

First earthworm (Oligochaeta: Lumbricidae) record from Sithonia Peninsula (Greece)

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Abstract. The paper deals with the earthworm diversity of Chalkidiki Peninsula, Greece. *Aporrectodea longa* (Ude, 1885) proved to be new species for the fauna of Greece and also represents the first earthworm record from Sithonia Peninsula. According to the literature and authors data 14 earthworm taxa are registered from the explored region. The paper underlines lumbricid richness of Chalkidiki Peninsula and provides information about the zoogeographical position of the earthworm species present.

Key words: earthworms, Greece, Lumbricidae.

Introduction

Chalkidiki is a peninsula in Northern Greece. It includes three smaller peninsulas: Kassandra, Sithonia, and Mount Athos. Sithonia, also known as Longos, is located south of the central part of Chalkidiki. The Kassandra Peninsula lies to the west and the Mount Athos Peninsula at the east.

Sithonia is surrounded by the Singitic Gulf to the west and the Toronean Gulf to the east. The mountain Itamos or Dragoudelis is in the center of the peninsula.

The earthworm fauna of Greece is well explored. Michaelsen (1902) launched researches in the country. His work was continued by Černovitov (1934), Tzelepis (1943), Karaman (1972) and Zicsi (1973). Michalis had the major contribution of exploration of the earthworm fauna of Greece (1975, 1977, 1982, 1995). Zicsi & Michalis (1981) summarized the earthworm knowledge of the country. Recently, Szederjesi & Csuzdi (2012) and Szederjesi (2015) added new species and records to the earthworm fauna of Greece.

Materials and Methods

The field investigations were carried out during the summer of 2016. Earthworms were collected by the diluted formaldehyde method (Raw 1959) complemented with digging and hand-sorting. The specimens were killed in 96% ethanol, fixed in 4% formalin solution and in 96% ethanol, then transferred into 75% ethanol. The material was deposited in the Institute of Soil Science, Agrotechnologies and Plant Protection “N. Poushkarov”, Sofia, Bulgaria in the private earthworm collection of Hristo Valchovski (PCHV).

Results and Discussion

Class Oligochaeta

Family Lumbricidae Rafinesque-Schmaltz, 1815

Genus Aporrectodea Örley, 1885

Aporrectodea longa (Ude, 1885)

Allolobophora longa Ude, 1885: 136.

Aporrectodea (Aporrectodea) longa: Mršić & Šapkarev 1988: 29.

Aporrectodea longa: Valchovski 2014: 3.

Material examined: PCHV/80, six ex., Chalkidiki, Sithonia Peninsula, Porto Koufo, meadow near a lake southeast of the village, 4 m a.s.l., 39° 57' 25N 23° 55' 55E, 16.06. 2016, leg. Hristo Valchovski.

Remark. New for the earthworm fauna of Greece. This is the first finding of *Ap. longa* from Greece. The records of Karaman (1972) and Michalis (1972) were misidentifications of *Ap. caliginosa trapezoides*.

The earthworm fauna of Chalkidiki Peninsula is well known except the Sithonia Peninsula. Many lumbricid records were published from Athos Peninsula by Michalis (1977). Earthworm data from Kassandra Peninsula and the Northern part of Chalkidiki Peninsula were presented by Zicsi & Michalis (1981) and Michalis (1982). On the basis of present and literature data we establish list of earthworm species with zoogeographical types from Chalkidiki Peninsula: *Aporrectodea longa* (Ude, 1885), *Aporrectodea rosea* (Savigny, 1826), *Aporrectodea trapezoides* (Dugès, 1828), *Dendrobaena alpina* (Rosa, 1884), *Dendrobaena attemsi* (Michaelsen, 1902), *Dendrobaena auriculata* (Rosa, 1897), *Dendrobaena byblica* (Rosa, 1893), *Dendrobaena michalisi* (Karaman, 1972), *Dendrobaena veneta* (Rosa, 1886), *Eisenia fetida* (Savigny, 1826), *Eiseniella tetraedra* (Savigny, 1826), *Octodrilus complanatus* (Dugès, 1828), *Octodrilus transpadanus* (Rosa, 1884), *Octolasion lacteum* (Örley, 1881).

The earthworm fauna of Chalkidiki Peninsula is dominated by the peregrine lumbricids. From the 14 species 7 taxa (50%) belong to the Peregrine distribution type: *A. longa*, *A. rosea*, *A. trapezoides*, *D. veneta*, *E. fetida*, *Ei. tetraedra* and *O. lacteum*. Mediterranean species take part with two taxa = 14.29% - *D. byblica* and *Oc. complanatus*. The Balkanic-Alpine *D. alpina*, *D. attemsi* (2 taxa = 14.29%) and Eastern-Alpine *D. auriculata* (1 taxon = 7.14%) species are typical European elements. The Trans-Aegean *Oc. transpadanus* and Endemic species *D. michalisi* (1-1 taxon= 7.14-7.14%) are less numerous.

