi* Attems, 1949

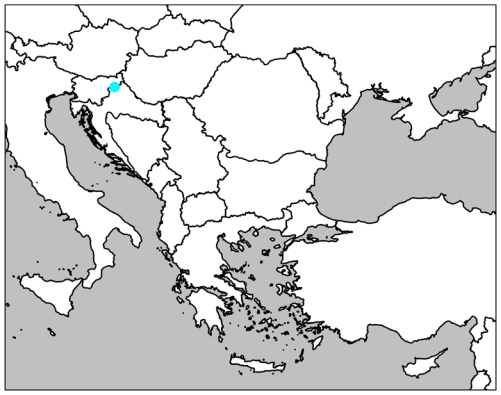


85. *Dimastosternum holdhausi*
Attems, 1927

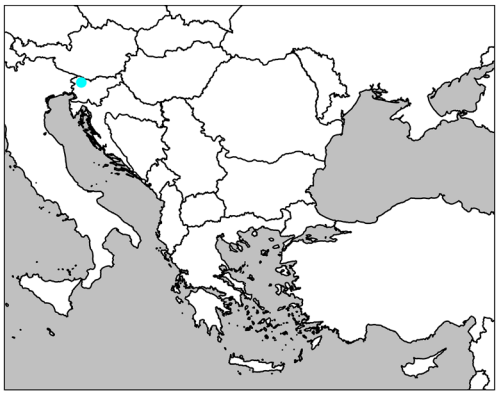


86. *Eurygonium alticola*
(Strasser, 1937)

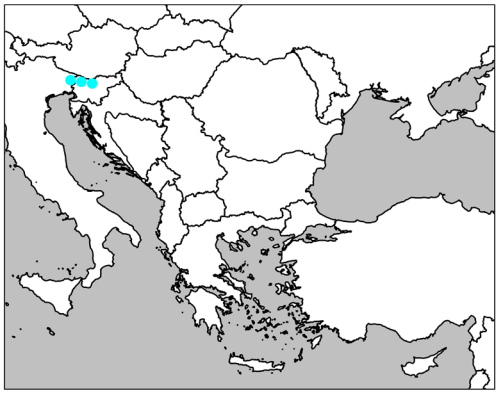
87. *Glomogonium karawankarum*
Strasser, 1965



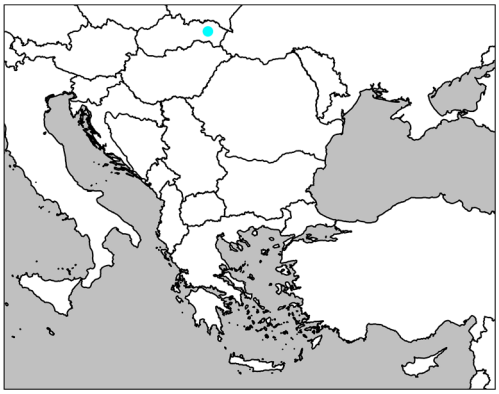
88. *Grassographia makolensis*
Mršić, 1987



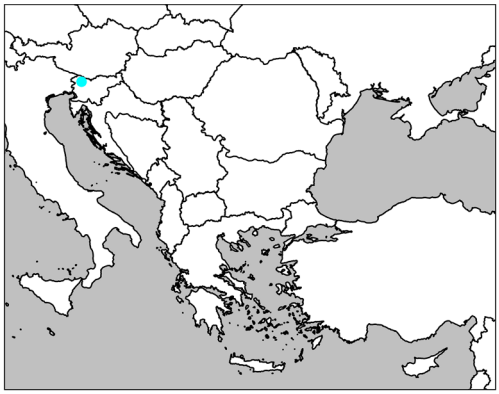
89. *Julialpium alabardatum*
(Strasser, 1937)



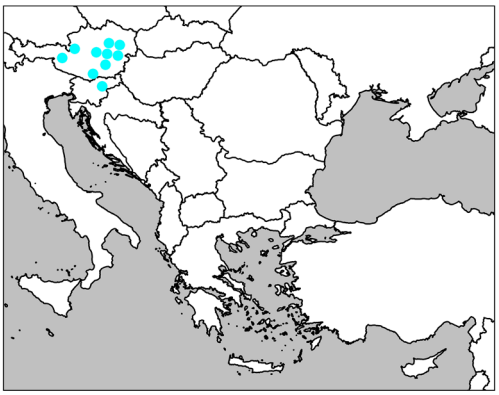
90. *Mecogonopodium bohiniense*
Strasser, 1933



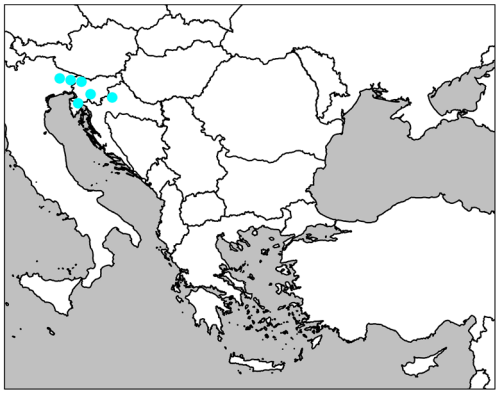
91. *Mecogonopodium carpathicum*
Mock & Tajovský, 2008



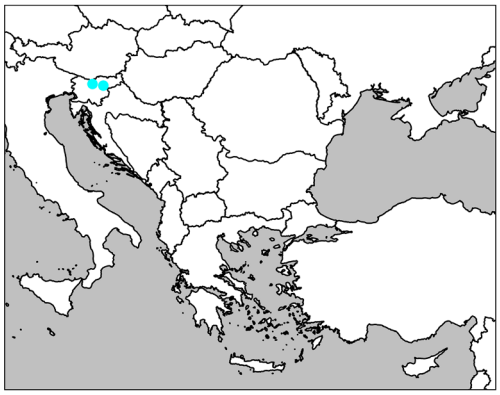
92. *Mecogonopodium zirianum*
Mršić, 1987



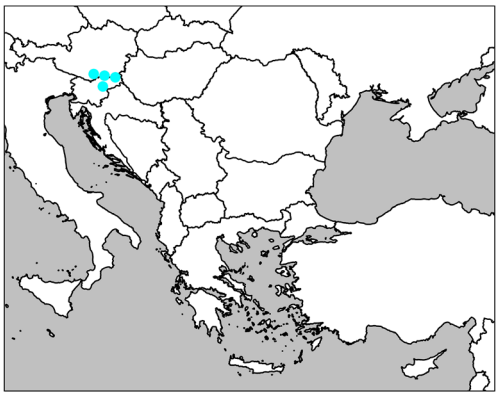
93. *Polyphematia moniliformis*
(Latzel, 1884)



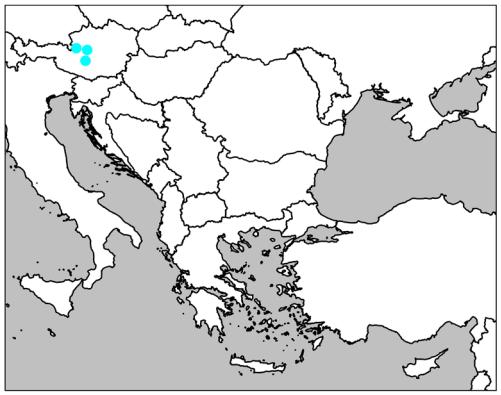
94. *Schubartia lohmanderi*
Verhoeff, 1927



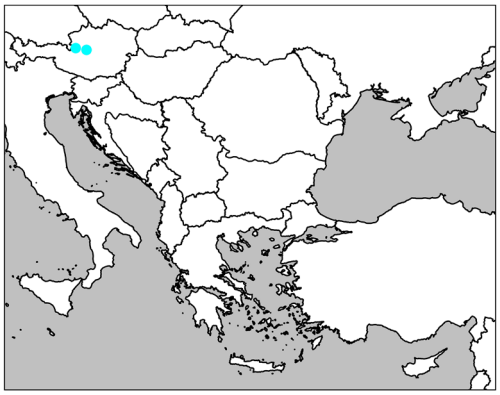
95. *Stiphrogonium attemsi*
Strasser, 1937



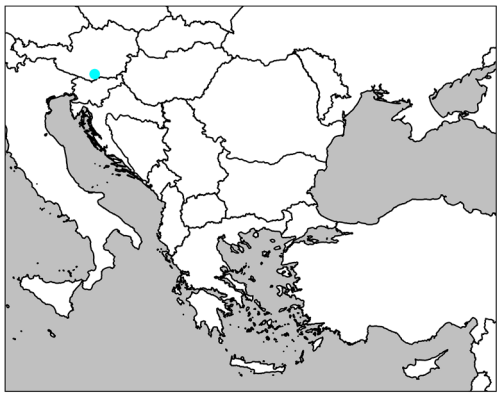
96. *Symphyosphys serkoi*
Strasser, 1939



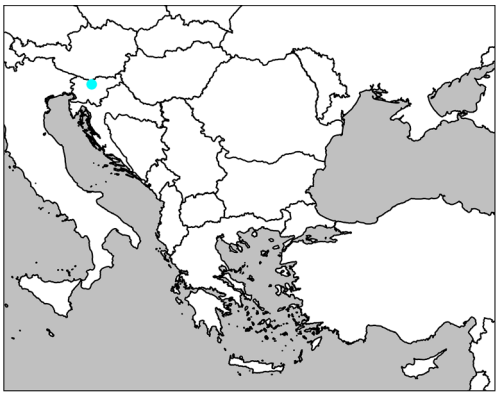
97. *Syngonopodium aceris*
Verhoeff, 1913



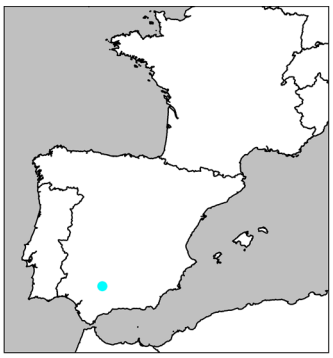
98. *Syngonopodium cornutum*
Verhoeff, 1929



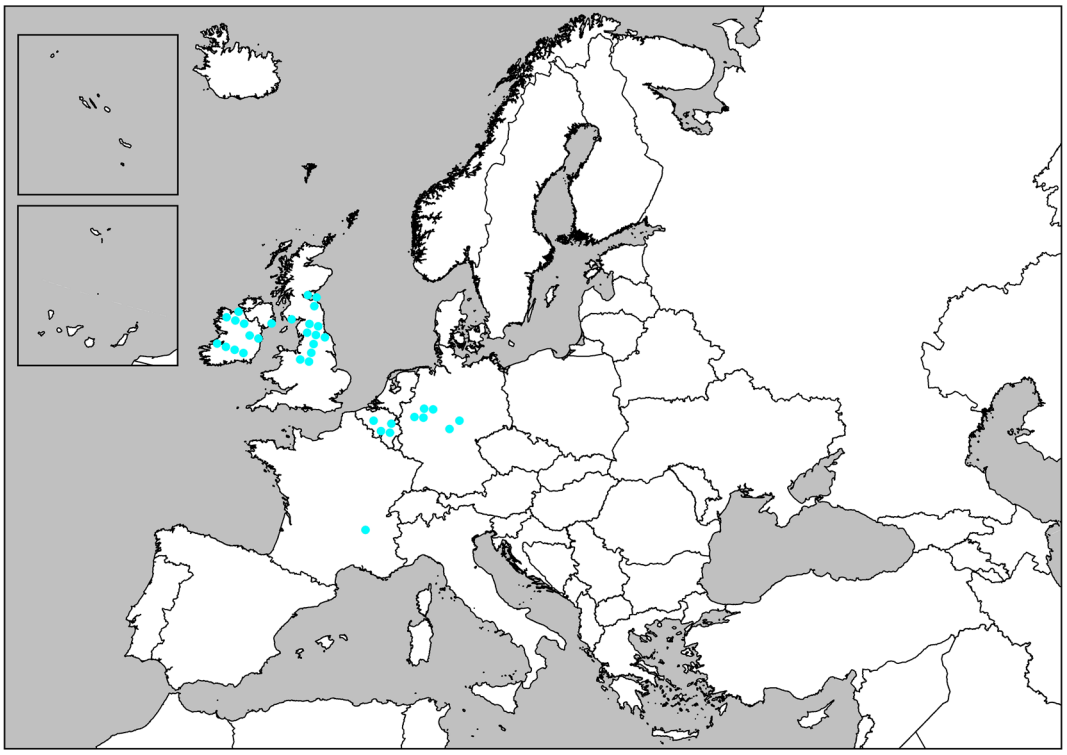
99. *Tylogonium hoelzeli*
Strasser, 1959



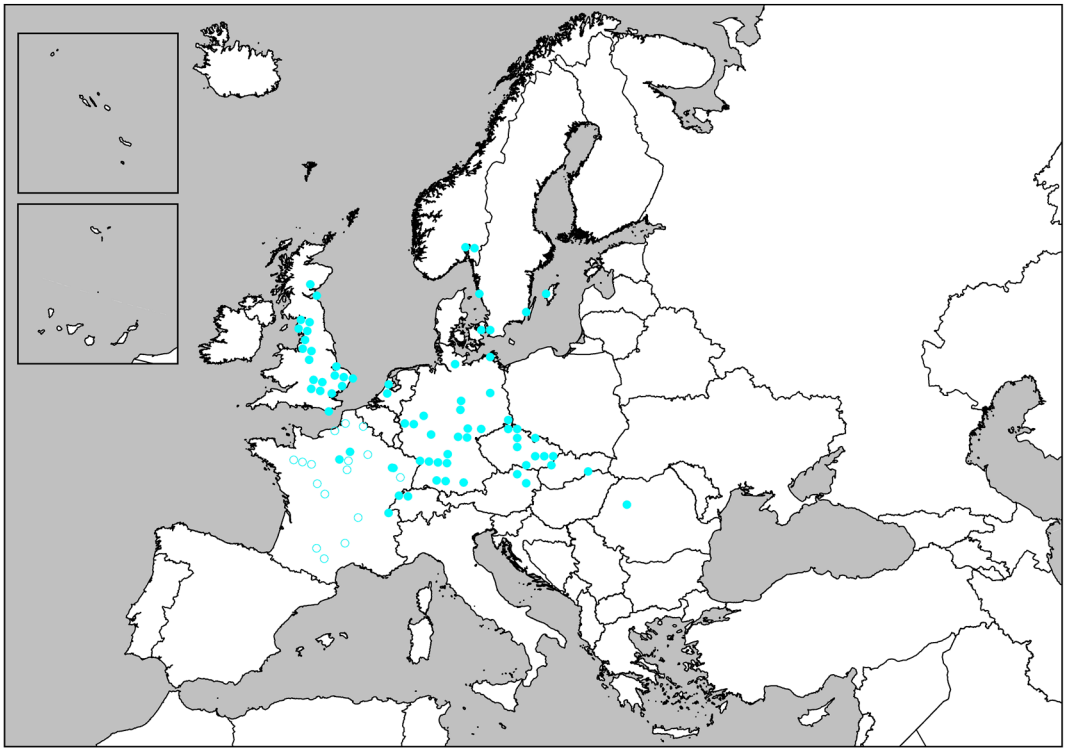
100. *Tylogonium nivifidele*
Strasser, 1937



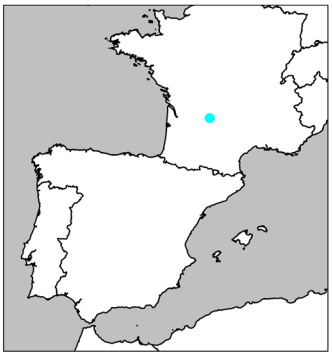
101. *Beticosoma longipenis*
Mauriès, 1990



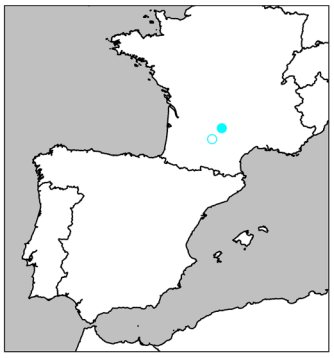
102. *Brachychaeteuma bagnalli* Verhoeff, 1911



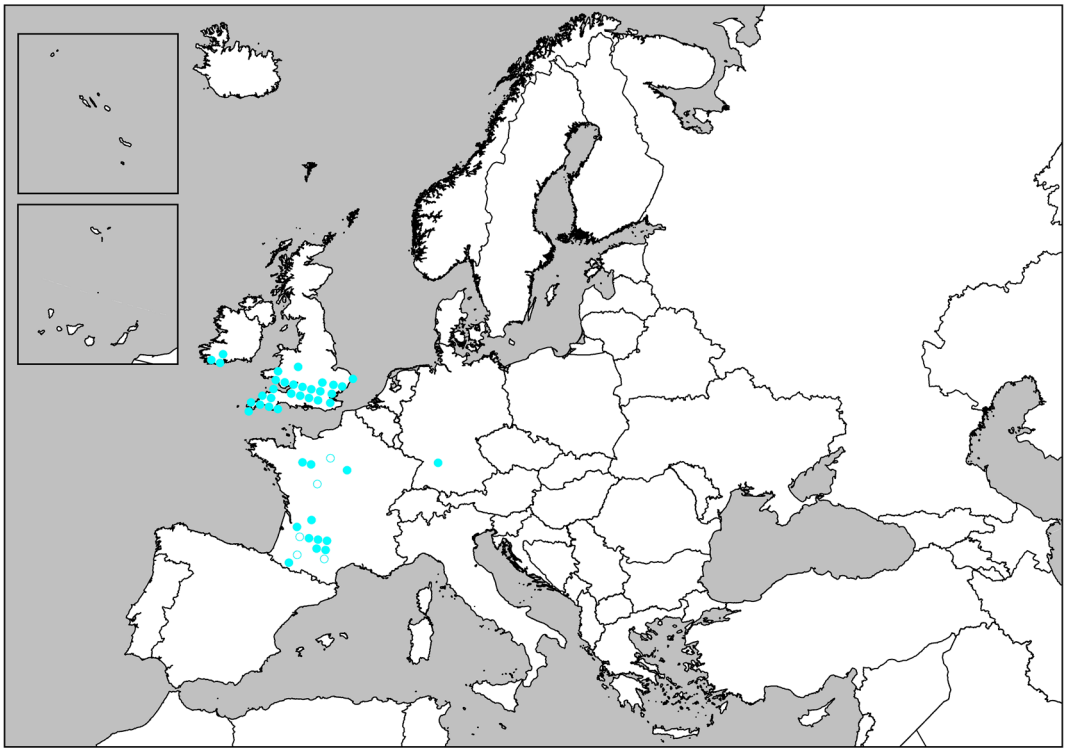
103. *Brachychaeteuma bradeae* (Brölemann, H.K. Brade-Birks & S.G. Brade-Birks, 1917)



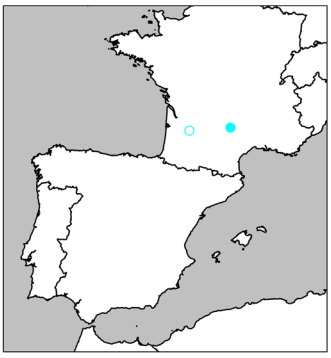
104. *Brachychaeteuma cadurcense* Mauriès, 1967



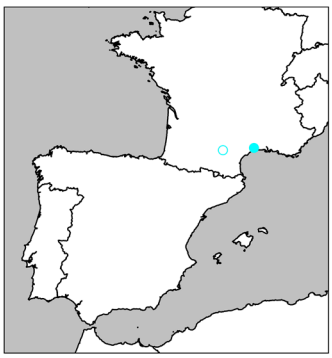
105. *Brachychaeteuma furcatum* Ribaut, 1956



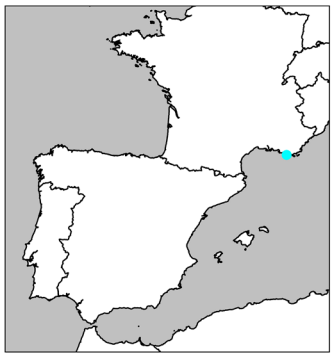
106. *Brachychaeteuma melanops* H.K. Brade-Birks & S.G. Brade-Birks, 1918



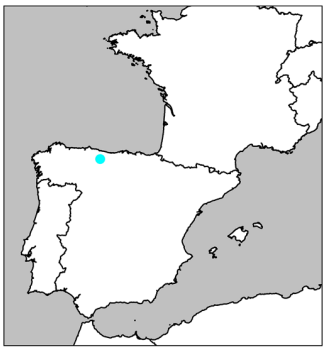
107. *Brachychaeteuma peniculatum* Ribaut, 1948



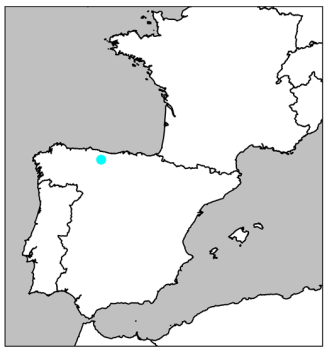
108. *Brachychaeteuma plumosum* Ribaut, 1947



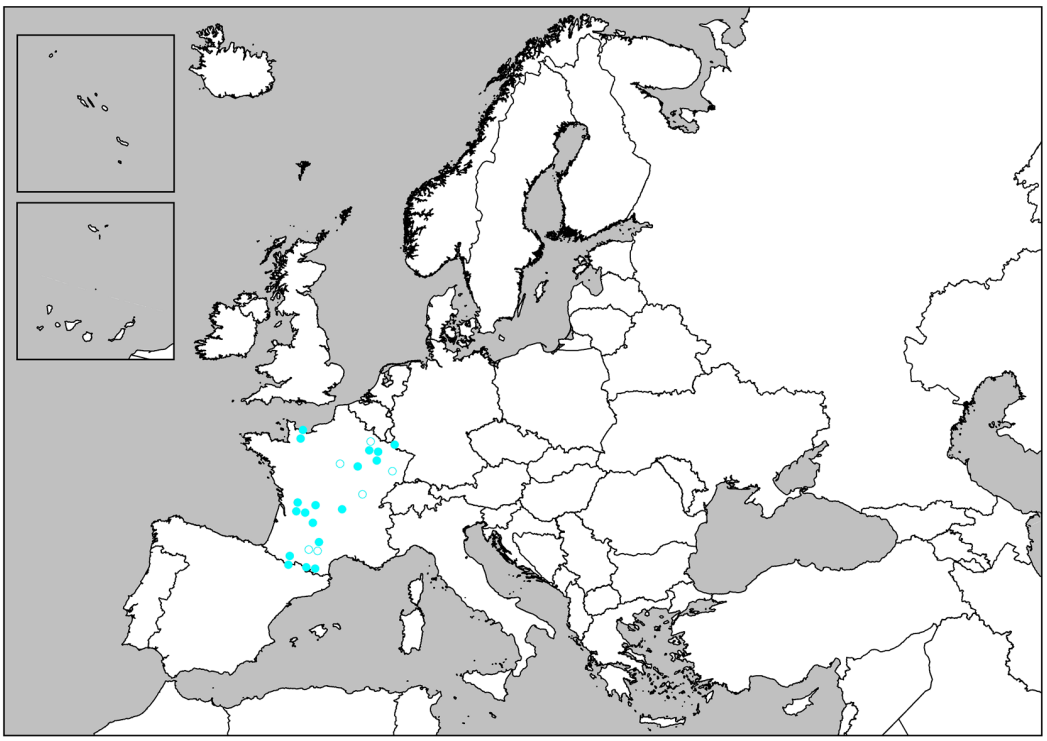
109. *Brachychaeteuma provinciale* Ribaut, 1956



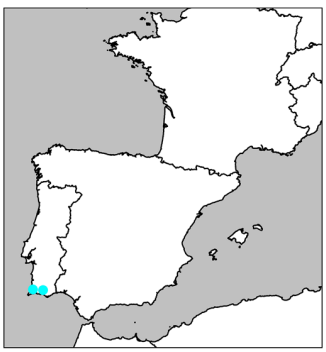
110. *Asturasoma chapmani* Mauriès, 1981



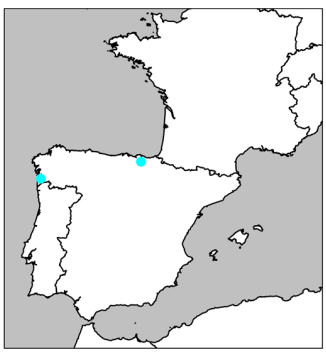
111. *Asturasoma fowleri* Mauriès, 1981



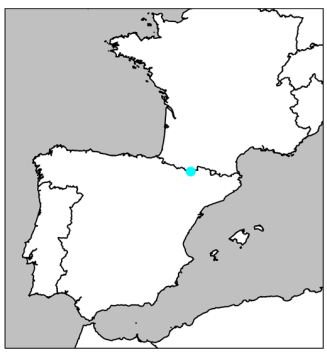
112. *Chamaesoma broelemanni* Ribaut & Verhoeff, 1913



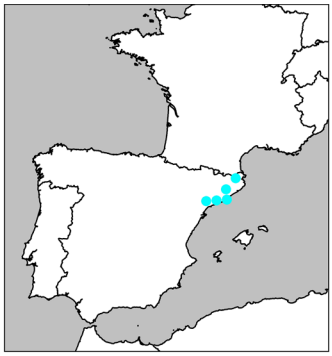
113. *Coiffaiteuma turdetanorum* Mauriès, 1964



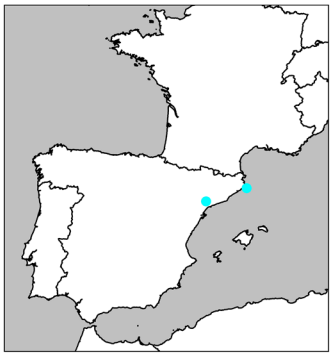
114. *Krauseuma viscaianum* Mauriès & Barraqueta, 1985



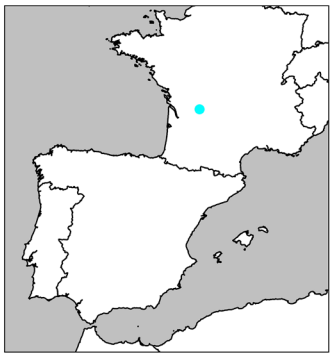
115. *Marboreuma brouquissei* Mauriès, 1988



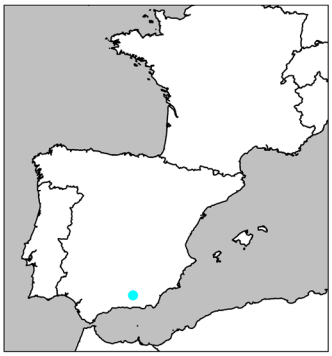
116. *Origmatogona catalonica* Ribaut, 1923



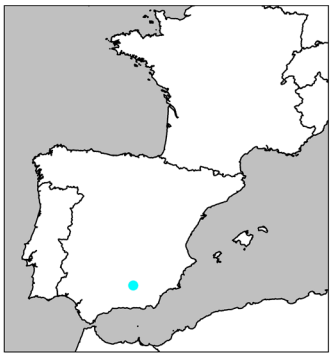
117. *Origmatogona jacetanorum* Mauriès, 1964



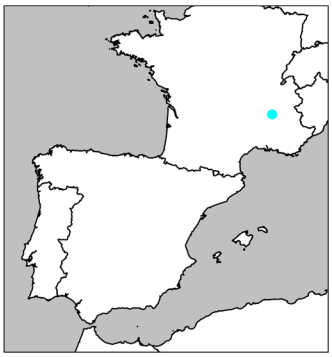
118. *Origmatogona kimeorum* Mauriès, 1990



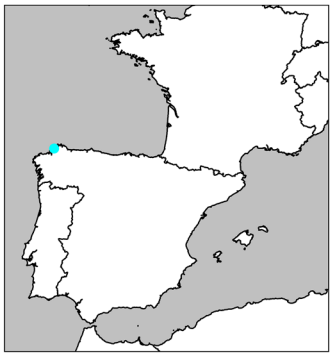
119. *Origmatogona tinauti* Mauriès, 1990



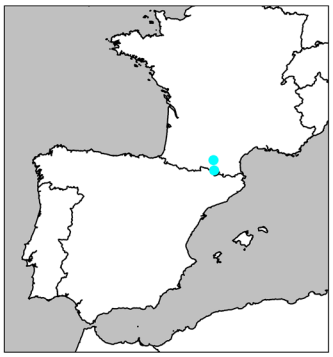
120. *Origmatogona toniperezi* Mauriès, 2014



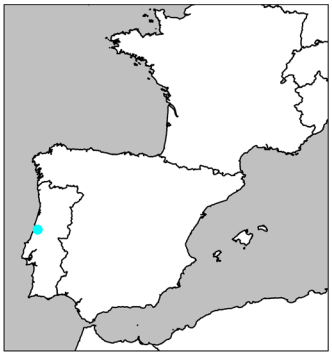
121. *Scutogona alba* Schubart, 1958



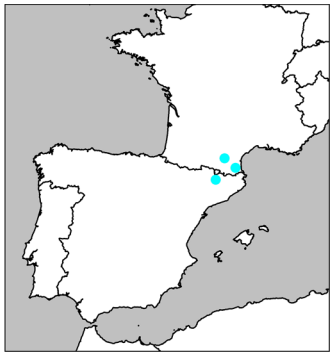
122. *Scutogona ferrolensis* Mauriès, 2015



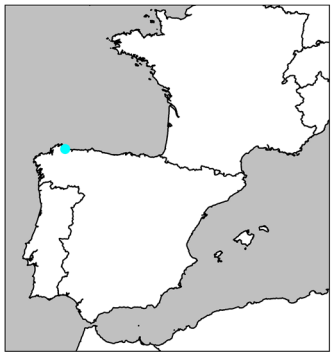
123. *Scutogona jeanneli* Ribaut, 1913



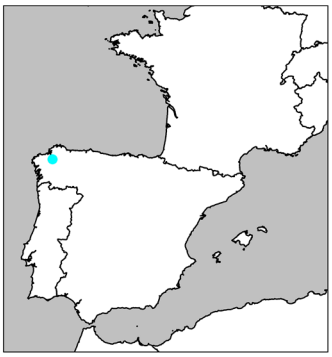
124. *Scutogona minor* Enghoff & Reboleira, 2013



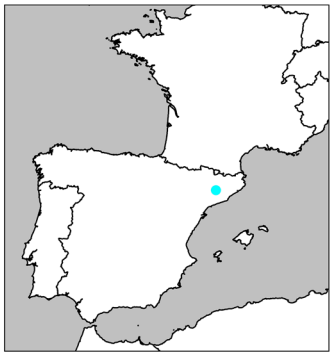
125. *Scutogona mutica*
Ribaut, 1923



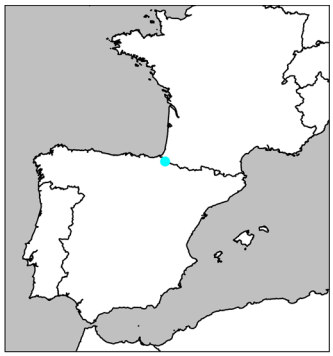
126. *Scutogona oculinigra*
Mauriès & Vicente, 1977



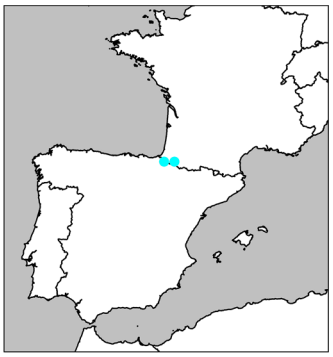
127. *Scutogona suboculinigra*
Mauriès, 2015



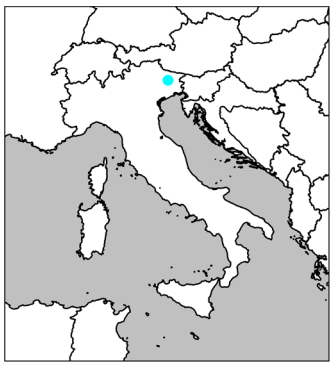
128. *Scutogona vivesi*
Mauriès & Vicente, 1977



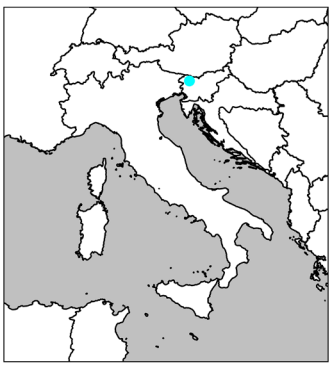
129. *Vascosoma coiffaiti*
Mauriès, 1966



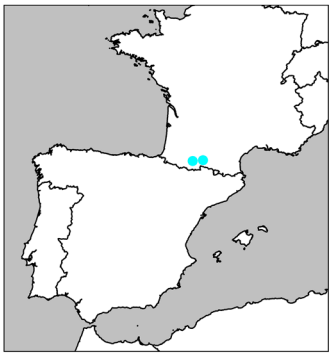
130. *Vascosoma duprei*
Mauriès, 1990



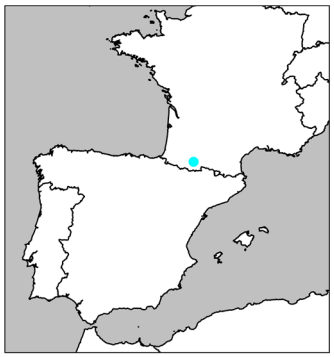
131. *Verhoeffeuma minellii*
Mauriès, 1990



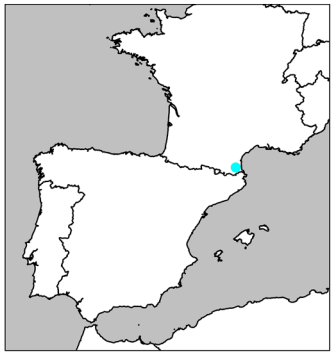
132. *Verhoeffeuma spinosum*
Strasser, 1937



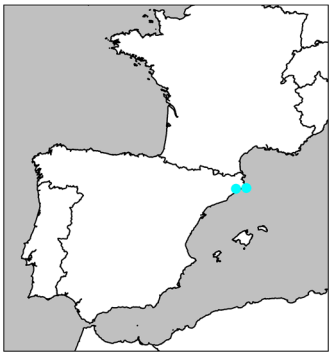
133. *Xystrosoma beatense*
Ribaut, 1927



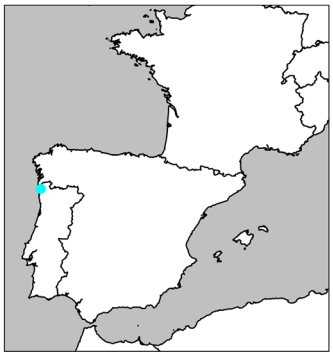
134. *Xystrosoma cassagnaui* Mauriès, 1965



135. *Xystrosoma catalonicum* Ribaut, 1927



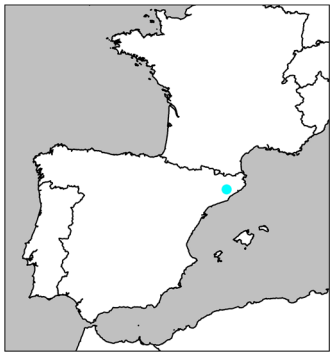
136. *Xystrosoma coiffaiti* Mauriès, 1964



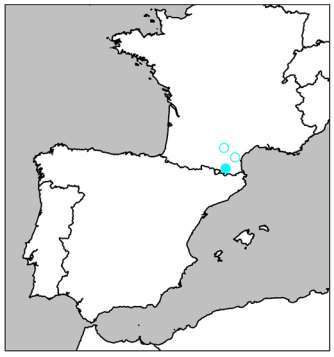
137. *Xystrosoma lusitanicum* Mauriès, 2015

