

Literature-based survey on the Swiss fauna of Chilopoda

Edi Stöckli

Natural History Museum Basel, Augustinergasse 2, CH-4001 Basel, Switzerland;

e-mail: eduard.stoeckli@bs.ch

Abstract

The Swiss centipede fauna has never been fully reviewed. Even though the first records date from 1845, a checklist has not been drawn up until now. Literature research based on 88 publications and 2 online databases offers a preliminary list of 62 species and 1 subspecies. Type species from the Swiss area are specified. Additional potential species are named and might be added in the future to a complete checklist incorporating almost 90 species.

Keywords: fauna, Chilopoda, literature, species list, Switzerland

1. Introduction

Research into the Diplopoda and the Chilopoda in Switzerland demonstrates two totally different levels. For the Diplopoda there is an excellent work by Ariane Pedroli-Christen dating from 1993. It covers the fauna and ecology of 127 species and presents their global and Swiss distribution (for Switzerland in a 5 x 5 km grid!). Unfortunately, she abandoned her scientific work some years ago and has no successor in Switzerland working with this group at such a level.

In contrast, the Swiss centipedes have not had such an intensive level of study. Up to the end of 2008 a published checklist was not available, not even a preliminary one. This may seem surprising, as most of the surrounding countries or areas already possess such lists. As examples may be named Austria (Würmli 1972b: 71 species), France (Geoffroy & Iorio 2009: 145 species) or Italy (Checklist of the species of the Italian fauna 2003: 155 species). Checklists from regions below country level surrounding Switzerland were established for E-France (Alsace, Lorraine; Spelda 2005b: 22 species and Iorio 2007: 40 species), Bavaria/Germany (Spelda 2003 & 2005a: 49 species), SW-Germany (Spelda 1991: 1999a, b & c, 2005a: 48 species), Kärnten/Austria (Koren 1999: 47 species), NE-Italy (Minelli 1992: 76 species). Fauna Europea lists for Switzerland a total of 56 species and 8 subspecies (and 392 synonyms), a number that certainly does not cover all actual and possible species.

Until 2008 there were no Chilopoda entries in the Swiss Biological Records Centre CSCF (Centre Suisse de Cartographie de la Faune), which holds distribution data for almost every zoological organism in Switzerland.

And finally, there are not many researchers interested in or working with centipedes in Switzerland.

This paper intends to establish a basis for a prospective more complete checklist of the Swiss Chilopod fauna. A list of all available literature (primary or secondary) containing data of Swiss collections or occurrence is given, adding information to type bearing entries. Potential members for the checklist from surrounding areas are also quoted.

2. Materials and methods

The literature list was established by checking libraries, museums archives, online databases and personal contacts with other researchers outside Switzerland.

3. Results

86 literature sources, dating from 1845 to 2008 plus two articles in prep. or in press, were found to cover locations of collections or other references for centipede species in Switzerland. The list contains primary and some secondary literature (e.g. publications of Attems 1929 & 1930 and Eason 1964). Two online databases were also incorporated (Chilobase, Fauna Europea).

The earliest works on Swiss centipedes date from Heer (1845) and Am Stein (1857) (containing records from as early as 1846). Obviously some systematic changes have occurred in the meantime and not all data entries could be taken without caution or suspicion. The latest publications included here refer to the year 2008 (Bonato & Minelli 2008, Iorio 2008, Stöckli 2008, Voigtländer 2008) plus two articles in prep. or in press.

A graphical summary of the publication years (Fig. 1) shows a small accumulation around 1900 to 1910 (Rothenbühler, Faes). Most of these works deal with collections made in the higher regions of the Alps. Other small peaks were in the 1920's and 30's (Verhoeff's various journeys and papers). In the late 1950's and 60's cave exploration was a popular theme and so led to several papers by Aellen and Strinati (1956 & 1962). Afterwards the curve of publication numbers steadily increases incorporating systematic, faunistic, biogeographic and statistical studies, some of them without specific determinations (e. g. Heiniger 1989).

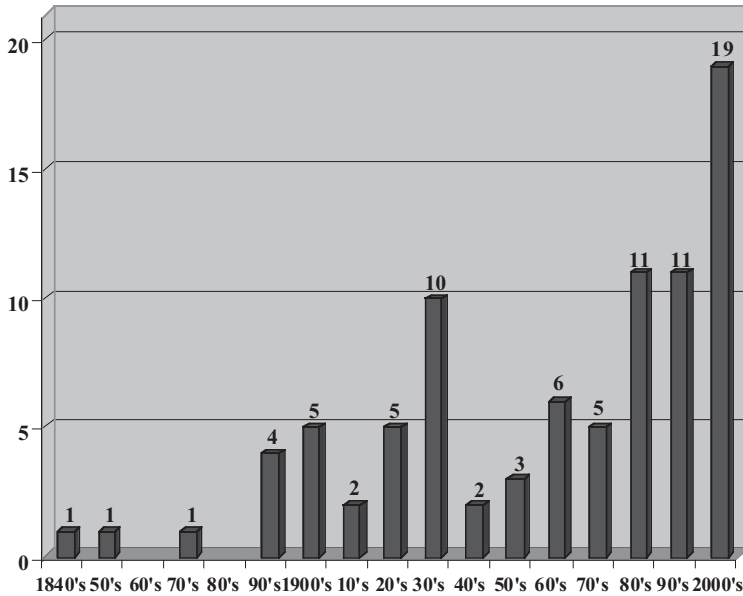


Fig. 1 Centipede publications per 10 years listing entries from 1845 to 2008 (86 records). Two publications in prep. or in press and two online databases are not included in figure.

From these sources a provisional species list of the Swiss centipede fauna may be established. It incorporates 62 species and 1 subspecies from the 4 orders Geophilomorpha, Lithobiomorpha, Scolopendromorpha and Scutigleromorpha (Tab. 1).

Tab. 1 Overview of literature entries according to orders, families, genera and species. Subspecies are not mentioned in this table.

	Families	Genera	Species
Geophilomorpha	6	12	23
Dignathodontidae		2	3
Geophilidae		5	12
Himantariidae		2	2
Linotaeniidae		1	4
Mecistocephalidae		1*	1*
Schendyliidae		1	1
Lithobiomorpha	2	3	35
Henicopidae		1	1
Lithobiidae		2	34*
Scolopendromorpha	1	1	3
Cryptopidae		1	3
Scutigleromorpha	1	1	1
Scutigleridae		1	1
Total	10	17	62

* 2 species new for Switzerland, Stöckli & Schnepf (in prep.)

3.1. Species for the Swiss checklist from literature

The following list names all the species found in the literature with collections or remarks relating to Switzerland. For the 2 online databases (Chilobase and Fauna Europea) only specific entries for Switzerland are listed and separated from the printed sources by a semicolon.

Order Geophilomorpha

Family Dignathodontidae

Dignathodon microcephalus (Lucas, 1846)

Fauna Europea (pers. comment by A. Minelli and G. Edgecombe: 2 specimens in the collections of the Natural History Museum in London, labelled 'Lugano', collected by Oldfield-Thomas in late 19th century)

Henia (Chaetechelyne) montana Meinert, 1870

Schubart 1963 sub *Chaetechelnyne vesuviana* (misspelled), Minelli 1985 sub *H. (Ch.) pharyngealis* (Verhoeff, 1928), Zapparoli 2006

Henia (Chaetechelyne) vesuviana (Newport, 1845)

Faes 1902 sub *Chaetechelyne* v. Newport, Verhoeff 1935a sub *Ch. v. helvetica* n. ssp. (type material), Matic 1976, Minelli 1981 sub *H. (Ch.) v. vesuviana* and as n. syn. *Ch. v. helvetica* Verhoeff 1929–35, Spelda 1991, Zapparoli 2006, Stöckli 2008; Chilobase, Fauna Europea

Family Geophilidae

Clinopodes flavidus C. L. Koch, 1847

Verhoeff 1928 sub *G. flavidus noduliger* n. sp. (type material); Chilobase, Fauna Europea

Clinopodes trebevicensis (Verhoeff, 1898)

Verhoeff 1934a sub *Geophilus trebevicensis poschiavensis* n. sp. (type material)

Eurygeophilus pinguis (Brölemann, 1898)

