

***Criodrilus lacuum* HOFFMEISTER, 1845 (*Oligochaeta*: *Criodrilidae*) – earthworm species new to Greece**

K. MICHALIS

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Abstract. Among the numerous members of the *Oligochaeta* from northern Greece there were also some specimens of *Criodrilus lacuum* HOFFMEISTER, 1845 found at 2 localities in the Thessaloniki and Serrae Provinces. This species, new to Greece, occurs in very damp soil with dense vegetation. A new description of this species includes its both external and internal features.

Key words: *Oligochaeta*, *Criodrilus lacuum*, Greece.

MICHALIS K., Aristoteleio University of Thessaloniki, Department of Zoology, Box 134, GR-54006 Thessaloniki, Greece.

I. INTRODUCTION

During the faunistic and the ecological studies carried out in various regions of northern Greece, especially in the Thessaloniki, Kilkis and Kozani Provinces, many specimens of the *Oligochaeta* from the families *Lumbricidae* and *Acanthofrilidae* and some specimens from the family *Criodrilidae* were collected and identified. The family *Criodrilidae* contains only one species, *Criodrilus lacuum* HOFFMEISTER, 1845. It is the first time that this species has been found in Greece. Its presence in this country is very interesting.

Various authors write about the presence of *Criodrilus lacuum* in Syria, Palestine, Lebanon, South Russia, Hungary, Austria, Germany and Italy (MICHAELSEN 1900). POP (1949) reports it from Rumania and WILCKE (1968), in addition to the above-mentioned regions, from the Ukraine, Czech and the Balkans. This last author, however, refers to the Balkans without giving exact places of collection. PEREL (1979) recorded this species in various regions of the former U. S. S. R., i. e. in the Ukraine, Moldovia and Latvia. The specimens of *Criodrilus lacuum* taken in various parts of Hungary are stored in the rich collections of the Laboratory of Systematics and Ecology, the Eötvös Lorand University in Budapest; its director, Prof. A. ZICSI, is a well-known oligochaetologist. During my

stay at that Laboratory I had the opportunity to compare my specimens with those in the possession of the Institute.

I wish to express my sincere thanks to Prof. A. ZICSI of the Eötvös Lorand University in Budapest for his willing help with identifying my specimens of this species. I also thank Dr Cs. CAUZDI, Prof. A. ZICSI's co-worker, for his help with the photographing of musculature.

II. MATERIALS AND METHODS

Materials were collected by digging up at various localities mentioned below. They were preserved in 0.55% formalin as described by LAKHANIK and SACHEL (1970). A comparison of MICHAELSEN's (1900), POP's (1949) and PERELS's (1979) descriptions of their specimens of this species shows various minor differences, which are however of no importance to their taxonomy.

Twelve sexually mature specimens of *Criodrilus lacuum* have been collected from the regions of Kalochori (Thessaloniki Province) and Kerkini (Serrae Province) in May in 1989 and 1990, respectively; they are mentioned in the section Distribution below. On anatomical examination many specimens appeared to be sexually mature but lacked their clitella and tubercula pubertatis. It is known that some species of the Oligochaeta lose their clitella and tuberosis pubertatis at some time of the year, especially in the summer, in June, July and even August.

Synoptic catalogue of *Lumbricidae*, *Acanthodrilidae* and *Criodrilidae* of northern Greece (Thessaloniki and Serrae Provinces)

1. *Lumbricidae*

Aporrectodea (*Aporrectodea*) *caliginosa* (SAVIGNY, 1826)

Aporrectodea (*Aporrectodea*) *rosea* (SAVIGNY, 1826)

Aporrectodea (*Aporrectodea*) *jassyensis* (MICHAELSEN, 1891)

Aporrectodea (*Aporrectodea*) *handlirschi* (ROSA, 1897)

Eisenia foetida (SAVIGNY, 1826)

Eiseniella tetraedra tetraedra (SAVIGNY, 1826)