138. *Xystrosoma murinum* Ribaut, 1927

139. *Xystrosoma pyrenaicum* Ribaut, 1927

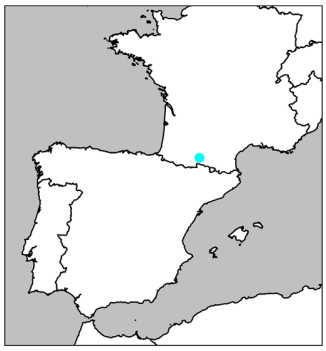


140. *Xystrosoma santllorence* Serra & Mauriès, 2018

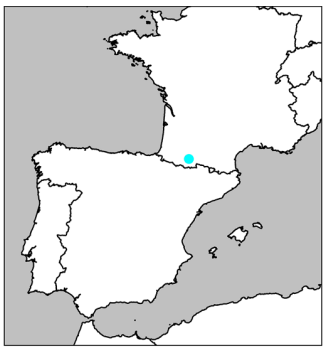


141. *Xystrosoma tectosagum* Ribaut, 1927

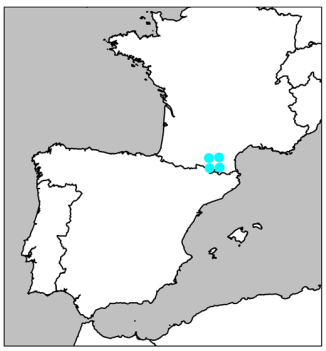
142. *Xystrosoma vasconicum* Mauriès & Barraqueta, 1985



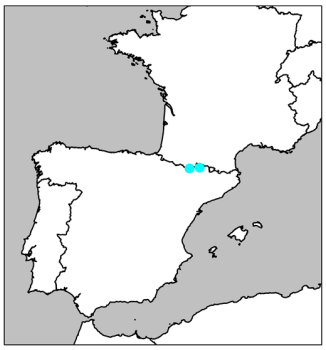
143. *Chordeuma consoranense* Ribaut, 1956



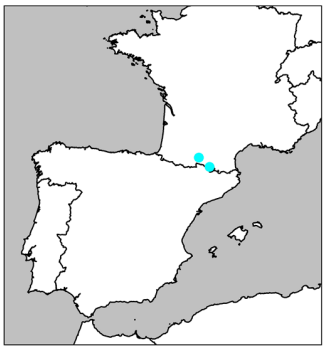
144. *Chordeuma iluronense* Ribaut, 1913



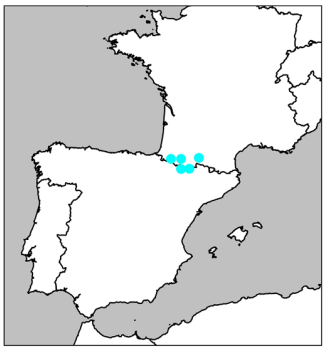
145. *Chordeuma inornatum* Ribaut, 1913



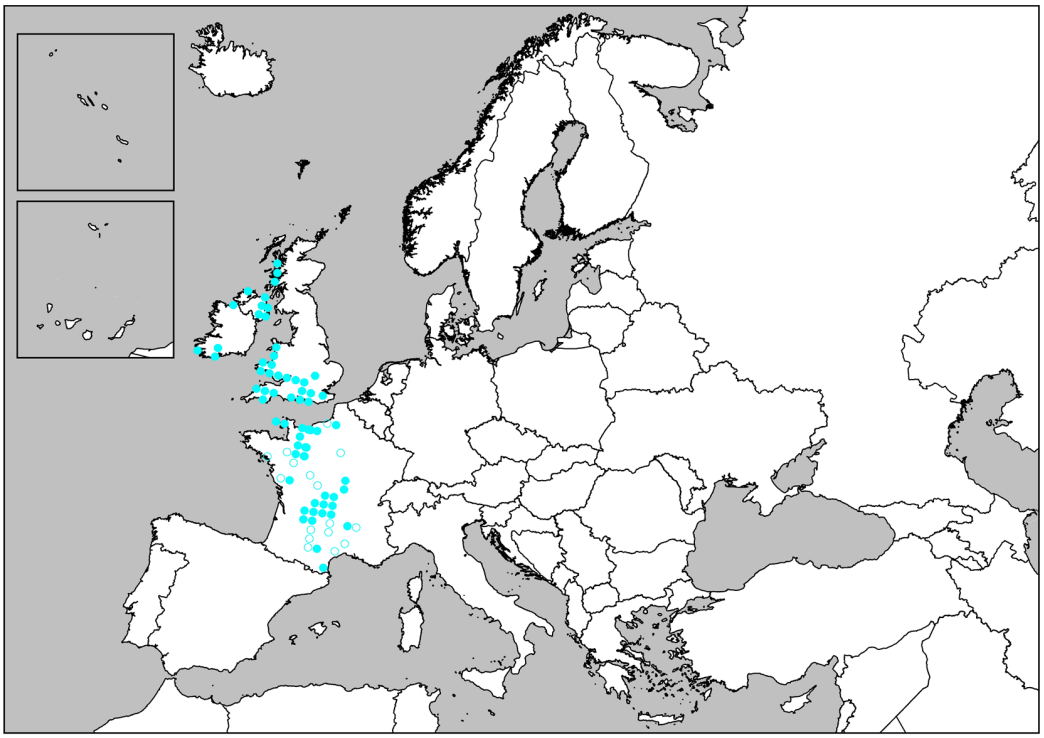
146. *Chordeuma intermedium* Ribaut, 1913



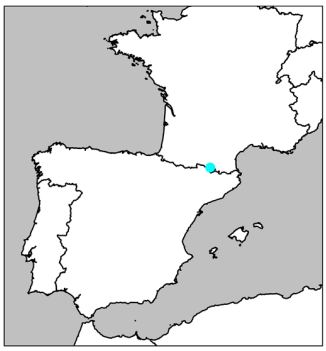
147. *Chordeuma montanum* Ribaut, 1956



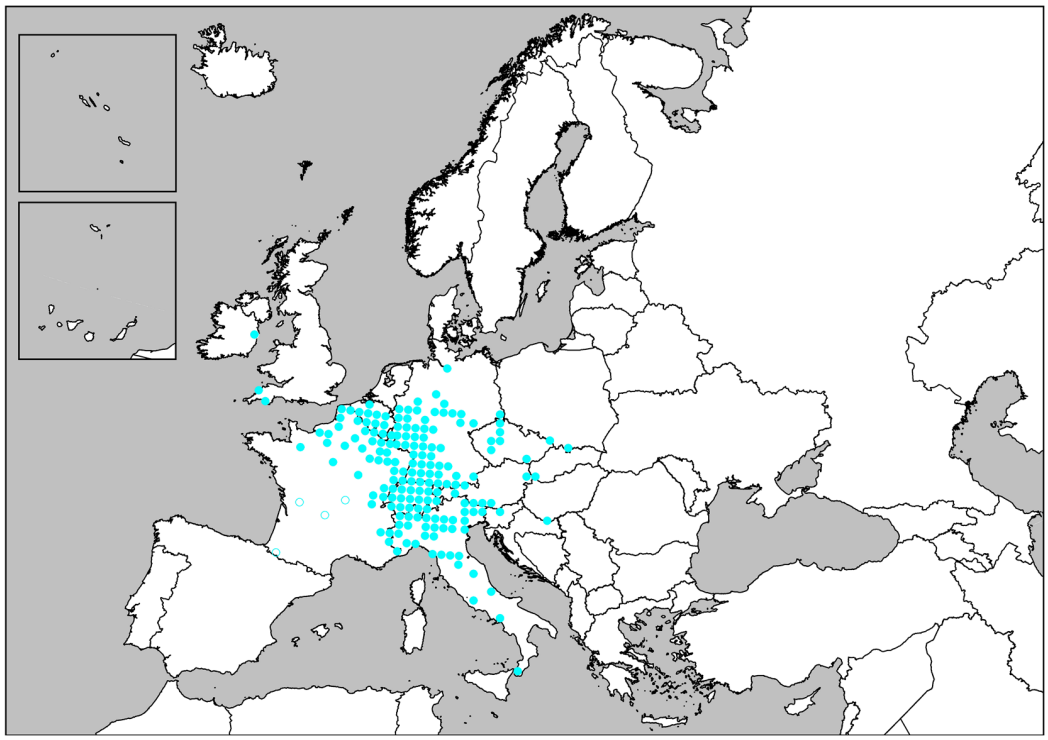
148. *Chordeuma muticum* Ribaut, 1927



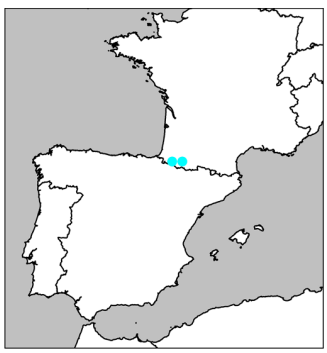
149. *Chordeuma proximum* Ribaut, 1913



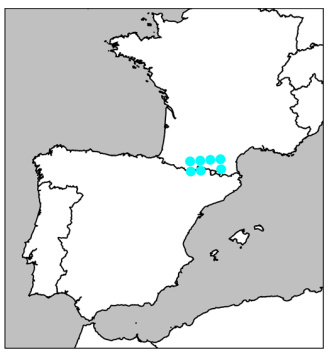
150. *Chordeuma reflexum* Brolemann, 1927



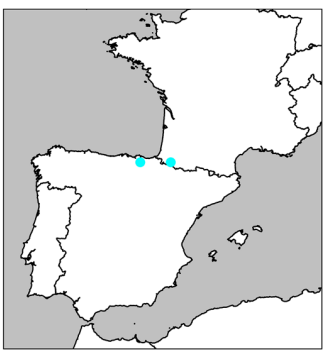
151. *Chordeuma sylvestre* C.L.Koch, 1847



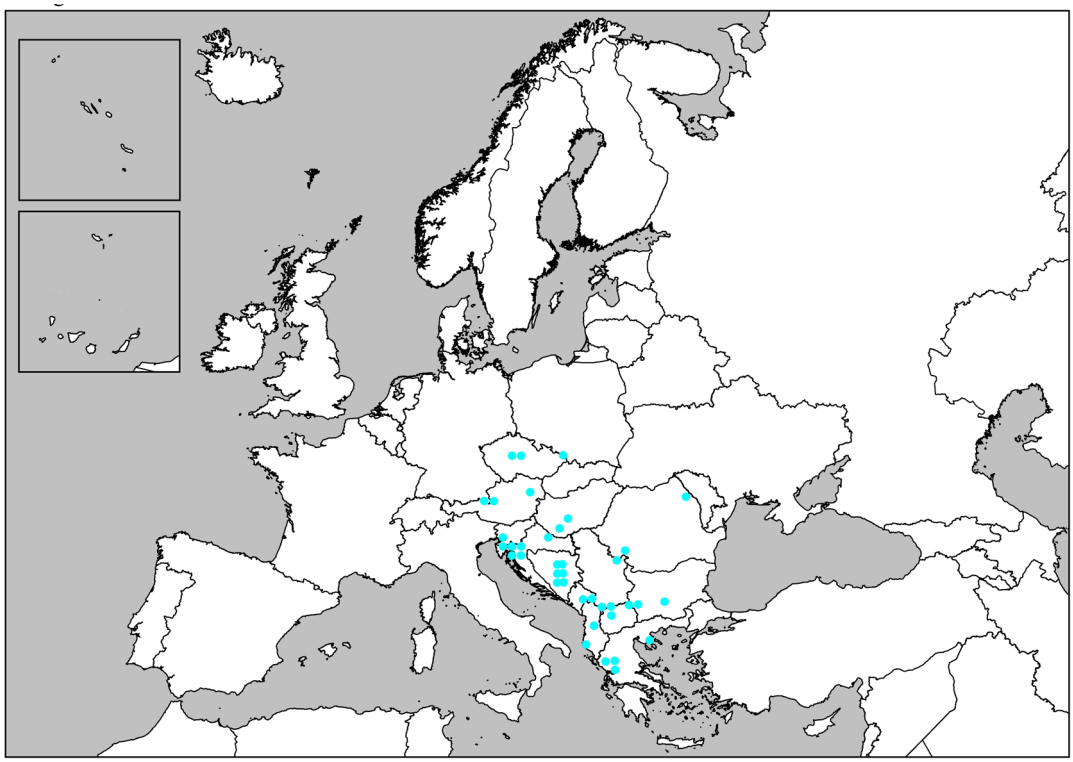
152. *Chordeuma trifidum* Ribaut, 1913



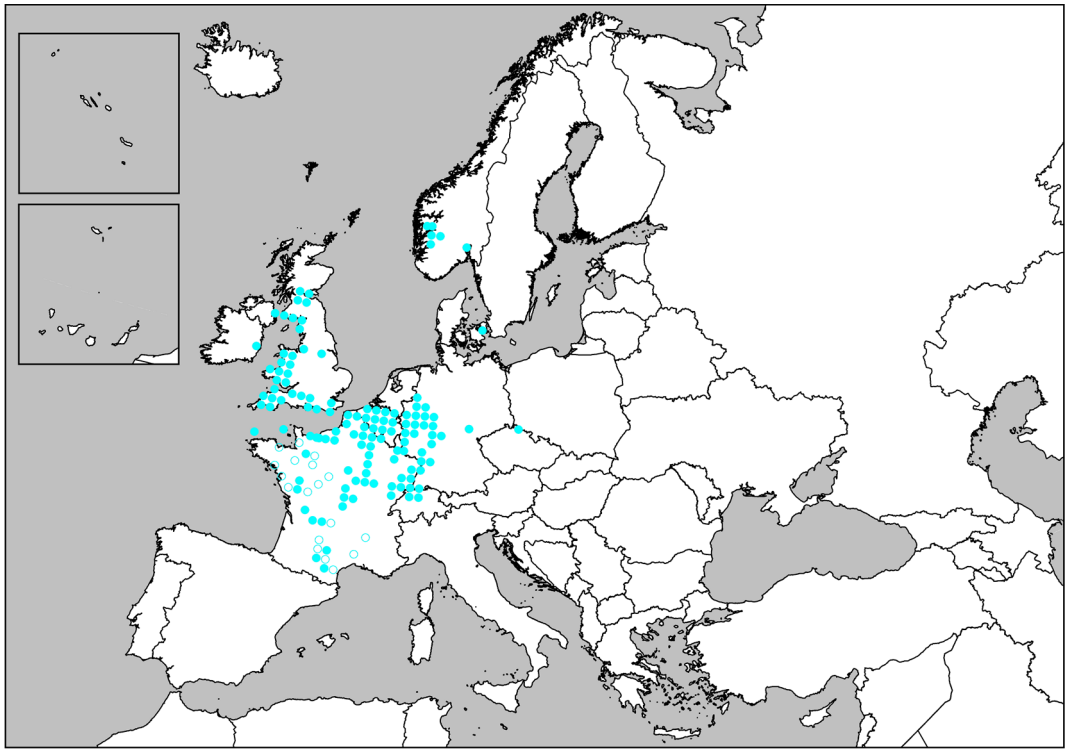
153. *Chordeuma utriculosum* Ribaut, 1913



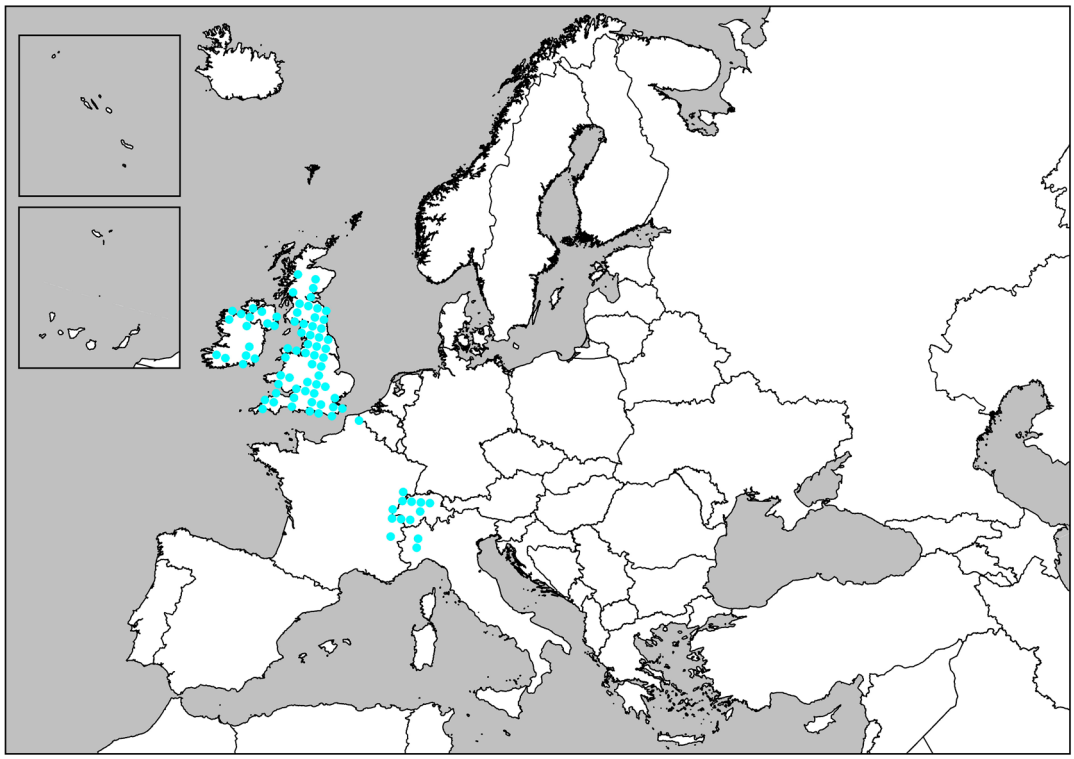
154. *Chordeuma vasconicum* Ribaut, 1913



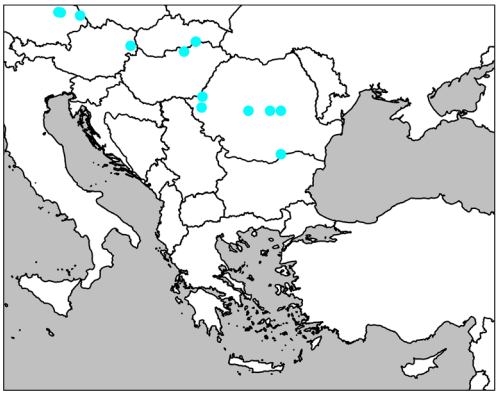
155. *Melogona broelemanni* (Verhoeff, 1897)



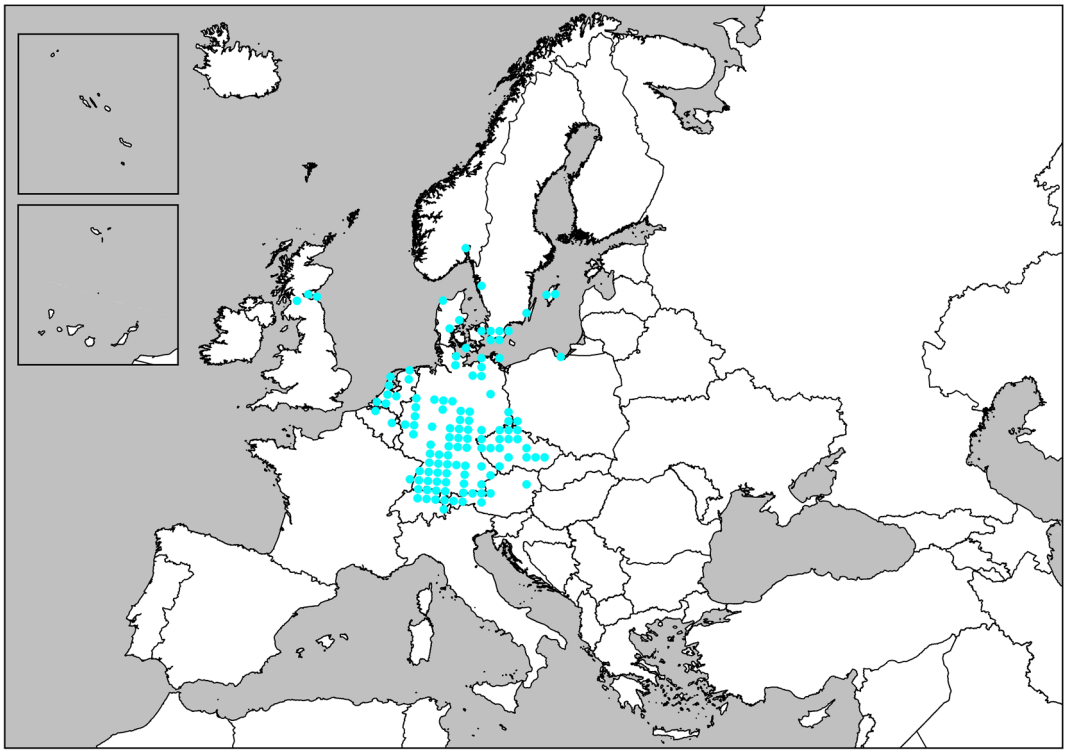
156. *Melogona gallica* (Latzel, 1884)



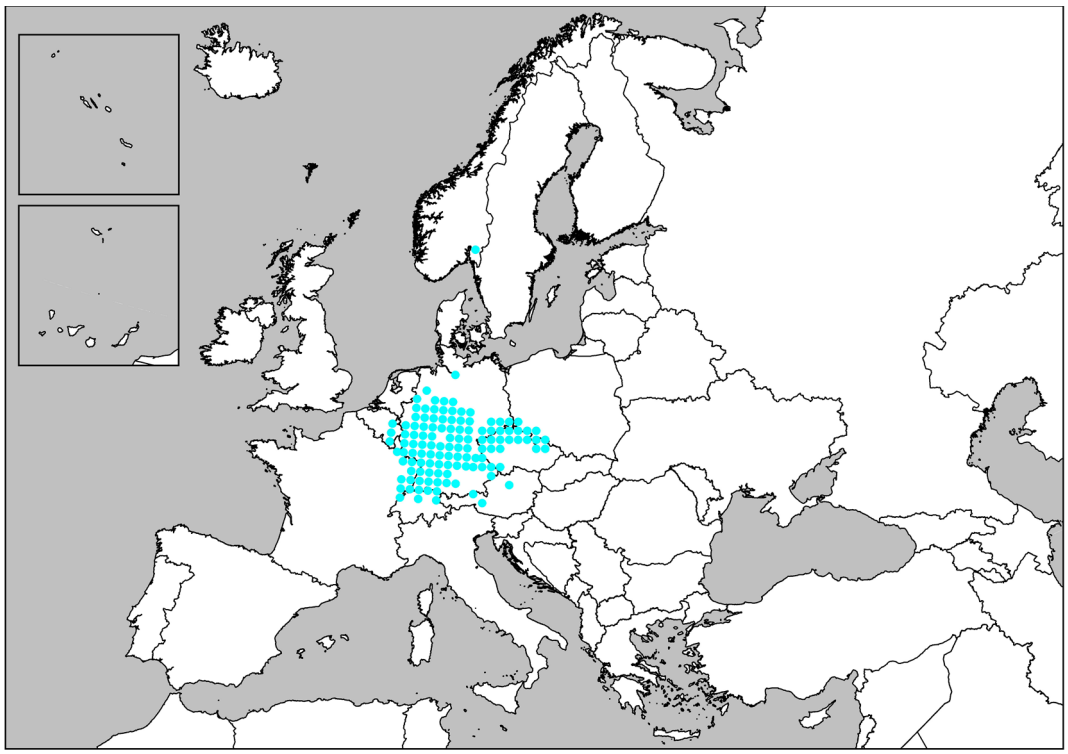
157. *Melogona scutellaris* (Ribaut, 1913)



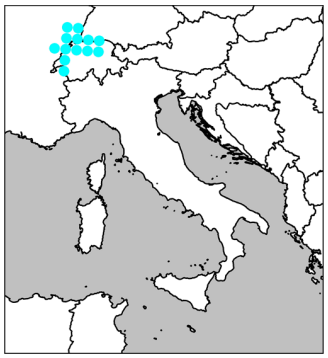
158. *Melogona transsilvanica* (Verhoeff, 1897)



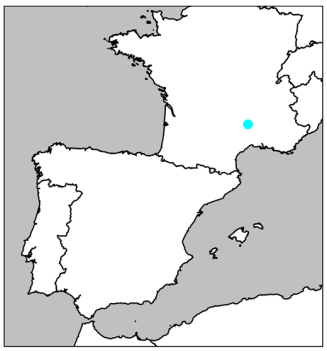
159. *Melogona voigti* (Verhoeff, 1899)



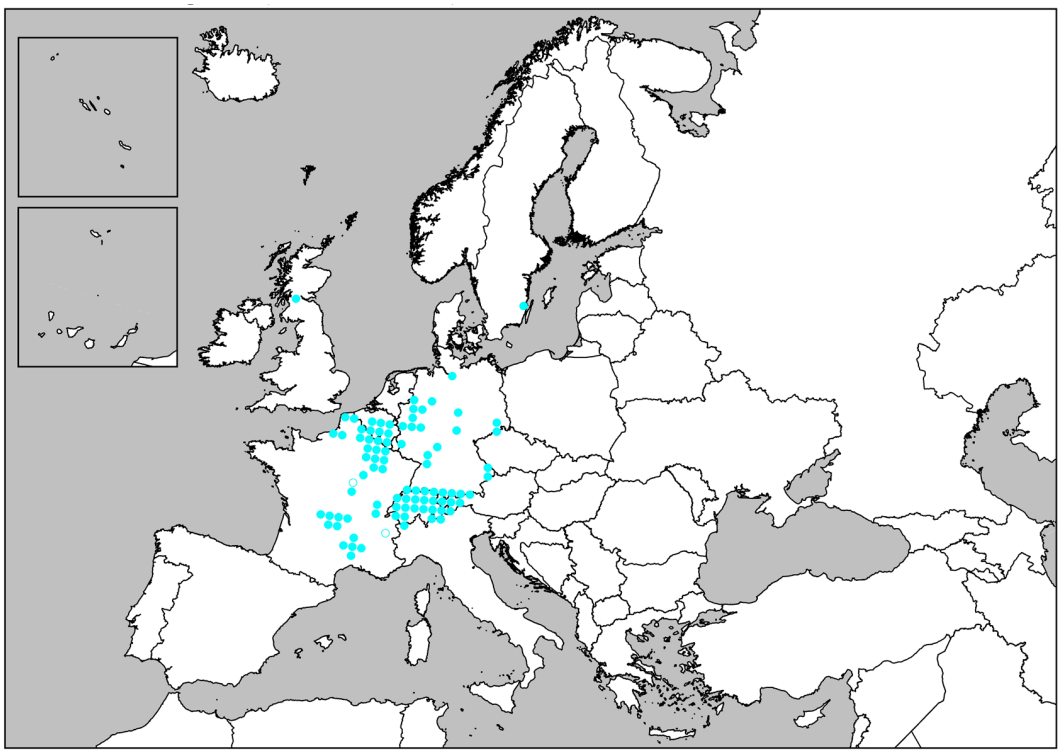
160. *Mycogona germanica* (Verhoeff, 1892)



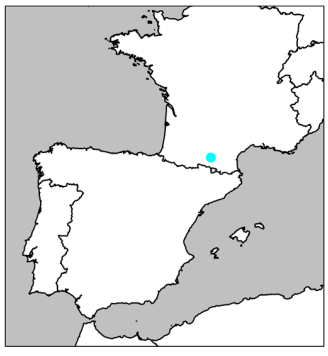
161. *Orthochordeumella fulva* (Rothenbühler, 1899)



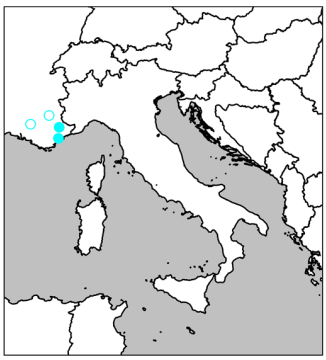
162. *Orthochordeumella leclerci* (Mauriès, 1985)



163. *Orthochordeumella pallida* (Rothenbühler, 1899)

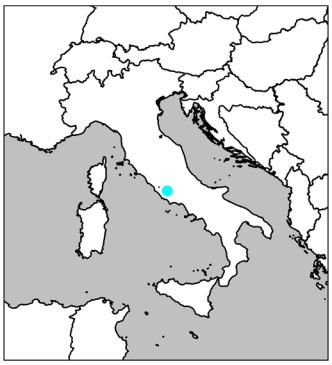


164. *Orthochordeumella pyrenaica* Mauriès, 1965

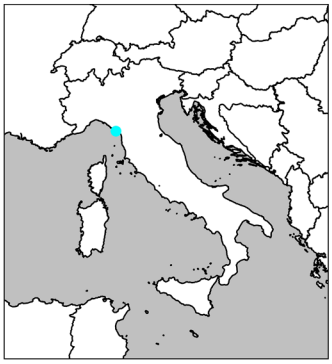


165. *Parachordeuma broelemanni* Ribaut, 1912

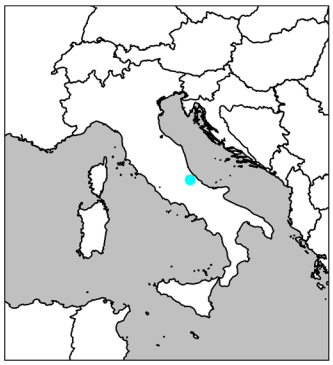
166. *Aspromontia ruffoi* Strasser, 1970



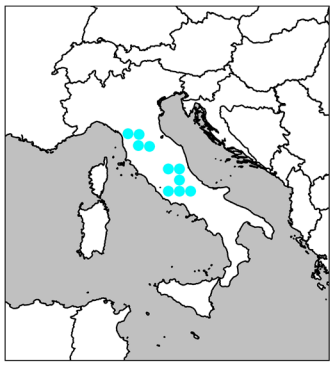
167. *Atractosoma abnorme*
Verhoeff, 1900



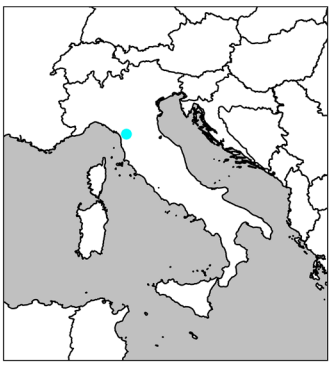
168. *Atractosoma blechnorum*
Verhoeff, 1936



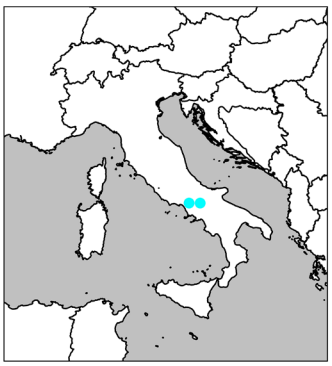
169. *Atractosoma cavannae*
Silvestri, 1898



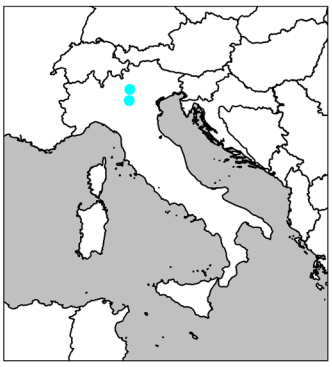
170. *Atractosoma cecconii*
Silvestri, 1898



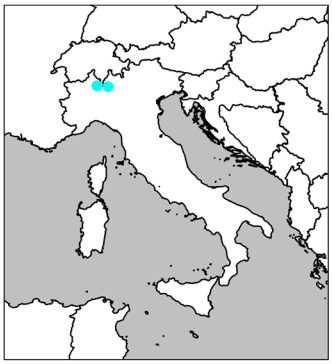
171. *Atractosoma confine*
Berlese, 1895



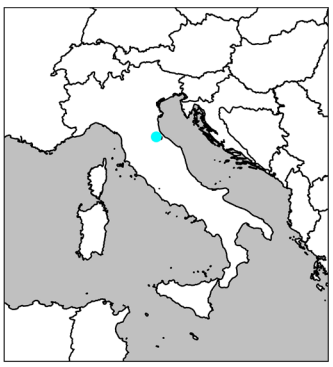
172. *Atractosoma divaricatum*
Strasser, 1981



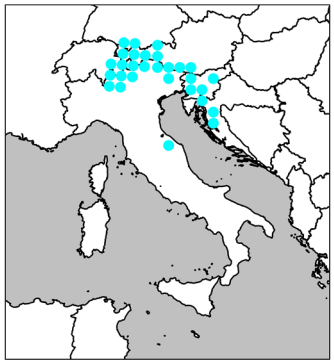
173. *Atractosoma ghidinii*
Manfredi, 1935



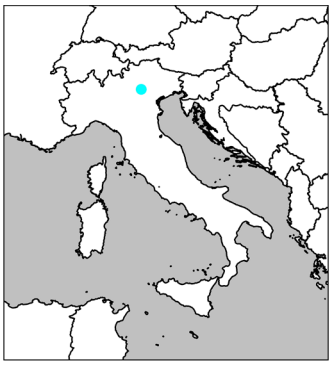
174. *Atractosoma gibberosum*
Verhoeff, 1900



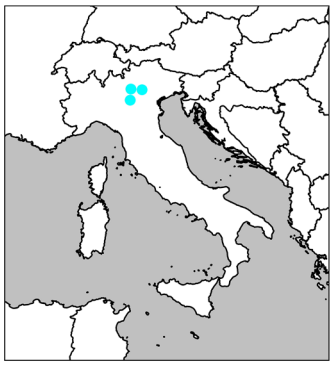
175. *Atractosoma marinense*
Verhoeff, 1932



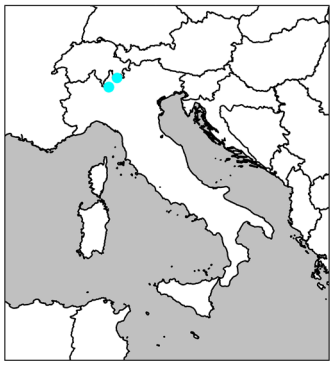
176. *Atractosoma meridionale* Fanzago, 1876



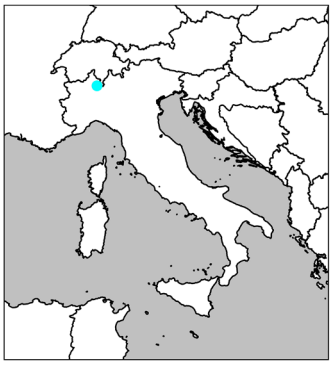
177. *Atractosoma paolettii* (Strasser, 1977)



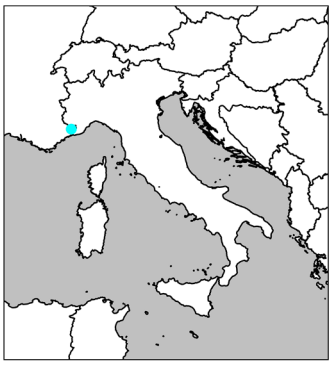
178. *Atractosoma ruffoi* Manfredi, 1940



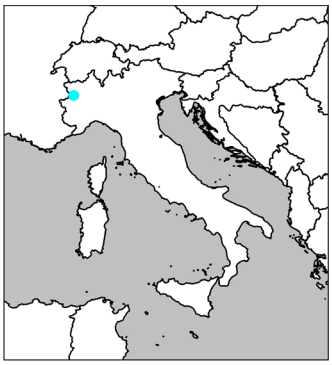
179. *Atractosoma tellinense* Brölemann, 1892