Bonato et al. 2006; Chilobase, Fauna Europea

Geophilus carpophagus Leach, 1815

Verhoeff 1896, Faes 1902 sub *Geophilus sedunensis* n.sp. (type material); Fauna Europea

Geophilus electricus (Linnaeus, 1758)

Am Stein 1857, Verhoeff 1896, Rothenbühler 1899, Faes 1902 sub *G. e. alpestris* Verhoeff, Verhoeff 1928 sub *G. helveticus* n. sp. (type material), Verhoeff 1935a, Koren 1986, Spelda 1999c, Glasstetter 2004; Fauna Europea

***Geophilus flavus* (De Geer, 1778)**

Am Stein 1857 sub *G. longicornis* Leach, Verhoeff 1896 sub *G. l.* Leach, Rothenbühler 1899 sub *G. l.*, Faes 1900 sub *G. l.* Leach, Rothenbühler 1901 sub *G. l.*, Faes 1902 sub *G. l.* Leach, Mumcuoglu & Ruffli 1981 sub *G. l.*, Koren 1986 sub *Necrophloeophagus longicornis* (Leach, 1815), Spelda 1999c sub *Necrophloeophagus f.* (De Geer, 1778), Stöckli 2008; Fauna Europea

***Geophilus insculptus* Attems, 1895**

Verhoeff 1938 partim sub *G. glacialis* n. sp. (type material), Strinati 1966a & b, Koren 1986; Fauna Europea

***Geophilus proximus* C. L. Koch, 1847**

Am Stein 1857, Verhoeff 1896, Faes 1900 & 1902, Diem 1903

Note: Diem (1903) lists *Geophilus pusillus* Verh., but which species he is referring to is not identifiable. Brolemann 1930 refers to *Geophilus pusillus* Meinert, 1870 as ‘Cette espèce de l’Europe centrale et méridionale Elle nous est inconnue’ and Chilobase indicates that records of this species other than from North Africa need confirmation.

***Geophilus pygmaeus* Latzel, 1880**

Diem 1903

***Geophilus studeri* Rothenbühler, 1899**

Rothenbühler 1899 (type material), Faes 1900, Faes 1902, Verhoeff 1928, Verhoeff 1935a, Verhoeff 1937a sub *G. silvaenigrae*, Attems 1949, Schubart 1963, Spelda 1991, Spelda 1999c, Iorio 2007; Chilobase, Fauna Europea

***Pachymerium ferrugineum* (C. L. Koch, 1835)**

Am Stein 1857, Pavesi 1873 sub *Geophilus ferrugineus* Koch, Faes 1900 sub *G. f.* Koch, Faes 1902 sub *G. f.* C. Koch, Verhoeff 1902 sub *P. f. helveticum* n. subsp. (type material), Diem 1903 sub *G. f.* C. Koch, Verhoeff 1934a sub *P. f. helveticum* Verhoeff, 1902 (type material), Attems 1949 sub *P. f. helveticum* Verh., Moritz & Fischer 1979 sub *P. f. helveticum* Verhoeff, 1902 (type material), Koren 1986; Fauna Europea

***Stenotaenia linearis* (C. L. Koch, 1835)**

Rothenbühler 1899 sub *Geophilus linearis* C. Koch, Faes 1902 sub *G. l.* C. Koch, Diem 1903 sub *G. l.* C. Koch, Holzapfel 1932 sub *G. l.* Koch, Schubart 1963 sub *G. l.*, Koren 1986, Glasstetter 2004 sub *G. l.*; Fauna Europea sub *G. l.*

Family Himantariidae***Himantarium gabrielis* (Linnaeus, 1767)**

Chilobase, Fauna Europea

***Stigmatogaster subterranea* (Shaw, 1789)**

Spelda 1999c sub *Haplophilus s.* (Shaw, 1789), Spelda 2005a; Chilobase

Family Linotaeniidae***Strigamia acuminata* (Leach, 1815)**

Am Stein 1857 sub *Stenotaenia acuminata* Koch and *Linotaenia subtilis* Koch, Rothenbühler 1899 sub *Scolioplanes acuminatus*, Faes 1900 sub *Sc. a.*, Rothenbühler 1901 sub *Sc. a.*, Faes 1902 sub *Sc. a.* Leach, Diem 1903 sub *Sc. a.*, Verhoeff 1935a sub *Sc. a.* Leach, Verhoeff 1935b sub *Sc. a.* var. *acuminatus* Verhoeff, Demange 1958 sub *Sc. a.*, Aellen & Strinati 1962 sub *Sc. a.* Leach, Schubart 1963 sub *Linotaenia a.*, Strinati 1966a & b sub *Sc. a.* Leach, Koren 1986, Minelli & Zapparoli 1992, Baur et al. 1999 sub *Sc. a.*, Spelda 1999c, Stöckli 2003, Zapparoli 2006; Fauna Europea

***Strigamia crassipes* (C. L. Koch, 1835)**

Am Stein 1857 sub *Linotaenia crassipes* Koch, Rothenbühler 1899, Faes 1902 sub *Scolioplanes crassipes* C. Koch, Verhoeff 1928 sub *Scolioplanes mediterraneus* var. *alsaticus* m. (type material), Verhoeff 1935a & b sub *Sc. c.* var. *crassipes* und var. *alsaticus*, Schubart 1963 sub *L. c.*, Matic 1976, Baur et al. 1999 sub *Sc. c.*, Spelda 1999c; Chilobase sub *Sc. m. alsaticus* Verhoeff, 1928; Fauna Europea

***Strigamia engadina* (Verhoeff, 1935)**

Verhoeff 1935b sub *Scolioplanes e.* n. sp. (type material), Attems 1949 sub *Scolioplanes e.* Verhoeff; Chilobase, Fauna Europea

***Strigamia transsilvanica* (Verhoeff, 1928)**

Verhoeff 1928 sub *Scolioplanes transsilvanica* n. sp. (type material), Verhoeff 1935a sub *Sc. t.* Verhoeff, Aellen & Strinati 1962 sub *Sc. t.* Verhoeff, Schubart 1963 sub *Linotaenia transsilvanica*, Strinati 1966a & b sub *Sc. t.* Verhoeff, Spelda 1999c sub *Sc. t.* (Verhoeff, 1928); Fauna Europea

Note: According to Spelda (2005a), southern German examples of *Strigamia transsilvanica* (Verhoeff, 1928) might be only a variety of *St. crassipes* (C. L. Koch, 1835), it is possible that this is also the case for Swiss examples.

Family Mecistocephalidae***Dicellogophilus carniolensis* (C. L. Koch, 1847)**

Stöckli & Schnepf (in prep.)

Family Schendylidae***Schendyla nemorensis* (C. L. Koch, 1837)**

Faes 1902, Holzapfel 1932, Würmli 1972a, Koren 1986, Baur et al. 1999, Spelda 1999c, Glasstetter 2004, Stöckli 2008; Fauna Europea

Order Lithobiomorpha**Family Henicopidae*****Lamyctes (Lamyctes) emarginatus* (Newport, 1844)**

Faes 1902 sub *Henicops fulvicornis* Meinert (first record in Switzerland), Würmli 1972a sub *L. fulvicornis* Meinert, Minelli & Zapparoli 1992 sub *Lamyctes f.* Meinert, 1868; Fauna Europea

Family Lithobiidae***Eupolybothrus (Eupolybothrus) grossipes* (C. L. Koch, 1847)**

Rothenbühler 1901 sub *Lithobius grossipes* C. Koch, Eason 1982, Koren 1992, Zapparoli 2006, Iorio 2008; Chilobase, Fauna Europea

***Eupolybothrus (Leptopolybothrus) tridentinus* (Fanzago, 1874)**

Rothenbühler 1899, Rothenbühler 1901 sub *Leptopolybothrus leptopus* Latzel, Verhoeff 1935a sub *P. leptopus germanicus* n. ssp. (type material), Verhoeff 1937a sub *P. l.*, Verhoeff 1937b sub *P. leptopus germanicus* and var. *helveticus* n. ssp. (type material), Attems 1949 sub *Polybothrus leptopus* Latz., Aellen & Strinati 1962 sub *Bothropolys leptopus* Latzel, Schubart 1963 sub *P. l. leptopus* and *P. l. germanicus*, Strinati 1966a & b sub *B. l.* (Latzel), Eason 1982, Schatzmann 1986, Koren 1992, Spelda 1999c; Chilobase, Fauna Europea