Eiseniella tetraedra intermedia CERNOSVITOV, 1934

Lumbricus rubellus HOFFMEISTER, 1843

Octodrilus complanatus (Ant. DUGÈS, 1828)

Octodrilus transpadanus (ROSA, 1884)

2. *Acanthodrilidae*

Microcolex phosphoreus (Ant. DUGÈS, 1837)

3. *Criodrilidae*

Criodrilus lacuum HOFFMEISTER, 1845

III. DISTRIBUTION OF SPECIES

Information concerning the distribution includes the following data for each species, arranged in the order given: locality, date of collection, number of specimens, name of collector and finally – in parentheses – container number.

Genus *Aporrectodea* ÖRLEY, 1885

Aporrectodea (Aporrectodea) caliginosa (SAVIGNY, 1826)

Localities: Mavrodendri (Prov. Kozani), 9 Apr. 1990: 4 spec., leg. MICHALIS (T/1335); Pontokomi (Prov. Kozani), 18 May 1990: 3 spec., leg. MICHALIS (T/1337); Agioneri (Prov. Kilikis), 3 Feb. 1990: 10 spec., leg. MICHALIS (T/1338); Microcampos (Prov. Kilikis), 3 Feb. 1990: 14 spec., leg. MICHALIS (T/1341); Palaeon Agioneri (Prov. Kilikis), 4 Feb. 1990: 30 spec., leg. MICHALIS (T/1342); Anthophyton (Prov. Kilikis), 4 Feb. 1990: 9 spec., leg. MICHALIS (T/1344); eastern area of Thessaloniki 2 May 1990: 4 spec., leg. MICHALIS (T/1346); North-East area of Nea Vathi (Prov. Kilikis), 14 Feb. 1991: 4 spec., leg. MICHALIS (T/1352); Efkarpiia (Prov. Kilikis), 14 Feb. 1991: 24 spec., leg. MICHALIS (T/1355); North-East area of Nea Vathi (Prov. Kilikis), 14 Feb. 1991: 7 spec., leg. MICHALIS (T/1359); Kato Theodorakia (Prov. Kilikis), 14 Feb. 1991: 21 spec., leg. MICHALIS (T/1363); Western area of Kato Theodorakia (Prov. Kilikis), 14 Feb. 1991: 14 spec., leg. MICHALIS (T/1368); Western area of Nea Vathi (Prov. Kilikis), 14 Feb. 1991: 22 spec., leg. MICHALIS (T/1371).

Aporrectodea (Aporrectodea) rosea (SAVIGNY, 1826)

Localities: Mavrodendri (Prov. Kozani), 9 Apr. 1990: 17 spec., leg. MICHALIS (T/1334); Pontokomi (Prov. Kozani), 18 Apr. 1990: 2 spec., leg. MICHALIS (T/1336); Agioneri (Prov. Kilikis), 3 Feb. 1990: 1 spec., leg. MICHALIS (T/1339); Microcampos (Prov. Kilikis), 4 Feb. 1990: 7 spec., leg. MICHALIS (T/1340); Palaeon Agioneri (Prov. Kilikis), 4 Feb. 1990: 22 spec., leg. MICHALIS (T/1343); Anthophyton (Prov. Kilikis), 4 Feb. 1990: 4 spec., leg. MICHALIS (T/1345); Efkarpiia (Prov. Kilikis), 14 Feb. 1991: 1 spec., leg. MICHALIS (T/1354); North-East area of Nea Vathi (Prov. Kilikis), 14 Feb. 1991: 1 spec., leg. MICHALIS (T/1360); Western area of Kato Theodorakia (Prov. Kilikis), 14 Feb. 1991: 1 spec., leg. MICHALIS (T/1366); Geracario (Prov. Kilikis), 14 Feb. 1991: 3 spec., leg. MICHALIS (T/1370); Western area of Nea Vathi (Prov. Kilikis), 14 Feb. 1991: 4 spec., leg. MICHALIS (T/1372).