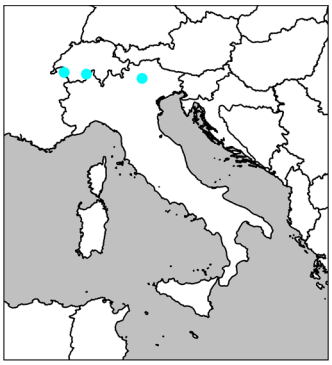
180. *Atractosoma troglobium* Manfredi, 1930



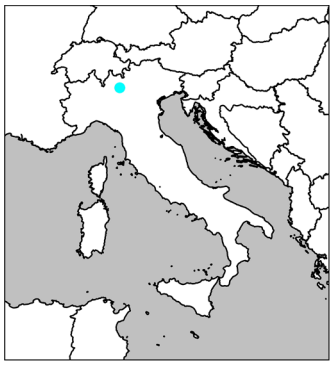
181. *Autaretia aliciae* Geoffroy & Mauriès, 2017



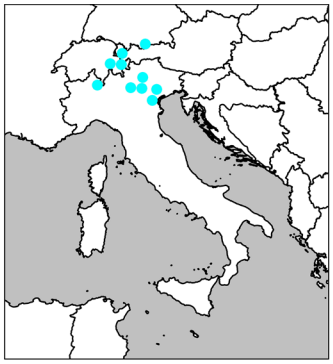
182. *Autaretia osellai* Strasser, 1978



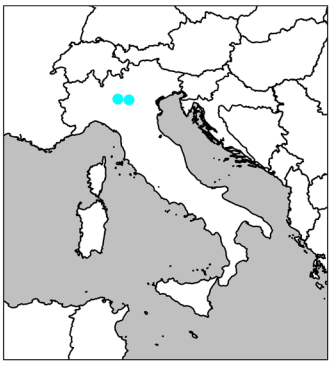
183. *Basigona athesina* (Fedrizzi, 1877)



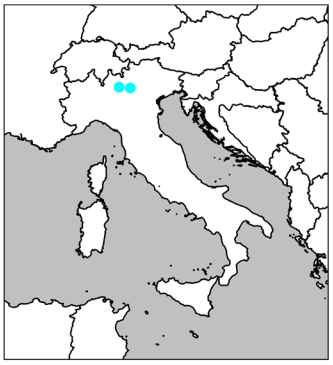
184. *Bergamosoma bergomatium* (Verhoeff, 1925)



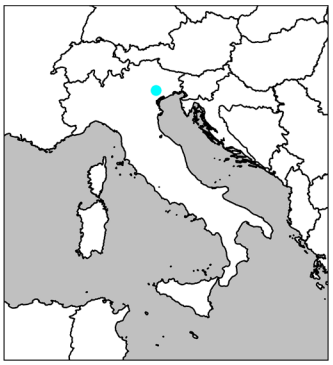
185. *Bergamosoma canestrinii*
(Fedrizzi, 1878)



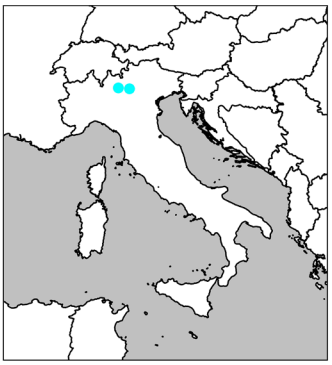
186. *Bergamosoma grottoloi*
(Strasser, 1973)



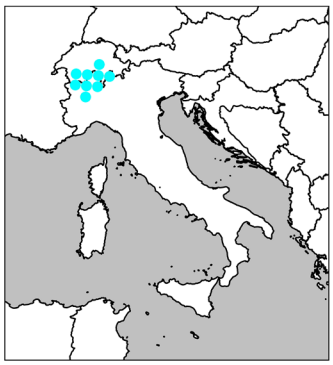
187. *Bergamosoma hessei*
(Verhoeff, 1931)



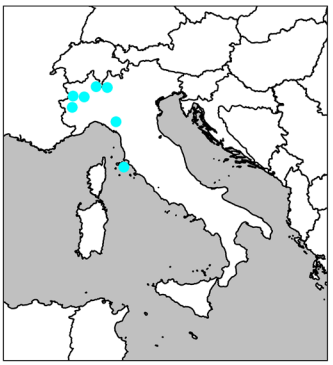
188. *Bergamosoma plavis*
(Strasser, 1960)



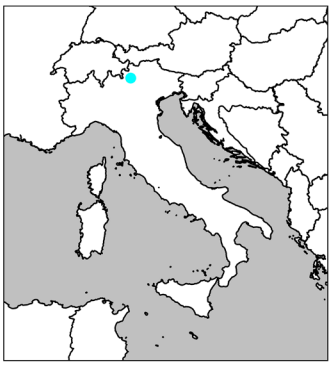
189. *Bergamosoma sevini*
(Verhoeff, 1931)



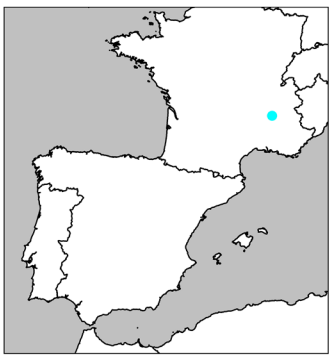
190. *Bomogona helvetica*
(Verhoeff, 1894)



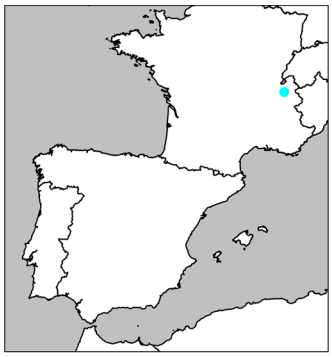
191. *Bomogona lombardica*
(Brölemann, 1892)



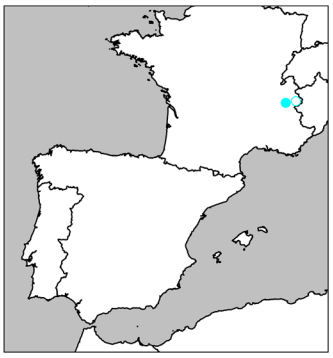
192. *Brentosoma nivale*
Verhoeff, 1932



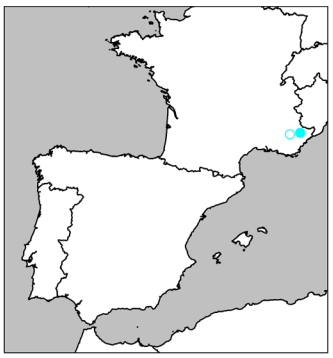
193. *Broelemanneuma furcatum*
Ribaut, 1913



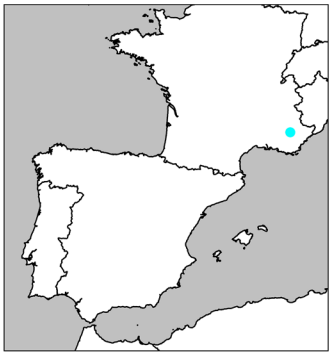
194. *Broelemanneuma gayi* Demange, 1968



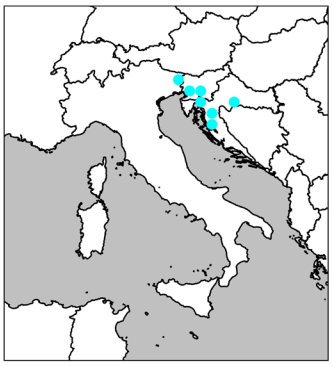
195. *Broelemanneuma gineti* Ribaut, 1954



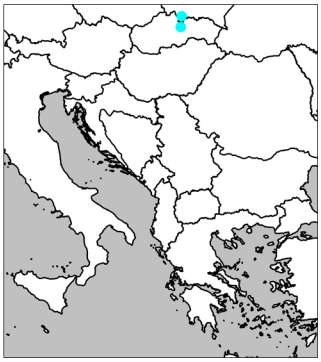
196. *Broelemanneuma palmatum* (Brölemann, 1902)



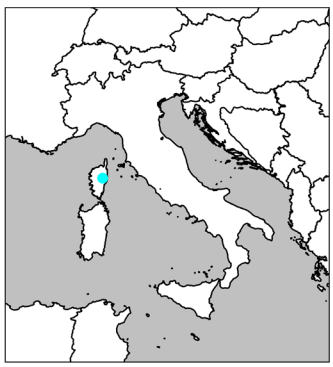
197. *Broelemanneuma pectiniger* (Brölemann, 1902)



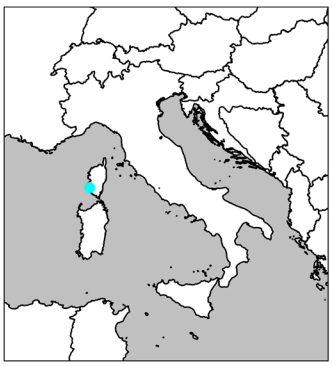
198. *Carniosoma verhoeffi* (Attems, 1927)



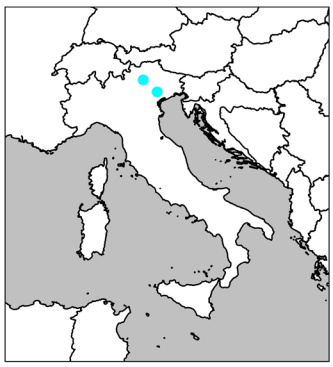
199. *Chelogona carpathicum* (Latzel, 1882)



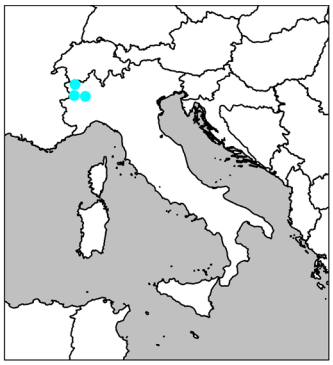
200. *Corsicosoma legeri* (Brölemann, 1903)



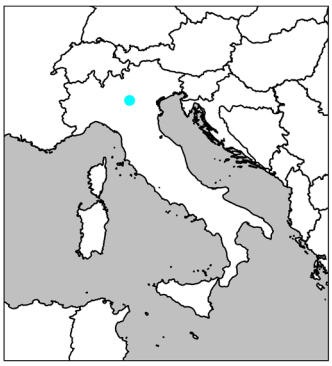
201. *Craspedosoma blaniulides* Latzel, 1900



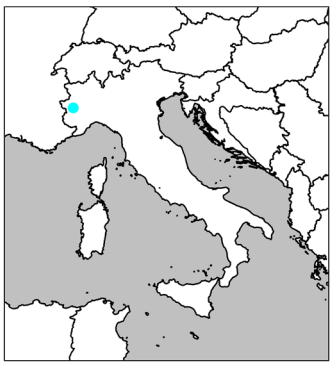
202. *Craspedosoma brentanum* Verhoeff, 1926



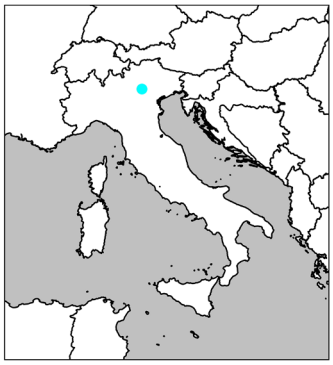
203. *Craspedosoma doranum* Verhoeff, 1932



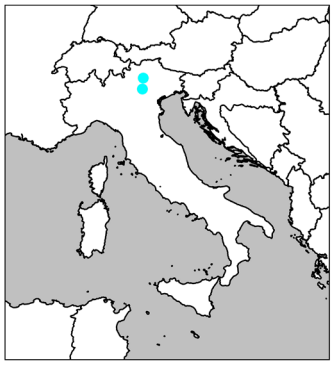
204. *Craspedosoma fontanellum* Attems, 1927



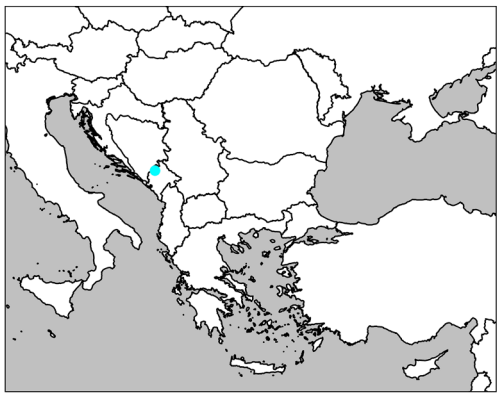
205. *Craspedosoma furculigerun* Verhoeff, 1936



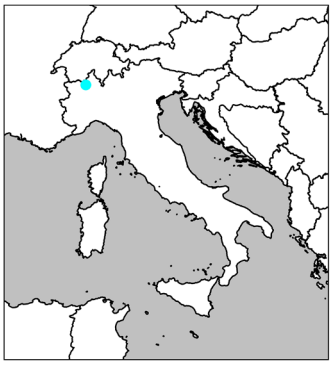
206. *Craspedosoma italicum* Silvestri, 1903



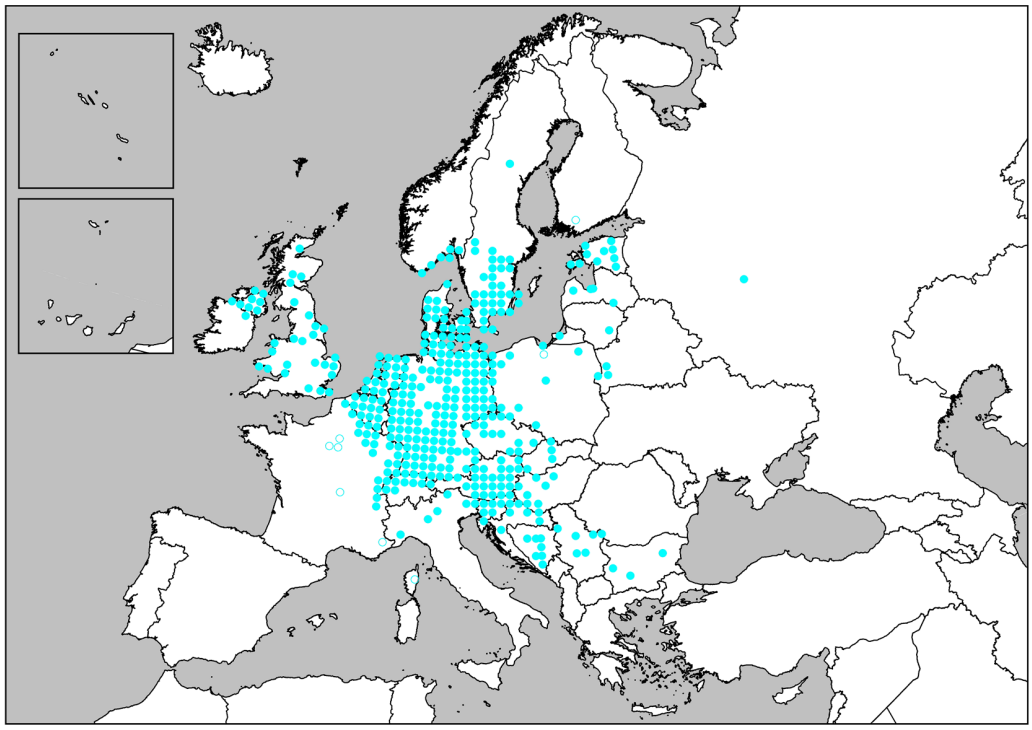
207. *Craspedosoma levicanum* Fedrizzi, 1876



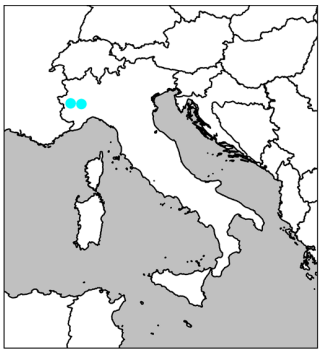
208. *Craspedosoma montenigrinum* Mršić, 1987



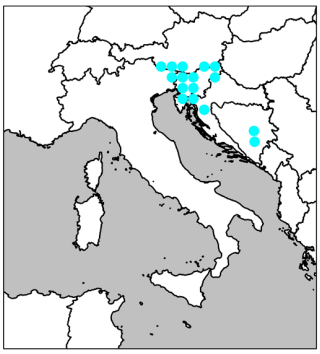
209. *Craspedosoma oropense* Verhoeff, 1936



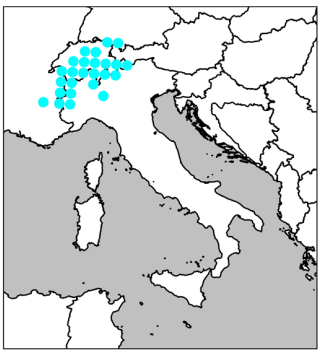
210. *Craspedosoma raulinsii* Leach, 1814



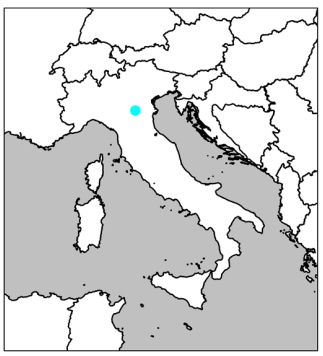
211. *Craspedosoma ruborum* Verhoeff, 1930



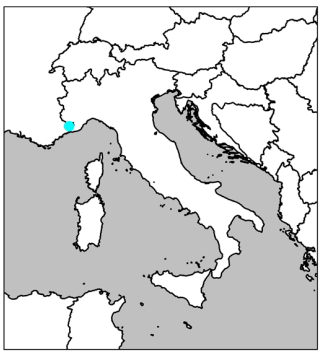
212. *Craspedosoma slavum* Attems, 1929



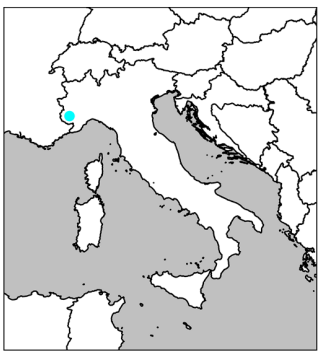
213. *Craspedosoma taurinorum* Silvestri, 1898



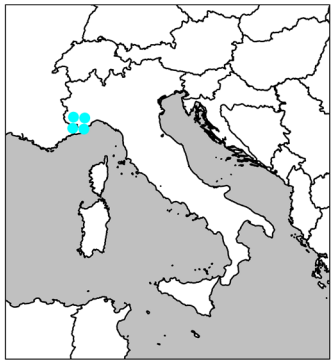
214. *Craspedosoma trilobum* Silvestri, 1903



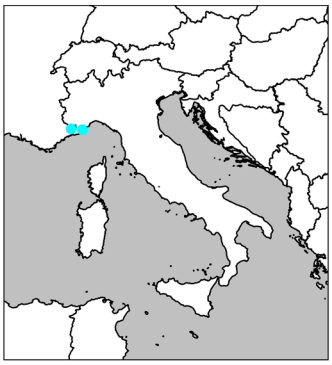
215. *Crossosoma brolemanni* Strasser, 1975



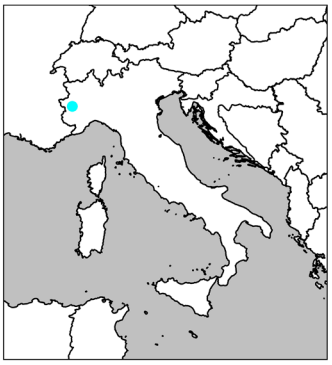
216. *Crossosoma casalei* Strasser, 1979



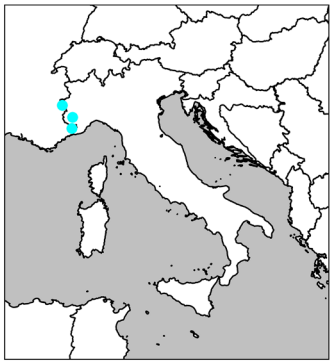
217. *Crossosoma cavernicola* (Manfredi, 1951)



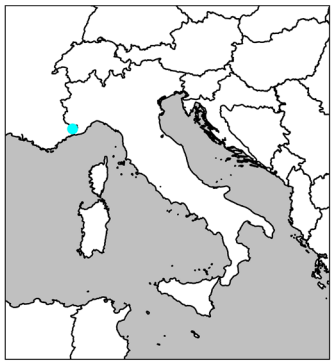
218. *Crossosoma falciferum* Strasser, 1975



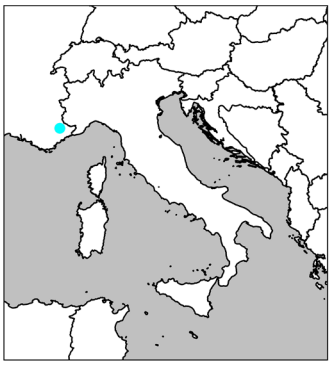
219. *Crossosoma fossum* Strasser, 1979



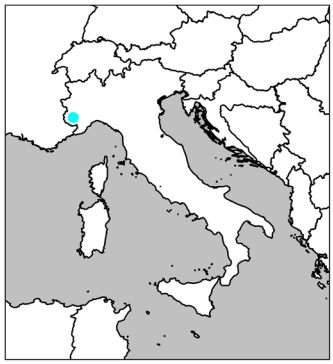
220. *Crossosoma mauriesi* Strasser, 1970



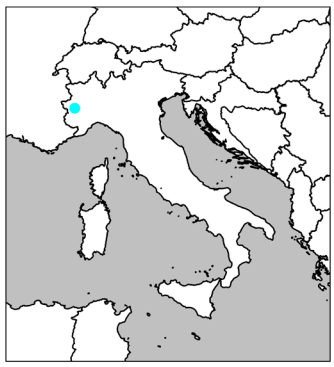
221. *Crossosoma parvum* Strasser, 1979



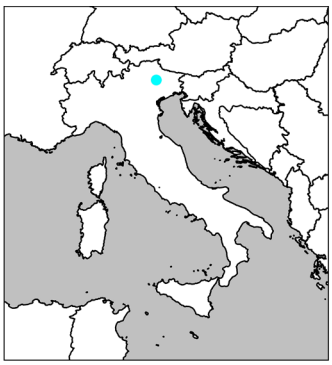
222. *Crossosoma peyerimhoffi* (Brölemann, 1902)



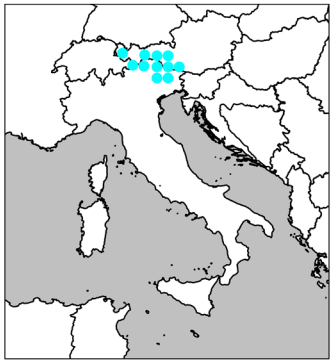
223. *Crossosoma phantasma* Strasser, 1970



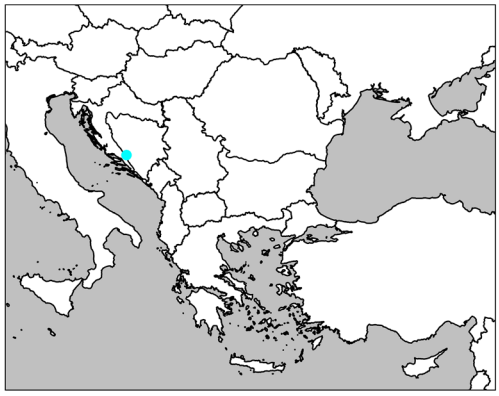
224. *Crossosoma semipes* (Strasser, 1958)



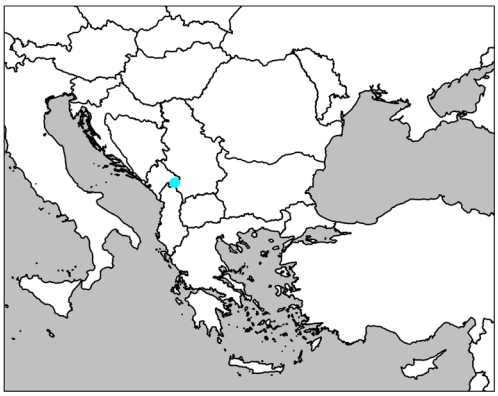
225. *Dactylophorosoma albocarinatum* Manfredi, 1940



226. *Dactylophorosoma nivisatelles* Verhoeff, 1900

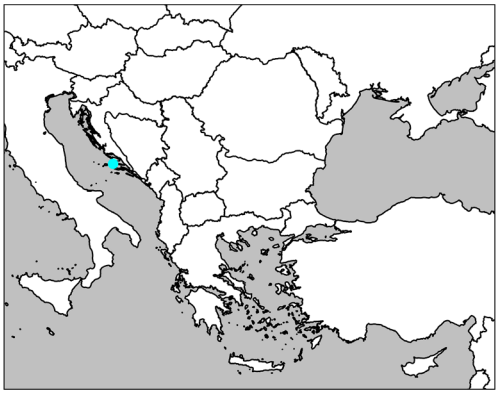


227. *Dyocerasoma biokovense* Mršić, 1986

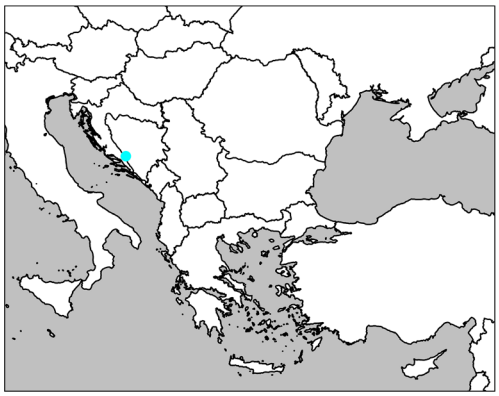


228. *Dyocerasoma drimicum* Mršić, 1985

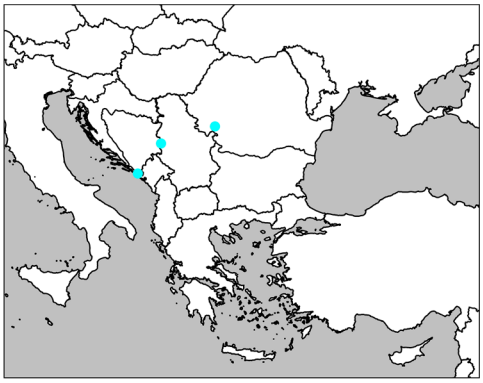
229. *Dyocerasoma furcilliferum* (Verhoeff, 1897)



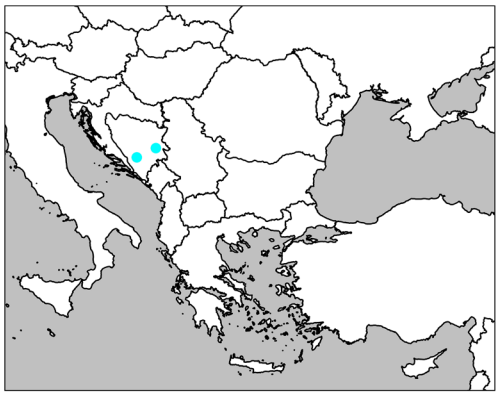
230. *Dyocerasoma insulanum* Attems, 1951



231. *Dyocerasoma intermedium* Makarov, Lučić, Mitić & Rađa, 2003

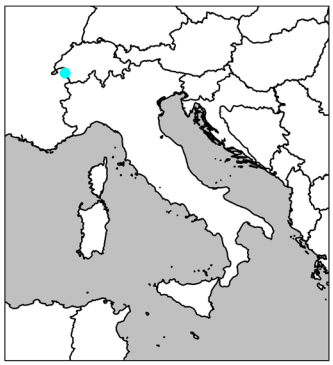


232. *Dyocerasoma lignivorum* (Verhoeff, 1899)

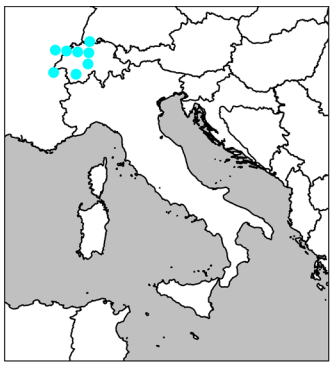


233. *Dyocerasoma narentanum* (Verhoeff, 1901)

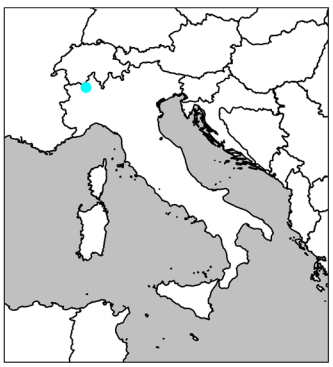
234. *Dyocerasoma nivisatelles* (Verhoeff, 1897)



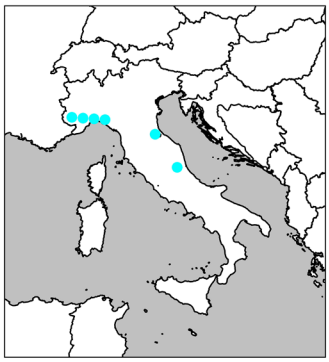
235. *Helvetiosoma blanci* (Faës, 1902)



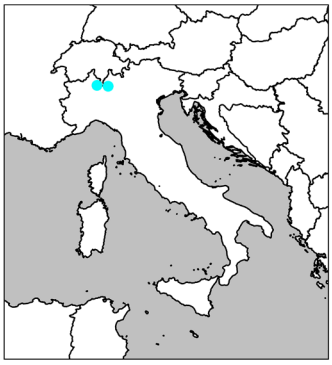
236. *Helvetiosoma helveticum* (Verhoeff, 1900)



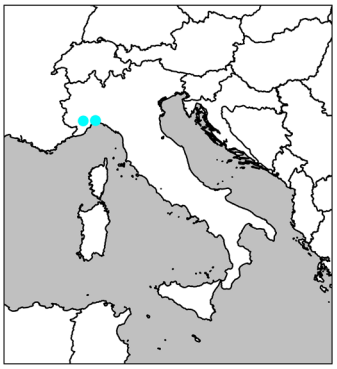
237. *Helvetiosoma montemorense* (Faës, 1905)



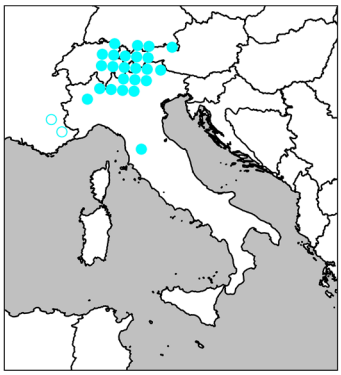
238. *Iulogona apenninorum* (Verhoeff, 1913)



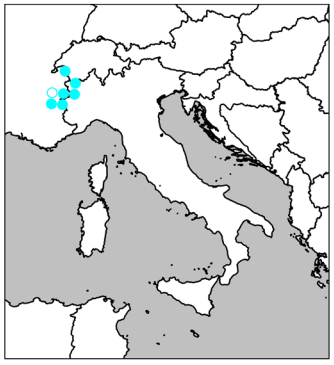
239. *Iulogona hamuligera* (Verhoeff, 1913)



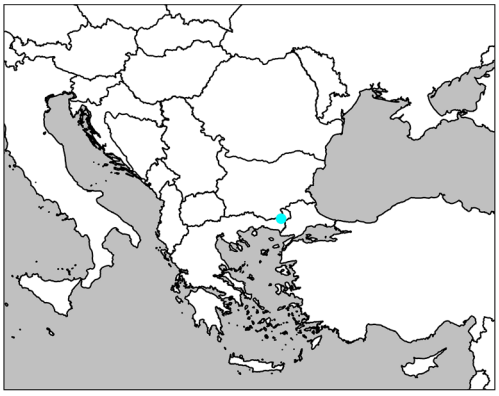
240. *Iulogona ligurina* (Verhoeff, 1910)



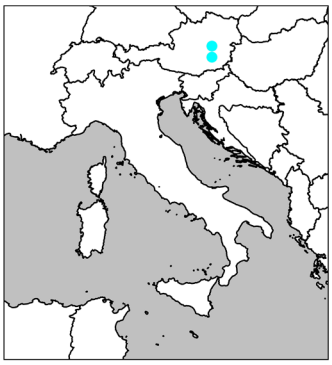
241. *Iulogona tirolensis* (Verhoeff, 1894)



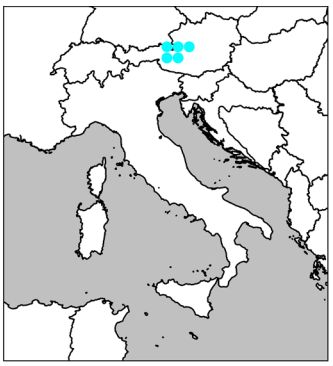
242. *Janetschekella valesiaca* (Faës, 1902)



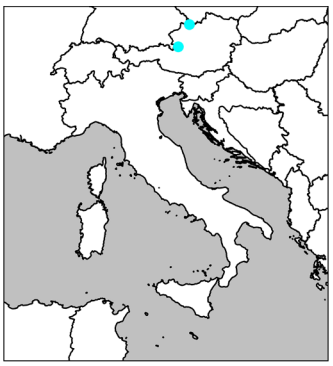
243. *Kelempekia martensi* Strasser, 1974



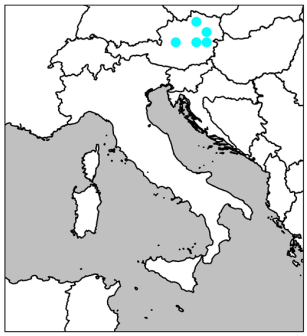
244. *Listrocheiritium bohemicum* (Rosický, 1876)



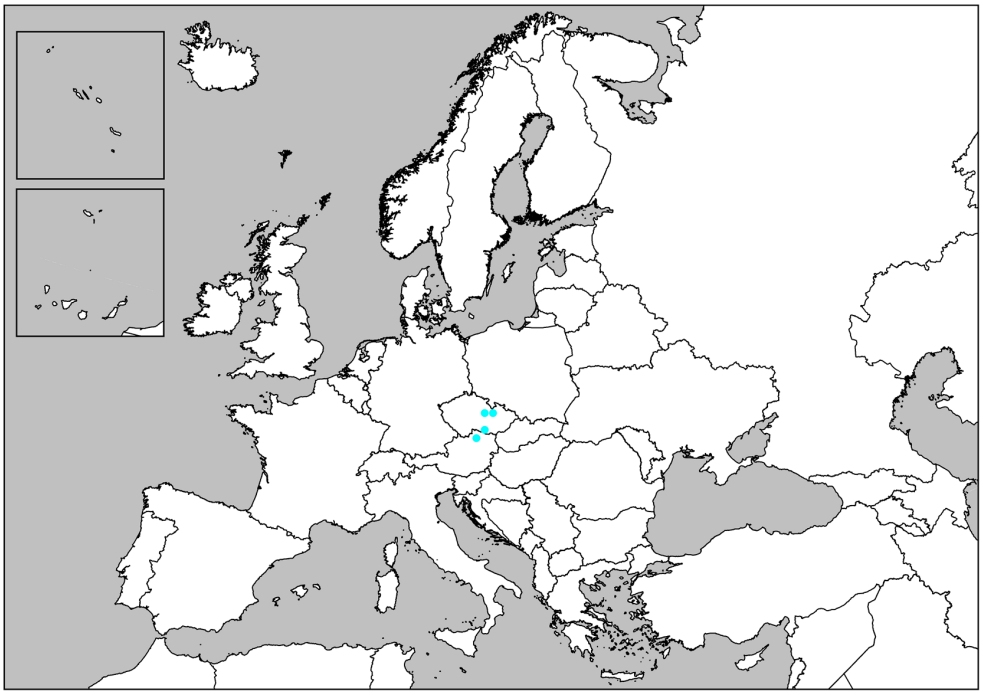
245. *Listrocheiritium cervinum* Verhoeff, 1925