***Lithobius (Monotarsobius) aeruginosus* L. Koch, 1862**

Faes 1902, Verhoeff 1935a sub *Monotarsobius a.* Koch, Attems 1949 sub *L. a.* L. Koch, Demange 1958, Aellen & Strinati 1962, Schubart 1963, Strinati 1966a & b, Matic 1976, Eason 1982, Schatzmann 1986, Koren 1992, Baur et al. 1999, Spelda 1999c, Iorio 2004; Fauna Europea

***Lithobius (Lithobius) agilis* C. L. Koch, 1847**

Rothenbühler 1899, Faes 1902, Attems 1949, Würmli 1972a, Koren 1992; Fauna Europea

***Lithobius (Lithobius) alpinus* Heer, 1845**

Heer 1845 (type material), Am Stein 1857; Chilobase, Fauna Europea

Note: Non *Lithobius alpinus* L. Koch, 1862; non *Lithobius alpinus* Matic & Darabantu, 1971

***Lithobius (Lithobius) borealis* Meinert, 1868**

Verhoeff 1937b, Würmli 1972a, Eason 1982 (not sure because of misdeterminations), Basset 1985a, b & 1986; Fauna Europea

***Lithobius (Sigibus) burzenlandicus* (Verhoeff, 1931)**

Stöckli & Schneppat (in prep.)

***Lithobius (Lithobius) calcaratus* C. L. Koch, 1844**

Eason 1982, Zapparoli 2006; Fauna Europea

***Lithobius (Monotarsobius) crassipes* L. Koch, 1862**

Faes 1902, Verhoeff 1935a sub *Monotarsobius c.* Koch, Aellen & Strinati 1962, Schubart 1963, Strinati 1966a & b, Würmli 1972a, Eason 1982, Schatzmann 1986, Koren 1992, Minelli & Zapparoli 1992, Baur et al. 1999; Fauna Europea

***Lithobius (Monotarsobius) curtipes* C. L. Koch, 1847**

Faes 1900, Eason 1982; Fauna Europea

***Lithobius (Lithobius) cyrtopus* Latzel, 1880**

Minelli & Zapparoli 1992; Chilobase, Fauna Europea

***Lithobius (Lithobius) dentatus* C. L. Koch, 1844**

Am Stein 1857, Rothenbühler 1899, Faes 1902, Verhoeff 1935a sub *L. d. helveticorum* n. ssp. (type material), Attems 1949, Schubart 1963, Eason 1982, Schatzmann 1986, Koren 1992, Spelda 1999c; Fauna Europea

***Lithobius (Lithobius) erythrocephalus* C. L. Koch, 1847**

Am Stein 1857, Faes 1902, Eason 1982, Koren 1992, Baur et al. 1999, Berg 1999, Zapparoli 2006; Fauna Europea

***Lithobius (Lithobius) forficatus* (Linnaeus, 1758)**

Am Stein 1857, Pavesi 1873, Brölemann 1897/98, Rothenbühler 1899, Faes 1900, Rothenbühler 1901, Faes 1902, Biegel 1922, Holzapfel 1932, Verhoeff 1935a & 1937b, Attems 1949, Aellen & Strinati 1962, Schubart 1963, Strinati 1966a & b, Würmli 1972a, Matic 1976, Mumcuoglu & Ruffli 1981, Eason 1982, Schatzmann 1986, Koren 1992, Minelli 1992, Spelda 1999c, Stöckli 2003, Zapparoli 2006, Stöckli 2008; Fauna Europea

***Lithobius (Lithobius) lapidicola* Meinert, 1872**

Rothenbühler 1899, Faes 1902 sub *L. pusillus* Latzel and *L. erythrocephalus* Meinert, Verhoeff 1937a sub *L. p.* Latzel, Strinati 1966a & b sub *L. pusillus pusillifrater* Verhoeff, Würmli 1972a, Eason 1982, Koren 1992, Berg 1999, Zapparoli 2006; Fauna Europea

***Lithobius (Lithobius) latro* Meinert, 1872**

Rothenbühler 1901, Faes 1902, Attems 1949, Eason 1982, Koren 1992, Minelli & Zapparoli 1992, Moser 1999, Voigtländer 2008; Chilobase, Fauna Europea

***Lithobius (Lithobius) lucifugus* L. Koch, 1862**

Rothenbühler 1899 & 1901, Faes 1902, Handschin 1919, Verhoeff 1937a & b sub *Lithobius l.* var. *latzeli* m. (type material) and *L. l. (genuinus)*, Attems 1949, Schubart 1963 including the not identifiable race *L. l. nivalis* Rothenbühler, 1910 (type material), Würmli 1972a, Eason 1982, Dethier & Pedrolí-Christen 1983, Koren 1992, Moser 1999, Zapparoli 2006 sub. *L.* sp. cf. *lucifugus* L. Koch, 1862, Voigtländer 2008; Fauna Europea

***Lithobius (Lithobius) macilentus* L. Koch, 1862**

Rothenbühler 1899 sub *L. aulacopus*, Faes 1900 sub *L. au.* Latzel, Faes 1902 sub *L. au.* Latzel, Diem 1903 sub *L. au.* Latzel, Attems 1949 sub *L. au.* Latz., Demange 1958 sub *L. au.* Latzel, Aellen & Strinati 1962 sub *L. au.* Latzel, Schubart 1963 sub *L. au.*, Strinati 1966a & b sub *L. au.* Latzel, Eason 1982, Schatzmann 1986, Koren 1992, Zapparoli 2006; Fauna Europea

***Lithobius (Lithobius) melanops* Newport, 1845**

Rothenbühler 1899, Faes 1902 sub *L. glabratus* C. Koch, Holzapfel 1932, Koren 1992, Würmli 1972a, Eason 1982, Zapparoli 2006; Fauna Europea

***Lithobius (Sigibius) microps* Meinert, 1868**

Eason 1982, Koren 1992, Baur et al. 1999, Spelda 1999c, Glasstetter 2004, Zapparoli 2006, Stöckli 2008; Fauna Europea

***Lithobius (Lithobius) mutabilis* L. Koch, 1862**

Am Stein 1857 sub *L. communis* Koch and *L. minutus* Koch, Rothenbühler 1899, Faes 1900, Faes 1902, Verhoeff 1935a sub *L. geyeri* n. sp. (type material), Attems 1949 sub *L. mutabilis mutabilis* L. Koch, Schubart 1963, Würmli 1972a, Eason 1982, Schatzmann 1986, Koren 1992, Baur et al. 1999, Spelda 1999c sub syn. *L. geyeri* Verhoeff, 1935, Spelda 2005a, Zapparoli 2006, Voigtländer 2008; Chilobase, Fauna Europea

***Lithobius (Lithobius) muticus* C. L. Koch, 1847**

Rothenbühler 1901, Attems 1949, Eason 1982, Koren 1992, Stöckli 2003; Fauna Europea

***Lithobius (Lithobius) nodulipes* Latzel, 1880**

Rothenbühler 1901, Verhoeff 1940, Attems 1949, Eason 1982, Koren 1992, Baur et al. 1999, Iorio 2008; Chilobase, Fauna Europea

***Lithobius (Lithobius) pelidnus* Haase, 1880**

Faes 1902, Verhoef 1937b sub *Lithobius p. insubricus* n. ssp. (type material) and *L. p. (genuinus)*, Attems 1949, Koren 1992, Iorio 2008; Fauna Europea

***Lithobius (Lithobius) piceus* (L. Koch, 1862)**

Rothenbühler 1899, Faes 1900, Rothenbühler 1901, Faes 1902, Verhoeff 1925, Attems 1949, Würmli 1972a, Eason 1982, Schatzmann 1986, Koren 1992, Baur et al. 1999, Spelda 1999c, Stöckli 2003, Verhoeff 1935a, Zapparoli 2006, Voigtländer 2008; Fauna Europea

***Lithobius (Lithobius) piceus verhoeffi* Demange, 1958**

Demange 1958 (type material), Aellen & Strinati 1962, Strinati 1966a & b, Koren 1992, Iorio & Berg 2007; Chilobase, Fauna Europea

