

## Earthworm species, a searchable database

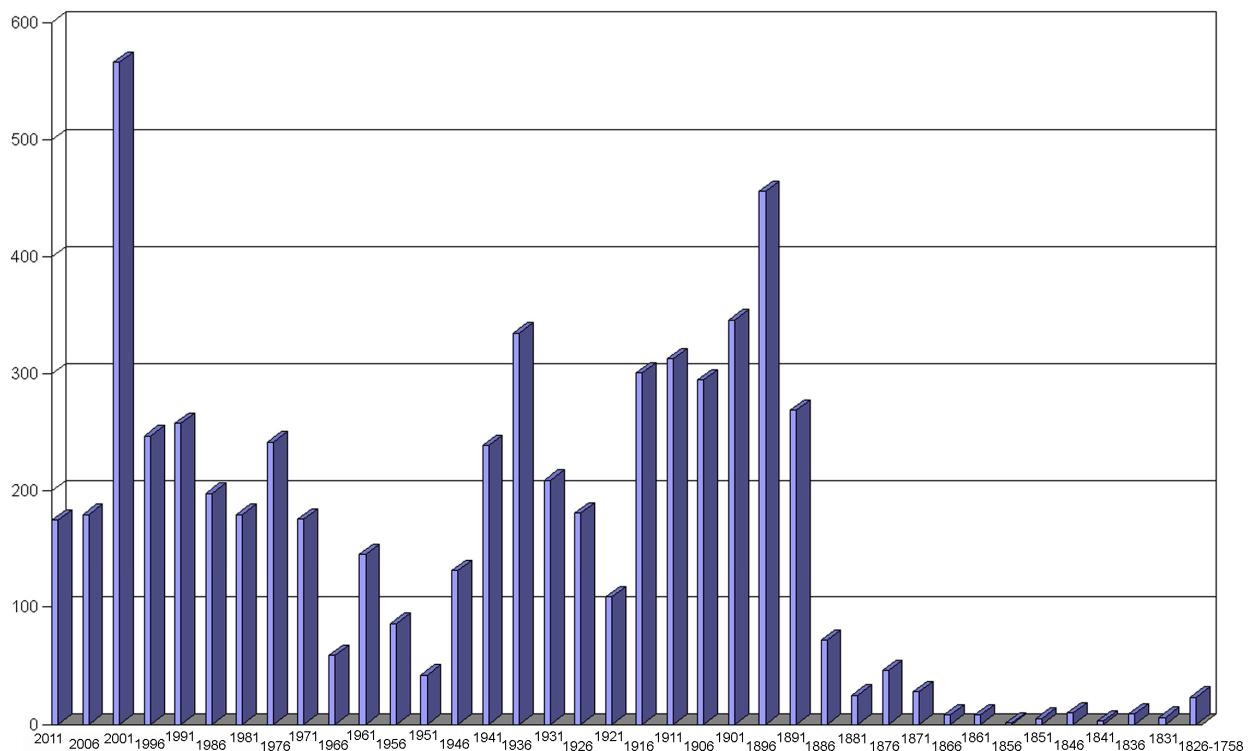
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**Abstract.** The first earthworm species named was *Lumbricus terrestris* Linnaeus, 1758. Since then, there were some 6000 earthworm (Oligochaeta: Megadrili) species names described, from which ca. 3000–3500 are valid. In order to help the orientation in such a huge amount of data a web-based database was created. Each record contains the basic data of the species names described; i.e. family, genus, specific epithet, author, year, reference to the original description and optionally the valid combination of the species name and deposition of type specimens. The database is searchable by every field mentioned and the resulted list can be arranged alphabetically.

**Keywords.** Oligochaeta, Megadrili, earthworms, species database.

The first earthworm named was *Lumbricus terrestris* Linnaeus, 1758. We had to wait until 1826 when the next work describing new earthworm species has been published (Savigny 1826) and by the 1870's the number of described earthworm species names hardly reached 100.

The intensive research on earthworms begun with the work of Rosa (1882), Beddard (1883), Benham (1886) and Michaelsen (1889), and, with more or less intensity, continues today, and now the described species names slightly exceed 6000 (Fig. 1).



