

## TERRESTRIAL OLIGOCHAETA FROM THE NATURE CONSERVATION AREAS OF BÁTORLIGET (NE HUNGARY)

A. ZICSI, K. DÓZSA-FARKAS and CS. CSUZDI

On the relatively small nature conservation area of Bátorliget the occurrence of 23 enchytraeid species and 9 lumbricid species could be established. Three of the enchytraeid species proved to be new for the fauna of Hungary: *Achaeta camerani* (Cognetti, 1899), *Enchytraeus bulbosus* Nielsen et Christensen, 1963 and *Henlea similis* Nielsen et Christensen, 1959. The lumbricid species *Octodrilus compromissus* Zicsi et Pop, 1984 was not reported till now from Hungary in the literature.

The marshland of the nature conservation area of Bátorliget, belonging to the region of Nyírség (NE Hungary) awakened the attention of Hungarian botanists and zoologists already since several decades. In the years of 1948-1949 systematical researches on the fauna of Bátorliget were carried out and the results of these investigations were summarized in the book "Bátorliget élővilága" (The living world of Bátorliget). Neither in this work, nor in the zoological publications listed in it (see p. 59) could be found any references on the occurrence of terrestrial Oligochaeta in this area, although in former collectings attention was given to the soil fauna, too. Most probably it is due to this circumstance that both of the first two authors of this paper have not given any special attention to this region during their collecting activities of long years in Hungary. Investigations carried out in the spring of 1991 brought surprisingly the evidence of a considerably rich Oligochaeta fauna with some interesting species, the detailed elaboration of which is given in the following.

List of collecting localities in the nature conservation area of Bátorliget

1. Wet meadow. Drying peat soil (Saprist).
2. Willow swamp, marsh, bog. Under water area.
3. Birch swamp. Under water area.
4. Willow swamp, marsh, bog. Under water area.
5. Oak-ash-elm gallery forest. Peaty meadow soil (Haplaquoll).
6. Wet meadow. Peaty meadow soil.
7. Sandy pedunculate oak-silver lime forest. Humic sandy soil (Ustipsamment).
8. Oak-ash-elm gallery forest. Meadow soil (Calciaquoll).
9. Oak-ash-elm gallery forest. Meadow soil (Calciaquoll).
10. Wet meadow. Peaty meadow soil (Haplaquoll).
11. Meadow. Meadow soil (Calciaquoll).
12. Oak-ash-elm gallery forest. Meadow soil (Calciaquoll).

13. Oak-ash-elm gallery forest. Meadow soil (Calciaquoll).
14. Meadow. Humic sandy soil (Ustipsamment).
15. Sandy pedunculate oak-silver lime forest. Humic sandy soil (Ustipsamment).
16. Fényi-erdő, oak gallery forest.
17. Fényi-erdő, oak gallery forest.
18. Fényi-erdő, oak gallery forest.
19. Fényi-erdő, oak gallery forest.
20. Fényi-erdő, alder forest patch.

On the localities 1-14 and 18 collectings were carried out on the 8-9th April, 1991 by T. Nell, J. Nagy, Cs. Csuzdi and A. Zicsi, on the localities 15, 19 and 20 collectings were made on the 3rd June, 1988 by S. Mahunka.

## LIST OF SPECIES

### ENCHYTRAEIDAE Udekem, 1855

#### ACHAETA Vejdovsky, 1877

*Achaeta camerani* (Cognetti, 1899) — Locality: 19. — The species is widely distributed in Europe. New for the fauna of Hungary.

*Achaeta eiseni* Vejdovsky, 1877 — Localities: 13, 19. — Widely spread in whole Europe. In Hungary known until now from forest soils and from the cave of "Baradla" (Aggtelek, NE Hungary).

#### BUCHHOLZIA Michaelsen, 1887

*Buchholzia* sp., juv. — Localities: 8, 9, 13, 19. — The identification was possible only on the genus level, because only juvenile specimens were found in the samples. The species belonging to this genus are reproducing during the whole year by fragmentation, and they become sexually mature and lay cocoons only once a year.

#### CERNOSVITTOVIELLA Nielsen et Christensen, 1959

*Cernosvitoviella minor* Dózsa-Farkas, 1990 — Localities: 1, 2, 3. — All the species of the genus occur in limnical environments or in very wet soils. This species was described from the *Sphagnum*-bog of "Bábtava" at Csaroda, and from the floating moor of Szigetcsép (Dózsa-Farkas 1990). Later it was found in numerous localities on the northern shore of lake Balaton, in wet reed debris and on root fragments of reed floating on the water. Thus, it is presumably widely spread in Hungary on riverside and lakeside environments, in bogs and moors.

*Cernosvitoviella aggtelekiensis* Dózsa-Farkas, 1970 — Localities: 1, 3. — This species was found until now only in the brookside samples of the cave "Baradla" of Aggtelek.