***Lithobius (Lithobius) pilicornis* Newport, 1844**

Verhoeff 1937b sub *L. doriae pellicensis* Verhoeff

***Lithobius pilosus* Am Stein, 1857**

Am Stein 1857 (type material); Chilobase

***Lithobius (Lithobius) punctulatus* C. L. Koch, 1847**

Rothenbühler 1901 sub *L. validus* Meinert, Attems 1949 sub *L. validus* Mein., Eason 1982 sub *L. v.* Meinert, 1872, Koren 1992 sub *L. v.* Meinert, 1872, Zapparoli 2006; Chilobase, Fauna Europea

***Lithobius (Lithobius) pygmaeus* Latzel, 1880**

Rothenbühler 1899, Faes 1902, Verhoeff 1937a, Attems 1949, Eason 1982 ('ev. different subspecies'), Schatzmann 1986, Koren 1992; Chilobase, Fauna Europea

***Lithobius (Lithobius) schuleri* Verhoeff, 1925**

Eason 1982 sub *L. erythrocephalus schuleri* Verhoeff, 1925, Berg 1999 sub *L. erythrocephalus schuleri*, Voigtländer 2008; Chilobase, Fauna Europea

***Lithobius (Lithobius) subtilis* Latzel, 1880**

Verhoeff 1935a sub *L. vindelicus* n. sp. (type material), Moritz & Fischer 1979 sub *L. v.* Verhoeff, 1935 (syntype), Eason 1982, Koren 1992, Minelli & Zapparoli 1992, Iorio 2008 sub *L. s. subtilis* Latzel, 1880; Chilobase, Fauna Europea

***Lithobius (Lithobius) tenebrosus* Meinert, 1872**

Rothenbühler 1901 sub *L. nigrifrons* Latzel, Attems 1949 sub *L. nigrifrons* Latz., Eason 1982, Schatzmann 1986, Koren 1992, Baur et al. 1999 sub *L. n.*, Berg 1999; Chilobase, Fauna Europea

***Lithobius (Lithobius) tricuspis* Meinert, 1872**

Rothenbühler 1899, Rothenbühler 1901, Faes 1902, Verhoeff 1935a, Attems 1949, Demange 1958, Aellen & Strinati 1962, Schubart 1963, Strinati 1966a & b, Eason 1982, Schatzmann 1986, Koren 1992, Minelli & Zapparoli 1992, Spelda 1999c, Stöckli 2003, Zapparoli 2006, Voigtländer 2008; Fauna Europea

***Lithobius (Lithobius) valesiacus* Verhoeff, 1935**

Verhoeff 1935a sub *L. lusitanus valesiacus* n. ssp., Verhoeff 1937b sub *L. l. v.*, Eason 1982 sub *L. l. v.* Verhoeff, 1935, Schatzmann 1986 sub *L. l. v.*, Minelli & Zapparoli 1992 sub *L. l. v.* Verhoeff, 1935, Spelda 1999c sub stat. nov. *L. (L.) v.* Verhoeff, 1935, Iorio 2005 sub *L. l. v.* Verhoeff, 1935, Iorio & Berg 2007; Fauna Europea sub *L. l. v.*, Chilobase

Order Scolopendromorpha**Family Cryptopidae*****Cryptops (Cryptops) anomalans* Newport, 1844**

Rothenbühler 1899, Faes 1902, Attems, 1949, Iorio & Geoffroy 2007a & b, Zapparoli 2006; Fauna Europea

***Cryptops (Cryptops) hortensis* (Donovan, 1810)**

Am Stein 1857 sub *C. ochraceus* Koch, Rothenbühler 1899, Faes 1900, Faes 1902, Diem 1903, Holzapfel 1932, Würmli 1972a, Matic 1976, Mumcuoglu & Rufli 1981, Baur et al.1999, Spelda 1999c, Zapparoli 2006, Iorio & Geoffroy 2007a & b, Stöckli 2008; Fauna Europea

***Cryptops (Cryptops) parisi* Brölemann, 1920**

Verhoeff 1931, Attems 1949, Koren 1986, Schatzmann 1986, Stöckli 2003, Stöckli 2008; Fauna Europea

Order Scutigermorpha**Family Scutigeraidae*****Scutigera coleoptrata* (Linnaeus, 1758)**

Faes 1900, Faes 1902, Attems 1949, Matic 1966, Spelda 1999c, Hänggi & Moor 2003, Glasstetter 2004, Iorio & Geoffroy 2006, Zapparoli 2006; Fauna Europea

3.2. Not properly identified or doubtful species or subspecies

Various lithobiid species could not be identified properly or have a doubtful systematic description:

***Eupolybothrus (Eupolybothrus) fasciatus* (Newport, 1845)**

Strinati 1966a & b sub *Bothropolys f.* (Newport), Mumcuoglu & Rufli 1981 sub *Polybothrus f.*

Note: These quotations probably refer to *E. (E.) grossipes*.

***Lithobius (Lithobius) lucifugus nivalis* Rothenbühler, 1910**

Bäbler 1910, Mani 1968

Note: Taxonomic status uncertain (see type list below)

***Lithobius (Lithobius) piceus romanus* Verhoeff, 1935**

Note: The state of this subspecies in Verhoeff (1935a) is not clear, perhaps identical with *L. (L.) piceus verhoeffi* Demange, 1958. *L. (L.) romanus* Meinert, 1972 is only known at the nearest to Switzerland from central and southern Italy, not even from France (E. Iorio pers. comm).

***Lithobius (Lithobius) tylopus* Latzel, 1882**

Note: E. H. Eason and H. Jungen (Zoological Museum, University of Zurich) could not finally conclude if some specimens collected in Switzerland belonged to *L. (L.) tylopus* Latzel, 1882 (pers. communications and letters).

***Lithobius (Lithobius) variegatus* Leach, 1814**

Am Stein 1857

Note: *L. (L.) variegatus* Leach, 1814 is not synonymous with *L. variegatus* C. L. Koch, 1844 & 1863. *L. (L.) variegatus* Leach is normally found only near the coast in France, in Ireland, Spain and UK (including the Channel Islands) (Chilobase), so this determination is very dubious.

3.3 Type material

Mainly in the older papers some descriptions of type material can be found among Swiss records:

Order Geophilomorpha**Family Dignathodontidae*****Chaetechelyne vesuviana helvetica* Verhoeff, 1935**

Syn. of *Henia (Chaetechelyne) vesuviana* (Newport, 1845) (Minelli 1981)

Family Geophilidae***Geophilus flavidus noduliger* Verhoeff, 1928**

Syn. of *Clinopodes flavidus* C. L. Koch, 1847 (Zapparoli 1979)

***Geophilus glacialis* Verhoeff, 1938**

Syn. of *Geophilus insculptus* Attems, 1895 (Minelli & Bonato 2006)

***Geophilus helveticus* Verhoeff, 1928**

Syn. of *Geophilus electricus* (Linnaeus, 1758) (Minelli & Bonato 2006)

Type material: Zoologische Staatssammlung München ZSM, slides A20030402 (lectotype), Brunnen above Lake Lucerne / Vierwaldstättersee, Canton Schwyz, Switzerland and A20030403 (Locality illegible)

***Geophilus sedunensis* Faes, 1902**

Syn. of *Geophilus carpophagus* Leach, 1815 (Verhoeff 1934b)

***Geophilus studeri* Rothenbühler, 1899**

Valid taxonomy (Chilobase)

Type material (Moritz & Fischer 1979): Museum für Naturkunde, Berlin ZMB 13508a (1 female, syntype, front and rear body, microslide nr. 108) and ZMB 13508b (remaining segments of body, microslide nr. 109), both Coll. Verhoeff, Switzerland

***Geophilus trebevicensis poschiavensis* Verhoeff, 1934**

Syn. of *Clinopodes trebevicensis* (Verhoeff, 1898) (Foddai et al. 1995)

Type material: Zoologische Staatssammlung München ZSM, slide A20030464, Poschiavo, Canton Grisons, Switzerland

***Pachymerium ferrugineum helveticum* Verhoeff, 1902**

Now *P. ferrugineum* (Koch, 1835) following Matic (1972)

Type material (Moritz & Fischer 1979): Museum für Naturkunde Berlin, ZMB 13514 (1 female in toto, holotype, microslide nr. 144. Coll. Verhoeff, Goeschenen, Canton Uri, Switzerland)