**Figure 1.** Number of earthworm species described in five years' periods from 1826 to the present

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However, because of the possible large number of synonymous names the number of valid species is much lower. Zicsi (1982) analyzing the lumbricid species names described until 1971 concluded, that from the 561 names 271 were synonyms and only 290 (51.7%) valid. If we accept that the ratio of the synonymous names is more or less the same in other families as well then the valid number of earthworm species can be estimated between 3000 and 3500.

The last comprehensive book on earthworms (Michaelsen 1900) contains only *ca.* 1250 species names, therefore in order to help the orientation among the described earthworm species Reynolds and Cook (1976, 1981, 1989, 1992) published the

Nomenclatura Oligochaetologica series. In the meantime, the present author, together with Prof. András Zicsi, working on a large earthworm material collected in West Africa, realized the need of an up to date list of the described species in the different earthworm families. Continuing the work done on lumbricid earthworms (Zicsi 1982) we have started to set up a cardfile system of the earthworm species names described in the other families as well.

The paper-based cardfile-system was first converted to an MS FoxPro database and used on personal computers, and later on it was made online and available to the public on the web site <http://earthworm.uw.hu> (Fig. 2).

Earthworm species. A searchable database\*

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Family:   
 Genus:   
 Species:   
 Author:   
 Year:   
 Literature:   
 Valid genus:   
 Valid species:

\* This database was compiled with a support from OTKA No. 42745

This database is updated continuously but far not complete and naturally contains many mistakes. USE IT AT YOUR OWN RISK

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Found: 5

▲ FAMILY ▼	▲ GENUS ▼	▲ SPECIES ▼	▲ AUTHOR ▼	▲ YEAR ▼	▲ LITERATURE ▼	▲ VALID_GENUS ▼	▲ VALID_SPECIES ▼	▲ TYPE ▼	▲ REFERENCE ▼
Megascolecidae	Perichaeta	rubra	Spencer	1893	Proc.Roy.Soc.Vict.5:8	Perichaeta	rubra	-	-
Lumbricidae	Allolobophora	rubra	Bretscher	1900	Rev.suisse.Zool.8:454	Allolobophoridaella	eiseni	-	-
Ocnerodrilidae	Kernia	rubra	Friend	1916	J.Roy.Micros.Soc.1916:147	Kernia	rubra	-	-
Acanthodrilidae	Hoplochaetina	rubra	Lee	1959	Bull.N.Z.Dept.Sci.Industr.Res.no.130:84	Hoplochaetina	rubra	-	-
Lumbricidae	Allolobophora	rubra	Vedovini	1969	Bull.Soc.Zool.Fr.92:793	Aporrectodea	rubicunda	-	-

**Figure 2.** Screen-shot of the database's home-page

The database presently consists of 6021 name records and is not considered complete. It might contain several duplicated records and misspellings. The valid name field is the most incomplete

and it gives only an orientation on the present combination of the names. It is more reliable in case of Lumbricidae and Acanthodrilidae (Benhamiinae) and absolutely not in other families.

The database can be searched by every field i.e. family, genus, specific epithet, author, year, reference to the original description and optionally the valid combination of the species name and deposition of type specimens. By simple keywords the records beginning with the given keyword can be selected. If one wants to find all records containing the key-word a percent sign (%) should be used before and after the key-word. For example searching the term %Csuzdi% in the author field will select all the species names described by Csuzdi, Zicsi and Csuzdi or Csuzdi and Pavlíček etc. Similarly searching %rubra% in the species field will result in listing *Perichaeta rubra* Spencer, 1893; *Allolobophora rubra* Bretschger, 1900; *Kerria rubra* Friend, 1916; *Hoplochaetina rubra* Lee, 1959 and *Allolobophora rubra* Vedovini, 1969.

The database is updated continuously and the valid name field is also maintained. However, the lack of up-to date revisions of such huge families like Megascolecidae or Lumbricidae makes this task very difficult. E. g. Qiu & Bouché (1998) listed 63 lumbricid genera and subgenera many of them were of doubted validity (Csuzdi & Zicsi 2003) and surely poly- or paraphyletic (Briones *et al.* 2009). Therefore in most cases the valid names presented represent the present author's view of earthworm taxonomy, however, all comments from the oligochaetologist community are most welcome.

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