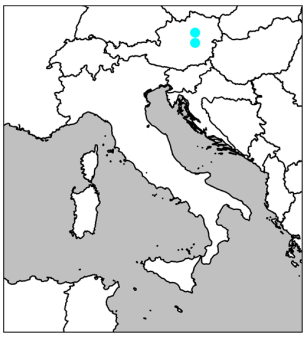
246. *Listrocheiritium noricum* Verhoeff, 1913



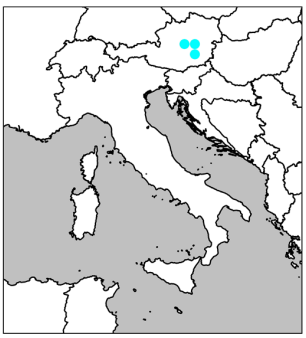
247. *Listrocheiritium nubium* Verhoeff, 1915



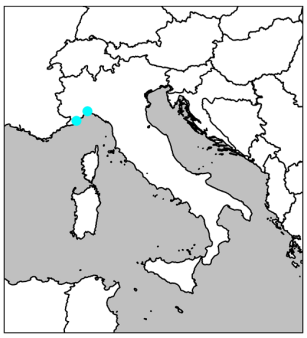
248. *Listrocheiritium septentrionale* Gulička, 1965



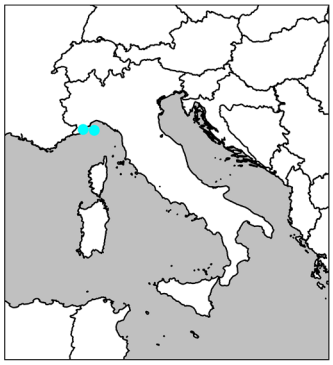
249. *Listrocheiritium styricum* Verhoeff, 1915



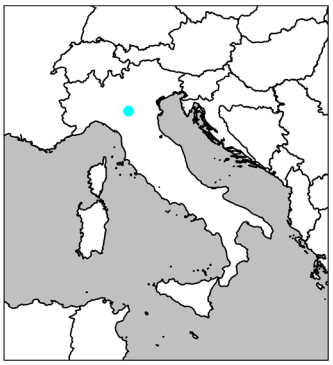
250. *Listrocheiritium susurrinum* Attems, 1926



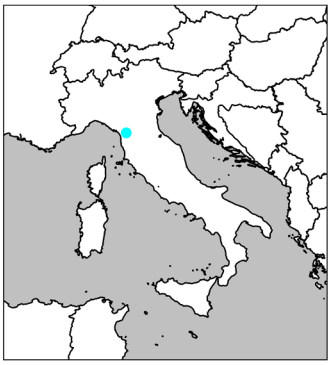
251. *Litogona hyalops* (Latzel, 1889)



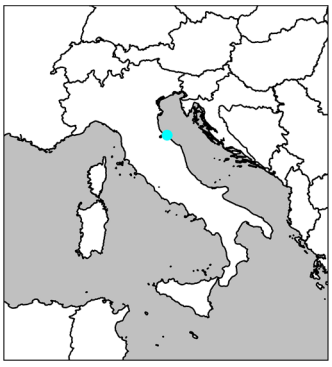
252. *Litogona mirabilis*
(Manfredi, 1948)



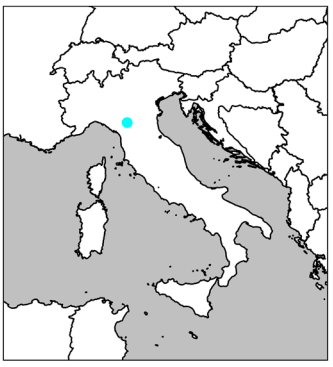
253. *Manfredia aemiliana*
(Manfredi,1932)



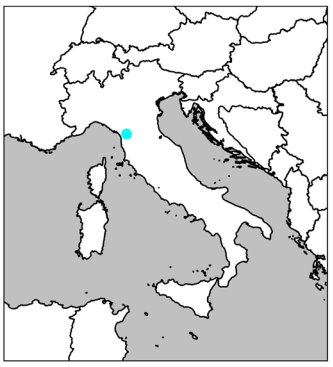
254. *Manfredia apuana*
Strasser, 1971



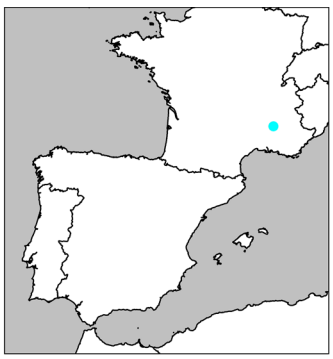
255. *Manfredia concii*
Manfredi, 1953



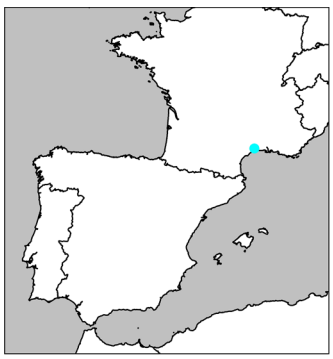
256. *Manfredia guareschii*
Manfredi, 1950



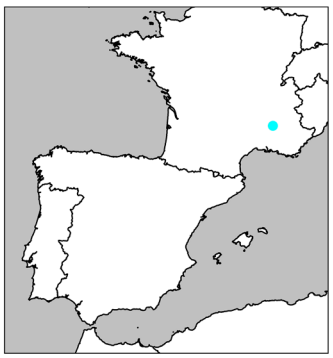
257. *Manfredia lanzai*
Manfredi, 1948



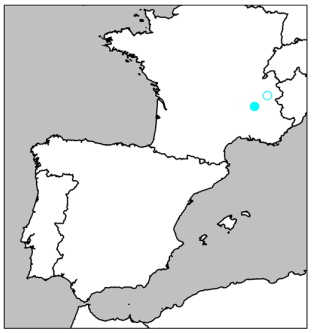
258. *Nanogona balazuci*
(Schubart, 1958)



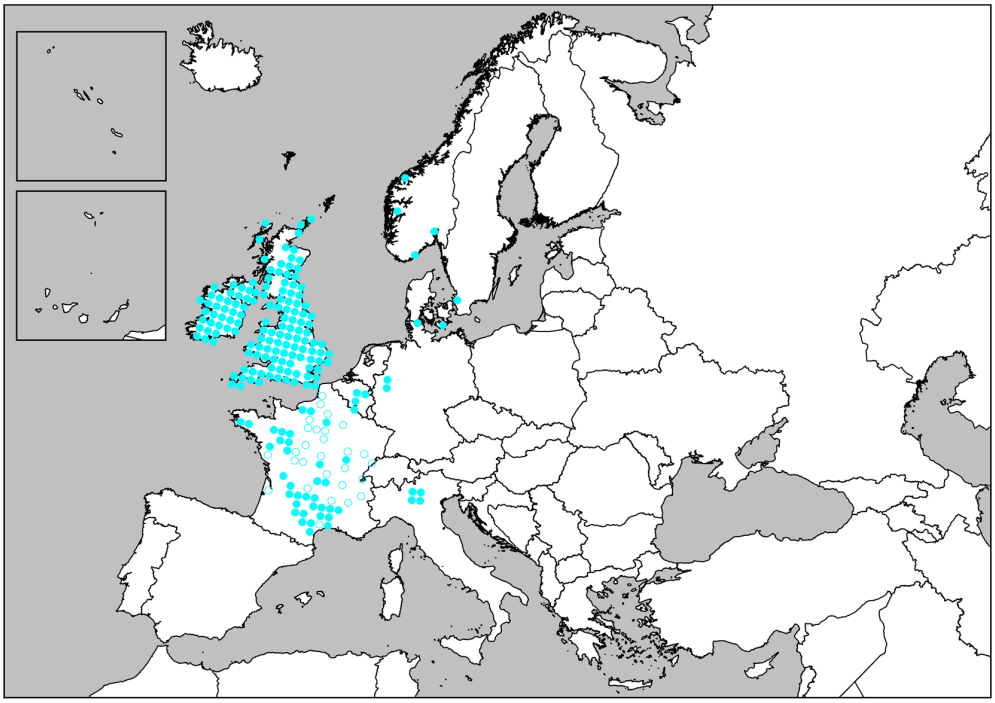
259. *Nanogona cebennica*
(Ribaut, 1947)



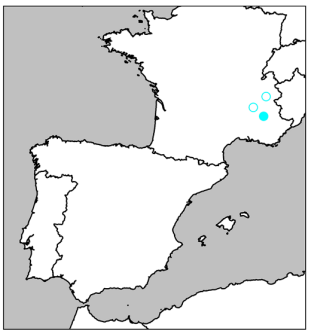
260. *Nanogona davidi*
(Demange, 1966)



261. *Nanogona digitata*
(Ribaut, 1913)

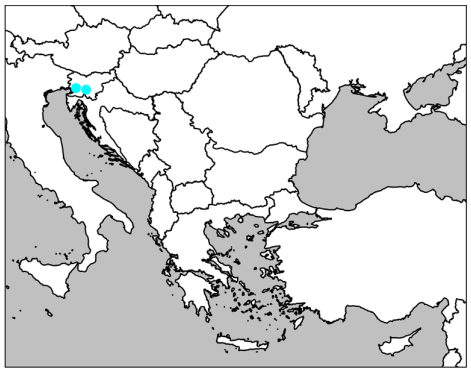


262. *Nanogona polydesmoides* (Leach, 1814)

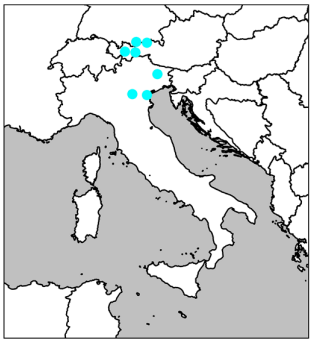


263. *Nanogona uncinata*
(Ribaut, 1913)

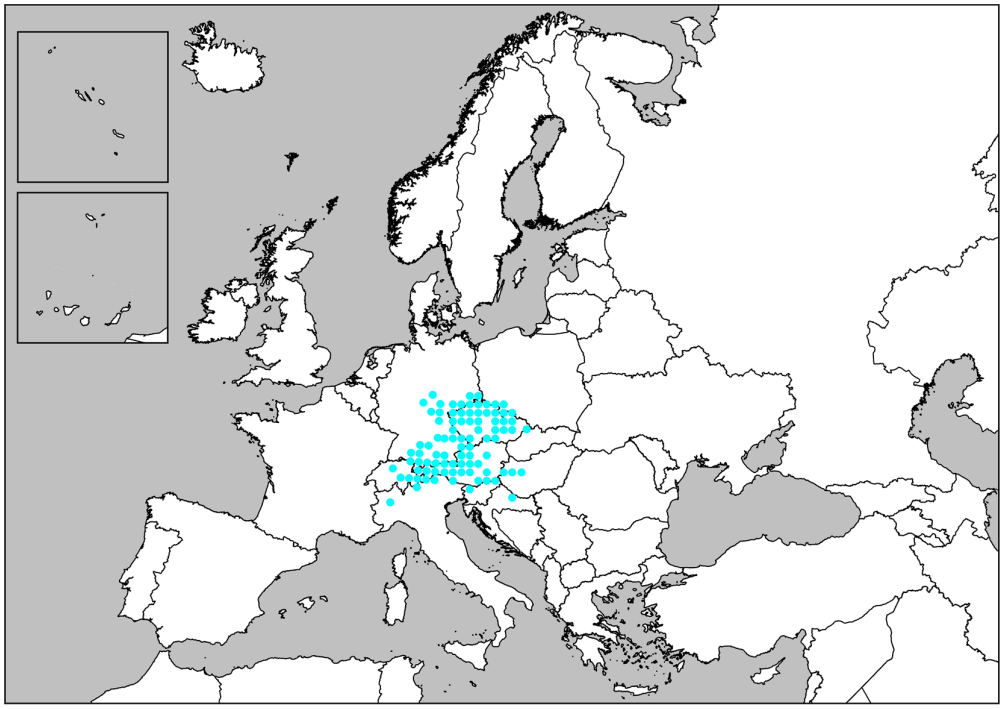
264. *Ochogona apfelbecki*
(Verhoeff, 1897)



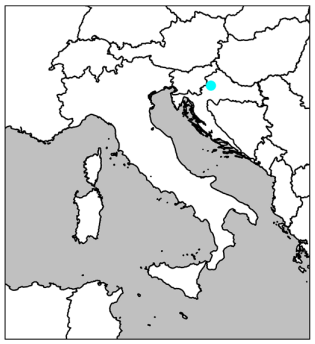
265. *Ochogona attemsi* (Verhoeff, 1907)



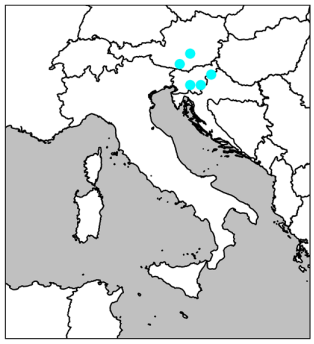
266. *Ochogona brentana* (Verhoeff, 1927)



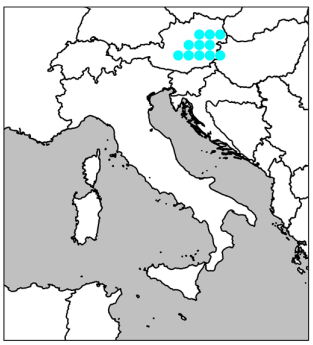
267. *Ochogona caroli* (Rothenbühler, 1900)



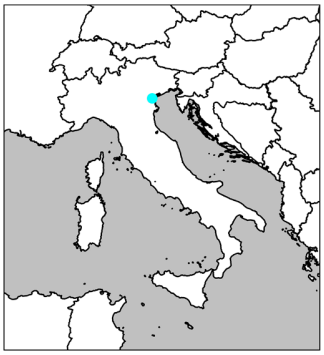
268. *Ochogona cervina* (Verhoeff, 1899)



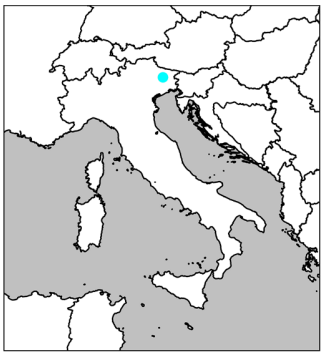
269. *Ochogona condylocoxa* (Attems, 1899)



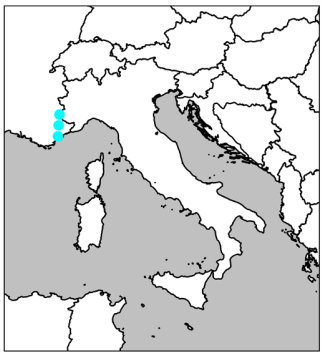
270. *Ochogona elaphron* (Attems, 1895)



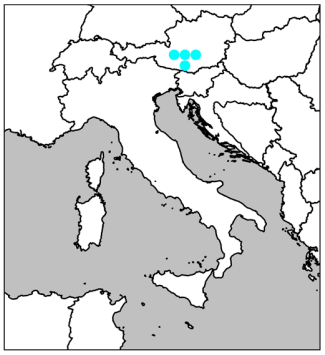
271. *Ochogona euganeorum* (Verhoeff, 1927)



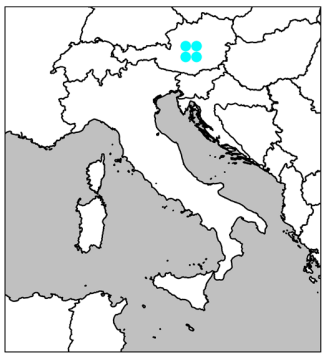
272. *Ochogona friulana* (Strasser, 1937)



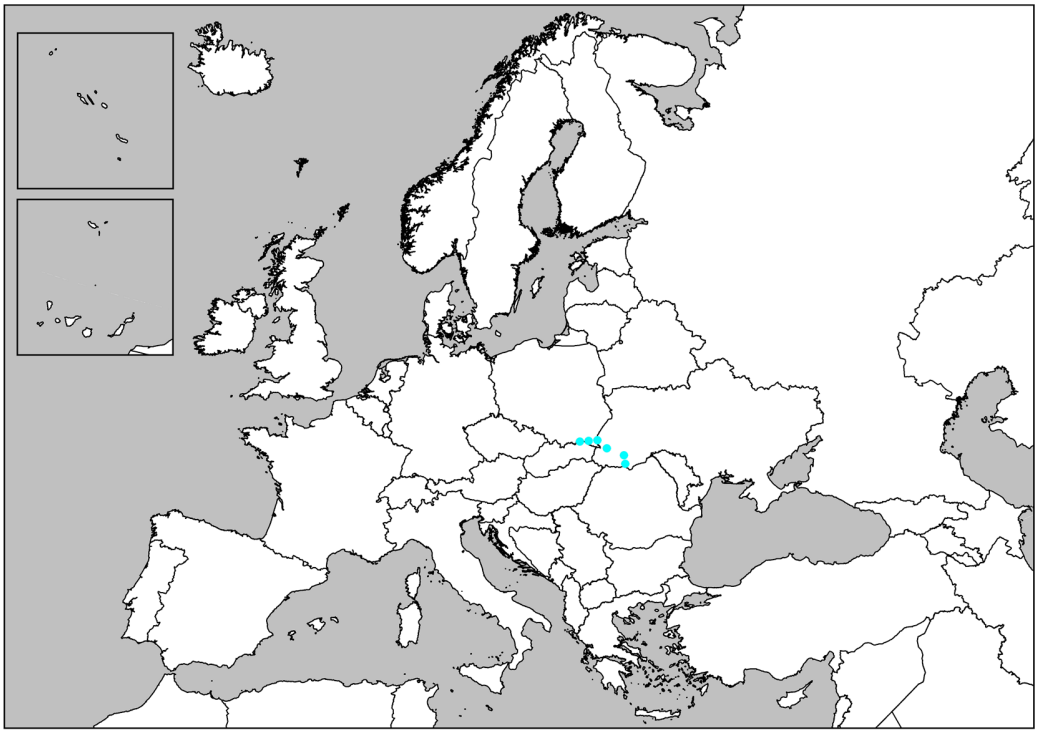
273. *Ochogona gallitarum* (Brölemann, 1900)



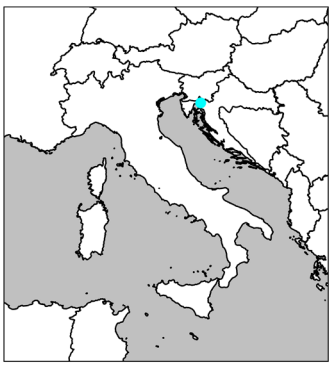
274. *Ochogona hanfi* (Attems, 1926)



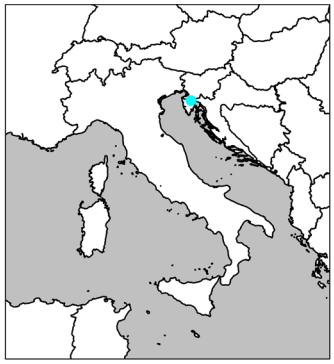
275. *Ochogona holdhausi* (Attems, 1926)



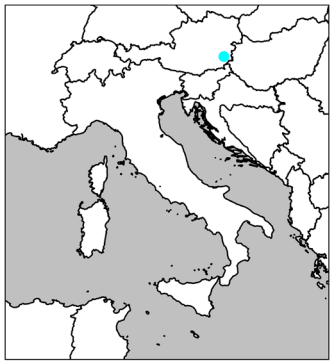
276. *Ochogona jankowskii* (Jawłowski, 1938)



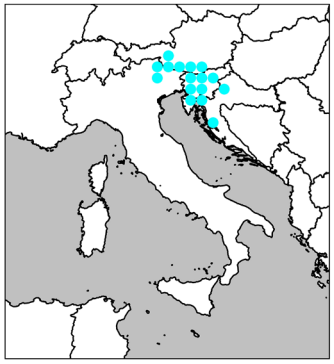
277. *Ochogona latzeli* (Attems, 1927)



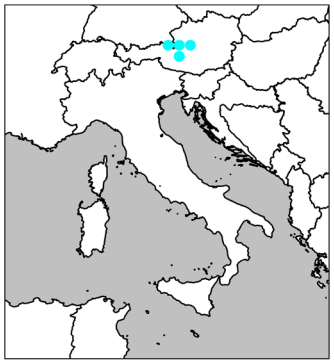
278. *Ochogona manfredii* (Strasser, 1942)



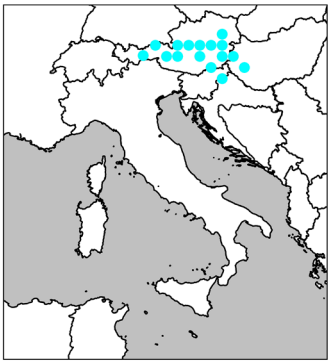
279. *Ochogona phyllophaga* (Attems, 1899)



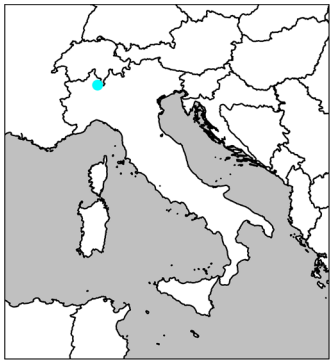
280. *Ochogona pusilla* (Verhoeff, 1893)



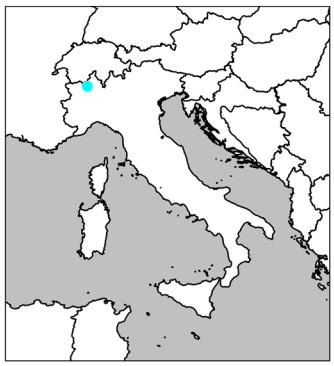
281. *Ochogona regalis* (Verhoeff, 1913)



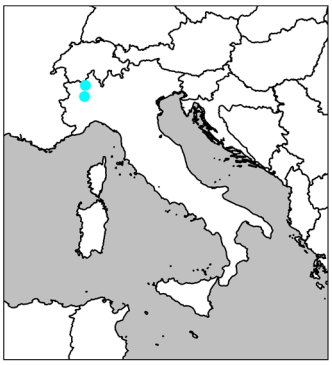
282. *Ochogona triaina* (Attems, 1895)



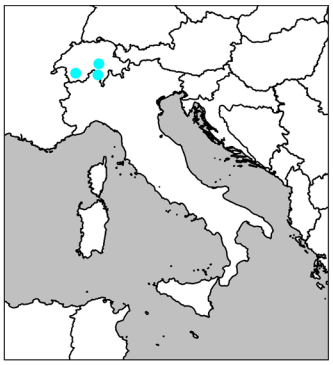
283. *Oroposoma catascaphium* Verhoeff, 1936



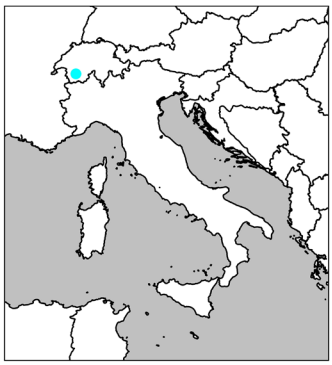
284. *Oroposoma emiliae* Manfredi, 1953



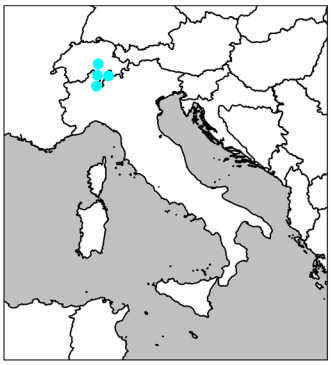
285. *Oroposoma fagorum* Verhoeff, 1936



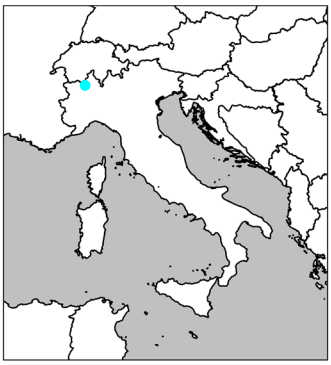
286. *Oroposoma granitivagum*
Verhoeff, 1936



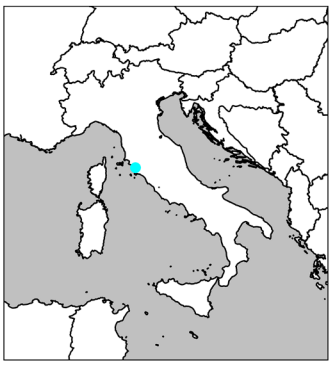
287. *Oroposoma nivale*
(Faës, 1902)



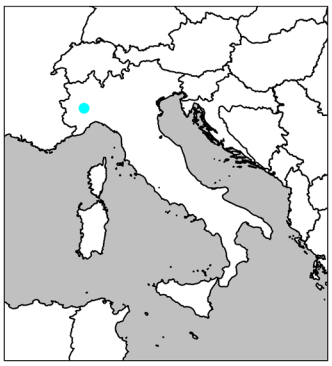
288. *Oroposoma ticinense*
Manfredi, 1957



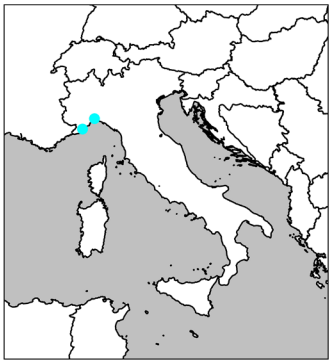
289. *Oroposoma varallense*
Verhoeff, 1936



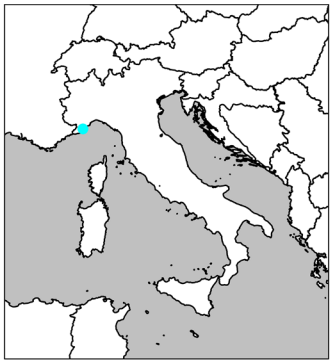
290. *Paradactylophorosoma insulanum*
(Attems, 1908)



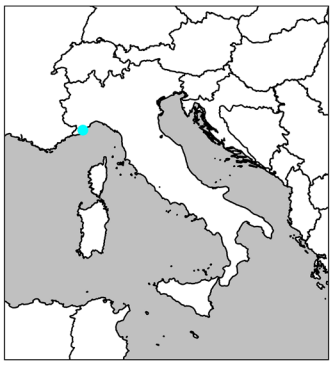
291. *Pedemontia delmastroi*
Mauriès, 1994



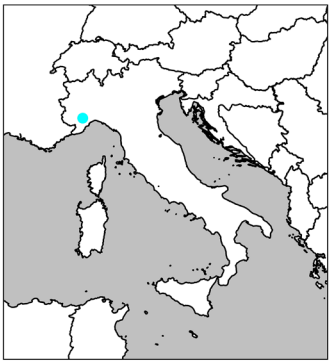
292. *Plectogona angusta*
(Latzel, 1887)



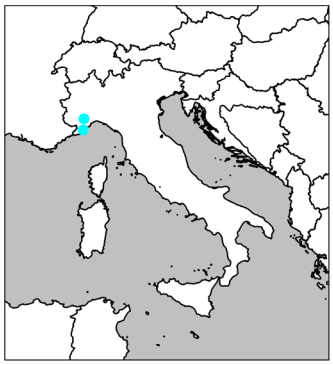
293. *Plectogona bonzanoi*
(Strasser, 1975)



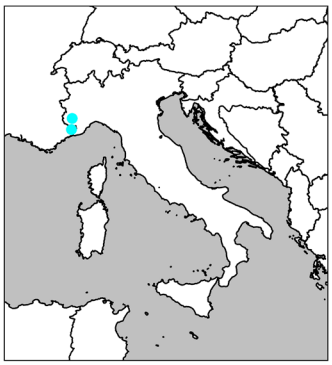
294. *Plectogona franciscoloi*
(Manfredi, 1953)



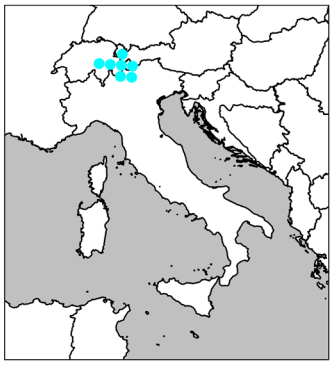
295. *Plectogona morisii* (Strasser, 1975)



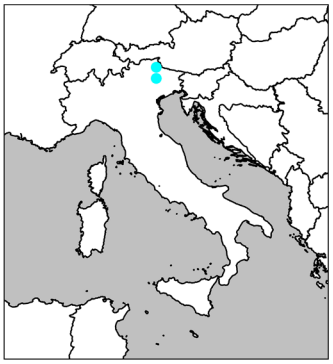
296. *Plectogona sanfillipoi* (Manfredi, 1956)



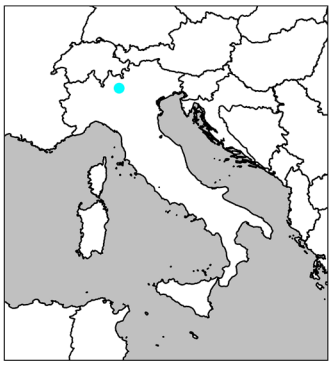
297. *Plectogona vignai* (Strasser, 1970)



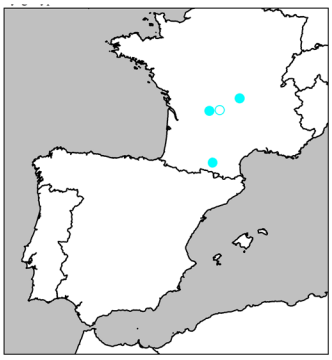
298. *Pterygophorosoma alticolum* (Verhoeff, 1894)



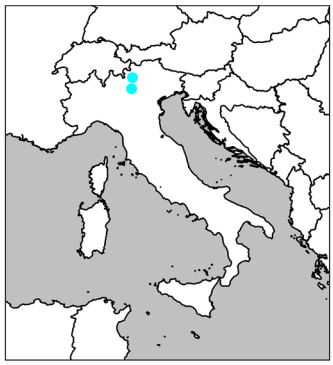
299. *Pterygophorosoma cornuigerum* (Verhoeff, 1900)



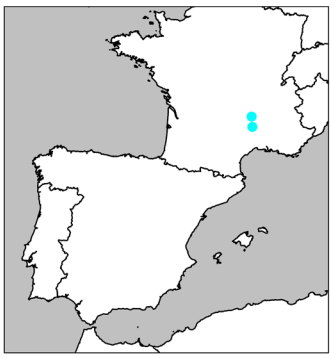
300. *Pyrgocyphosoma armigerun* Verhoeff, 1925



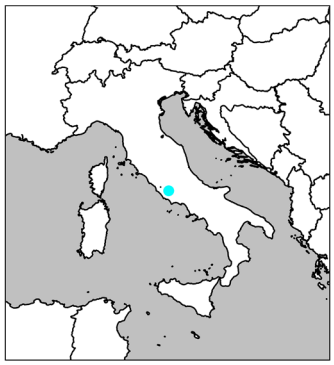
301. *Pyrgocyphosoma arvernum* (Ribaut & Brolemann, 1932)



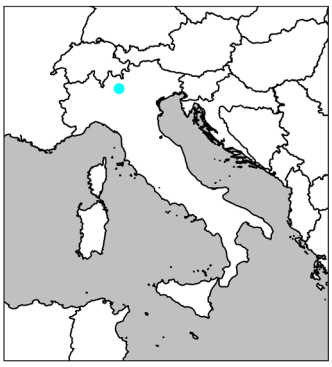
302. *Pyrgocyphosoma aspidiorum* Verhoeff, 1931



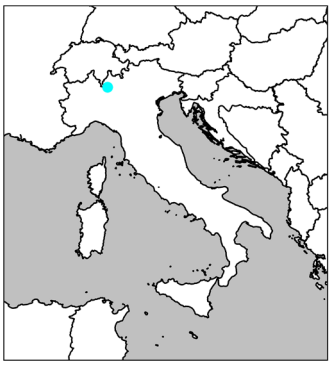
303. *Pyrgocyphosoma balazuci* Mauriès & Kime, 1999



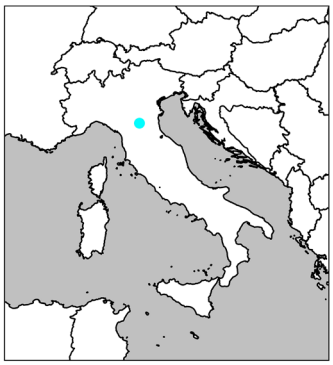
304. *Pyrgocyphosoma bidentatum* (Verhoeff, 1900)



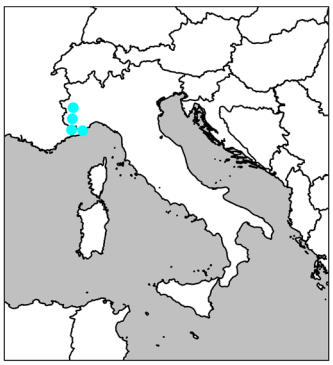
305. *Pyrgocyphosoma brembanum* Verhoeff, 1931



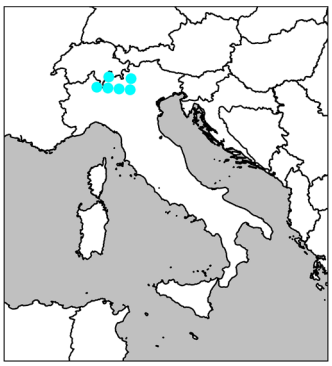
306. *Pyrgocyphosoma brunatense* (Verhoeff, 1910)



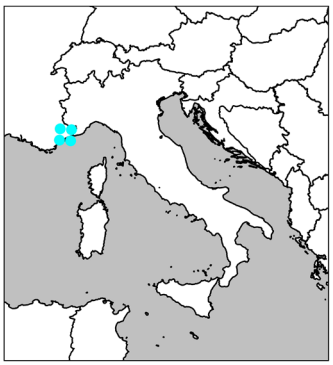
307. *Pyrgocyphosoma centrale* (Silvestri, 1898)



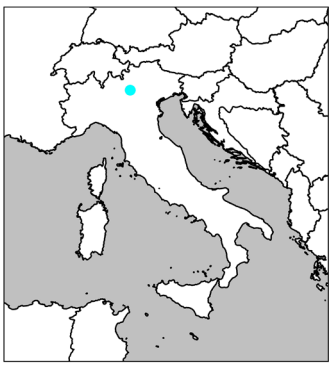
308. *Pyrgocyphosoma dalmazzense* Verhoeff, 1930



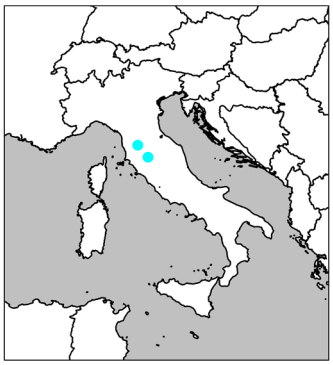
309. *Pyrgocyphosoma dentatum* (Brölemann, 1892)



