

Research Report (VIII. 2017)

Books:

2007 Worldwide Door Snails (Clausiliidae), recent and fossil. - Hackenheim (ConchBooks).

2017 Pulmonata, Stylommatophora, Helicoidea: systematics with comments. - Harxheim (ConchBooks).

Papers (see Publications):

General papers on the system of the Clausiliidae: 1963a, 1969d, 1978a, 1979a, 1982a, 1984b, 2005e, 2015d, books 2007, 2017.

Papers on

recent European Clausiliidae since 1963,
including taxonomy of

- Serrulininae: 1978b, 1994, 1995;
- Aloiinae:
 - *Albinaria*: 1977a, 1984a, 1993c, 1999a, 2004, 2014d, 2015b, 2017b;
 - *Alopiia*: 1979b, 1981c, 2008b, 2013e, 2015f, 2016a;
 - *Charpentieria*: 1963b;
 - *Cochlodina*: 1969a, b, c, 2007b;
 - *Cristataria*: 1971c;
 - *Delima*: 1969e;
 - *Delimini*: 2002b, 2013d, 2015b;
 - *Herilla*: 1971a;
 - *Leucostigma*: 2011a;
 - *Medora*: 1970a, 2009b, 2012a;
 - *Montenegrina* 2009a;
 - other groups of Aloiinae: 1972a, 1974d, 1977c;
- Mentissoideinae: 1975a, 1977c, 1994, 1995, 2004b, 2005b;
- Clausiliinae:
 - *Clausilia*: 1966a, 1990, 2002e, 2013b, 2013h [Nardi & Nordsieck];
 - *Macrogastrea*: 2003c, 2006a;
- Baleinae:
 - *Balea*, *Alinda*, *Laciniaria*: 2007e, 2008a;
 - other groups of Baleinae: 1973b, 1974d, 1975a, 1976a, 1977c;

non-European Clausiliidae:

- Garnieriinae: 2002g, 2005a, 2007c, 2010, 2011d, 2012b, c, d, 2014a, 2016c;
- Neniinae: 1999d, 2005c [Neubert & Nordsieck], 2005d, 2010;
- Phaedusinae: 1973a, 1974b, 1997b, 1998d, 2001c, 2002f, 2003a, b, 2005a, 2007c, 2011d, 2012b, d, 2013f, 2016c;

further articles on recent Clausiliidae on the website www.hnords.de

fossil Clausiliidae from western and central Europe: 1972c, 1974a, 1976b, 1978c, 1981a, b, 1985a, c, 2000a, 2002i, 2013c, g, 2014c, 2015d;

stratigraphy of Neogene deposits with clausiliid faunas: 1982b, 1990;

the systematic position of the Clausiliidae: 1985b, 1986b;

the system of the Helicoidea: 1986a, 1987, 1993b, 2002c;

the system of the Pulmonata: 1993a;

Chondrina: 1962, 1970b;

Cochlostoma: 2011b;

Marmorana: 2011c;

Cepaea: 2014b;

fossil Stylommatophora: 2014e;

fossil Helicoidea: 1986a, 2015a, 2016b.

Research results:

Main result of the research was the revision of the system of the Clausiliidae.

Basic results in this task were the following:

- Species differ by shell and genital characters; the differences in shell and genital morphology are not equally great in different groups (1963a, 1966a, 1969c, 1971c, 1990).
- Characters have different taxonomic value; the essential characters of different groups are not the same. Characters which formerly were regarded as essential often turned out to be convergences (1963a, 1969d, 1973a, 1978a, 1979a, 1998d, 2001c, 2002g, 2004b, Nordsieck & Neubert 2002).
- For the definition of higher taxa genital morphology is more important than shell morphology (1969d, 1978a, 1979a, 1994).
- Three character complexes formerly used as principal characters in classification originated more than once by parallel evolution:
 - G-type of clausilial apparatus (1963a, 1966a, 1969d, 1979a, 1982a, 1997c);
 - apostrophy (1978a, 1999c, 2002g);
 - transformed diverticulum of bursa copulatrix (1978a).