Aporrectodea (Aporrectodea) jassyensis (MICHAELSE, 1891)

Locality: Eastern area of Thessaloniki, 2 May 1990: 1 spec., leg. MICHALIS (T/1347).

Aporrectodea (Aporrectodea) handlirschi (ROSA, 1897)

Localities: North-East area of Nea Vathi (Prov. Kilikis), 14 Feb. 1991: 13 spec., leg. MICHALIS (T/1358); Kato Theodorakia (Prov. Kilikis), 14 Feb. 1991: 3 spec., leg. MICHALIS (T/1364).

Genus *Eisenia* MALM, 1877 emend. POP, 1941

Eisenia fetida (SAVIGNY, 1826)

Localities: Western area of Thessaloniki, 9 Mar. 1990: 12 spec., leg. MICHALIS (T/1349); Eastern area of Nea Vathi (Prov. Kilkis), 14 Feb. 1991: 15 spec., leg. MICHALIS (T/1362).

Genus *Eiseniella* MICHAELSEN 1900

Eiseniella tetraedra tetraedra (SAVIGNY, 1826)

Localities: Western area of Nea Vathi (Prov. Kilkis), 14 Feb. 1991: 6 spec., leg. MICHALIS (T/1350); Efkarpiia (Prov. Kilkis), 14 Feb. 1991: 3 spec., leg. MICHALIS (T/1353); North-Eastern of Nea Vathi (Prov. Kilkis), 14 Feb. 1991: 34 spec., leg. MICHALIS (T/1357).

Eiseniella tetraedra intermedia CERNOSVITOV, 1934

Localities: North-West area of Nea Vathi (Prov. Kilkis), 14 Feb. 1991: 1 spec., leg. MICHALIS (T/1351).

Genus *Lumbricus* LINNAEUS, 1758 emend. EISEN, 1874

Lumbricus rubellus HOFFMEISTER, 1843

Localities: North-East area of Nea Vathi (Prov. Kilkis), 14 Feb. 1991: 9 spec., leg. MICHALIS (T/1361); Western area of Kato Theodorakia (Prov. Kilkis), 14 Feb. 1991: 4 spec., leg. MICHALIS (T/1367).

Genus *Octodrilus* OMODEO, 1956

Octodrilus complanatus (Ant. DUGÉS, 1828)

Localities: Western area of Thessaloniki, 9 Mar. 1990: 2 spec., leg. MICHALIS (T/1348)

Octodrilus transpadanus (ROSA, 1884)

Locality: Western area of Nea Vathi (Prov. Kilkis), 14 Feb. 1991: 2 spec., leg. MICHALIS (T/1373).

Genus *Microscolex* ROSA, 1887

Microscolex phosphoreus (Ant. DUGÈS, 1837)

Locality: Efkarpiia (Prov. Kilkis), 14 Feb. 1991: 4 spec., leg. MICHALIS (T/1356).

Genus *Criodrilus* HOFFMEISTER, 1845

Criodrilus lacuum HOFFMEISTER, 1845

Localities: Kalochori (Prov. Thessaloniki), 20 May 1989: 10 spec., leg. MICHALIS (T/1374); Kerkini (Prov. Serrae), 10 May 1990: 2 spec., leg. G. OIKONOMIDIS (T/1375).