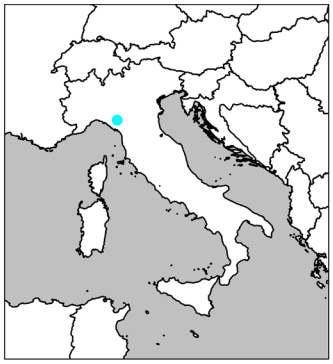
310. *Pyrgocyphosoma doriae* (Silvestri, 1898)



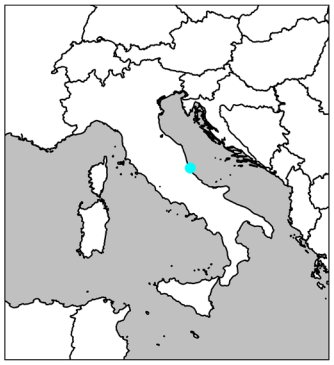
311. *Pyrgocyphosoma edrinum* Verhoeff, 1934



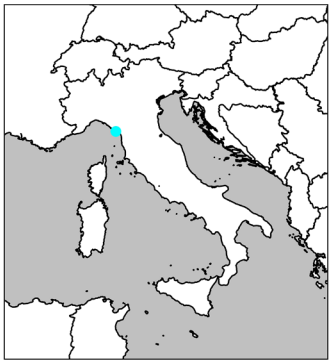
312. *Pyrgocyphosoma florentinum* (Silvestri, 1903)



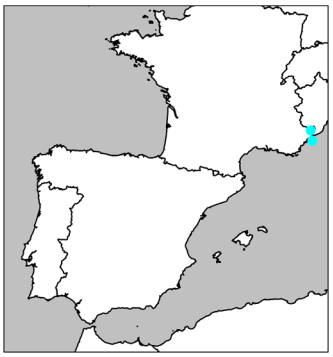
313. *Pyrgocyphosoma fonticuli* Verhoeff, 1936



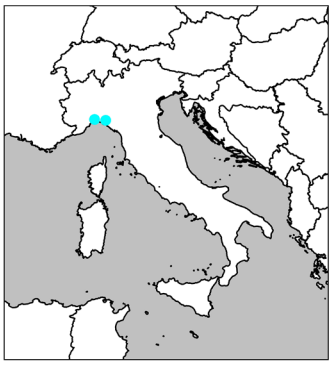
314. *Pyrgocyphosoma gattii* (Silvestri, 1898)



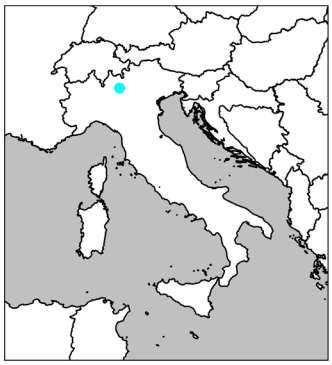
315. *Pyrgocyphosoma grassii* (Silvestri, 1898)



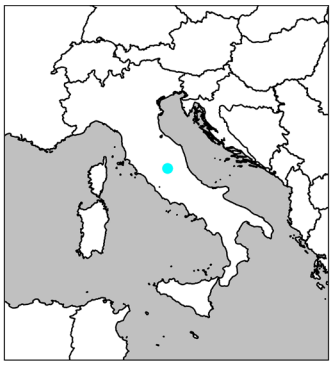
316. *Pyrgocyphosoma jucundum* (Brolemann, 1935)



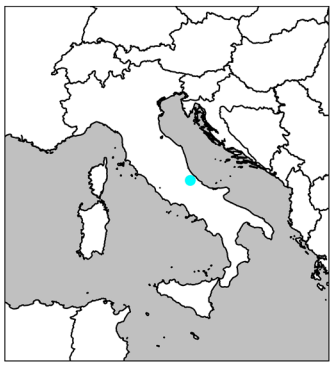
317. *Pyrgocyphosoma ligusticum* (Silvestri, 1898)



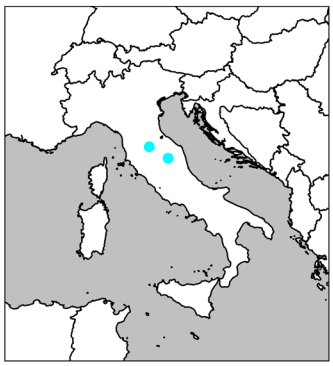
318. *Pyrgocyphosoma longilamellatum* Verhoeff, 1931



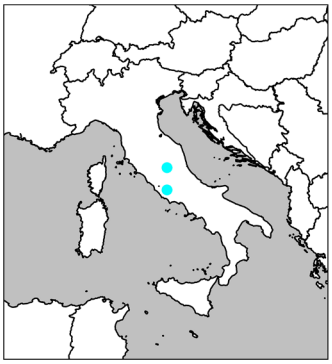
319. *Pyrgocyphosoma marmorense* Verhoeff, 1932



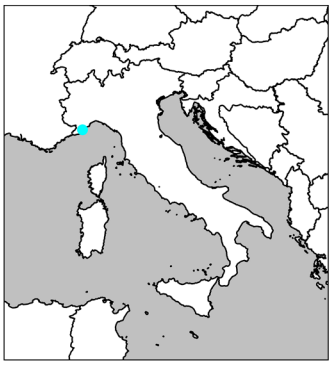
320. *Pyrgocyphosoma marrucinum* Manfredi, 1950



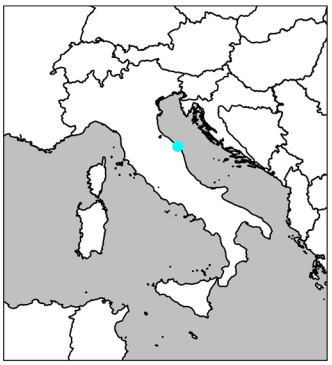
321. *Pyrgocyphosoma mevaniense* (Silvestri, 1894)



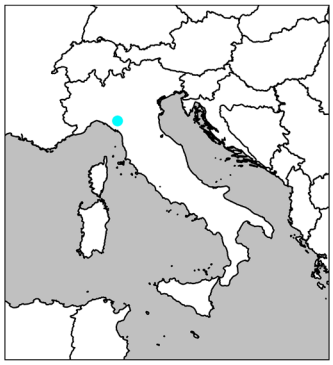
322. *Pyrgocyphosoma oppidicola* (Silvestri, 1898)



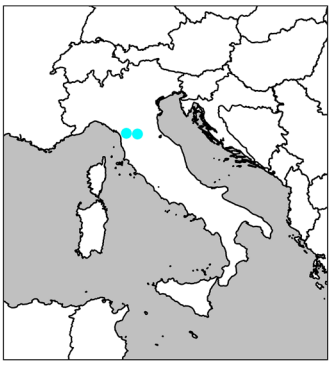
323. *Pyrgocyphosoma ormeanum* Verhoeff, 1930



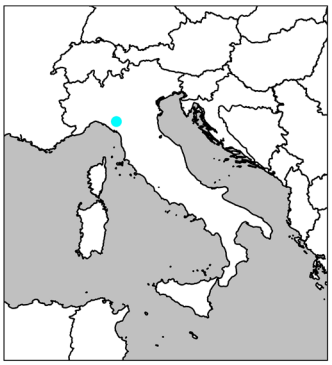
324. *Pyrgocyphosoma picenum* Manfredi, 1953



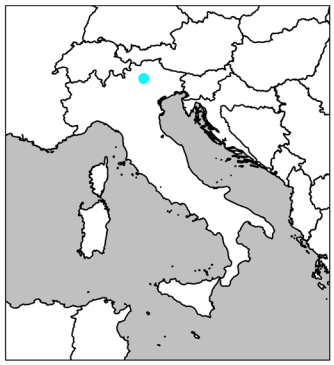
325. *Pyrgocyphosoma pontremolense* Verhoeff, 1936



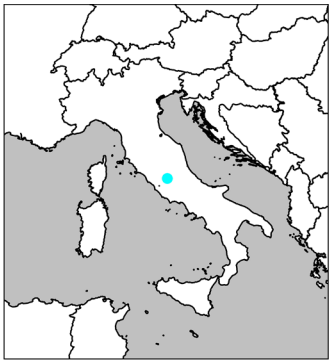
326. *Pyrgocyphosoma pracchiense* Verhoeff, 1932



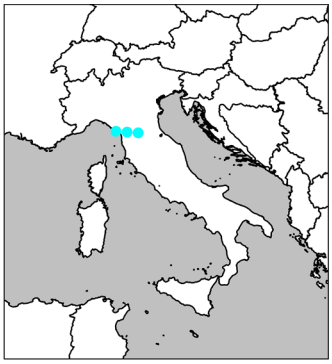
327. *Pyrgocyphosoma quercuum* Verhoeff, 1936



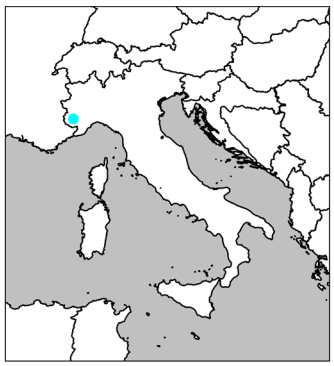
328. *Pyrgocyphosoma ravinense* Verhoeff, 1936



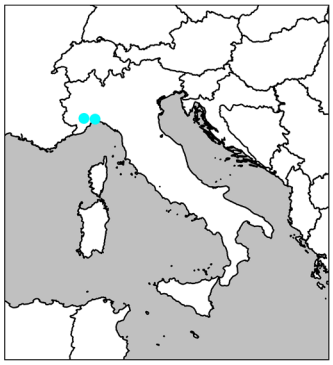
329. *Pyrgocyphosoma reatinum* Strasser, 1977



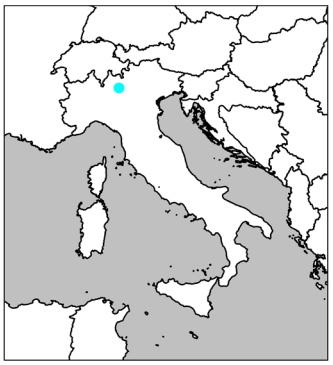
330. *Pyrgocyphosoma renanum* Verhoeff, 1932



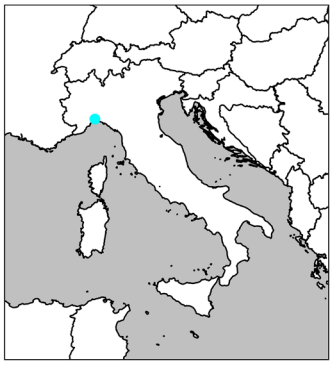
331. *Pyrgocyphosoma roccavionense* Verhoeff, 1937



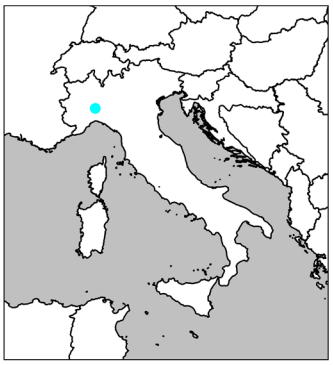
332. *Pyrgocyphosoma savonense* (Verhoeff, 1910)



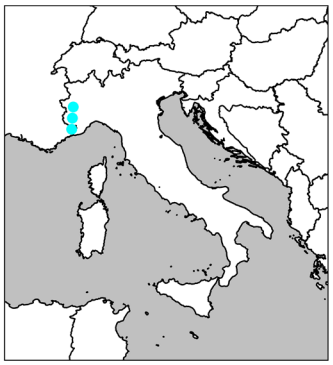
333. *Pyrgocyphosoma serianum* Verhoeff, 1937



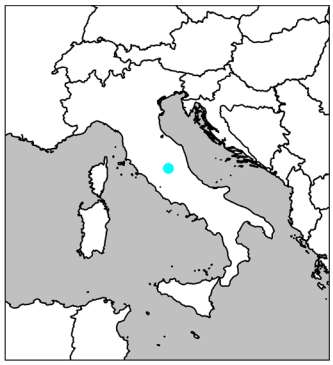
334. *Pyrgocyphosoma serpentinum* Verhoeff, 1932



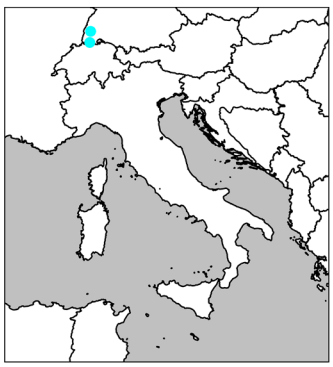
335. *Pyrgocyphosoma serravallense* Verhoeff, 1936



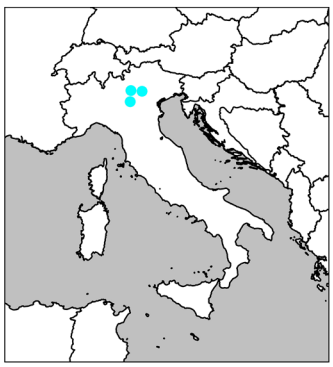
336. *Pyrgocyphosoma tendanum* Verhoeff, 1930



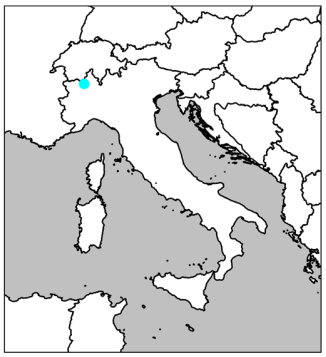
337. *Pyrgocyphosoma terminilli* Strasser, 1977



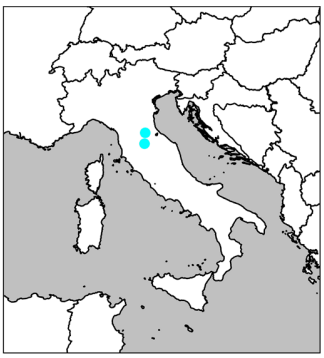
338. *Pyrgocyphosoma titianum* (Verhoeff, 1910)



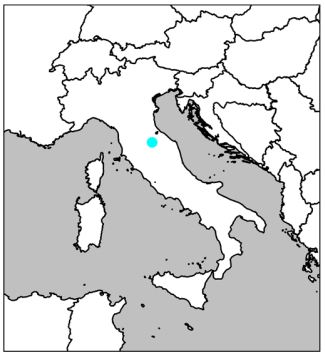
339. *Pyrgocyphosoma tridentinum* (Silvestri, 1898)



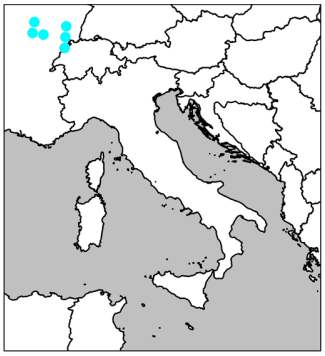
340. *Pyrgocyphosoma vallicola* (Silvestri, 1898)



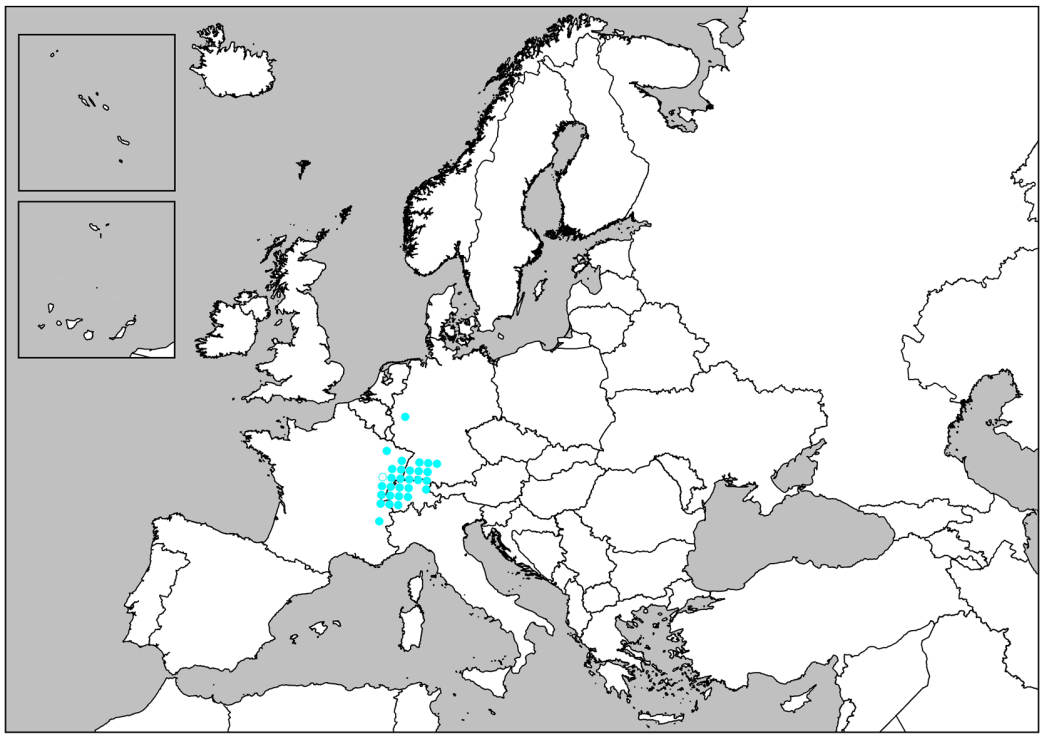
341. *Pyrgocyphosoma vallombrosae* (Silvestri, 1898)



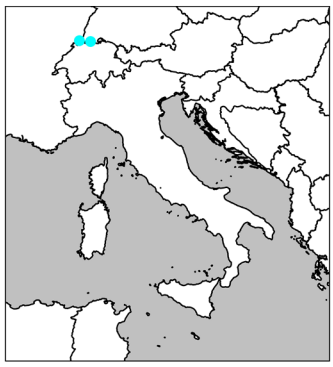
342. *Pyrgocyphosoma zangherii* Manfredi, 1951



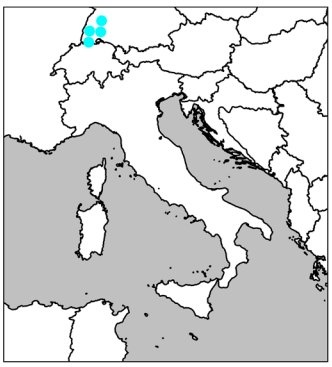
343. *Rhymogona hessei* (Ravoux, 1935)



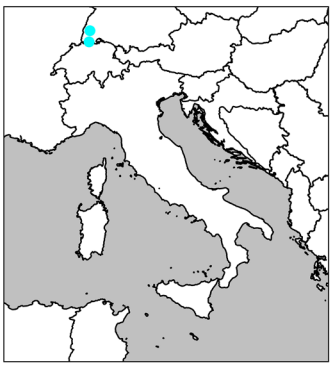
344. *Rhymogona montivaga* (Verhoeff, 1894)



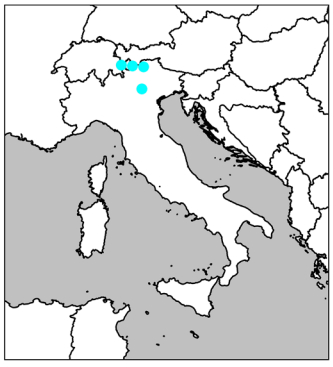
345. *Rhymogona serrata*
(Bigler, 1912)



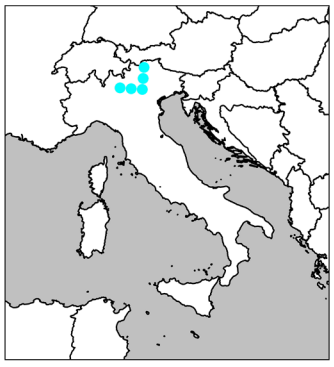
346. *Rhymogona verhoeffi*
(Bigler, 1913)



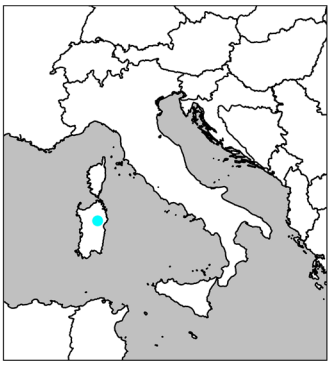
347. *Rhymogona wehrana*
(Verhoeff, 1910)



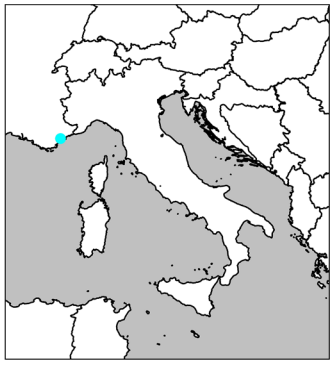
348. *Rothenbuehleria minima*
(Rothenbühler, 1899)



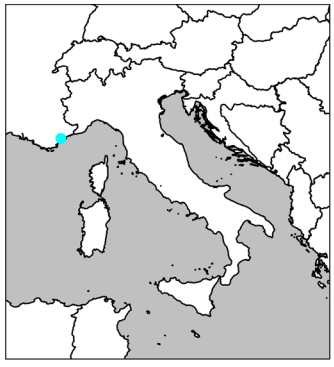
349. *Rothenbuehleria tirolensis*
Verhoeff, 1900



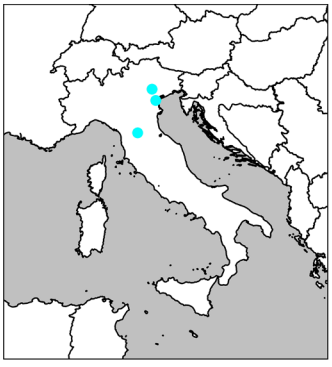
350. *Sardosoma franchettii*
Manfredi, 1956



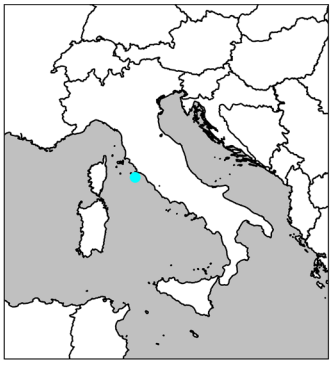
351. *Semiosoma bordei*
Ribaut, 1913



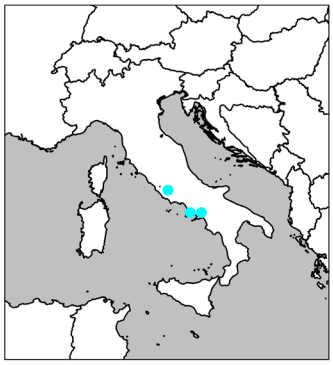
352. *Semiosoma devillei*
(Brölemann, 1901)



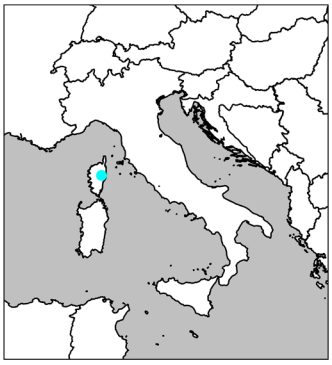
353. *Semiosoma minutum*
(Berlese, 1894)



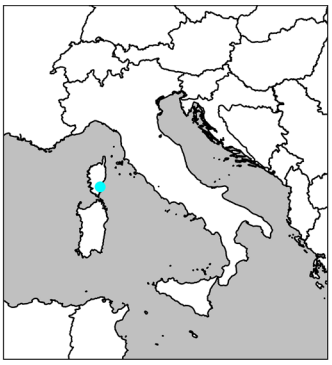
354. *Synischiosoma argentarium* Attems, 1927



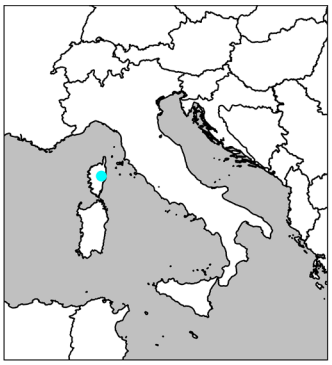
355. *Synischiosoma murorum* (Silvestri, 1902)



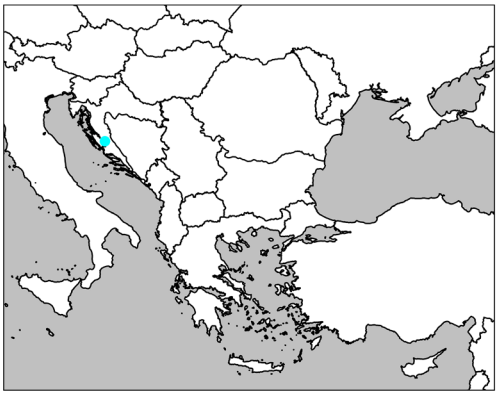
356. *Cyrnosoma beroni* (Mauriès, 1969)



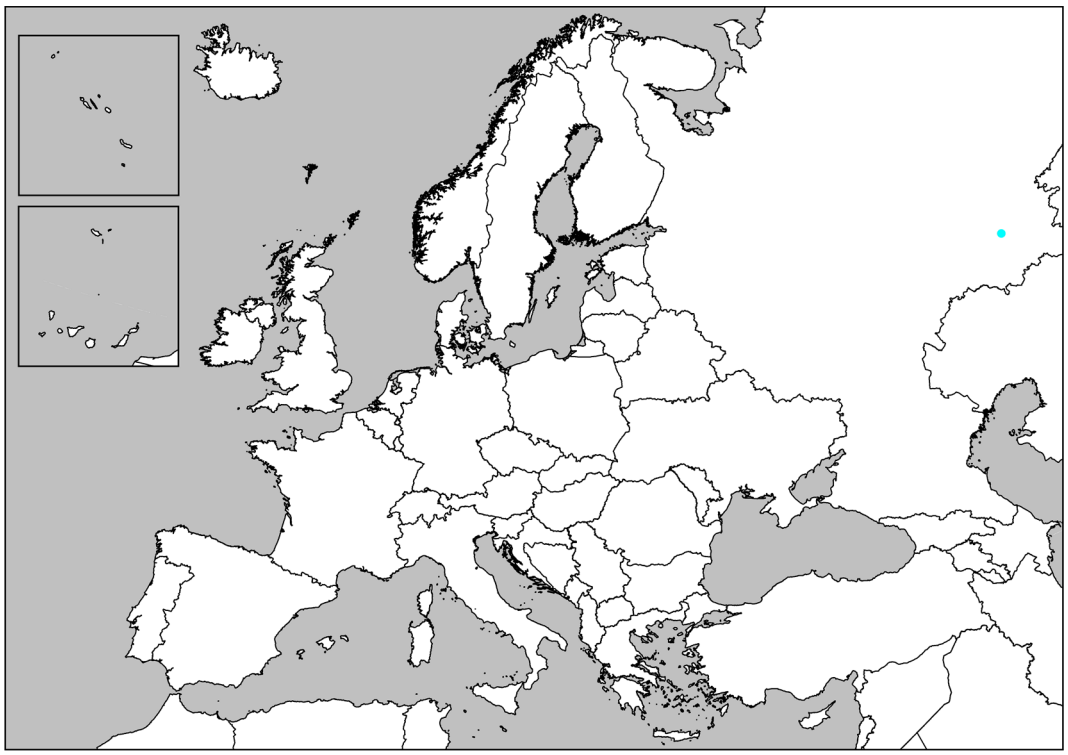
357. *Cyrnosoma coineaui* (Mauriès, 1969)



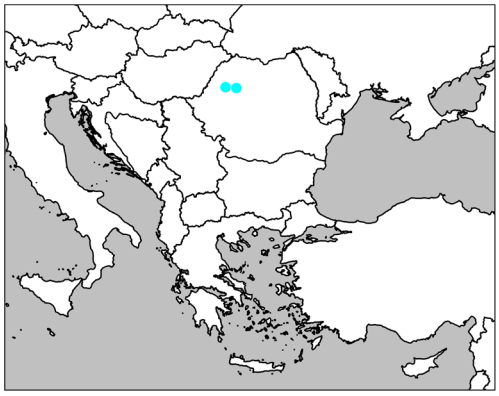
358. *Cyrnosoma strasseri* (Mauriès, 1969)



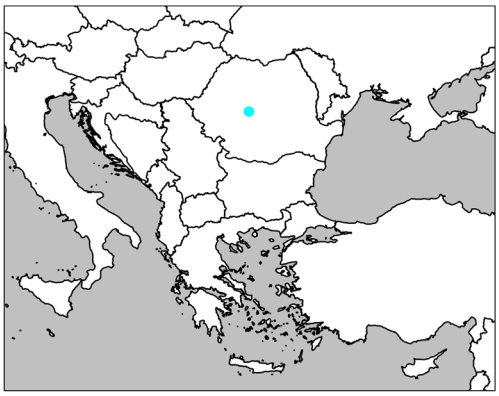
359. *Dalmatosoma agaricum* Antić & Makarov, 2018



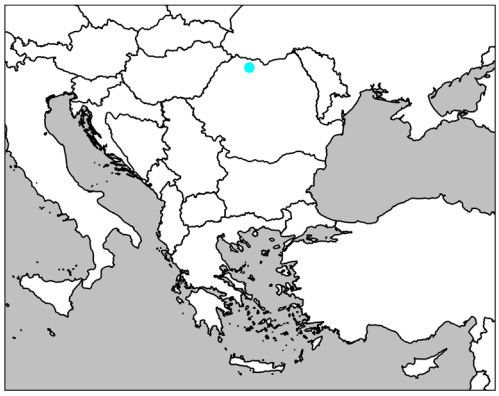
360. *Altajosoma golovatchi* (Shear, 1990)



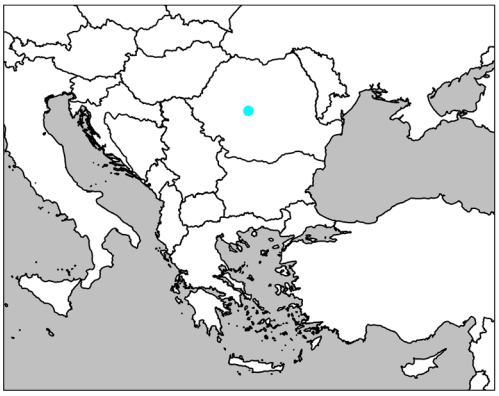
361. *Entomobielzia getica* Ceuca, 1964



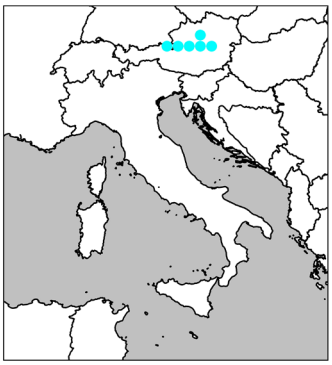
362. *Entomobielzia kimakowizii* (Verhoeff, 1897)



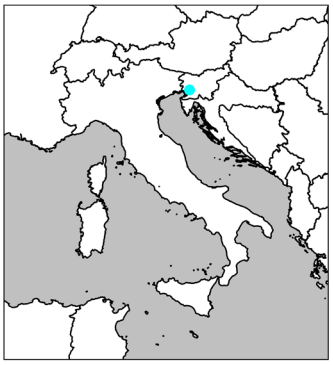
363. *Entomobielzia varvarai* Ceuca, 1985



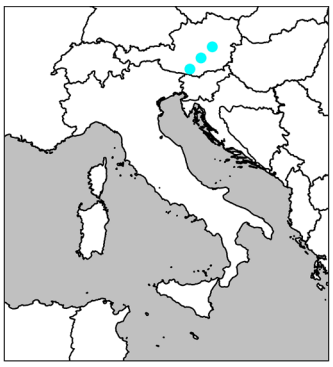
364. *Pseudoclis octocera* Attems, 1899



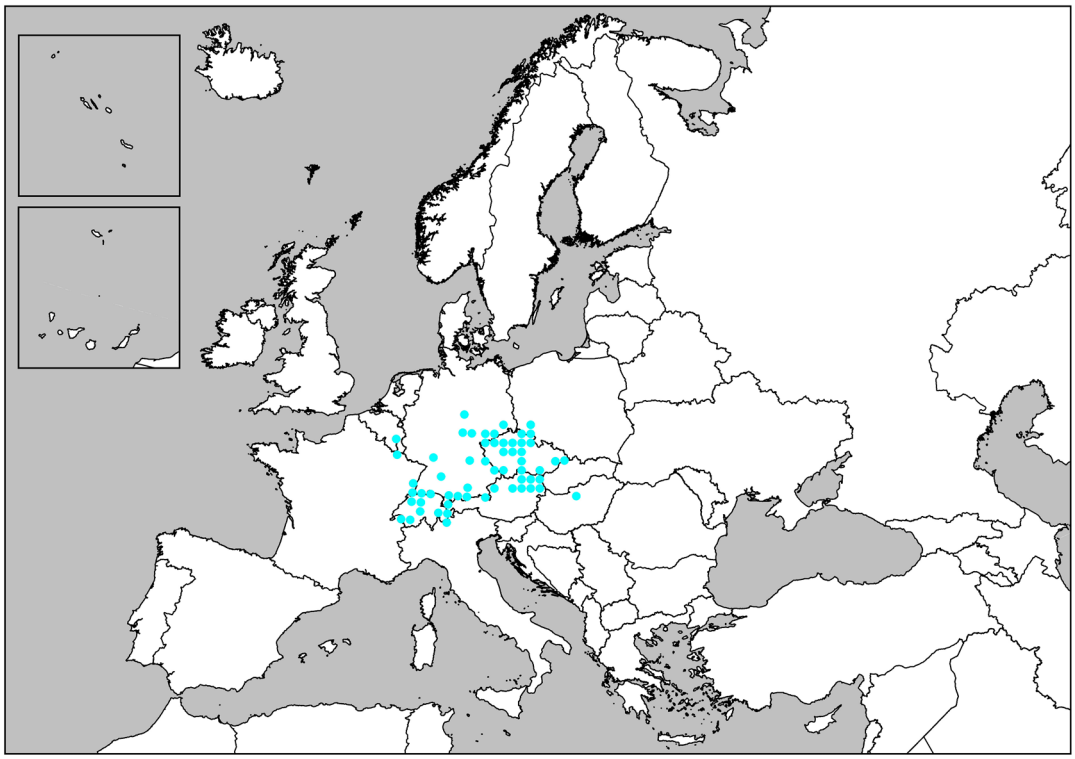
365. *Haasea cyanopida* (Attems, 1903)



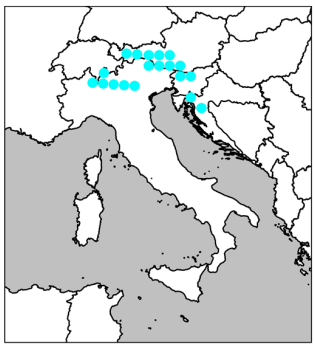
366. *Haasea faucium* (Verhoeff, 1931)