Family Linotaeniidae***Scolioplanes mediterraneus* var. *alsaticus* Verhoeff, 1928**

Syn. of *Strigamia crassipes* (C. L. Koch, 1835) (Minelli & Bonato 2006)

***Scolioplanes engadina* Verhoeff, 1935**

Now *Strigamia engadina* (Verhoeff, 1935) (Chilobase)

Type material: Zoologische Staatssammlung München ZSM, slide A20030532 (paratype; design. Crabill 08.06.1960: lectotype): *Scolioplanes engadinus* Verh., Morteratsch-Gletscher, Canton Grisons, Switzerland

***Scolioplanes transsilvanica* Verhoeff, 1928**

Now *Strigamia transsilvanica* (Verhoeff, 1928) (Chilobase)

Order Lithobiomorpha**Family Lithobiidae*****Lithobius (Lithobius) alpinus* Heer, 1845**

Taxonomic status uncertain. Non *Lithobius alpinus* L. Koch, 1862; non *Lithobius alpinus* Matic & Darabanzu, 1971 (Chilobase)

***Lithobius (Lithobius) dentatus helveticorum* Verhoeff, 1935**

Probable but uncertain synonymy: *Lithobius (Lithobius) dentatus* C. L. Koch, 1844 (Chilobase)

***Lithobius (Lithobius) geyeri* Verhoeff, 1935**

Taxonomic status uncertain, seems to be *Lithobius (Lithobius) mutabilis* L. Koch, 1862 (Chilobase)

Type material: Zoologische Staatssammlung München ZSM, slide A20030727, Beringen am Randen, Canton Schaffhausen, Switzerland, 26.09.1934.

Further type material (not directly from, but near Switzerland): Museum für Naturkunde Berlin, ZMB 13548, 1 female in toto, Syntype, microslide nr. 3470. Coll. Verhoeff, waterfall near Todtnau, 850 m, Baden-Wuerttemberg, Germany, 29.09.1934.

***Lithobius (Lithobius) lusitanus valesiacus* Verhoeff, 1935**

Now *L. valesiacus* Verhoeff, 1935 (Spelda 1999c, Chilobase)

***Lithobius pelidnus insubricus* Verhoeff, 1937**

Probable but uncertain synonymy: *Lithobius (Lithobius) pelidnus* Haase, 1880 (Chilobase)

Type material: Zoologische Staatssammlung München ZSM, slide A20030792, locality uncertain. Verhoeff (1937b) gave as locality Blatten (above Brig, Canton Valais, Switzerland).

***Lithobius (Lithobius) lucifugus latzeli* Verhoeff, 1937**

Syn. of *Lithobius (Lithobius) lucifugus* L. Koch, 1862 (Eason 1982)

Type material: Zoologische Staatssammlung München ZSM, slide A20030744, Coll. Verhoeff, Simplon-Kulm, Canton Valais, Switzerland

***Lithobius (Lithobius) lucifugus nivalis* Rothenbühler, 1910**

Taxonomic status uncertain, perhaps syn. of *Lithobius (Lithobius) lucifugus* L. Koch, 1862. Schubart (1963) mentions *L. l. nivalis* Rothenbühler, 1910, but a publication by Rothenbühler from 1910 is not known to the author.

***Lithobius (Lithobius) piceus verhoeffi* Demange, 1958**

Valid taxonomy. Non *Lithobius lucifugus verhoeffi* Loksa, 1955 (Chilobase)

***Lithobius pilosus* Am Stein, 1857**

Taxonomic status uncertain (Attems, 1895; Chilobase)

***Lithobius (Lithobius) vindelicus* Verhoeff, 1935**

Syn. of *Lithobius (Lithobius) subtilis* Latzel, 1880

Type material (Moritz & Fischer 1979): Museum für Naturkunde Berlin ZMB 13562 (1 female in toto, syntype, microslide nr. 3540. Coll. Verhoeff, Twann-Klamm at the lake of Biel, Canton Bern, Switzerland). Now *L. subtilis* Latzel, 1880 (Eason 1980, Chilobase: probable but uncertain synonymy).

Further type material (not directly from, but near Switzerland): Museum für Naturkunde Berlin, ZMB 13326, 1 male, Syntype, in spirit. Coll. Verhoeff, Black forest N 1103, Germany

***Polybothrus leptopus germanicus* Verhoeff, 1935**

Probable but uncertain synonymy: *Eupolybothrus (Leptopolybothrus) tridentinus* (Fanzago, 1874) (Chilobase)

Type material (not directly from, but near Switzerland. The Swiss material mentioned in publication is not known): Museum für Naturkunde Berlin, ZMB 13342, 1 male & 1 female, syntypes, in spirit. Coll. Verhoeff, Black forest N 1103, Germany

***Polybothrus leptopus helveticus* Verhoeff, 1937**

Syn. of *Eupolybothrus (Leptopolybothrus) tridentinus* (Fanzago, 1874) (Jeekel 1967)

4. Discussion

The literature research is only a first step to a 'complete' checklist. The different publications cover only limited sampling areas and time periods and there is no comprehensive survey of the whole area of Switzerland, so that the species list presented here represents only a part of the possible species diversity.

The huge variability of the landscape in such a small country (41 293 km²) influences the character of the centipede fauna without any doubt. Many different regions like the almost Mediterranean southern parts, high-mountain areas in the Alps, the middle land (intensively changed by agriculture, traffic and industry) or different temperature hot spot areas can be found within very small distances from each other. Glacial relicts and high alpine records are no surprise (Bäbler 1910). The influences and connections via mountain ranges and lowland to surrounding countries and areas and its centric position in Central Europe will lead to a quite high number of species.

4.1. Potential species for the Swiss checklist

This species list above will obviously gain more entries with future collections or the revision of the collections in different Swiss museums.

Potential members of a Swiss checklist might be found among the species from the surrounding regions and countries (Würmli 1972b, Spelda 1991, Minelli 1992, Koren 1994, Spelda 1999a, b & c, Checklist of the species of the Italian fauna 2003, Spelda 2005a, Iorio 2007, Geoffroy & Iorio 2009). Older papers contain records from areas very near to Switzerland, e.g. Verhoeff (1925): Lago maggiore/‘Langensee’, or Brölemann (1892): Santa Caterina del Sasso, Lac Majeur, both just over the border in Italy.

The following listing names out 25 **potential** future members of the Swiss checklist. According to Chilobase some of the species mentioned have an uncertain taxonomic status (*) or uncertain identity (**):

Order Geophilomorpha

Family Dignathodontidae

Henia (Pseudochaetechelyne) brevis (Silvestri, 1896)

Family Geophilidae

Geophilus oligopus (Attems, 1895)

Geophilus osquidatum Brölemann, 1909

Geophilus truncorum ribauti Brölemann, 1908

Note: the precise status of *G. tr. ribauti* Brölemann, 1908 (species or subspecies) requires further studies. Without these the original rank of Brölemann (1908) is used (Geoffroy & Iorio 2009). The record ‘le Jura Suisse’ relates to Verhoeff 1935 ‘Wildbad’, which is in the Black Forest, southern Germany, so the taxon is not confirmed for Switzerland. Presumably the entry in the Fauna Europea also originates from this misinterpretation).

Family Schendylidae

Schendyla carniolensis Verhoeff, 1902

Schendyla dentata (Brölemann & Ribaut, 1911)

Schendyla montana Attems, 1895

Order Lithobiomorpha

Family Lithobiidae

Eupolybothrus (Eupolybothrus) longicornis (Risso, 1826)

Harpolithobius anodus (Latzel, 1880)

Lithobius (Lithobius) acuminatus Brölemann, 1892

Lithobius (Lithobius) aostanus Verhoeff, 1934*

Lithobius (Monotarsobius) austriacus (Verhoeff, 1937)

Lithobius (Lithobius) biporus Silvestri, 1894*

- Lithobius (Sigibius) burzenlandicus carinthiacus* Koren, 1992
Lithobius (Lithobius) castaneus Newport, 1844
Lithobius (Monotarsobius) catascaphius (Verhoeff, 1937)*
Lithobius (Lithobius) delfosseii Iorio & Geoffroy, 2007
Lithobius (Sigibius) electrinus (Verhoeff, 1937)
Lithobius (Lithobius) glacialis Verhoeff, 1937*
Lithobius (Lithobius) grandiporosus Verhoeff, 1937
Lithobius (Lithobius) minimus L. Koch, 1862 **
Lithobius (Lithobius) pelidnus triangulatus Koren, 1992
Lithobius (Lithobius) salicis Verhoeff, 1925

Order Scolopendromorpha

Family Cryptopidae

Cryptops (Cryptops) parisi sebini Verhoeff, 1934

Family Scolopendridae

Scolopendra cingulata Latreille, 1829

Note: there have been various personal reports of this species from the Canton Tessin in Switzerland but these have not yet been verified by collections.