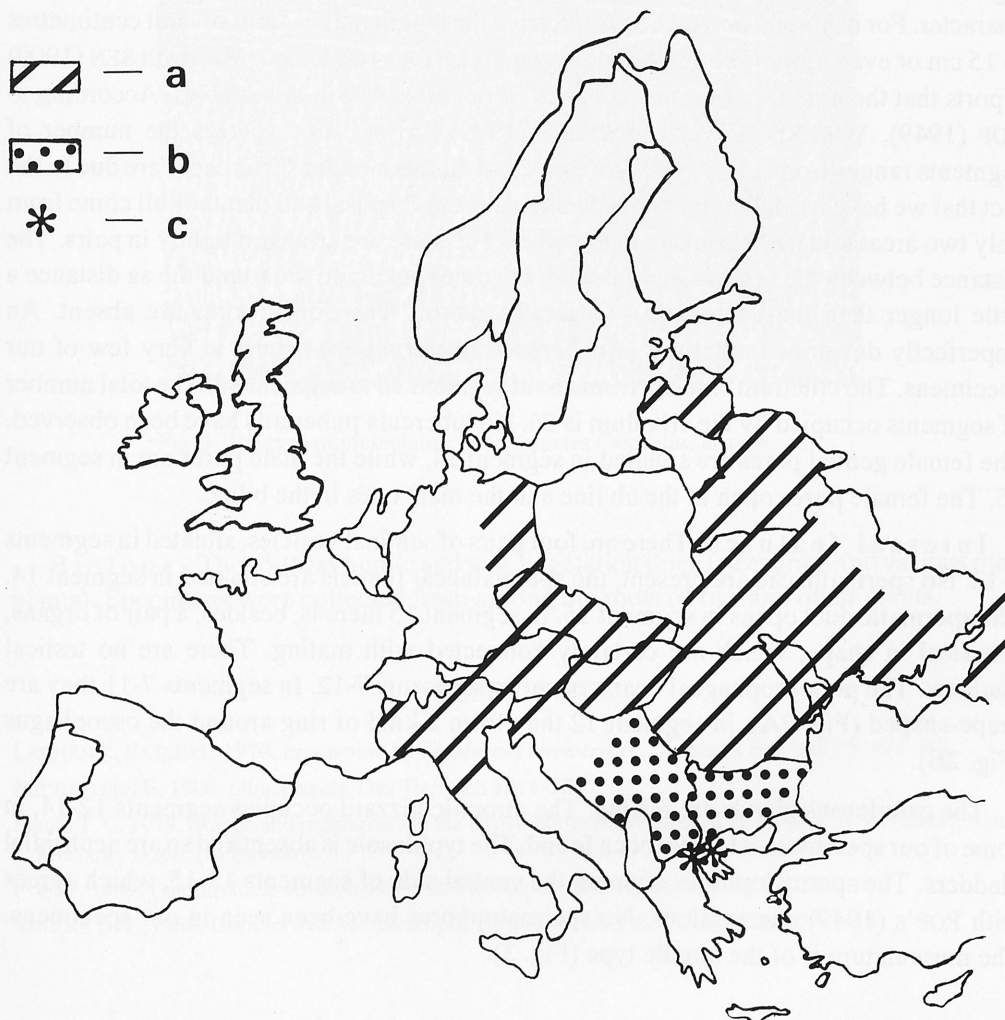


Fig. 1. European distribution – known so far – of the species *Criodrilus lacuum*. a – European countries reported generally, b – terrains not defined clearly, c – localities in Greece described in the present paper.

IV. REDESCRIPTION OF *CRIDRILUS LACUUM*

External features. Prostomium zygalobous. MICHAELSEN (1900) described it as zygalobous to prolobous, POP (1949) as zygalobous to epilobous, about 1/3 closed. In PEREL's (1979) and WILCKE's (1968) descriptions it is nearly the same. Body length up to 150 mm, breadth 3.5 mm MICHAELSEN, WILCKE and PEREL unanimously give the body