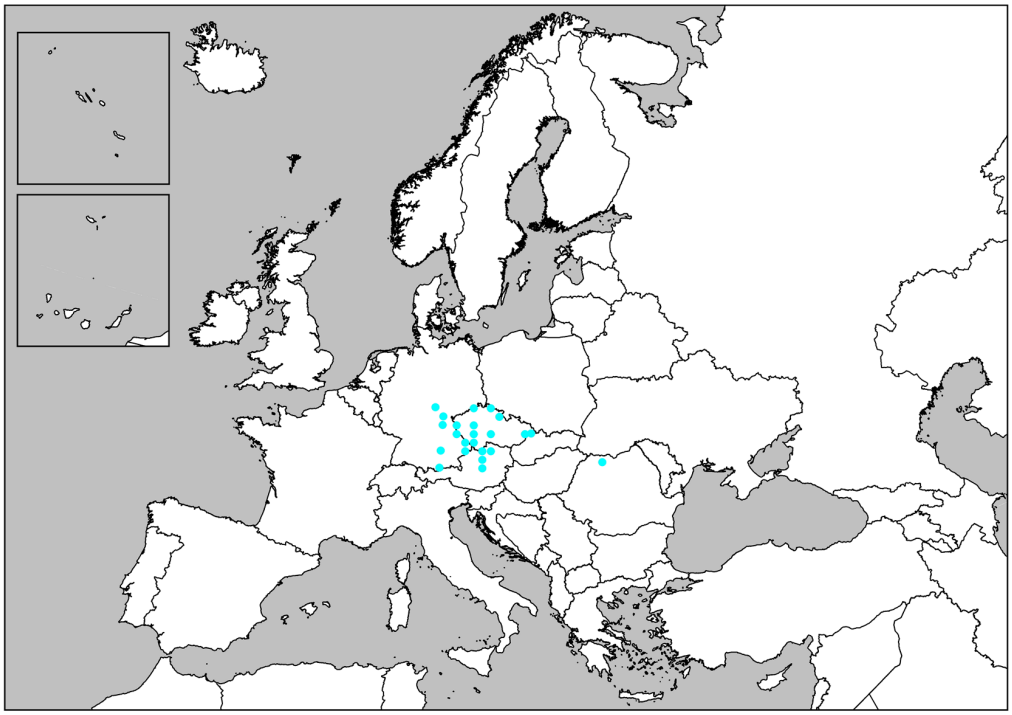
367. *Haasea filicis* (Verhoeff, 1929)



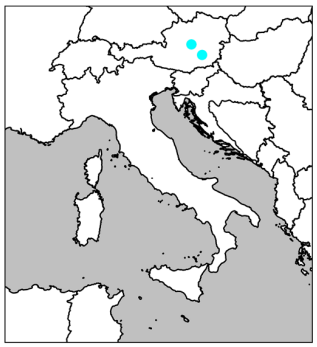
368. *Haasea flavescens* (Latzel, 1884)



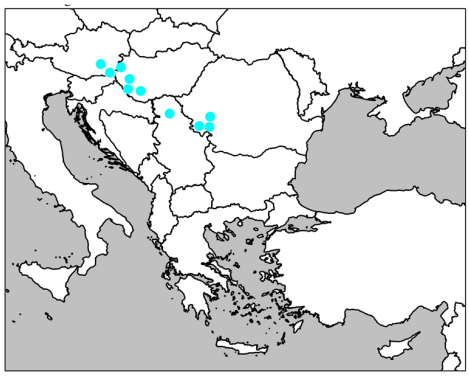
369. *Haasea fonticulorum* (Verhoeff, 1910)



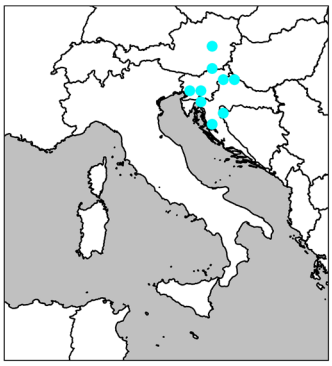
370. *Haasea germanica* (Verhoeff, 1901)



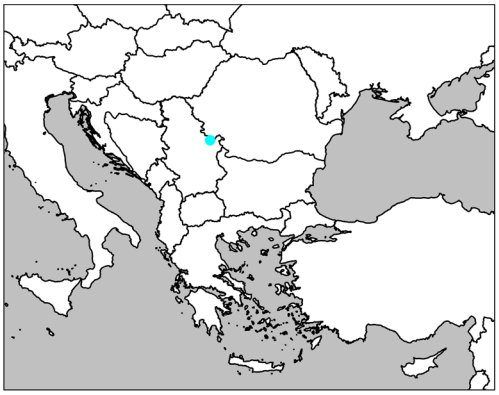
371. *Haasea gruberi*
Antić & Akkari, 2020



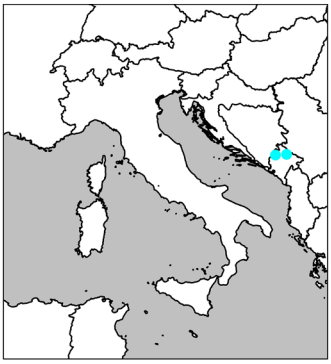
372. *Haasea hungarica*
(Verhoeff, 1928)



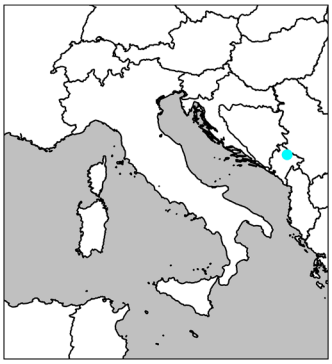
373. *Haasea inflata* (Verhoeff, 1907)



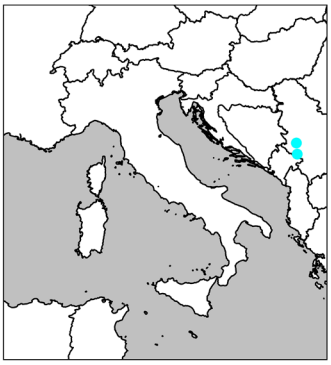
374. *Haasea intermedia* Mršić, 1985



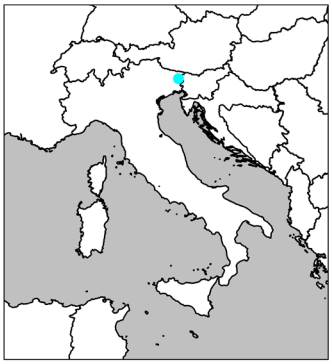
375. *Haasea lacusnigri* (Gulička, 1968)



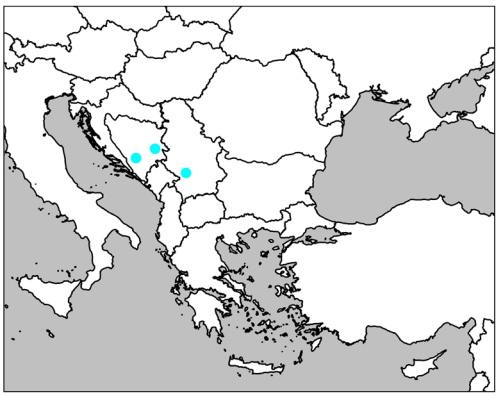
376. *Haasea makarovi* Antić & Akkari, 2020



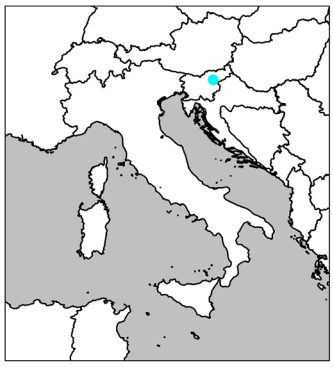
377. *Haasea microcorna* (Strasser, 1971)



378. *Haasea musimontium* (Strasser, 1937)

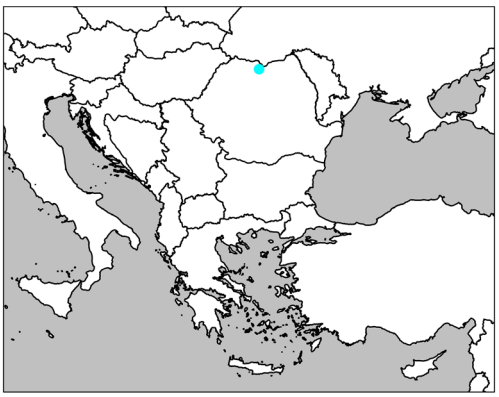


379. *Haasea plasana* (Verhoeff, 1899)

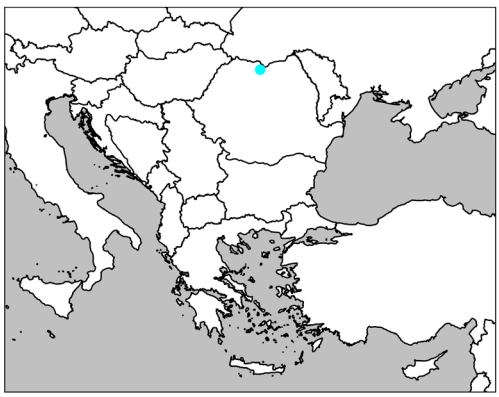


380. *Haasea pretneri* (Strasser, 1966)

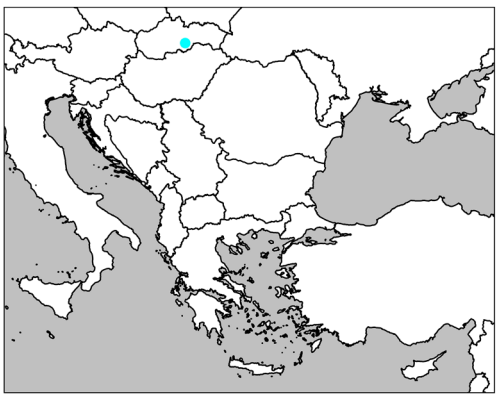
381. *Haasea vidinensis* (Strasser, 1973)



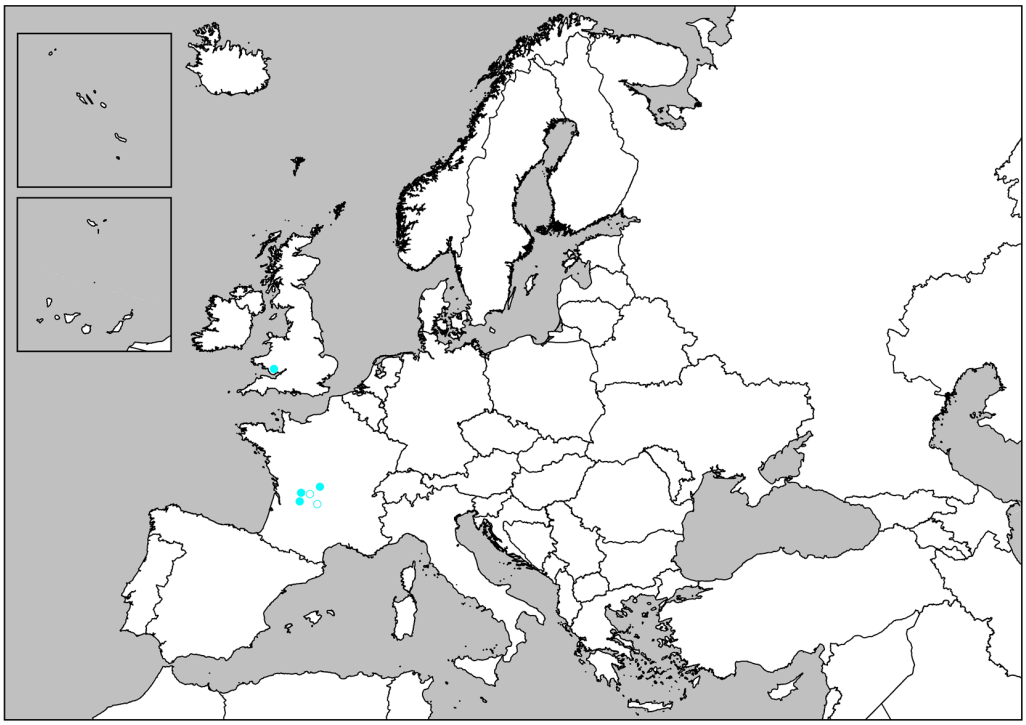
382. *Hylebainosoma birtei* (Ceuca, 1967)



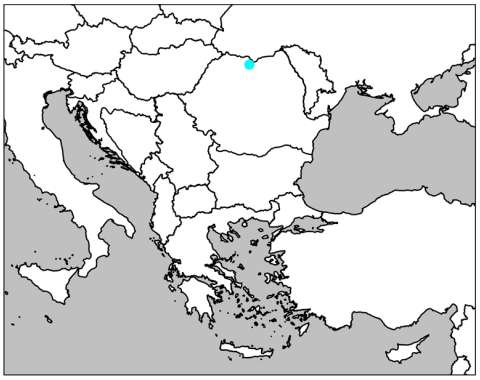
383. *Hylebainosoma cavernicola* (Ceuca, 1967)



384. *Hylebainosoma gulickai* Tajovský, Mock & Papáč, 2014

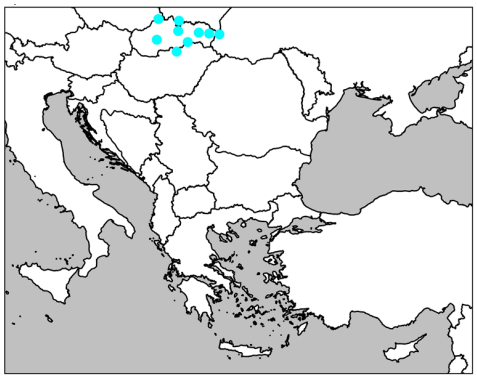


385. *Hylebainosoma nontronense* Mauriès & Kime, 1999

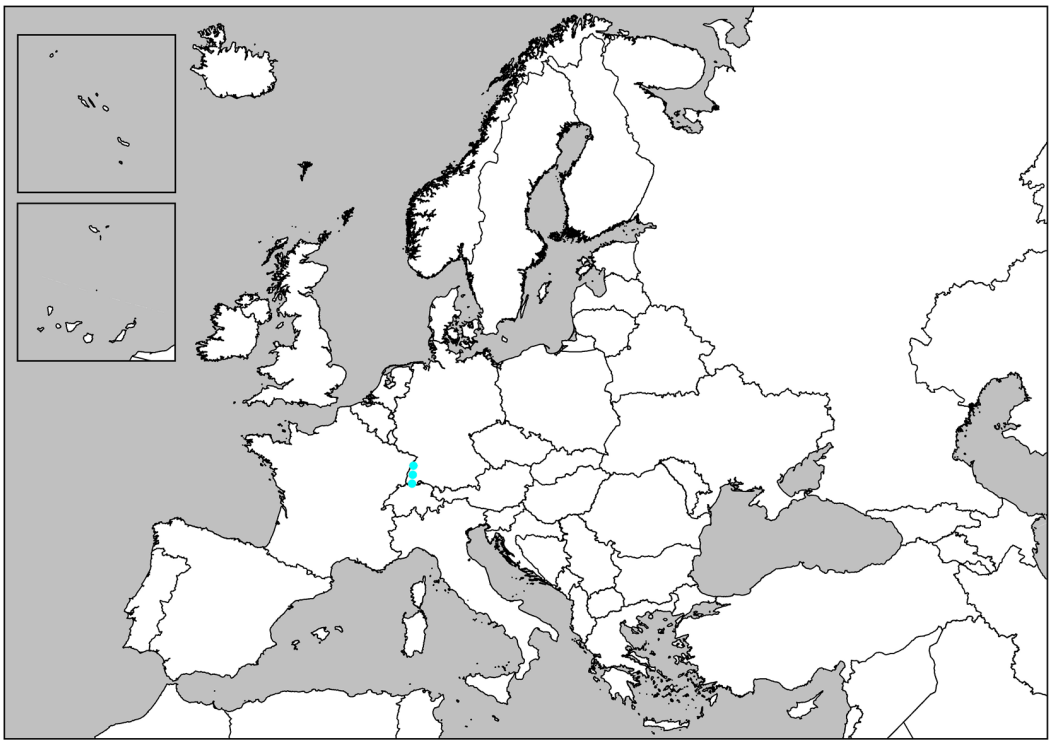


386. *Hylebainosoma odici* (Ceuca, 1967)

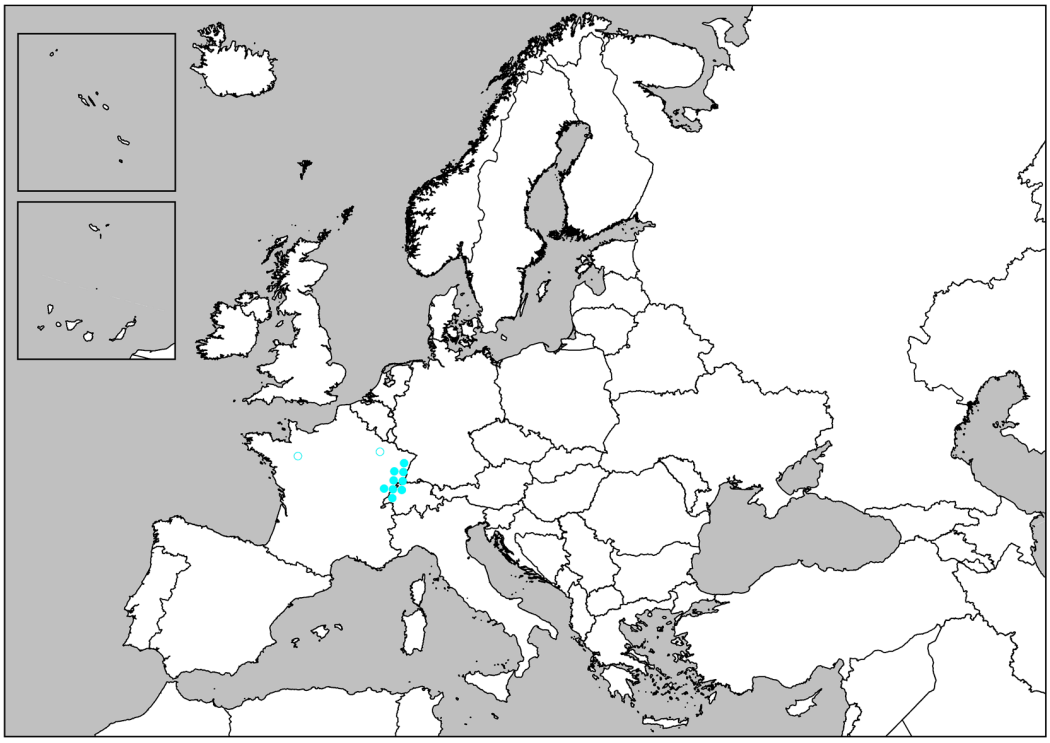
387. *Hylebainosoma oltenicum* (Ceuca, 1967)



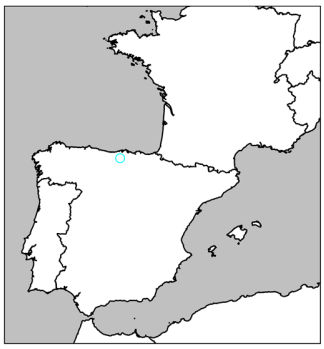
388. *Hylebainosoma tatranum* Verhoeff, 1899



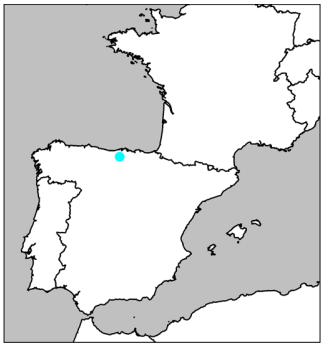
389. *Xylophageuma vomrathi* Verhoeff, 1911



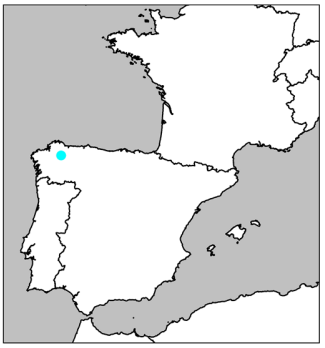
390. *Xylophageuma zschokkei* Bigler, 1912



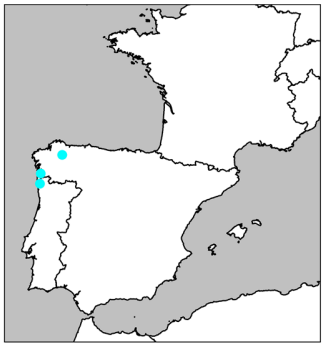
391. *Cantabrosoma rogeri*
Mauriès, 1970



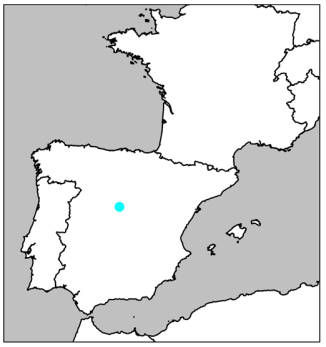
392. *Cantabrosoma serrai*
Mauriès & Vicente, 1977



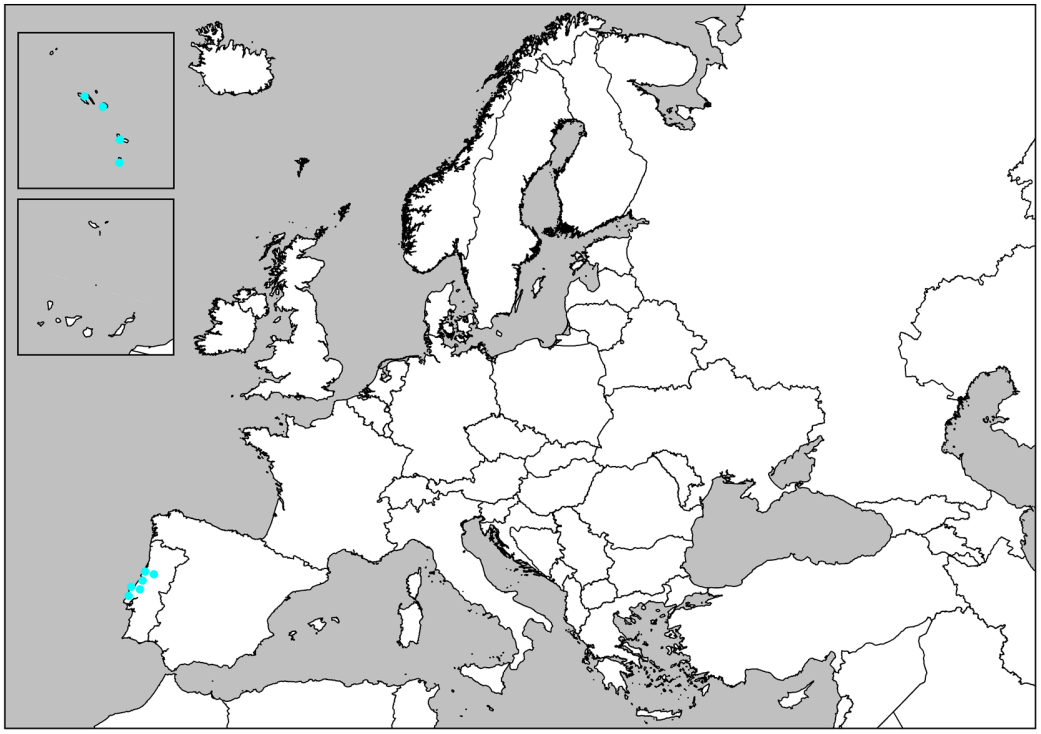
393. *Galicisoma biltoni*
Mauriès, 2015



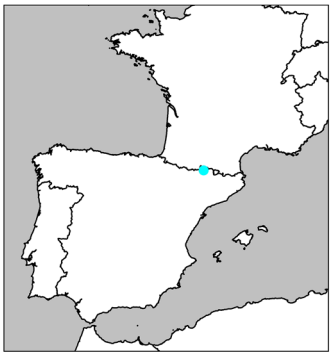
394. *Galicisoma desmondkimei*
Mauriès, 2015



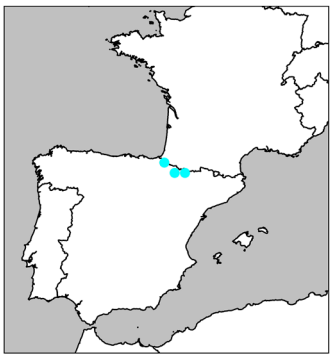
395. *Guadarramasoma ramosae*
Gilgado, Ledesma, Enghoff & Mauriès, 2017



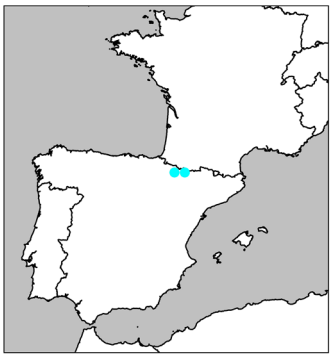
396. *Haplobainosoma lusitanum* Verhoeff, 1899



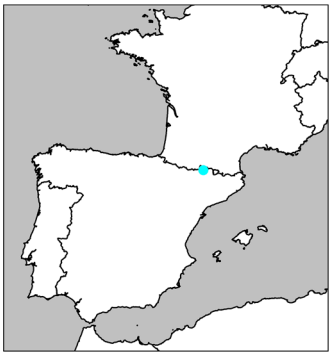
397. *Pyreneosoma aranense* Mauriès, 2010



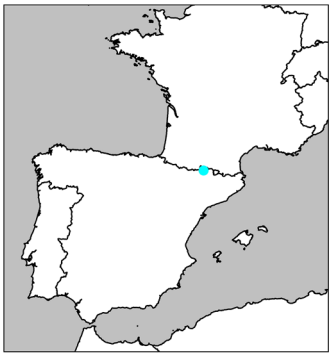
398. *Pyreneosoma barbieri* (Mauriès, 1971)



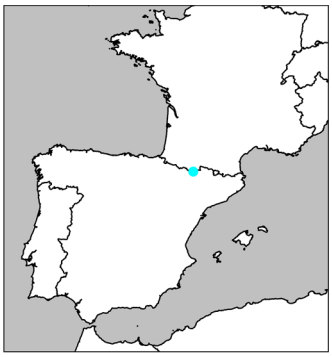
399. *Pyreneosoma bessoni* Mauriès, 1974



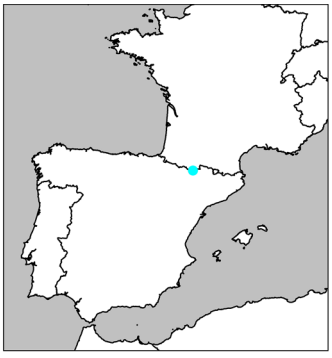
400. *Pyreneosoma birosense* Mauriès, 2010



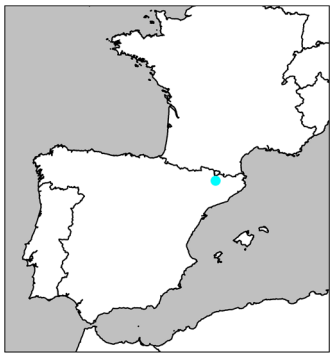
401. *Pyreneosoma consoranense* Mauriès, 2010



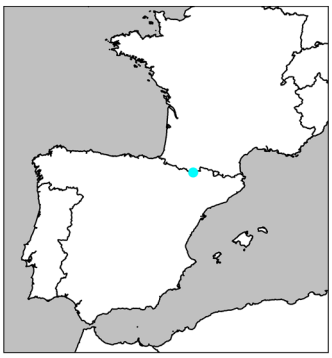
402. *Pyreneosoma convenarense* Mauriès, 2010



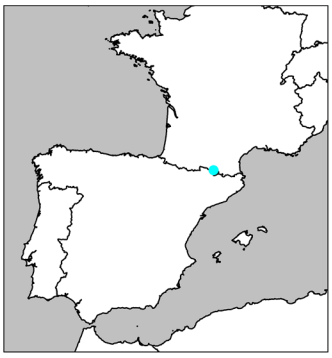
403. *Pyreneosoma digitatum* Mauriès, 1959



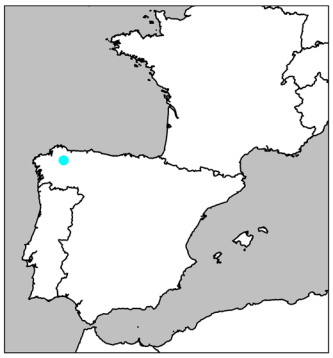
404. *Pyreneosoma grandicoxae* Mauriès, 2010



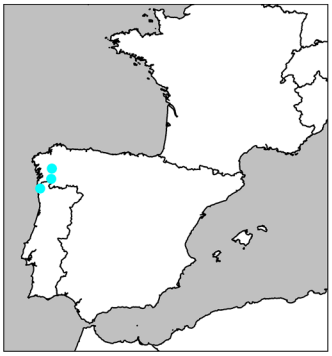
405. *Pyreneosoma ribauti* Mauriès, 1959



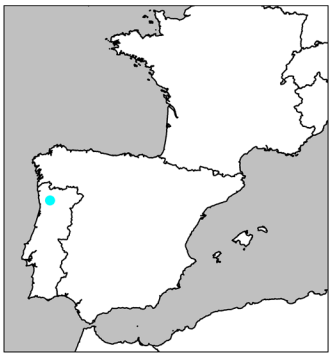
406. *Pyreneosoma vicdessosense* Mauriès, 2010



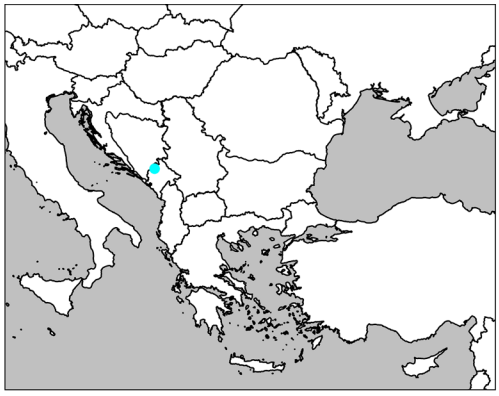
407. *Turdulisoma galiciense* Mauriès, 2015



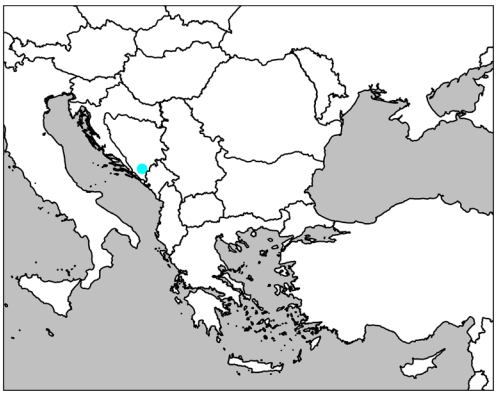
408. *Turdulisoma helenreadae* Mauriès, 2015



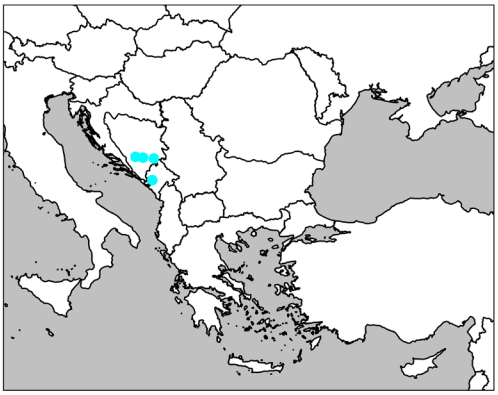
409. *Turdulisoma turdulorum* Mauriès, 1964



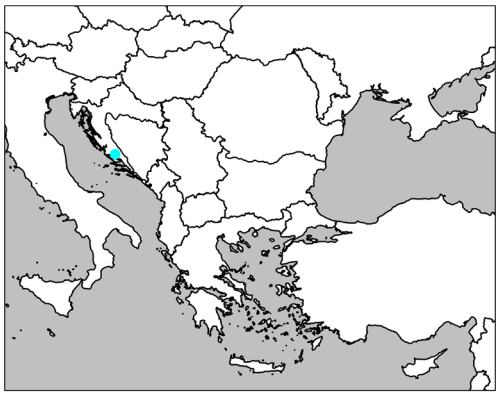
410. *Heterolatzelia durmitorensis* Gulička, 1968



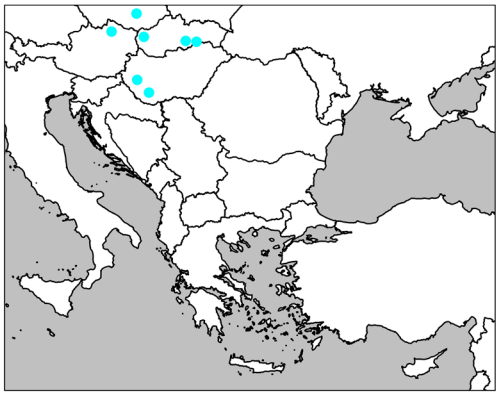
411. *Heterolatzelia karlstrasseri* Antić & Makarov, 2015



412. *Heterolatzelia nivalis* Verhoeff, 1897

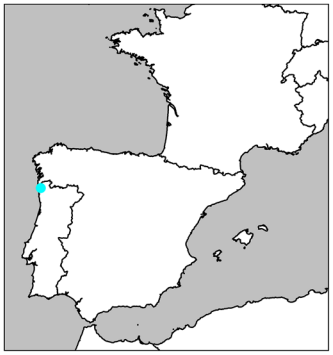


413. *Massarilatzelia dugopoljica*
Makarov & Rađa, 2011

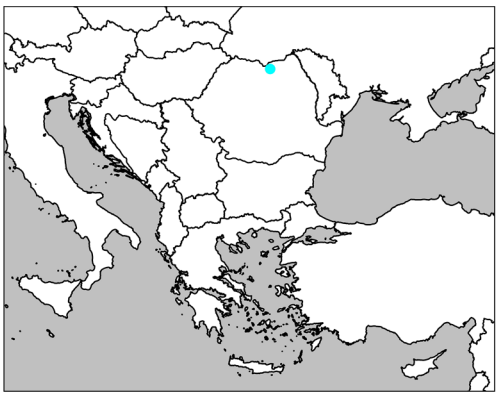


414. *Hungarosoma bokori*
Verhoeff, 1928

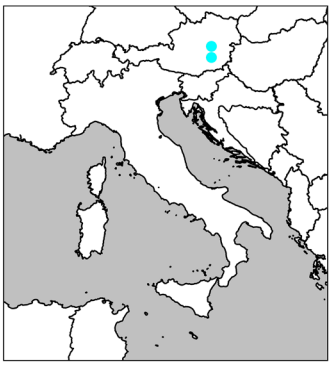
415. *Hungarosoma inexpectatum*
Ceuca, 1967



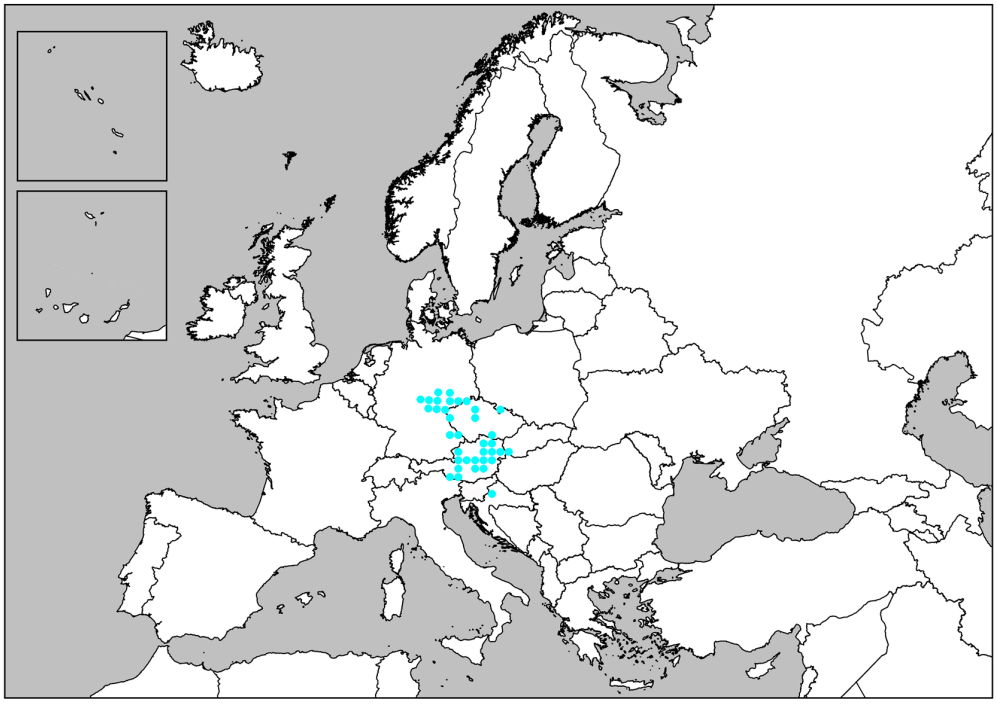
416. *Lusitaniosoma machadoi*
Schubart, 1953