The contributions in the following fields of research go beyond the taxonomic work on Clausiliidae:

- Origin and evolution of the clausilial apparatus (1982a, book 2007).
- Distribution of the European Clausiliidae in time, their stratigraphic importance, faunal changes and successions (1981b, 1982b, 1990, 2000a, 2015d, books 2007, 2017).
- Stratigraphy of the Neogene deposits with fossil Clausiliidae and Triptychiidae = Filholiidae (1982b, 1990).
- Morphology of genital and excretory systems of the Stylommatophora, importance of certain genital organs for phylogeny and systematics (1966b, 1985b).
- Complexity of species subdivision into subspecies and speciation in Clausiliidae and resulting problems for taxonomy (1963b, 1966a, 1969e, 1970a, 1971a, 1973b, 1990, 1993c, 1999a, 2002e, 2002h, 2004a, book 2007).
- Species hybridization in Clausiliidae, its occurrence in different groups and resulting problems for species concept and taxonomy (1969e, 1979b, 1984a, 1997c, 1999a, 2004a, book 2007).
- Left-right-coiling in Alopia, copulation and hybridization of inversely coiled species (1978e, 1979b, 1986c, 2008b, 2016a).
- Mating biology of Clausiliidae (1969d, 2005f, book 2007).

Further contributions concern the following fields of research:

- Systematics of the Helicoidea (1987, 1993b, 2002c, book 2017), system of the fossil European Helicoidea and their distribution in time (1986a, 2014e, book 2017).
- Systematics and distribution of the Stylommatophora in space and time (1986b, 2014e, book 2017).
- Phylogeny and system of the Pulmonata (1993a, book 2017).

Research travels:

- Southern Alps (southern Austria, Italy from Lake of Lugano to Venezia Giulia): IV.1960, VIII.1960, IV.1961, IX.1961, IX.-X.1962, IX.1963, IV.1968, VIII.-IX.1980, IV.2001, V.2003, VII.-VIII.2012, VII.2013.
- Western Alps (Italy, France): IV.1971 (mainly Piedmont), VII.-VIII.1987 (Piedmont, Provence), VII.-VIII.1988 (Piedmont, Liguria).
- France: VII.-VIII.1982, VIII.-IX.1983 (mainly Languedoc and Provence), IV.2014 (Jura).
- Italy: VIII.-IX.1972 (Puglia), VI.-VII.2009, X.2009, III.-IV.2010 (central Italy), X.2010 (central and southern Italy), IV.2011, X. 2011, IV.2012 (southern Italy).
- Yugoslavia: IX.1961 (mainly Slovenia), IX.1963 (mainly Dalmatia), VIII.-IX.1965 (mainly Dalmatia), IV.1966 (Dalmatia), VIII.1966 (Croatia, Dalmatia, Bosnia, Hercegovina), III.-IV.1967 (mainly Dalmatia), VIII.1967 (mainly Croatia with Istria and Dalmatia), IV.1968 (Istria), VII.-VIII.1968 (Dalmatia, Hercegovina), III.-IV.1969 (Croatia, Dalmatia), VII.-VIII.1969 (mainly Crna Gora), III.-IV.1970 (mainly Dalmatia and Hercegovina), VIII.1970 (mainly Serbia and Macedonia), VIII.-IX.1971 (Serbia, Macedonia), VII.-VIII.1973 (Serbia), VII.-VIII.1974 (mainly Crna Gora and Macedonia), VII.-VIII.1975 (mainly Istria), IX.1985 (Slovenia), VIII.1986 (Dalmatia).
- Slovenia, Croatia: IV.2001 (Slovenia, Istria), V.-VI.2004, V.-VI.2005 (Slovenia), V.2006, IX.2006 (Slovenia, Croatia), V.2008, X. 2008, IV.-V.2009 (mainly Dalmatia), VII.2013 (Slovenia, Croatia), III.-IV.2015 (Dalmatia).
- Greece: VIII.-IX.1971 (Macedonia, Thessalia, Epirus), VIII.-IX.1972 (Epirus, central Greece, Euboea, Thessalia), VII.-VIII.1974 (Macedonia), X.-XI.1997, V.-VI.1998 (eastern Peloponnese).
- Bulgaria: VII.-VIII.1973 (Balkan, Rhodopes).
- Romania: VII.-VIII.1975 (Banat, southern Carpathians), VII.-VIII.1976, VII.-VIII.1977, VII.1978, VIII.-IX.1979, VIII.-IX.1980 (western, southern and eastern Carpathians), VIII.2014, VIII.2015, VII.2016 (southern Carpathians).
- Turkey: IV.1992, XII.1992-I.1993, XII.1993-I.1994, VII.-VIII.1994, V.-VI.1995 (southern Anatolia from provinces Denizli to Hatay).
- Collection trips in Germany (western and southern parts), Switzerland (northern part, Jura), France (Alsace), Belgium, Luxemburg and Great Britain (southern England).