4.2. Endemic species

Not many species were found only in the Swiss area. Many more are distributed over different Alpine countries or are also encountered in southern regions such as Italy or the more northern regions of southern Germany, etc.

The following taxa, found up to now only in Swiss localities, could be considered as endemic species for Switzerland:

Lithobius (Lithobius) alpinus Heer, 1845

Lithobius pilosus Am Stein, 1857

Both belong to the genera *Lithobius* and were only mentioned in the older publications of Heer (1845) and Am Stein (1857).

4.3. Invasive species

A species that most certainly could be found in Switzerland as a synanthropic follower of mankind in greenhouses over Europe (Eason 1982) is *Lamyctes (Lamyctes) caeculus* (Brölemann, 1889) (Lithobiomorpha, Henicopidae) and as an invasive species *Scutigera coleoptrata* (Linnaeus, 1758), a Mediterranean species, already mentioned by Faes 1902 for the southern parts and now present in many areas of Switzerland (Hänggi & Moor 2003).

4.4 Further research

In a further step, collections from different Swiss museums will be revised. There are several hundreds of specimens to be checked, most of them not determined (a synonym for the lack of specialists). Ongoing research projects like the Biodiversity Monitoring Switzerland will be a good source for up-to-date Chilopoda material. New species are also to be awaited from local research hot spots like the Alp Flix in the Grisons Alps (Stiftung Schatzinsel Alp Flix 2007). As a first result of recent research activity, two new species have to be added to the Swiss checklist (Stöckli & Schnepapat in prep.): *Lithobius (Sigibus) burzenlandicus* Koren, 1992 and *Dicellyphilus carniolensis* (Koch, 1847).

4.5 Expectation

How many species do we expect for Switzerland? Considering the species from literature, surrounding areas, personal data and new entries about to be published, the chilopod fauna for Switzerland might reach almost 90 species. This is quite a high number but not really a surprise. The huge variability of biotopes and habitats in a small area and the central location in middle Europe are definitely the main reasons for such species richness.

But, as mentioned, species number is only one minor aspect to be considered. Our knowledge of even a single species is far too inadequate to establish a 5 x 5 grid distribution map as it exists for the Diplopoda (Pedroli-Christen 1993).

5. Acknowledgements

I would like to thank Tony Barber, Greg Edgecombe, Étienne Iorio, Alessandro Minelli and Karin Voigtländer for their personal comments, also all the participants of the 14th International congress of Myriapodology 2008 in Görlitz for their remarks and additional information to the checklist. Wolf Blanckenhorn (Zoological Museum of the University of Zurich-Irchel) allocated the records of Hans Jungen. Ulrich Schnepapat from the Naturmuseum Chur collected new centipede species in the Alp region. Many thanks for all unnamed people who contributed material or information to this paper. The Natural History Museum Basel kindly supports this centipede research.

6. References

- Literature and databases without Swiss Chilopoda entries are distinguished by an *:
- Aellen, V. & P. Strinati (1956): Matériaux pour une faune cavernicole de la Suisse. – *Revue Suisse de Zoologie* **63**(4): 183–202.
- Aellen, V. & P. Strinati (1962): Nouveaux matériaux pour une faune cavernicole de la Suisse. – *Revue Suisse de Zoologie* **69**(2): 25–66.
- Am Stein, J. G. (1857): Aufzählung und Beschreibung der Myriapoden und Crustaceen Graubündens, erste Folge. – *Jahresbericht der Naturforschenden Gesellschaft Graubündens, neue Folge* II. Jahrgang: 112–148.
- Attems, C. (1926): *Handbuch Zoologie: Chilopoda*. – *Handbuch Zoologie*: 239–402.
- Attems, C. (1929): Myriapoda. 1. Geophilomorpha. – In: *Das Tierreich*, 52. Lfg. Walter de Gruyter & Co., Berlin, Leipzig: XXIII and 388 pp.
- Attems, C. (1930): 2. Scolopendromorpha. – *Das Tierreich* **54**: 1–308.

- Attems, C. (1949): Die Myriopodenfauna der Ostalpen. – Sitzungsberichte der Österreichischen Akademie der Wissenschaften, Mathematisch-naturwissenschaftlichen Klasse, Abteilung I **158**, Heft 1 bis 10: 79–153.
- Bäbler, E. (1910): Die wirbellose, terrestrische Fauna der nivalen Region. – Revue Suisse de Zoologie **18**: 761–916.
- Barber, A. D. (1992): Distribution and Habitat in British Centipedes (Chilopoda). – Bericht des Naturwissenschaftlich-Medizinischen Vereins Innsbruck, Suppl. **10**: 339–352.
- Basset, Y. (1985a): Comparaison de quelques méthodes de piègeage de la faune dendrobie. – Bulletin Romand d'Entomologie **3**: 1–14.
- Basset, Y. (1985b): Les peuplements d'arthropodes sur *Pinus mugo* TURRA dans les tourbières du Haut-Jura Neuchâtelois. – Bulletin de la Société Neuchâtelois des Sciences Naturelles **108**: 63–76.
- Basset, Y. (1986): Aspects de la répartition des peuplements d'arthropodes sur le tronc, sous les écorces et le bois mort de *Pinus mugo* TURRA. – Bulletin de la Société Entomologique Suisse **59**: 349–364.
- Baur, B., W. Billen & D. Burckhardt (1999): Der Allschwiler Wald. – Allschwiler Schriften, Heft **11**: 1–154.
- Berg, M. P. (1999): Naamlijst van de nederlandse duizendpoten (Myriapoda: Chilopoda). – Nederlandse faunistische Mededelingen **8**: 67–76.
- Biegel, J. H. (1922): Beiträge zur Morphologie und Entwicklungsgeschichte des Herzens bei *Lithobius forficatus* L. – Revue Suisse de Zoologie **29**(9): 427–480.
- Bonato, L., A. Barber & A. Minelli (2006): The European centipedes hitherto referred to *Eurygeophilus*, *Mesogeophilus*, and *Chalandea* (Chilopoda, Geophilomorpha): taxonomy, distribution, and geographical variation in segment number. – Journal of Natural History **40**(7–8): 415–438.
- Bonato, L. & A. Minelli (2008): *Stenotaenia* Koch, 1847: a hitherto unrecognized lineage of western Palaearctic centipedes with unusual diversity in body size and segment number (Chilopoda: Geophilidae). – Zoological Journal of the Linnean Society **153**: 253–286.
- Brölemann, H. W. (1892): Contributions à la faune myriapodologique méditerranéenne. Dix espèces nouvelles. – Annales de la Société Linnéenne de Lyon **39**: 91–134.
- Brölemann, H. W. (1897–98): Myriopodes de Bex. – Revue Suisse de Zoologie **5**: 105.
- Brölemann, H. W. (1908): La haute Vallée de la Neste (Myriapodes). – Bulletin de la Société d'Histoire Naturelle de Toulouse **41**: 57–67.
- Brolemann, H. W. (1930): Éléments d'une Faune des Myriapodes de France. – Faune de France **25** (1932): 405 pp.
- Chilobase – a web resource of chilopoda taxonomy (2007). [<http://chilobase.bio.unipd.it/>].
- Demange, J. M. (1958): Sur quelque Myriapodes cavernicoles de France et de Suisse. – Revue Suisse de Zoologie **65**, No. 40: 843–855.
- Dethier, M. & A. Pedrollo-Christen (1983): Diplopodes et Chilopodes d'une pelouse alpine au Parc national suisse. – Bulletin de la Société vaudoise des sciences naturelles **76**(364): 373–379.
- Diem, K. (1903): Untersuchungen über die Bodenfauna in den Alpen. – Dissertation, in Jahrbuch der St. Gallischen Naturwissenschaftlichen Gesellschaft **1901/02**: 234–414.
- Eason, E. H. (1964): Centipedes of the British Isles. – London: 294 pp.
- Eason, E. H. (1974): The Type Specimens and Identity of the Species described in the Genus *Lithobius* by F. Meinert, and now preserved in the Zoological Museum, Copenhagen University (Chilopoda: Lithobiomorpha). – Zoological Journal of the Linnean Society **55**: 1–52.
- Eason, E. H. (1982): A review of the north-west European species of Lithobiomorpha with a revised key to their identification. – Zoological Journal of the Linnean Society **74**: 9–33.