#### COGNETTIA Nielsen et Christensen, 1959

*Cognettia glandulosa* ? (Michaelsen, 1888), juv. — Localities: 2, 3. — The species of the genus *Cognettia*, similarly to those of the genus *Buchholzia*, belong to the rare enchytraeid species reproducing by fragmentation during all over the year, and becoming sexually mature only for a short period, mostly in autumn. Regarding other characteristic features, the immature specimens found in our samples are most probably representatives of *C. glandulosa*, marked

therefore with the sign of "?". The species occurs mostly in pine forests and moors of North and West Europe. In Hungary it is known from pine forests (near Kőszeg, W Hungary, and from the Mátra Mountains)(Dózsa-Farkas 1987), from some *Sphagnum*-bogs (Dózsa-Farkas 1990) and from the shores of lake Balaton, on reed stumps standing in the water, and in the wet soil of lakeside reeds.

#### ENCHYTRAEUS Henle, 1837

*Enchytraeus buchholzi* Vejdovsky, 1879 — Localities: 19, 20. — A cosmopolite species, occurring in wetter and drier soils alike.

*Enchytraeus bulbosus* Nielsen et Christensen, 1963 — Locality: 8. — South-European species. New for the fauna of Hungary. Found recently also in a hornbeam-oak forest of the Cserhát Mountains, at Szendehely-Katalinpuszta.

*Enchytraeus minutus* Nielsen et Christensen, 1961 — Localities: 1, 3, 8, 9. — Widely distributed in Europe in wetter soils. In Hungary the species was found on the shores of lake Balaton, in the *Sphagnum*-bog "Bábtava" of Csaroda, and in the floating moor of Szigetcsép. In humid environments often occurring together with the species *E. buchholzi*, but always in the manner that *E. minutus* is dominant on the wetter places and *E. buchholzi* on the drier parts.

#### ENCHYTRONIA Nielsen et Christensen, 1959

*Enchytronia parva* Nielsen et Christensen, 1959 — Locality: 19. — Widely spread in whole Europe and in Hungary in forest soils.

#### FRIDERICIA Michaelsen, 1889

*Fridericia bisetosa* (Levinsen, 1884) — Locality: 19. — A very frequent species, widely spread all over Europe and Hungary.

*Fridericia bulbosa* (Rosa, 1887) — Localities: 1, 20. — Cosmopolitan species, frequent in Hungary. Because of its wide occurrence all over the world some taxonomical problems of the species have yet to be clarified. The specimens found in our samples correspond in all respects to the description given by Nielsen and Christensen (1959).

*Fridericia bulboides* Nielsen et Christensen, 1959 — Localities: 3, 9, 19. — A frequent species, occurring widely in whole Europe and Hungary.

*Fridericia galba* (Hoffmeister, 1843) — Localities: 8, 13. — Very common in Europe and Hungary, most frequent in forest soils.

*Fridericia maculata* Issel, 1905 — Localities: 8, 20. — Abundant in many habitats in whole Europe and in Hungary.

*Fridericia perrieri* (Vejdovsky, 1877) — Localities: 1, 3, 9. — The species occurs in Europe (also in Hungary) and in North Africa in wet places.

*Fridericia ratzell* (Eisen, 1872) — Localities: 13, 16, 19, 20. — Widely distributed in Europe. In Hungary the largest species of our deciduous and coniferous forests.

#### HENLEA Michaelsen, 1889

*Henlea perpusilla* Friend, 1911 — Localities: 2, 3, 8, 9. — Abundant in many habitats all over Europe and Hungary.

*Henlea nasuta* (Eisen, 1878) — Localities: 1, 2, 9, 13, 16. — A large species, distributed in whole Europe and in Siberia; very frequent in Hungary.

*Henlea ventriculosa* (Udekem, 1854) — Localities: 1, 2, 3. — Cosmopolitan species.

*Henlea similis* Nielsen et Christensen, 1959 — Localities: 8, 13. — In Europe the species is of northern distribution, it occurs in masses in Norwegian pine forests (Klungland 1981). New for the fauna of Hungary.

#### MARIONINA Michaelsen, 1889

*Marionina argentea* Michaelsen, 1889 — Localities: 1, 2, 3, 9. — Frequent in Europe and in Hungary too, on river- and lakeside places, in swamps and also in wet forest soils.

#### STERCUTUS Michaelsen, 1888

*Stercutus niveus* Michaelsen, 1888 — Locality: 19. — Occurring in many places in Europe, but exclusively in the soil of deciduous forests. Its extremely interesting reproduction cycle, different from all other enchytraeid species, was revealed by Dózsa-Farkas (1973).