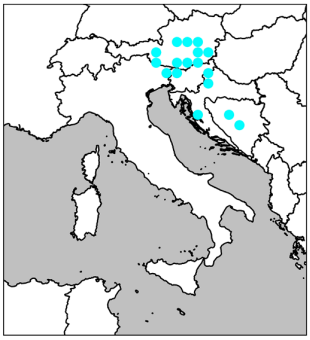
417. *Bucovinosoma capusei*
Tabacaru, 1978



418. *Haploporatia cervina*
Verhoeff, 1929

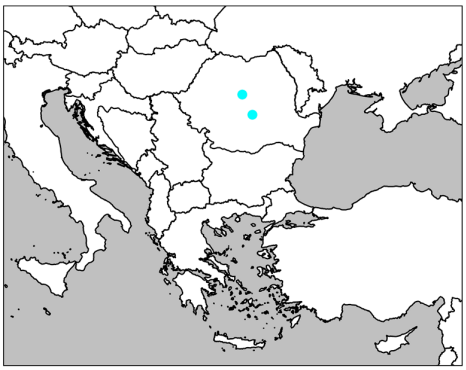


419. *Haploporatia eremita* Verhoeff, 1909

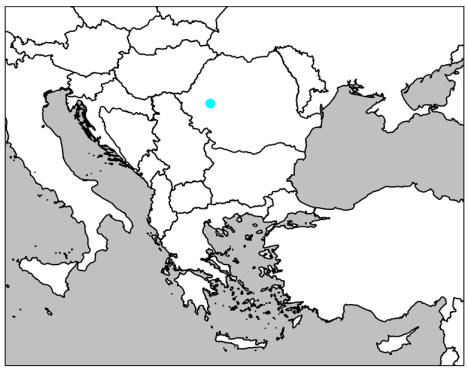


420. *Haploporatia similis* (Attems, 1895)

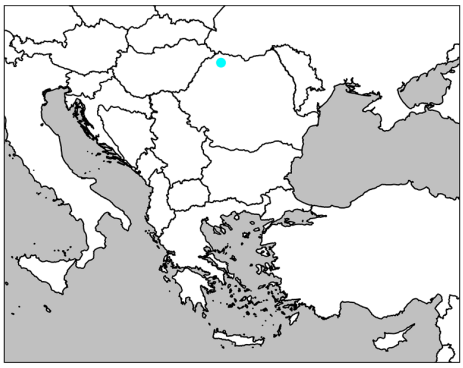
421. *Heterobraueria karoli* Verhoeff, 1897



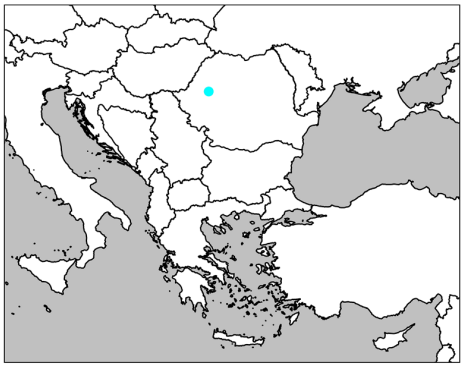
422. *Heterobraueria scopifera* Verhoeff, 1898



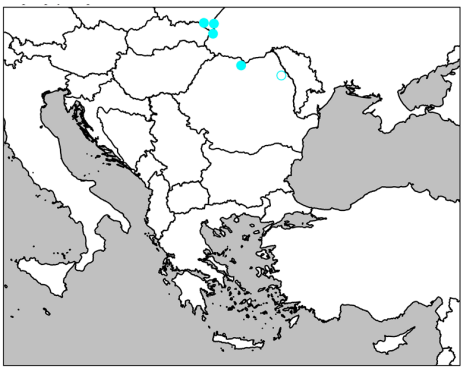
423. *Karpatophyllon banaticum* Ceuca, 1989



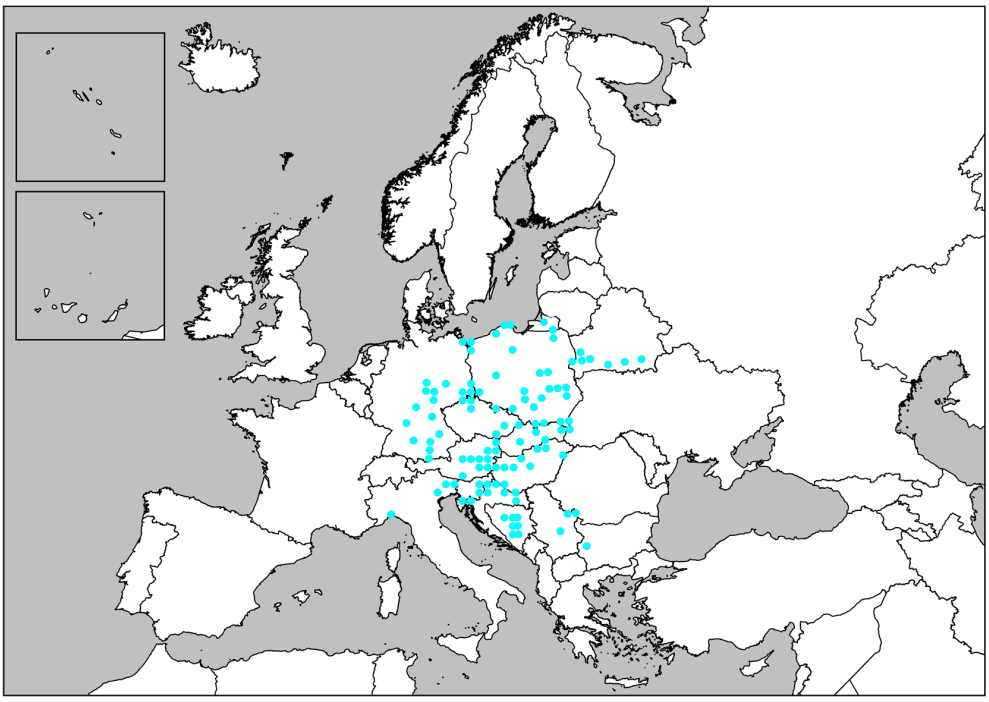
424. *Karpatophyllon carpaticum* Ceuca, 1985



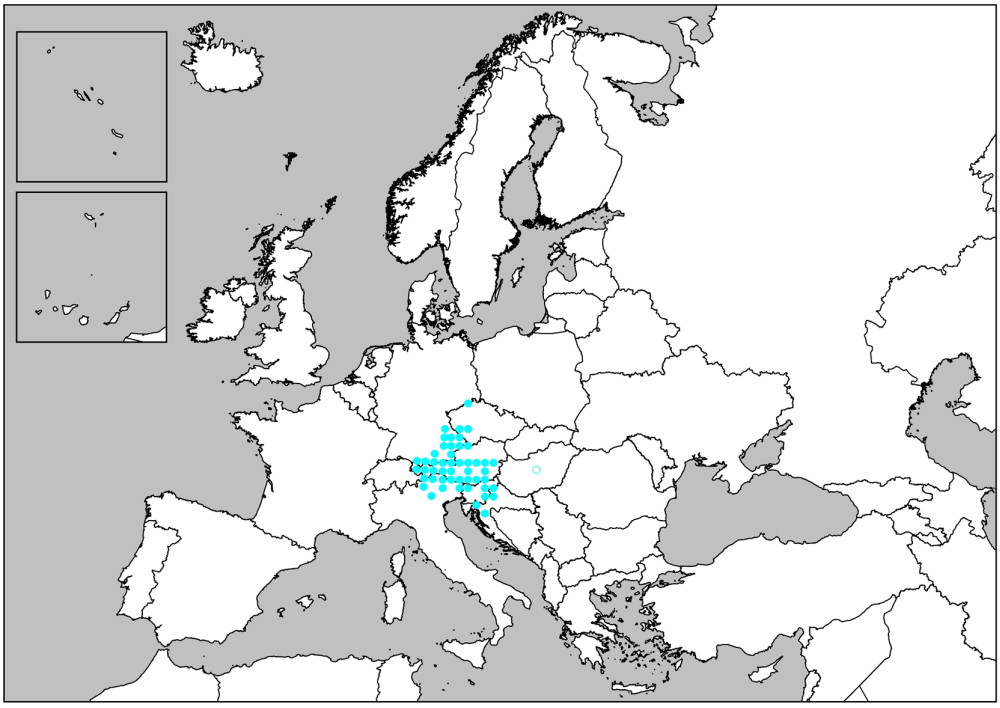
425. *Karpatophyllon dacicum* Ceuca, 1964



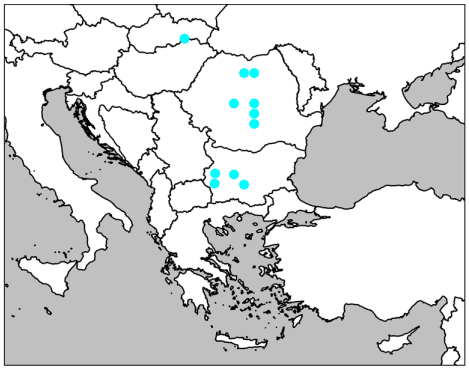
426. *Karpatophyllon polinskii* Jawłowski, 1928



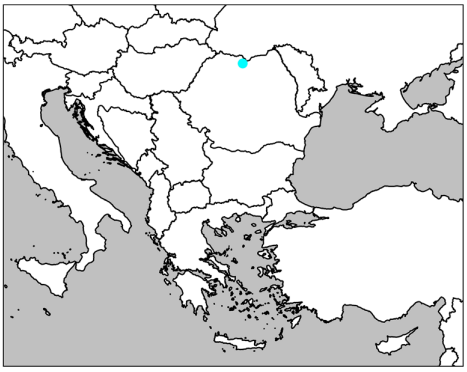
427. *Mastigona bosniensis* (Verhoeff, 1897)



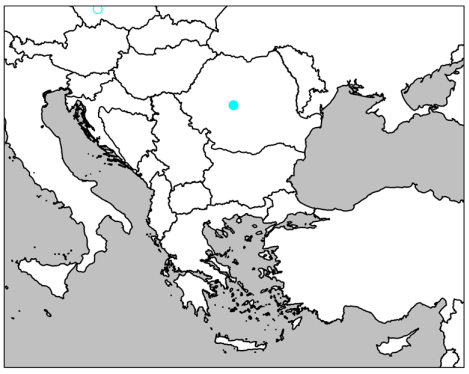
428. *Mastigona mutabilis* (Latzel, 1884)



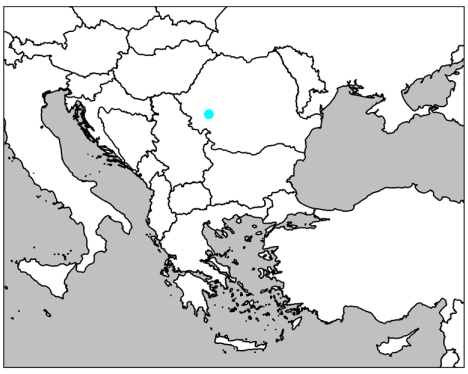
429. *Mastigona transsylvanica* (Verhoeff, 1897)



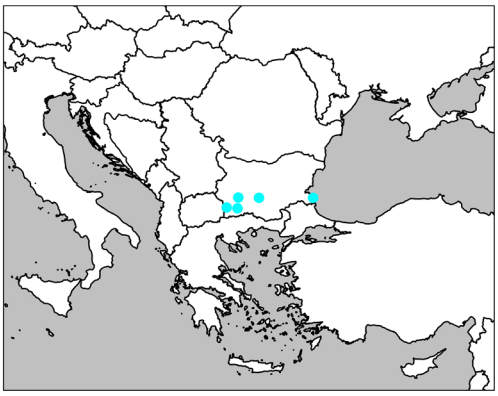
430. *Mastigophorophyllon aberratum* Ceuca, 1985



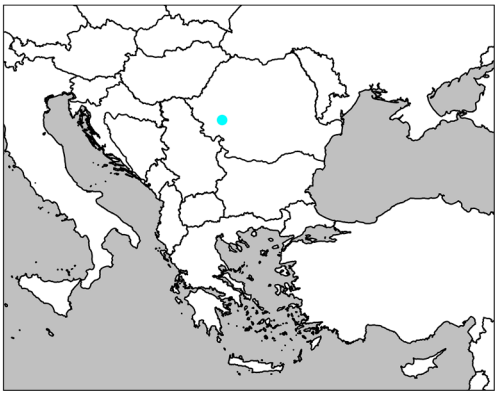
431. *Mastigophorophyllon alpivagum* (Verhoeff, 1897)



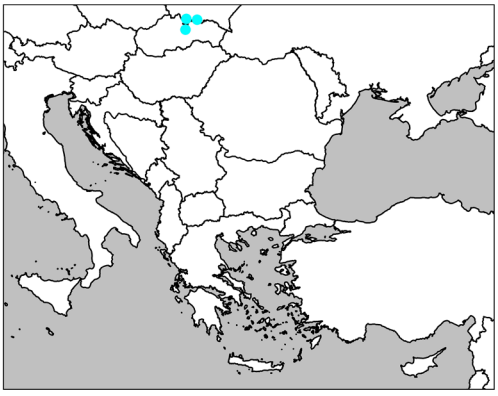
432. *Mastigophorophyllon banarescui* Ceuca, 1976



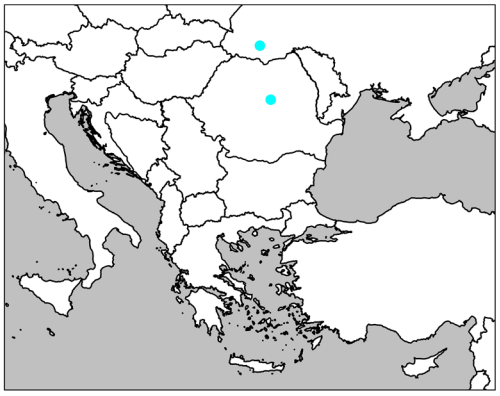
433. *Mastigophorophyllon bulgaricum* Schubart, 1934



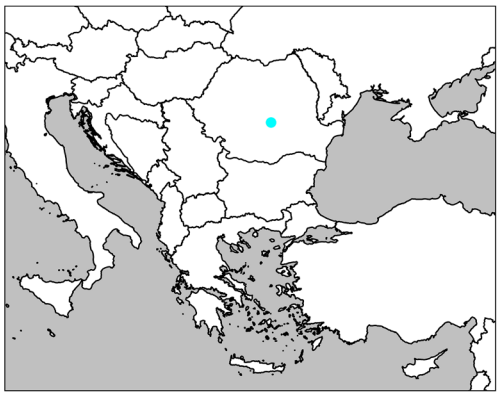
434. *Mastigophorophyllon carpaticum* Ceuca, 1976



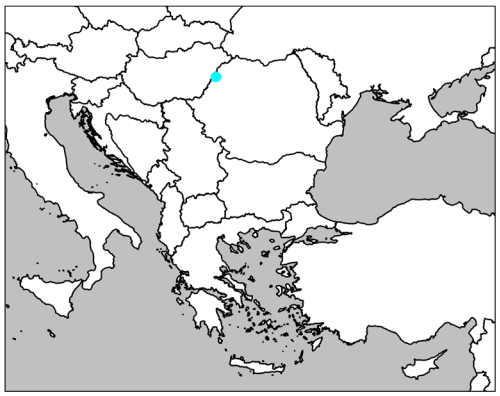
435. *Mastigophorophyllon cirriferum* Verhoeff, 1899



436. *Mastigophorophyllon crinitum* Attems, 1926

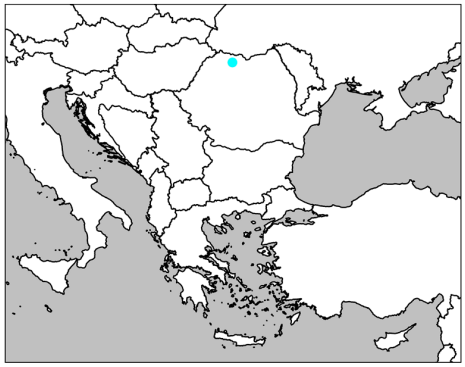


437. *Mastigophorophyllon deubeli* Verhoeff, 1898

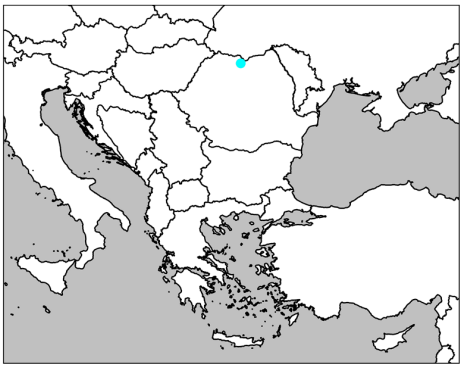


438. *Mastigophorophyllon jickelii* Verhoeff, 1900

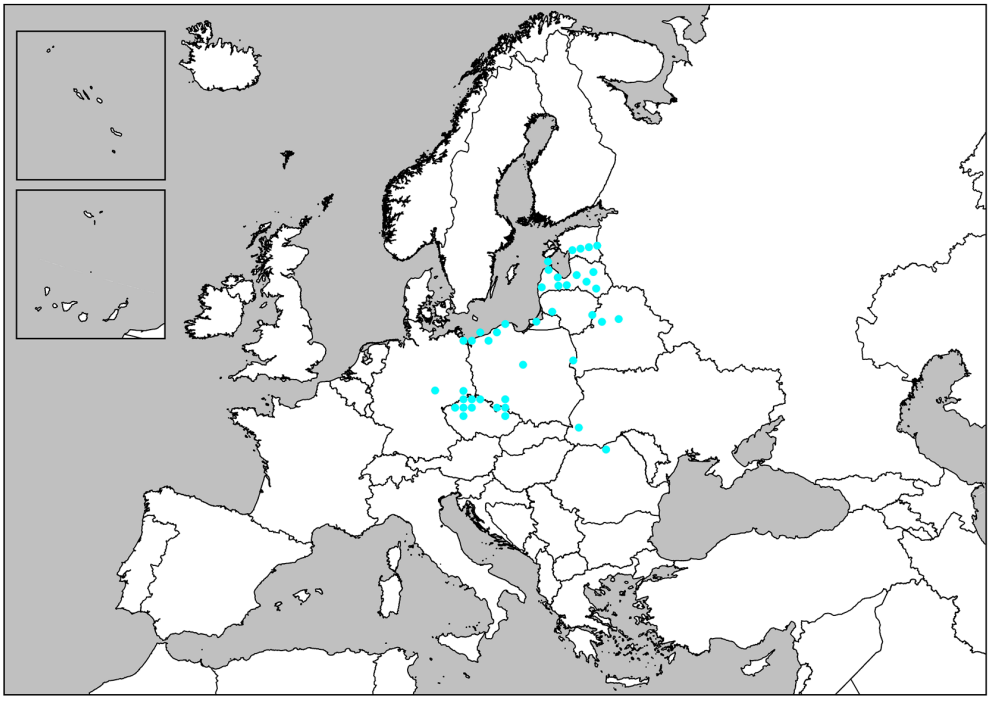
439. *Mastigophorophyllon moldavicum*
Ceuca, Crisan & Olaru, 1996



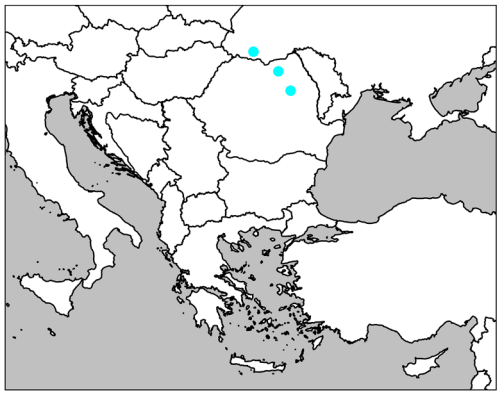
440. *Mastigophorophyllon parapenicilligerum*
Crisan & Ceuca, 1998



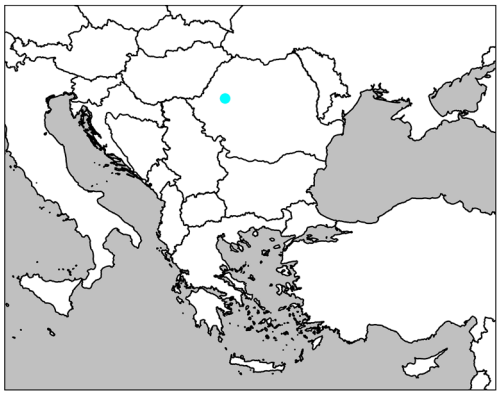
441. *Mastigophorophyllon penicilligerum*
Verhoeff, 1899



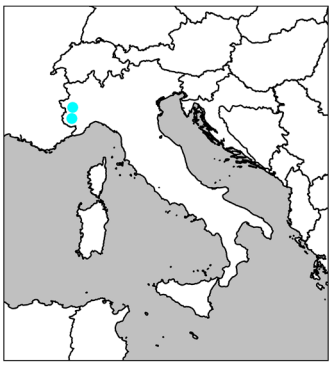
442. *Mastigophorophyllon saxonicum* Verhoeff, 1910



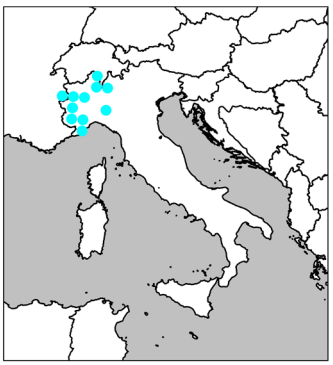
443. *Mastigophorophyllon serrulatum*
Attems, 1926



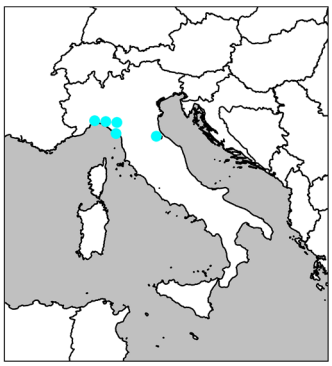
444. *Paraporatia racovitzai*
Ceuca, 1967



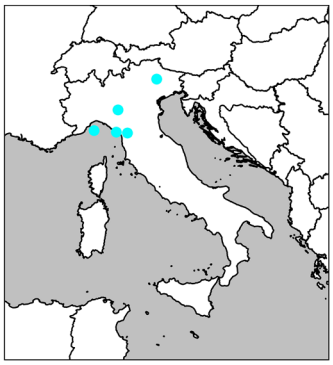
445. *Taurinosoma graniticola*
Verhoeff, 1932



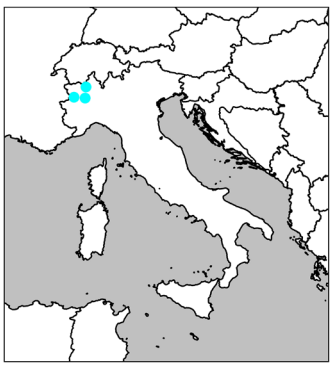
446. *Tessinosoma caelebs*
Verhoeff, 1911



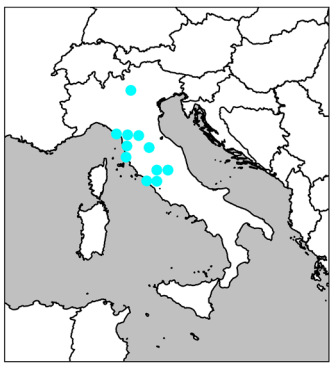
447. *Thaumaporatia apenninorum*
Verhoeff, 1909



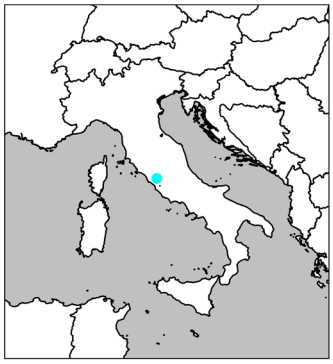
448. *Thaumaporatia apuana*
Verhoeff, 1909



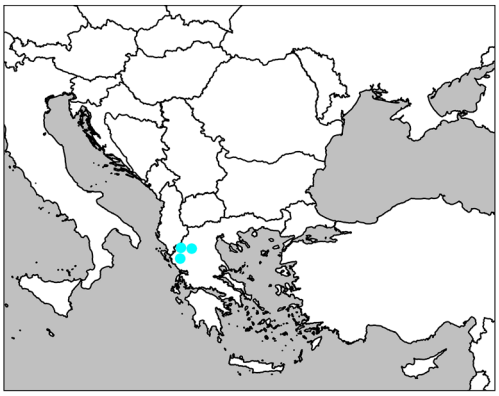
449. *Thaumaporatia oropensis*
Verhoeff, 1936



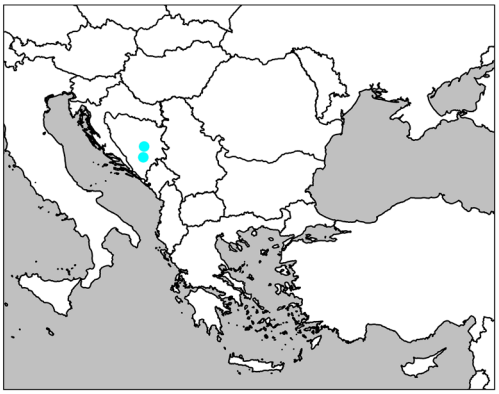
450. *Thaumaporatia plumigera*
(Verhoeff, 1900)



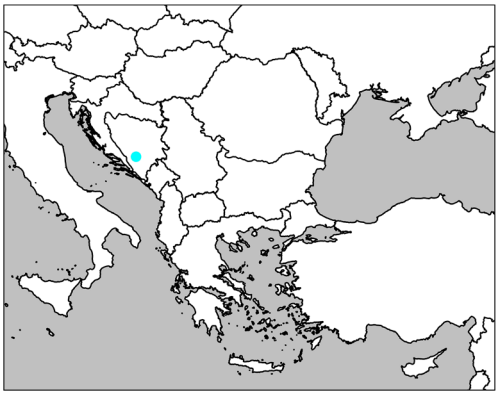
451. *Thaumaporatia sorattina* Verhoeff, 1951



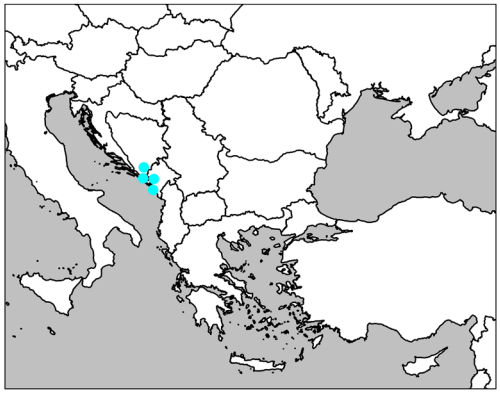
452. *Epirosomella loebli* Strasser, 1976



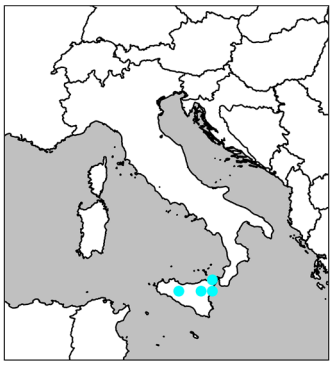
453. *Fagina silvatica* (Attems, 1904)



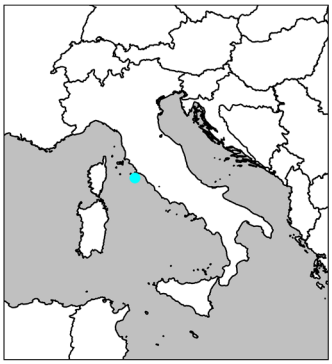
454. *Microbrachysoma alpestre* Verhoeff, 1897



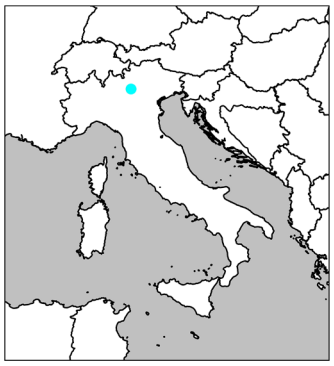
455. *Neoatractosoma herzegowinense* Verhoeff, 1901



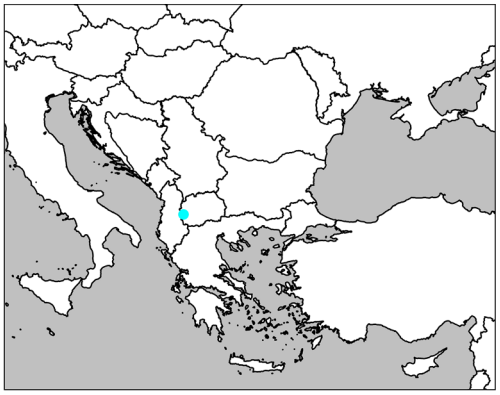
456. *Neoatractosoma kleinenbergi* Silvestri, 1898



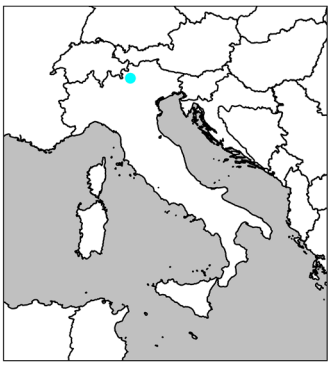
457. *Neoatractosoma strandi* Attems, 1927



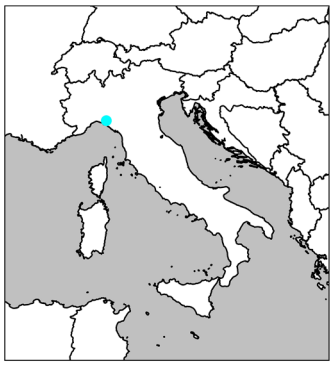
458. *Osellasoma caoduroi* Mauriès, 1984



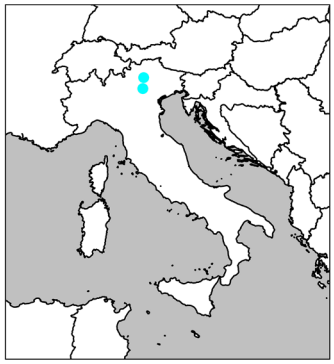
459. *Paeonisoma faucium* Verhoeff, 1932



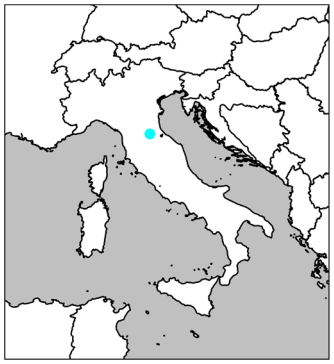
460. *Pseudocraspedosoma alpivagum* (Verhoeff, 1901)



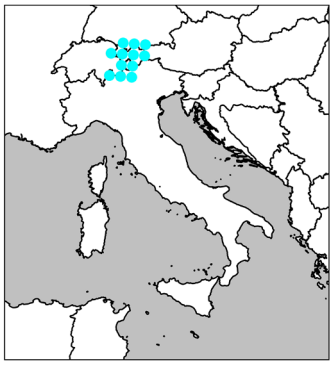
461. *Pseudocraspedosoma bensai* (Manfredi, 1935)



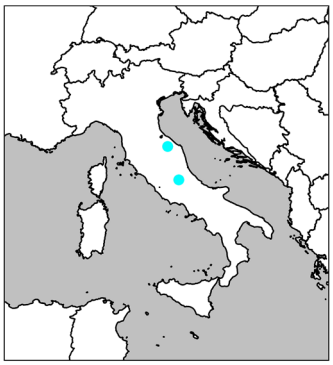
462. *Pseudocraspedosoma brentanum* (Verhoeff, 1930)



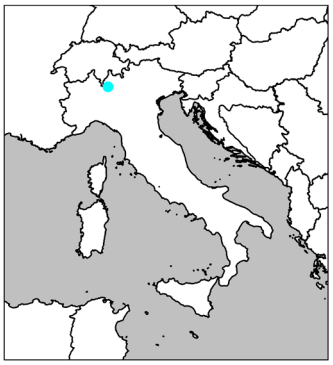
463. *Pseudocraspedosoma falteronense* (Manfredi, 1951)



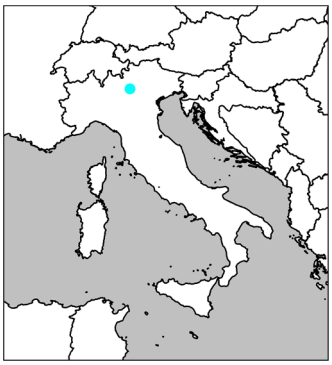
464. *Pseudocraspedosoma grypischium* (Rothenbühler, 1900)



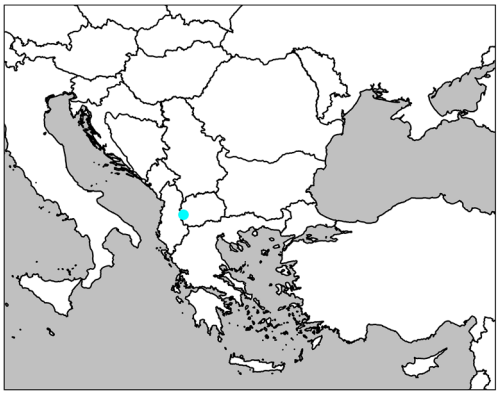
465. *Pseudocraspedosoma nemorense* Silvestri, 1898



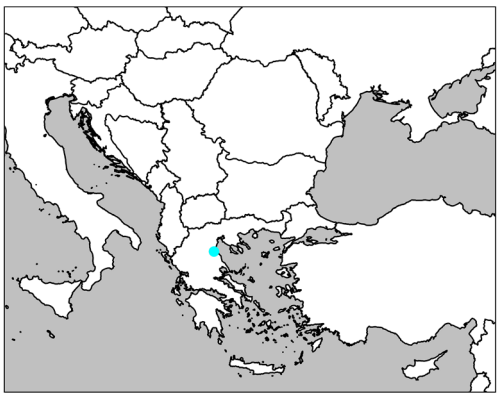
466. *Pseudocraspedosoma peniculorum* (Verhoeff, 1910)



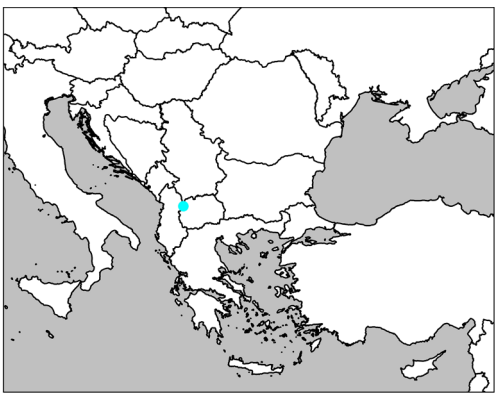
467. *Pseudocraspedosoma vestonense* (Verhoeff, 1934)