- Faes, H. (1900): Contributions à l'étude des Myriapodes. – Bulletin de la Société Vaudoise des Sciences Naturelles **36**: 140–146.
- Faes, H. (1902): Myriopodes du Valais. – Revue Suisse de Zoologie **10**: 29–166.
- Fauna Europaea Web Service (2007): Fauna Europaea version 1.3. [<http://www.faunaeur.org/>].
- Foddai, D. et al. (1995): Chilopoda, Diplopoda, Pauropoda, Symphyla. – In: Minelli, A., S. Ruffo & S. la Posta (eds): Checklist delle specie della fauna italiana **32**: 1–35.
- Geoffroy, J.-J. & E. Iorio (2009): The French centipede fauna (Chilopoda): updated checklist and distribution in mainland France, Corsica and Monaco. – In: Xylander, W. & K. Voigtländer (eds): – Proceedings of the 14th International Congress of Myriapodology. – Soil Organisms **81**(3): 671–694.
- Glasstetter, M. (2004): Biomonitoring urbaner Böden in Basel (Schweiz). – Institut für Natur-, Landschafts- und Umweltschutz NLU, Basel: 201 pp.
- Handschin, E. (1919): Beiträge zur Kenntnis der wirbellosen terrestrischen Nivalfauna der schweizerischen Hochgebirge. – Dissertation Zoologische Anstalt Basel ZAB: 1–153.
- Hänggi, A. & B. Moor (2003): Fauna und Flora auf dem Eisenbahngelände im Norden Basels: Tausendfüsser. – Monographien der Entomologischen Gesellschaft Basel **1**: 80–83, 206.
- Heer, O. (1845): Ueber die oberen Gränzen des thierischen und pflanzlichen Lebens in unseren Alpen. – An die Zürcherische Jugend auf das Jahr 1845 / von der Naturforschenden Gesellschaft. Neujahrsblatt der Naturforschenden Gesellschaft in Zürich (1799–1870) **47**: 1–19, Tab 6, 6a.
- Heiniger, P. H. (1989): Arthropoden auf Schneefeldern und in schneefreien Habitaten im Jungfraugebiet (Bernser Oberland, Schweiz). – Mitteilungen der Schweizerischen Entomologischen Gesellschaft **62**: 375–386.
- Holzappel, M. (1932): Die Gewächshausfauna des Berner Botanischen Gartens. – Revue Suisse de Zoologie **39**(14): 325–374.
- Iorio, E. (2004): Compléments à la description de *Lithobius (Monotarsobius) aeruginosus* L. Koch, 1862 (Chilopoda, Lithobiomorpha, Lithobiidae). – Bulletin de Phyllie **19**(1): 44–49.
- Iorio, E. (2005): Un nouveau chilopode pour la faune de France: *Lithobius (Lithobius) lusitanus valesiacus* Verhoeff, 1935 (Chilopoda, Lithobiomorpha, Lithobiidae). – Le bulletin d'Arthropoda **25**(3): 41–44.
- Iorio, E. (2007): A new contribution to the knowledge of the centipedes of eastern France (Chilopoda). – Schubartiana **2**: 1–12.
- Iorio, E. (2008): Contribution à l'étude des chilopodes (Chilopoda) des Alpes–Maritimes, incluant une clé d'identification des lithobiomorphes Lithobiidae de Provence–Alpes–Côte d'Azur. – Bulletin de la Société Linnéenne de Provence **59**: 127–190.
- Iorio, E. & M. P. Berg (2007): Première contribution à l'étude des chilopodes (Chilopoda) de Provence et description d'une nouvelle sous-espèce. – Bulletin de la Société Linnéenne de Provence **58**: 21–36.
- Iorio, E. & J.-J. Geoffroy (2006): Répartition géographique de *Scutigera coleoptrata* (Linné, 1758) en France (Chilopoda: Scutigermorpha: Scutigerae). – Le bulletin d'Arthropoda **30**(4): 48–59.
- Iorio, E. & J.-J. Geoffroy (2007a): Diagnose et répartition de trois espèces de *Cryptops* en France (Chilopoda, Scolopendromorpha, Cryptopidae). – Le bulletin d'Arthropoda **32**(2): 26–38.
- Iorio, E. & J.-J. Geoffroy (2007b): Les Scolopendromorphes de France (Chilopoda, Scolopendromorpha): Identification et distribution géographique des espèces. – Riviera Scientifique **91**: 73–90.
- Italian Ministry of Environment (2003): Checklist of the species of the Italian fauna, online version 2.0, ed. F. Stoch. [<http://www.faunaitalia.it/checklist/>]. *

- Jeekel, C. A. W. (1967): On two Italian Lithobius species described by Silvestri with taxonomic notes on the genus Eupolybothrus Verhoeff (Chilopoda Lithobiidae). – *Beaufortia* **14**: 165–175. *
- Koren, A. (1986): Die Chilopoden-Fauna von Kärnten und Osttirol: 1. Geophilomorpha, Scolopendromorpha. – *Carinthia* II **43**, Sonderheft: 1–87.
- Koren, A. (1992): Die Chilopoden-Fauna von Kärnten und Osttirol: 2. Lithobiomorpha. – *Carinthia* II **51**, Sonderheft: 1–138.
- Koren, A. (1999): Verzeichnis der Hundertfüsser Kärntens (Chilopoda). – *Naturschutz in Kärnten: Rote Listen gefährdeter Tiere Kärntens* **15**: 517–520. *
- Mani, M. S. (1968): *Ecology and Biogeography of High Altitude Insects*. – Springer Verlag: 548 pp.
- Matic, Z. (1966): Fauna Republicii socialiste România: Clasa Chilopoda: Subclasa Anamorpha. – *Editura Academiei Republicii socialiste România* **Vol. VI**, Fasc. 1: 1–267.
- Matic, Z. (1972): Fauna Republicii socialiste România: Clasa Chilopoda: Subclasa Epimorpha. – *Editura Academiei Republicii socialiste România* **Vol. VI**, Fasc. 2: 1–220.
- Matic, Z. (1976): Sur quelques Myriapodes Chilopodes du Muséum d'Histoire naturelle de Genève. – *Revue Suisse de Zoologie* **83**(2): 287–306.
- Minelli, A. (1981): Contributo alla revisione dei chilopodi geofilomorfi finora riferiti ai generi *Henia* e *Chaetechelyne*. – *Memoire della societa entomologica Italiana* **60**: 253–268.
- Minelli, A. (1985): Catalogo die Diplopodi e dei Chilopodi cavernicoli italiani. – *Memorie del Museo Civico di Storia Naturale di Verona (II Serie), Sezione Biologica* **4**: 1–50.
- Minelli, A. (1992): The Centipedes of North-eastern Italy (Trentino-Alto Adige, Veneto, Friula-Venzia Giulia) (Chilopoda). – *Gortania, Atti Museo friulano di Storia Naturale* **13**(1991): 157–193.*
- Minelli, A. & L. Bonato (2006): European geophilomorph centipedes (Chilopoda: Geophilomorpha): a complete synonymical list with taxonomic and nomenclatural notes. – *Zootaxa in progress*. *
- Minelli, A. & M. Zapparoli (1992): Considerazioni faunistiche e zoogeografiche sui Chilopodi delle Alpi occidentali. – *Biogeografia* **16**: 211–243.
- Moritz, M. & S.-C. Fischer (1979): Die Typen der Myriapoden-Sammlung des Zoologischen Museums Berlin. II. Chilopoda. – *Mitteilungen aus dem Zoologischen Museum in Berlin* **55**(2): 297–352.
- Moser, K. (1999): Vertikalverteilung und Habitatwahl der Steinkriecher im Exkursionsgebiet um Innsbruck (Nordtirol, Österreich). – *Berichte des Naturwissenschaftlich-Medizinischen Verein in Innsbruck* **86**: 213–228.
- Mumcuoglu, Y. & T. Ruffli (1981): *Dermatologische Entomologie* 30. Myriapoda: Chilopoda und Diplopoda (Hundertfüssler und Tausendfüssler). – *Schweizerische Rundschau für Medizin Praxis* **70**(37): 1606–1610.
- Pavesi, P. (1873): Materiali per una fauna del cantone Ticino. – *Atti della Società italiana di scienze naturali e del Museo civico di storia naturale di Milano* **16**: 24–54.
- Pedroli-Christen, A. (1993): Faunistique des mille-pattes de Suisse (Diplopoda) – Faunistik der Tausendfüssler der Schweiz (Diplopoda). – *Documenta Faunistica Helvetiae* **14**: 1–167, I–LXIII.
- Rothenbühler, H. (1899): Ein Beitrag zur Kenntnis der Myriapodenfauna der Schweiz. – *Revue Suisse de Zoologie* **6**: 5–271.
- Rothenbühler, H. (1901): Fauna der Rhätischen Alpen: Myriopoden Graubündens, besonders des Engadins und des Münsterthales. – *Revue Suisse de Zoologie* **9**(3): 355–377.
- Schatzmann, E. (1986): Ein neuer Aehnlichkeitsindex \bar{T} zum Vergleich von diskreten Häufigkeitsverteilungen aufgrund von Stichproben und seine Anwendung auf Mikrobiotope von Chilopoden. – *Dissertation Universität Zürich*: 52 pp.
- Schubart, O. (1956/1963): Die Tierwelt Mitteleuropas: Klasse Hundertfüssler, Chilopoda. – *Die Tierwelt Mitteleuropas* II. Band, Ergänzung, Lieferung **3**: 39–54.