References

- Černosvitov, L. (1934) Die Lumbriciden Bulgariens. *Mitteilungen der Königlichen Naturwissenschaftlichen Institute Sophia*, 7: 71-78.
- Dugès, A. (1828) Recherche sur la circulation, la respiration, et la reproduction des Annélides sétigères abranchedes. *Annales des Sciences Naturelles Paris*, 15, 284-336.
- Karaman, S. (1972) Beitrag zur Kenntnis der Lumbricidenfauna von Griechenland. *Fragmenta Balcanica Skopje*, 9(11): 109-115.
- Michaelsen, W. (1891) Oligochaeten des Naturhistorischen Museums in Hamburg IV. *Jahrbuch der Hamburgischen Wissenschaftlichen Anstalten*, 8: 1-42.
- Michaelsen, W. (1902) Neue Oligochaeten und neue Fundorte alt-bekannter. *Mitteilungen aus dem Naturhistorischen Museum in Hamburg*, 19: 3-53.
- Michalis, K. (1975) Neue Angaben zur Fauna der Oligochaeten von Mazedonien. *Scientific Annals, Faculty of Physics and Mathematics, University of Thessaloniki*, 15: 201-211.

- Michalis, K. (1977) Die Oligochaetenfauna der Halbinsel von Athos (Chalkidiki). *Scientific Annals, Faculty of Physics and Mathematics, University of Thessaloniki*, 17: 285–298.
- Michalis, K. (1982) Katalog der Oligochaetenfauna Griechenlands. *Biologia Gallo-Hellenica*, 9: 343-362.
- Michalis, K. (1995) Oligochaeten – Funde aus Thessalien (Griechenland) nebst Beschreibung der Art *Octodrilus peleensis* sp. nov. *Bios (Macedonia, Greece)*, 3: 15-20.
- Mršić, N. & Šapkarev, J. (1988) Revision of the genus *Allolobophora* Eisen, 1874 (sensu Pop 1941) (Lumbricidae, Oligochaeta). *Acta Musei Macedonici Scientiarum Naturalium*, 19: 1-38.
- Örley, L. (1881) A magyarországi Oligochaeták faunája. I. Terricolae. *Mathematikai és Természettudományok Köréből*, 16: 562-611.
- Örley, L. (1885) A palaearktikus övben élő Terrikoláknak revíziója és elterjedése. *Értekezések a Természettudományok Köréből*, 15: 1-34.
- Rafinesque-Schmaltz, C. (1815) *Analyse de la Nature ou tableau de l'univers et des corps organisés*. Palermo, 223 pp.
- Raw, F. (1959) Estimating earthworm population by using formalin. *Nature*, 184: 1661-1662.
- Rosa, D. (1884) *Lumbricidi del Piemonte*. Unione Tipografico- Editrice, Torino, 55 pp.
- Rosa, D. (1886) Note sui lombrici del Veneto. *Atti del Reale Istituto Veneto di Scienze*, 4: 673-687.
- Rosa, D. (1893) Viaggio del Dr. E. Festa in Palestina, nel Libano e regioni vicin.. II. Lumbricidi. *Bolletino dei Musei di Zoologia ed Anatomia Comparata della Reale Università di Torino*, 8 (160): 1-14.
- Rosa, D. (1897) Nuovi lombrichi dell'Europa orientale (Seconda serie). *Bolletino dei Musei di Zoologia ed Anatomia Comparata della Reale Università di Torino*, 12 (269): 1-5.
- Rosa, D. (1901) Un lombrico cavernicolo. *Atti della Società dei Naturalisti e Matematici di Modena*, 4: 36-39.
- Savigny, J.C. (1826) Analyse des Travaux de l'Académie royale des Sciences, pendant l'année 1821, partie physique. In: G. Cuvier (Ed.), *Mémoires de l'Académie des Sciences de l'Institut de France*, Paris, 5: 176-184.
- Szedzerjesi, T. (2015) New earthworm records from various parts of Greece (Oligochaeta: Lumbricidae, Acanthodrilidae, Megascolecidae, Ocnerodrilidae). *Opuscula Zoologica Budapest*, 46(2): 143-152.
- Szedzerjesi, T. & Csuzdi, Cs. (2012) New and little known earthworm species from Greece (Oligochaeta: Lumbricidae, Acanthodrilidae). *Zootaxa*, 3304: 25-42.
- Tzelepis, N.D. (1943) *Symvoli is tin meletin ton Oligochaeton tis Ellados*. Athen, pp. 60.
- Ude, H. (1885) Ueber die Rückenporen der terricolen Oligochaeten, nebst Beiträgen zur Histologie des Leibschlauches und zur Systematik der Lumbriciden. *Zeitschrift für Wissenschaftliche Zoologie*, 43: 87-143.
- Valchovski, H. (2014) Diversity of earthworms (Oligochaeta: Lumbricidae) in Sofia Plain, Bulgaria. *Zoonotes*, 59: 1-9.
- Zicsi, A. (1973) Regenwürmer (Oligochaeta: Lumbricidae) aus Griechenland. *Opuscula Zoologica Budapest*, 12: 99-103.
- Zicsi, A. & Michalis, K. (1981) Übersicht der Regenwurm-fauna Griechenlands (Oligochaeta: Lumbricidae). *Acta Zoologica Academiae Scientiarum Hungaricae*, 27: 239-264.