length of this species as reaching 320 mm and its breadth equal to 3.5 mm. There is therefore a marked difference in body dimensions, which, in our opinion, is however not significant as regards taxonomy. It is known that the animal's size is not a taxonomic character. For example, in *Octolasion lacteum* the length ranges from several centimetres to 15 cm or even more. The number of segments is from 180 to 380. MICHAELSEN (1900) reports that the number of segments varies from 200 to 450 in this species. According to POP (1949), WILCKE (1968) and PEREL (1979), in the same species the number of segments ranges from 150 to 450. We think that all these minor differences are due to the fact that we have a small number of specimens at our disposal and that they all come from only two areas situated close one to the other. The setae are arranged tightly in pairs. The distance between the setae is $aa = bb = dd$. In some specimens we found the aa distance a little longer than the dd ($aa > dd$). Generally, $aa < bc$. The dorsal pores are absent. An imperfectly developed clitellum (a difference in coloration) occurs in very few of our specimens. The clitellum extends from about segment 16 to segment 42. The total number of segments occupied by the clitellum is 26. No tubercula pubertatis have been observed. The female genital pores are situated in segment 14, while the male pores are in segment 15. The female pores open in the ab line and the male ones in the b line.

I n t e r n a l f e a t u r e s . There are four pairs of seminal vesicles, situated in segments 9-12. No spermathecae are present, the spermathecal funnels are situated in segment 14. The spermatic duct opens in segment 15. In segment 15 there is, besides, a pair of organs, spherical in shape, which are certainly connected with mating. There are no testical bladders. The perioesophageal hearts occur in segments 7-12. In segments 7-11 they are grape-shaped (Fig. 2A), in segment 12 they form a kind of ring around the oesophagus (Fig. 2B).

The calciferous glands are missing. The atrophic gizzard occupies segments 12-14, in some of our specimens it has not been found. The typhlosole is absent and so are nephridial bladders. The spermatophores open on the ventral side of segments 13-15, which agrees with POP's (1949) observations. No spermatophores have been seen in our specimens. The musculature is of the bundle type (Fig. 3).

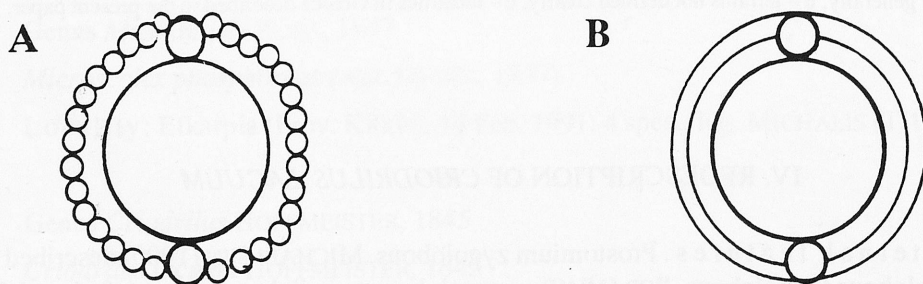


Fig. 2. Types of hearts occurring in *Criodrilus lacuum*: A – grape-shaped heart. B – ring-shaped heart.

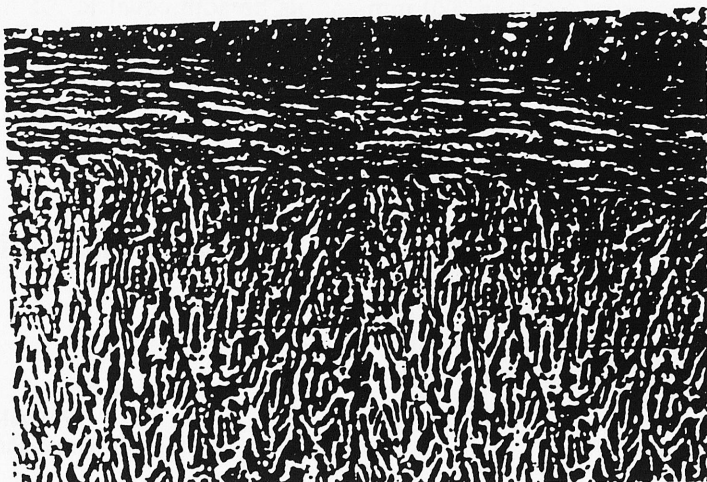


Fig. 3. The type of musculature of the species *Criodrilus lacuum*.

B i o t o p e . The soil was humic and wet, vegetation thick (rice, grass and various other plants). Specimens were collected from among the roots of rice and other plants.

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