- Spelda, J. (1991): Zur Faunistik und Systematik der Tausendfüßler (Myriapoda) Südwestdeutschlands. – Jahreshefte der Gesellschaft für Naturkunde in Württemberg **146**: 211–232.
- Spelda, J. (1999a): Ökologische Differenzierung südwestdeutscher Steinläufer (Chilopoda: Lithobiida). – Verhandlungen der Gesellschaft für Ökologie **29**: 389–395.
- Spelda, J. (1999b): Verbreitungsmuster und Taxonomie der Chilopoda und Diplopoda Südwest Deutschlands. – Thesis, University of Ulm, Part I: 217 pp.
- Spelda, J. (1999c): Verbreitungsmuster und Taxonomie der Chilopoda und Diplopoda Südwest Deutschlands. – Thesis, University of Ulm, Part II: 324 pp.
- Spelda, J. (2003): Rote Liste gefährdeter Hundert- und Tausendfüßler (Myriapoda: Chilopoda, Diplopoda) Bayerns. – Rote Liste gefährdeter Tiere Bayerns des Bayerischen Landesamtes für Umweltschutz (BayLfU) **166**: 333–336.
- Spelda, J. (2005a): 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. (2005b): Millipedes and centipedes from Eastern France (Myriapoda: Chilopoda, Diplopoda). – Schubartiana **1**: 45–55.
- Stiftung Schatzinsel Alp Flix (2007): Schatzinsel Alp Flix – Studie zur alpinen Biodiversität. [<http://www.schatzinselalpflix.ch/>]. *
- Stöckli, E. (2003): Hundertfüßler (Myriapoda: Chilopoda) im Naturschutzgebiet Wildenstein. – Mitteilungen der Naturforschenden Gesellschaften beider Basel **7**: 253–255.
- Stöckli, E. (2008): Vielfalt zwischen den Gehegen: wildlebende Tiere und Pflanzen im Zoo Basel: Hundertfüßler. – Monographien der Entomologischen Gesellschaft Basel **3**: 238–244.
- Stöckli, E. & U. Schneppat (in prep.): Chilopoda species new for Switzerland.
- Strinati, P. (1966a): Faune cavernicole de la Suisse (1). – Annales de spéléologie **XXI**(1): 1–268.
- Strinati, P. (1966b): Faune cavernicole de la Suisse (2). – Annales de spéléologie **XXI**(2): 357–571.
- Verhoeff, K. W. (1896): Geophiliden und Scolopendriden aus Portugal und Tabelle europäischer *Geophilus* Arten. – Zoologischer Anzeiger **496 & 497**: 1–14.
- Verhoeff, K. W. (1902): 5. Über einige paläarktische Geophiliden. – Zoologischer Anzeiger **XXV**. Band, No. 659–684: 557–561.
- Verhoeff, K. W. (1925): Beiträge zur Kenntnis der Steinläufer, Lithobiiden. – Archiv für Naturgeschichte **91**: 124–158 + Taf.
- Verhoeff, K. W. (1928): Geophilomorphen-Beiträge und eine *Lithobius*-form. – Mitteilungen aus dem Zoologischen Museum in Berlin **14**: 229–286.
- Verhoeff, K. W. (1931): Über europäische *Cryptops*-Arten. – Zoologische Jahrbücher, Abteilung für Systematik, Ökologie und Geographie der Tiere **62**: 263–288 und figs.
- Verhoeff, K. W. (1934a): Beiträge zur Systematik und Geographie der Chilopoden. – Zoologische Jahrbücher, Abteilung für Systematik, Ökologie und Geographie der Tiere **66**(1/2): 1–112 & 6 Tafeln.
- Verhoeff, K. W. (1934b): Diplopoda, Symphyla, Pauropoda, Chilopoda. – In: Brohmer P., P. Ehrmann & G. Ulmer (eds): Die Tierwelt Mitteleuropas. – Quelle & Meyer, Leipzig **Vol. 2**, Lieferung 3: 1–120. *
- Verhoeff, K. W. (1935a): Quer durch den Schwarzwald und schweizerischen Jura (Chiemgau), Chilopoden. – Verhandlungen des naturwissenschaftlichen Vereins in Karlsruhe **31**: 181–208.
- Verhoeff, K. W. (1935b): Über *Scolioplanes* (Chilopoda). – Zoologischer Anzeiger **111**: 10–23.
- Verhoeff, K. W. (1937a): Über Chilopoden des alemannischen Gaues. – Bericht der naturforschenden Gesellschaft zu Freiburg **35**: 196–210.
- Verhoeff, K. W. (1937b): Chilopoden-Studien: Zur Kenntnis der Lithobiiden. – Archiv für Naturgeschichte N.F. **5**(2): 151–257.

- Verhoeff, K. W. (1938): Chilopoden-Studien zur Kenntnis der Epimorphen. – Zoologische Jahrbücher. Abteilung für Systematik, Ökologie und Geographie der Tiere **71**(1/2): 337–388 und figs.
- Verhoeff, K. W. (1940): Chilopoden von Kärnten und Tauern, ihre Beziehungen zu europäischen und mediterranen Ländern und über allgemeine geographische Verhältnisse – Abhandlungen der Preussischen Akademie der Wissenschaften, Mathematisch-naturwissenschaftliche Klasse **Nr. 5**: 1–39 & 2 Tafeln.
- Voigtländer, K. (2008): Diplopoden und Chilopoden der Alp Flix. – Jahresbericht der Naturforschenden Gesellschaft **114**: 81–82.
- Würmli, M. (1972a): Zur vergleichenden Synökologie und Faunistik der Kryptozoischen Makroarthropoden Mitteleuropas und Südtaliens. – Mitteilungen der Schweizerischen Entomologischen Gesellschaft **45**(1–3): 157–216.
- Würmli, M. (1972b): Myriapoda: Ein systematisches Verzeichnis aller auf österreichischem Gebiet festgestellten Tierarten: Chilopoda, Symphyla. – In: Attems, C. (ed.): *Catalogus Faunae Austriae* **XIa**: 1–16. *
- Zapparoli, M. (1979): Contributo alla conoscenza dei chilopodi delle Isole Toscane. – *Fragmenta Entomologica* **15**: 43–51. *
- Zapparoli, M. (2006): A catalogue of the centipedes (Chilopoda) of central Apennines (Italy). – *Bollettino del Museo Civico di Storia Naturale di Verona – Botanica, Zoologia* **30**: 165–273.