Our researches on the enchytraeid fauna of Bátorliget resulted in a list of 23 species, belonging to 10 genera. Three species: *Achaeta camerani*, *Enchytraeus bulbosus* and *Henlea similis* proved to be new for the fauna of Hungary. Richest in species was the wet meadow (1) and the birch swamp (3) with 8 and 9 species, respectively, and the oak stand of Fényi-erdő (19) with similarly 8 species. Naturally, the composition of species was quite different, on the meadow and in the birch swamp species typically preferring humid, very wet places, were found, in the oak stand already characteristic species of drier forests appeared like *Stercutus niveus* and *Enchytronia parva*. In wetter places mostly *Henlea perpusilla*, *Cognettia glandulosa* ? juv. and *Cernovitoviella* species were dominant. On the meadow (1) *Enchytraeus minutus* and *Henlea ventriculosa* proved to be most abundant. In the oak-ash-elm gallery forests (8, 13) *Buchholzia* sp. juveniles were found in greater quantities.

#### LUMBRICIDAE Rafinesque-Schmaltz, 1815

##### ALLOLOBOPHORA Eisen, 1874

*Allolobophora calliginosa* (Savigny, 1826) — Locality: 14: 1 ex. — It is interesting that this peregrine species could be found only in a single locality, and even in this place only near to the guest-house.

*Allolobophora rosea* (Savigny, 1826) — Localities: 1: 11 ex., 5: 5 + 3 juv. ex., 6: 11 ex., 7: 5 ex., 8: 3 ex., 10: 2 ex., 11: 6 ex., 12: 2 ex., 13: 2 ex., 14: 4 ex., 16: 6 ex., 17: 2 ex., 18: 14 ex. — As it could be expected this peregrine species widely distributed in Hungary (Zicsi 1968, 1990) was frequent all over the area in all soil types and in all plant associations.

*Allolobophora dubiosa* (Örley, 1881) — Localities: 1: 1 ex., 4: 1 ex. — The species occurring in neighbouring countries too, is typical for humid environments and partly lives also under water (Zicsi 1963, 1983). It could be recognized by its big excrements in other places of the nature conservation area. These were flooded by water, therefore here the collecting of these animals could not be carried out.

*Allolobophora leoni* Michaelsen, 1891 — Localities: 5: 1 ex., 6: 3 + 10 juv. ex., 7: 1 ex., 12: 2 + 1 juv. ex., 13: 2 ex. — This species, similarly bound to very humid environments, most of all to meadow soils, was reported from many parts of Hungary (Zicsi 1968, 1990). According to the opinion of Omodeo (1952) and Zajonc (1965) it belongs to the Alpine-Illyrian-Carpathian type. The occurrence of this species in Italy has yet to be verified on Italian material.

*Allobophora georgii* Michaelsen, 1890 — Localities: 7: 5 ex., 8: 1 + 1 juv. ex., 10: 1 ex., 18: 2 ex. — Similarly belongs to the Alpine-Ilyrian-Carpathian type, and is distributed from Spain to Greece. In Hungary it was reported from humid environments (Zicsi 1968, 1990).

#### DENDROBAENA Eisen, 1884

*Dendrobaena octaedra* (Savigny, 1826) — Localities: 5: 1 ex., 7: 10 ex., 14: 1 ex., 15: 1 ex., 16: 3 ex., 17: 4 ex.

#### DENDRODRILUS Omodeo, 1956

*Dendrodrilus rubidus rubidus* (Savigny, 1826) — Localities: 15: 1 ex., 16: 4 ex. — Most curiously only these two litter decomposing species were present in these biotopes, which are both peregrine species and can be found everywhere.

#### OCTODRILUS Omodeo, 1956

*Octodrilus transpadanus* (Rosa, 1884) — Localities: 1: 4 + 27 juv. ex., 6: 6 + 1 juv. ex., 7: 3 + 2 juv. ex., 13: 1 ex., 16: 1 ex. — This species, regarded by Omodeo (1952) as belonging to the Caucasian-Alpine-Syrian-Agaissian type, is very frequent in Hungary and partly also prefers very wet biotopes. A taxonomical revision of the more than 2000 specimens collected in Hungary would give information on the validity of the forms relegated to this species.