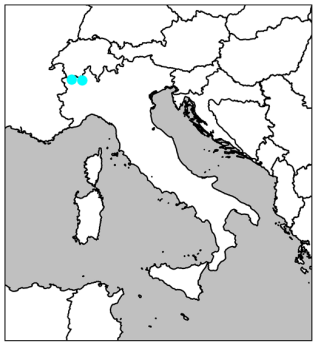
468. *Schizmohetera curcici* Makarov, 2001



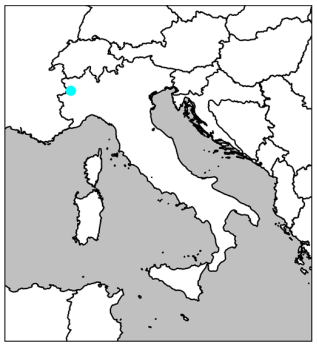
469. *Schizmohetera olympica* Mauriès, 2003



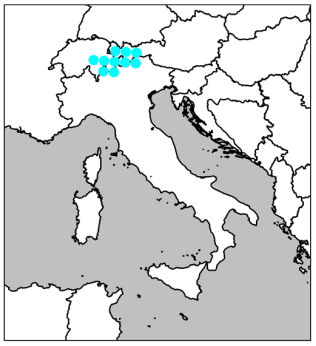
470. *Schizmohetera sketi* Mršić, 1987



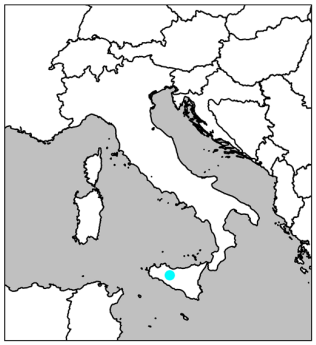
471. *Trimerophorella ornata* (Faës, 1902)



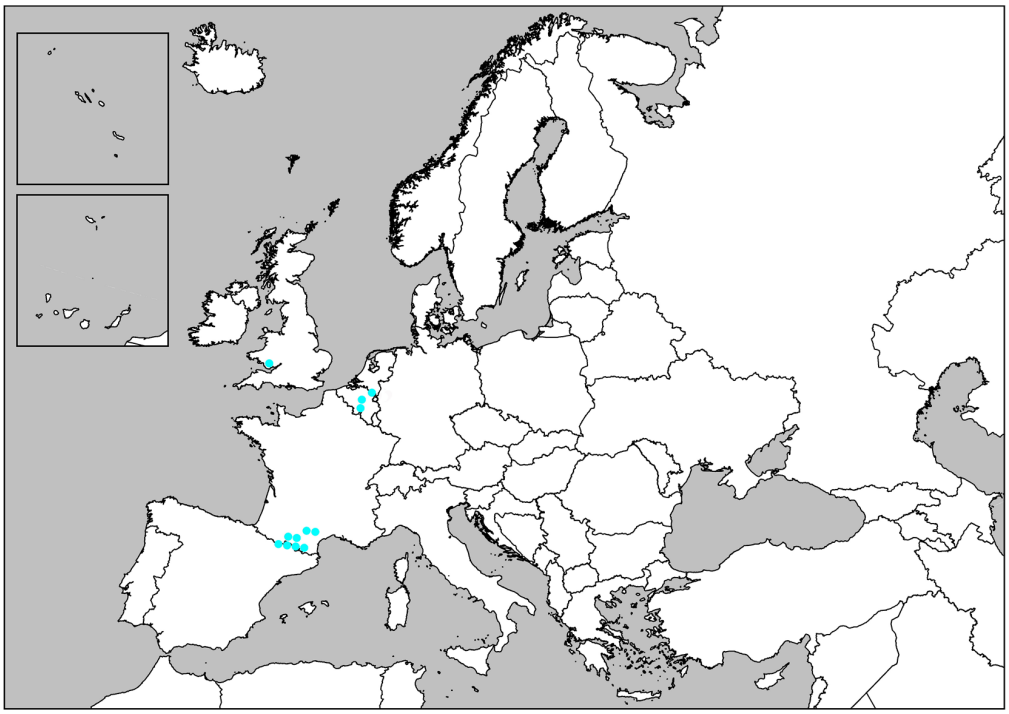
472. *Trimerophorella paradisia* Meyer, 1983



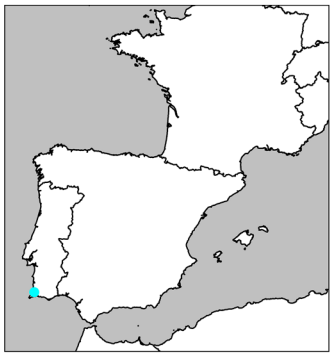
473. *Trimerophorella rhaetica* (Rothenbühler, 1901)



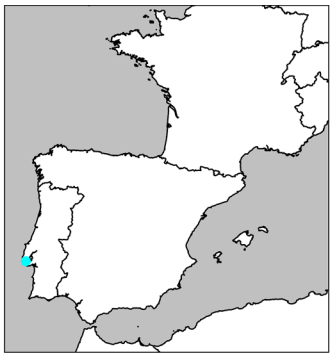
474. *Brachytropisoma giardinae* Silvestri, 1898



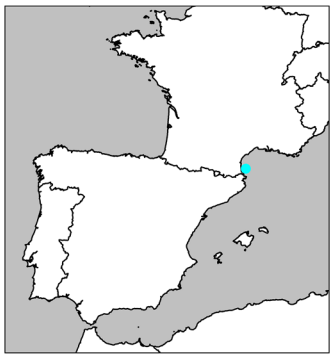
475. *Ceratosphys amoena* Ribaut, 1920



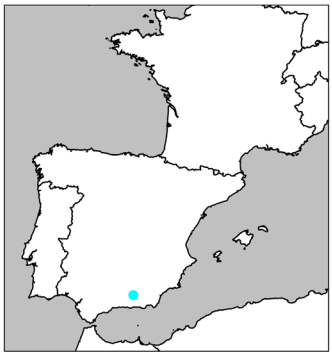
476. *Ceratosphys angelieri* Mauriès, 1964



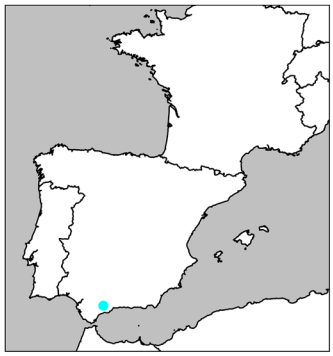
477. *Ceratosphys bakeri* Mauriès, 1990



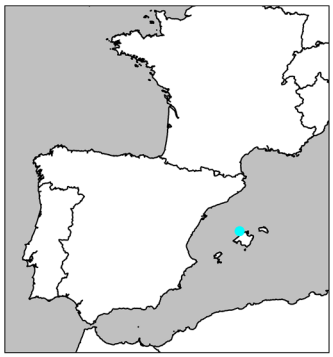
478. *Ceratosphys banyulensis* Brolemann, 1926



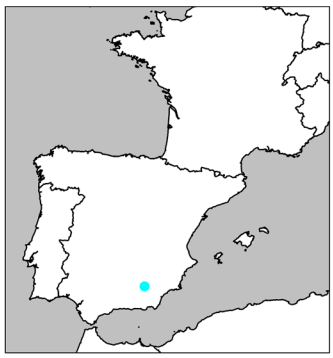
479. *Ceratosphys cryodeserti* Gilgado, Mauriès & Enghoff, 2015



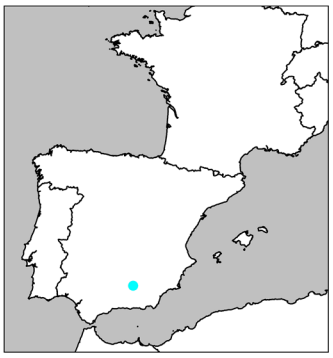
480. *Ceratosphys deharvengi* Mauriès, 1978



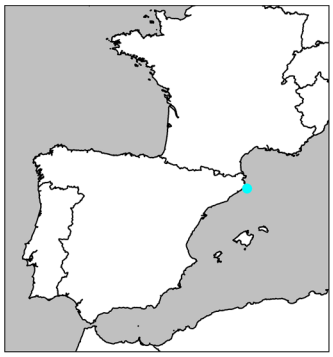
481. *Ceratosphys escolai* Mauriès, 2013



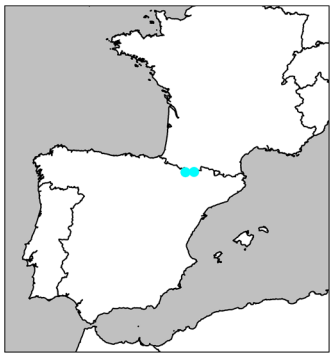
482. *Ceratosphys fernandoi* Mauriès, 2014



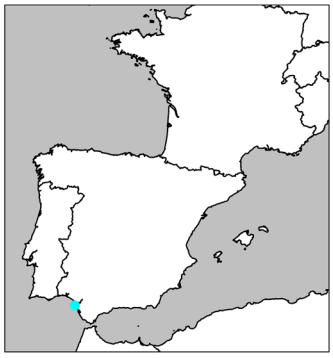
483. *Ceratosphys flammeola* Mauriès, 2014



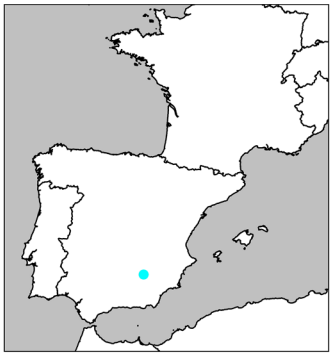
484. *Ceratosphys geronensis* Mauriès, 1963



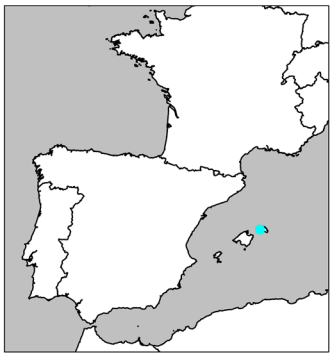
485. *Ceratosphys guttata*
Ribaut, 1956



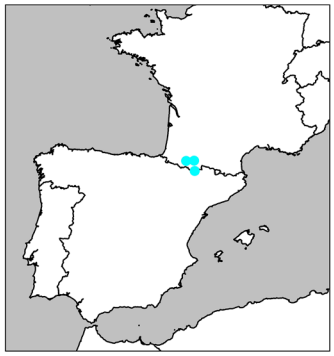
486. *Ceratosphys hispanica*
Ribaut, 1920



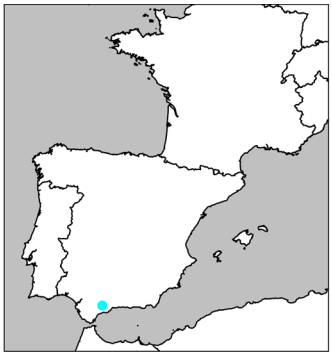
487. *Ceratosphys jabaliensis*
Mauriès, 2013



488. *Ceratosphys mariacristinae*
Mauriès, 2013

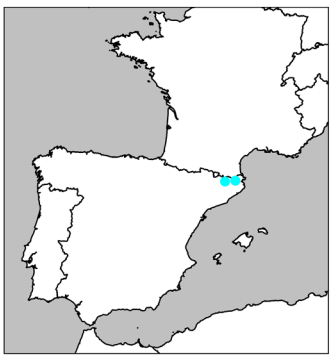


489. *Ceratosphys nivium*
Ribaut, 1927

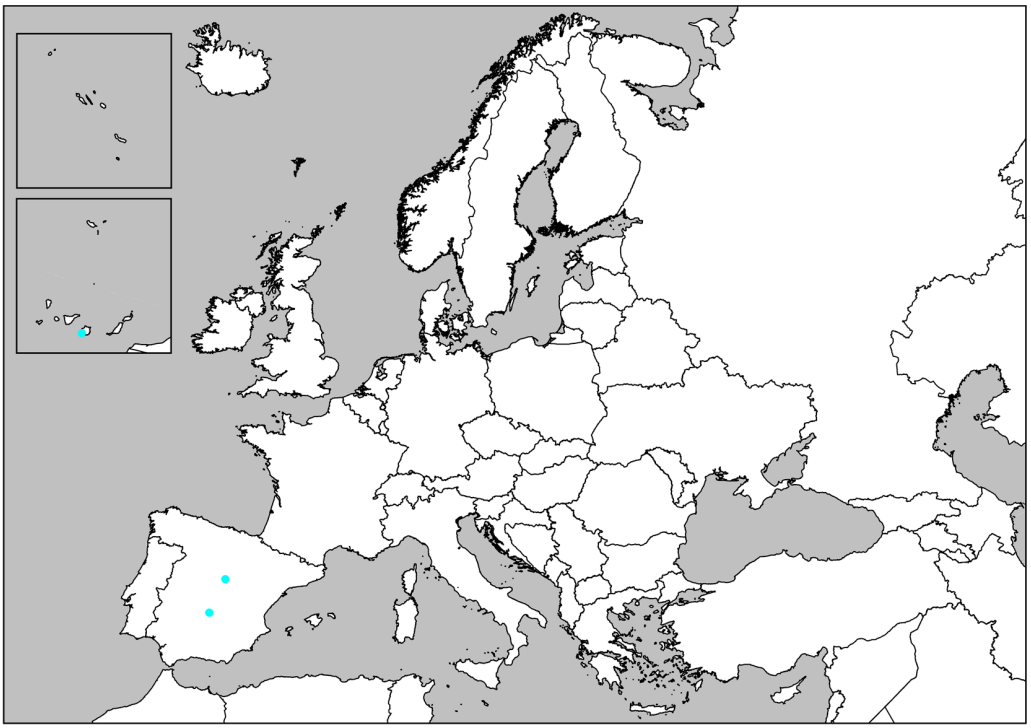


490. *Ceratosphys nodipes*
(Attems, 1952)

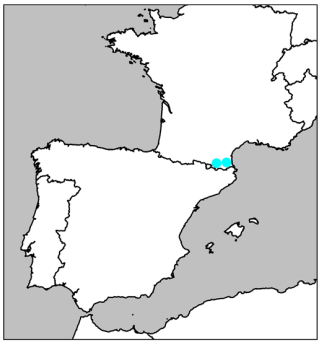
491. *Ceratosphys occidentalis*
Mauriès, 1976



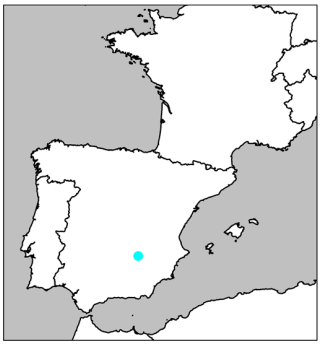
492. *Ceratosphys picta*
Ribaut, 1951



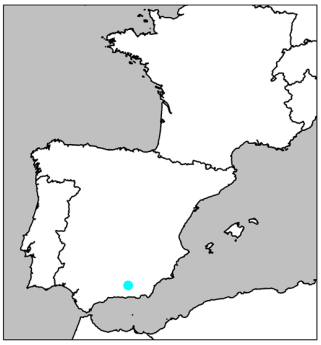
493. *Ceratosphys poculifer* (Brolemann, 1920)



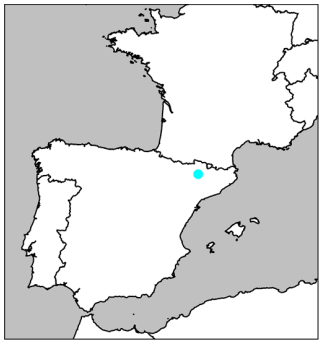
494. *Ceratosphys simoni* Ribaut, 1920



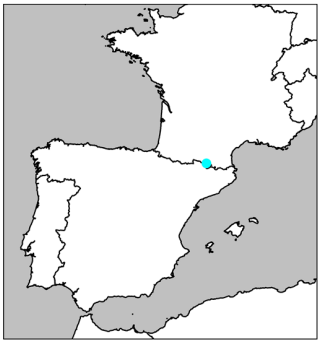
495. *Ceratosphys solanasi* (Mauriès & Vicente, 1978)



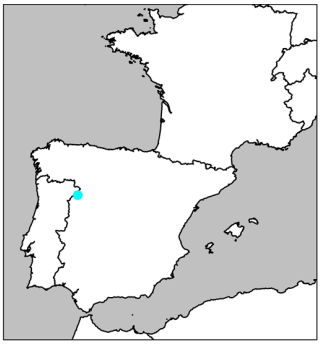
496. *Ceratosphys soutadei* Mauriès, 1969



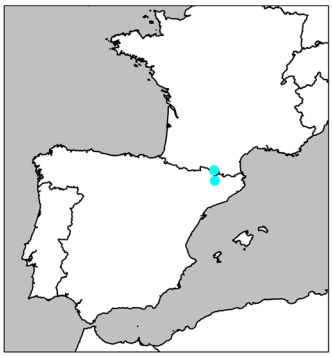
497. *Ceratosphys toniserrai* Mauriès, 2013



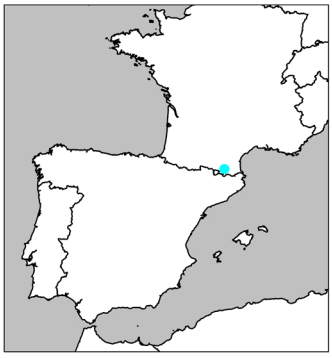
498. *Ceratosphys vandeli* Mauriès, 1963



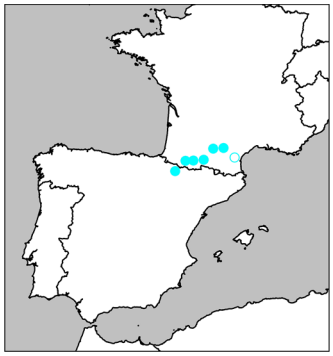
499. *Ceratosphys vicenteae* Mauriès, 1990



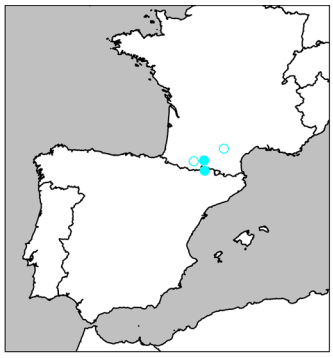
500. *Hispaniosoma racovitzai* Ribaut, 1913



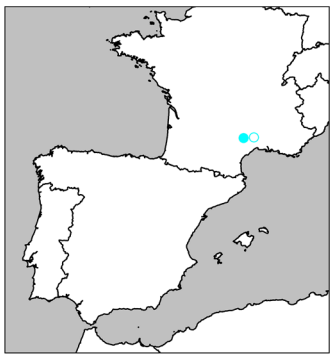
501. *Marquetiella auriculata* (Ribaut, 1920)



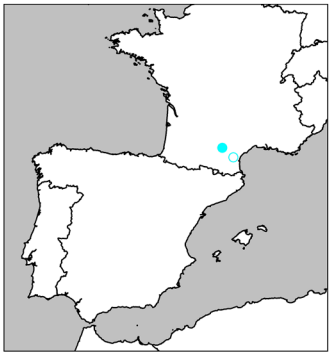
502. *Marquetiella lunata* (Ribaut, 1920)



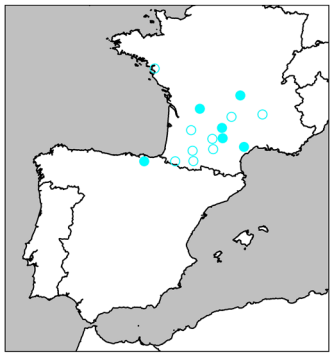
503. *Marquetiella pyrenaica* (Ribaut, 1905)



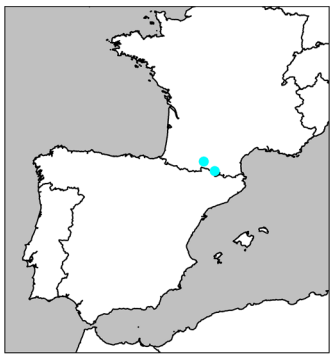
504. *Opisthocheiron canayerensis* Mauriès & Geoffroy, 1982



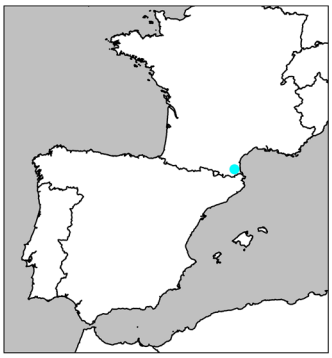
505. *Opisthocheiron cornutum* Ribaut, 1922



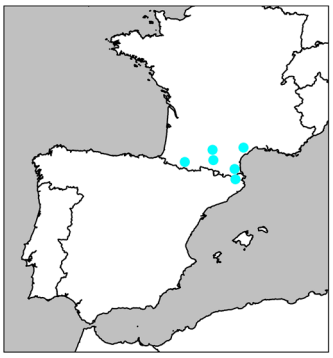
506. *Opisthocheiron elegans* Ribaut, 1922



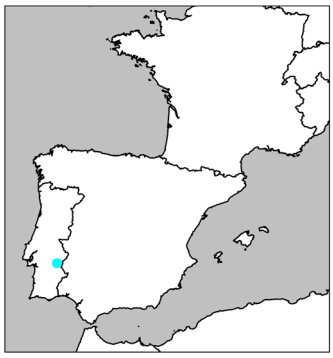
507. *Opisthocheiron fallax* Ribaut, 1922



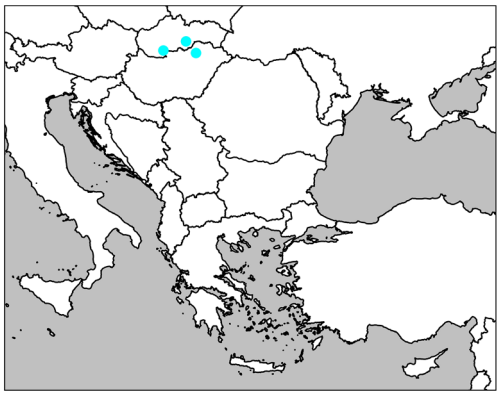
508. *Opisthocheiron lacazei* Brolemann, 1932



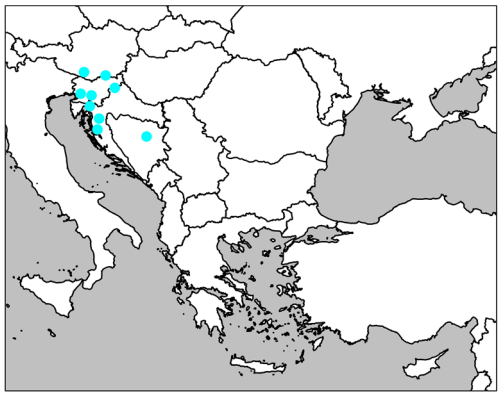
509. *Opisthocheiron penicillatum* Ribaut, 1913



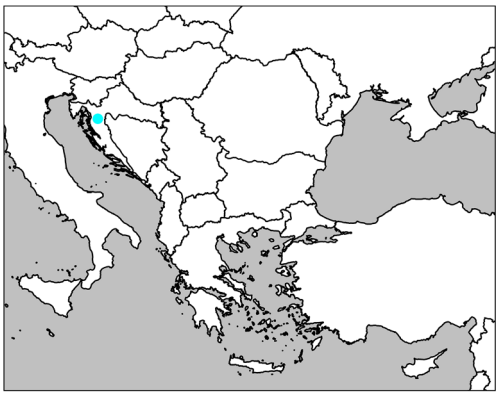
510. *Sireuma nobile* Reboleira & Enghoff, 2014



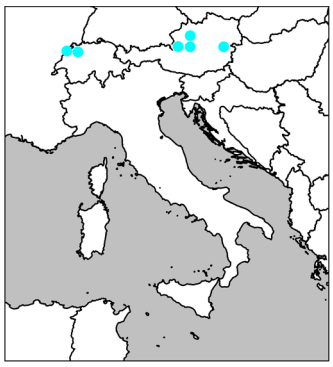
511. *Acrochordum evae* Loksa, 1960



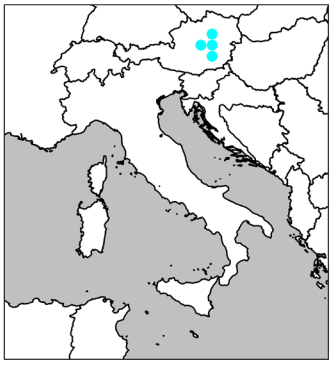
512. *Acrochordum flagellatum* Attems, 1899



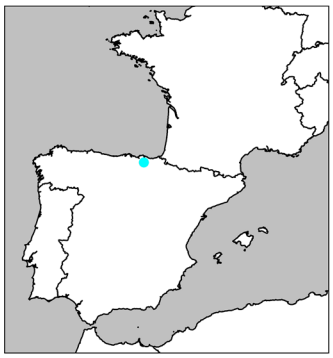
513. *Acrochordum plitvicense* (Verhoeff, 1929)



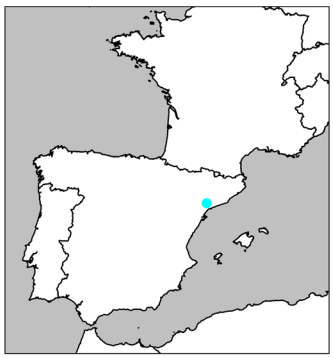
514. *Halleinosoma noricum* Verhoeff, 1913



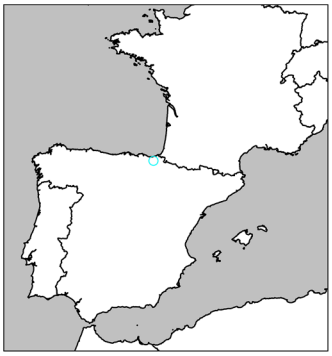
515. *Trachygona capito* (Attems, 1894)



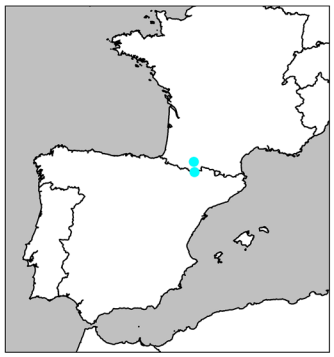
516. *Alavasoma muniesai* Mauriès & Vicente, 1977



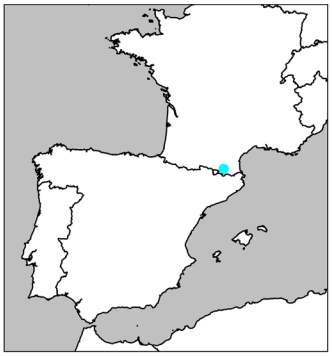
517. *Eopsychrosoma serrapradense* Serra & Mauriès, 2015



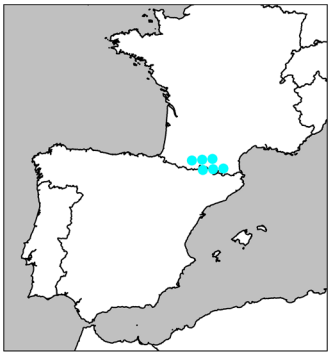
518. *Guipuzcosoma comasi* Vicente & Mauriès, 1980



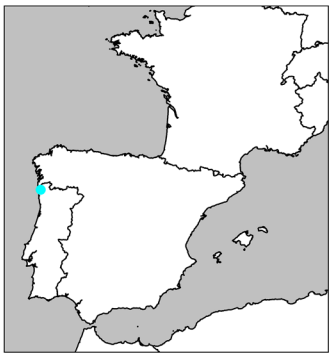
519. *Hypnosoma exornatum* Ribaut, 1952



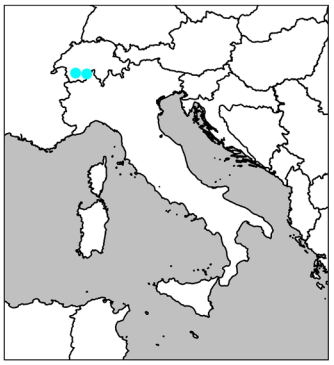
520. *Hypnosoma juberthieorum* Mauriès, 1968



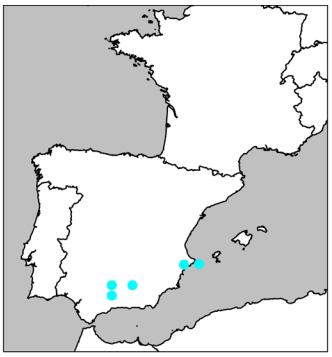
521. *Hypnosoma pallidum* Ribaut, 1952



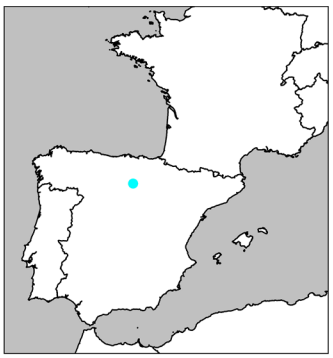
522. *Miniusoma litorea* Mauriès, 2015



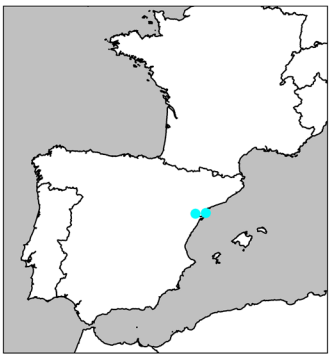
523. *Niphatrogleuma wildbergeri* Mauriès, 1986



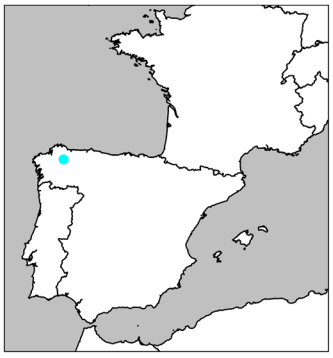
524. *Psichrosoma baeticaense*
Mauriès, 2013



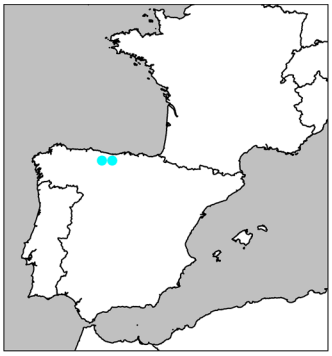
525. *Psichrosoma breuili*
(Mauriès, 1970)



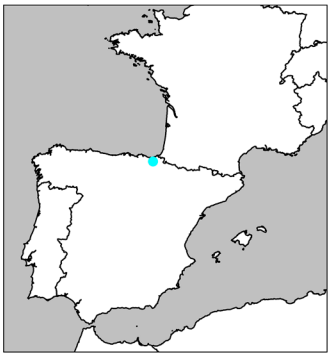
526. *Psichrosoma tarraconense*
(Mauriès, 1970)



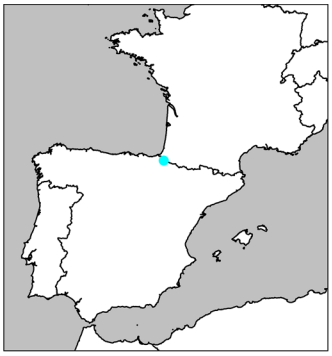
527. *Strangulogona lugoensis*
Mauriès, 2015



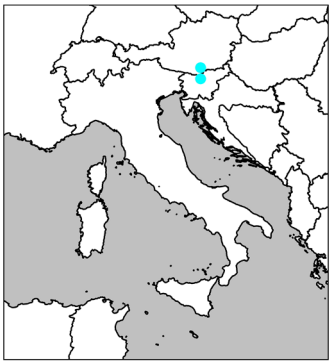
528. *Typhlopsychrosoma fadriquei*
(Mauriès & Vicente, 1977)



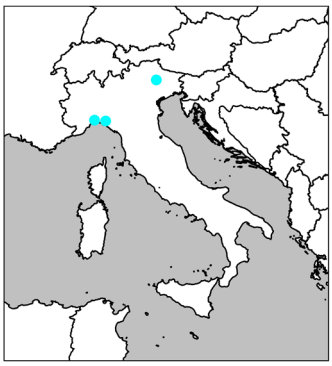
529. *Vandeleuma hispanicum*
Ceuca, 1967



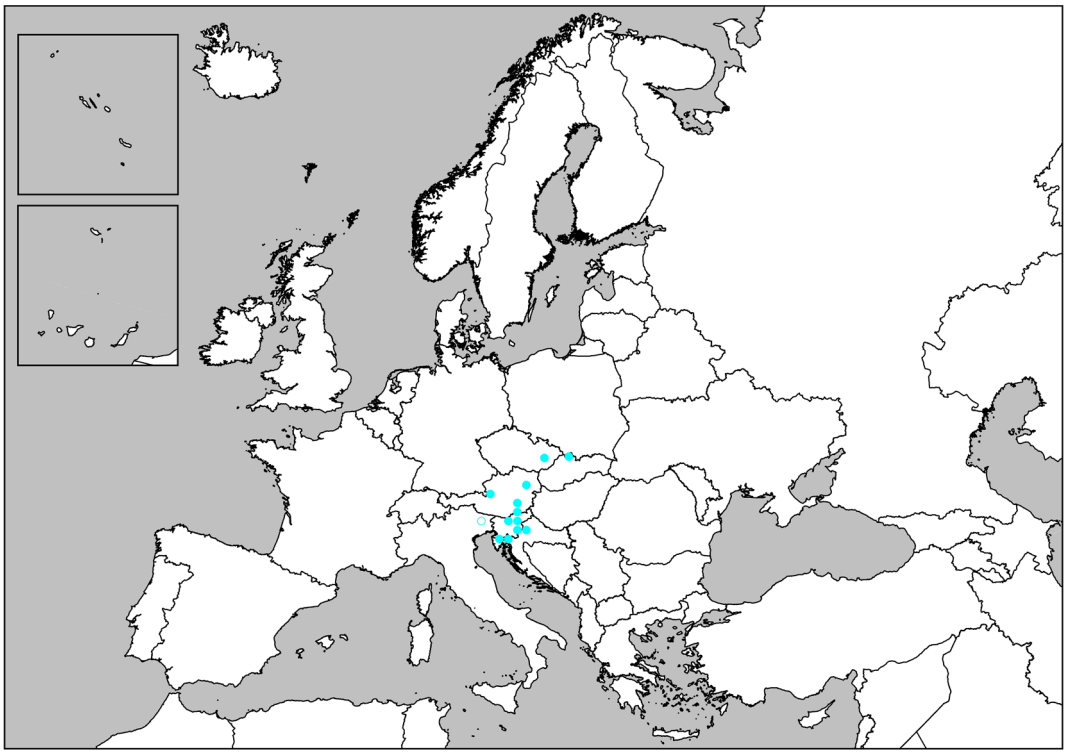
530. *Vandeleuma vasconicum*
Mauriès, 1966



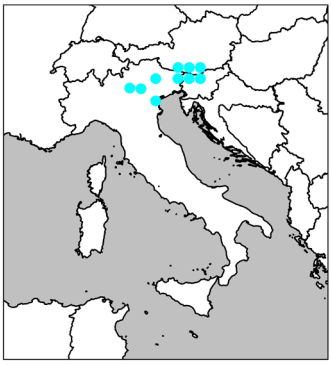
531. *Haplogona carynthiaca* (Strasser, 1967)



532. *Haplogona gestri* (Silvestri, 1898)



533. *Haplogona oculodistincta* (Verhoeff, 1893)



534. *Haplogona rothenbuehleri* (Verhoeff, 1900)