*Octodrilus compromissus* Zicsi et Pop, 1984 Syn. n. *Octodrilus c. minimus* V. V. Pop, 1989, Syn. *Octolasion lissaense* (Michaelsen) Pop, 1948, 1964, *Octolasion (Octodrilus) lissaense* (Michaelsen) part. Zicsi, 1968 — Localities: 1: 6 ex., 5: 1 ex., 6: 2 ex., 15: 1 ex. — *Octodrilus compromissus* Zicsi et Pop, 1984 was reported in the original description only from Romania. When identifying the present material, the *Octodrilus lissaensis* material of the Lumbricidae collection of our Institute originating from Hungary, was revised. We could establish that a part of this material ought to be relegated to the species *Octodrilus compromissus*, described by Zicsi and Pop. As it may be seen from the above-mentioned references, this species is widely distributed besides Hungary also in Romania (Com. Banat, Maramures, Moldova and Muntenia). From Hungary until now it was reported only from the Sátor Mountains (Füzér, Kókapu and Kishuta; see Zicsi 1968, p. 144). New, unpublished data from Hungary are the followings: Sátor Mountains Z/11625. 2 ex., Rostalló, 20.6.1988, leg. Csuzdi; Kemence-patak Z/11639. 1 ex., 8.10.1987, leg. Cs. Csuzdi; Kishuta Z/11686. 5 ex., Kókapu, Z/11692. 2 ex., 13.5.1985, leg. Cs. Csuzdi.

As it can be established from the localities listed above, this species new for the fauna of Hungary was known until now only from the most north-eastern part of the country, from a mountainous region. Its occurrence in the nature conservation area of Bátorliget, in which it shows up in biotopes similar to those where it was found in the Sátor Mountains, represent the most southern occurrence of this species in Hungary.

#### REFERENCES

- Dózsa-Farkas, K. (1970): The description of three new species and some data to the Enchytraeid fauna of the Baradla Cave Hungary. — Opusc. Zool. Budapest, 10(2): 241-251.
- Dózsa-Farkas, K. (1973): Ananeosis, a new phenomenon in the life-history of the enchytraeids (Oligochaeta). — Opusc. Zool. Budapest, 12(1-2): 43-55.

- Dózsa-Farkas, K. (1987): Über den Enchytraeidenbesatz in Nadelholzwäldern Ungarns. — In: Striganova, B. R. (ed.): Soil fauna and soil fertility (Proc. 9th Int. Soil Zool. Coloq., Moscow), pp. 312-316.
- Dózsa-Farkas, K. (1990): New Enchytraeid species from *Sphagnum*-bogs of Hungary (Oligochaeta: Enchytraeidae). — Acta zool. hung., 36: 265-274.
- Klungland, T. (1981): Abundance fluctuations of enchytraeids in two high-mountain localities in Southern Norway. — Pedobiologia 22: 112-140.
- Nielsen, C. O. and Christensen, B. (1959): The Enchytraeidae. Critical revision and taxonomy of European species. (Studies on Enchytraeidae VII.) — Natura Jutlandica, 8-9: 1-160.
- Omodeo, P. (1952): Particolarità della zoogeografia dei Lumbrichi. — Boll. Zool., 19: 349-369.
- Pop, V. (1948): Lumbricidele din Romania. — Ana. Acad. Rep. Pop. Rom., Sect. știint. Geol. Geogr. Biol. Ser. A Mem. 9, 1: 383-506.
- Pop, V. (1964): Noi date faunistice și sistematice asupra lumbricidelor (Oligochaeta) din Romania. — Studia Univ. Babeș-Bolyai, Cluj, Ser. Biol., 2: 107-116.
- Pop, V. V. (1989): Studies on the Genus *Octodrilus* Omodeo, 1956 (Oligochaeta, Lumbricidae) from the Apușeni Mountains (The Carpathians Romania). I. Description of new taxa. — Trav. Mus. Hist. nat. "Grigore Antipa", 30: 103-221.
- Székesy, V. (1953): Bátorliget élővilága. [The flora and fauna of Bátorliget.] — Akadémiai Kiadó, Budapest, pp. 486.
- Zajonc, I. (1965): Beitrag zur Frage der endemischen Arten von Regenwürmern (Oligochaeta: Lumbricidae) im Karpatengebiet. — Informationsbericht der Landwirtschaftlichen Hochschule, Nitra, 1: 73-87.
- Zicsi, A. (1963): Beobachtungen über die Lebensweise des Regenwurmes *Allolobophora dubiosa* (Örley, 1880). — Acta zool. hung., 9: 219-236.
- Zicsi, A. (1968): Ein zusammenfassendes Verbreitungsbild der Regenwürmer auf Grund der Boden- und Vegetationsverhältnisse Ungarns. — Opusc. Zool. Budapest, 8: 99-164.
- Zicsi, A. (1983): The earthworm fauna of the Hortobágy National Park. — In: Mahunka, S. (ed.): The fauna of the Hortobágy National Park. Akadémiai Kiadó, Budapest, pp. 47-49.
- Zicsi, A. (1990): Über die Regenwürmer Ungarns (Oligochaeta: Lumbricidae) mit Bestimmungstabellen der Arten. — Opusc. Zool. Budapest, 24: 1-39.
- Zicsi, A. and Pop, V. V. (1984): Neue Regenwürmer aus Rumänien (Oligochaeta: Lumbricidae). — Acta zool. hung. 30: 241-248.