

The first earthworm records from Malta (*Oligochaeta Lumbricidae*)

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ABSTRACT

The first earthworm report from Malta lists seven species; six species from the Holarctic family Lumbricidae and one species from the Mediterranean family Hormogastridae. Apart from the Circum-Mediterranean *Octodrilus complanatus* (Dugès, 1828) and the Trans-Aegean *Octodrilus transpadanus* (Rosa, 1884) the other four lumbricid species recorded are widely distributed peregrine. The unidentified hormogastrid specimen might represent an autochthonous species in Malta.

KEY WORDS

Earthworms; fauna; new record; Maltese Islands.

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INTRODUCTION

Earthworms (*Oligochaeta Lumbricidae*) represent one of the most important groups of the soil fauna. Due to the earthworms' activity not only the structure of the soil is altered, but also the chemical composition is substantially changed (Lee, 1985).

As members of the saprophagous guild, earthworm species play a paramount role in the decomposition of dead plant material (litter, dead grass, etc.) in temperate forests (Zicsi, 1983). Their activity is also important in the tropical regions as well, where, together with termites, earthworms are responsible for the decomposition of 40% of dead plant material (Lee, 1985).

This is the reason why earthworms are considered "soil ecosystem engineers" (Jones et al., 1994; Decaëns et al., 2001), which play a fundamental role in maintaining soil fertility and consequently are indispensable for sustainable agricul-

ture (Jiménez et al., 2001). Contrary to their vital importance in biogeochemical cycles we have detailed ecological data only about two dozen species (Zicsi et al., 2011) from the some 800 valid lumbricid species distributed over the Holarctic (Csuzdi, 2012).

In addition, there are regions even in Europe from where earthworm records are scarce or completely missing.

One of such region is Malta from where, up to our present knowledge, there are no earthworm records published. In the last year the second author, a herpetologist interested in different lizard groups investigated the available prey-population including earthworms in Malta.

During this short-term study five earthworm species have been recorded which, together with some other specimens from the collection of the Hungarian Natural History Museum, are herewith presented.

MATERIAL AND METHODS

A larger study collecting all fauna present in sampling sites was being carried out in two previous separate studies.

One of the authors (AS) resident on Malta, was able to monitor, dig and hand sort the mentioned retrieved specimens along with his colleague Patrick Vella. Along with the latter specimens from the Hungarian Natural History Museum, all specimens were studied by CC and included in the current list.

All voucher specimens that have been collected are now housed in the collection of one of the authors (CC).

RESULTS

Family LUMBRICIDAE Rafinesque-Schmaltz, 1815

Allolobophora chlorotica (Savigny, 1826)

Enterion chloroticum Savigny, 1826: 182.
Allolobophora chlorotica: Csuzdi & Zicsi, 2003: 50 (for complete synonymy).

EXAMINED MATERIAL. Santa Marija bay, Comino Island (Maltese Archipelago), 3 adult ex., 1 adult and 1 juvenile ex., 3 adult ex., leg. A. Sciberras.

Aporrectodea trapezoides (Dugès, 1828)

Lumbricus trapezoides Dugès, 1828: 289.
Aporrectodea trapezoides: Blakemore, 2008: 531 (for complete synonymy).

EXAMINED MATERIAL. 23 adult ex., 1 adult ex., Chadwik Lakes, 1 adult ex., leg. V. Mahnert, 06.V.1974.

Aporrectodea rosea (Savigny, 1826)

Enterion roseum Savigny, 1826: 182.
Aporrectodea rosea: Csuzdi & Zicsi, 2003: 92 (for complete synonymy).

EXAMINED MATERIAL. 1 adult ex., 1 adult and 1 juvenile ex., Around St. Georges Bay under stones, in Garrique, 1 adult ex., leg. V. Mahnert, 04.V.1974.

Eiseniella tetraedra (Savigny, 1826)

Enterion tetraedrum Savigny, 1826: 184.
Eiseniella tetraedra: Csuzdi & Zicsi, 2003: 153 (for complete synonymy).

EXAMINED MATERIAL. Chadwik Lakes, 1 adult ex., leg. V. Mahnert, 06.V.1974.

Octodrilus complanatus (Dugès, 1828)

Lumbricus complanatus Dugès, 1828: 289.
Octodrilus complanatus: Blakemore, 2008: 625 (for complete synonymy).

EXAMINED MATERIAL. 6 adult and 51 juvenile ex.

Octodrilus transpadanus (Rosa, 1884)

Allolobophora transpadana Rosa, 1884: 45.
Octodrilus transpadanus: Csuzdi & Zicsi, 2003: 215 (for complete synonymy).

EXAMINED MATERIAL. Around St. Georges Bay under stones, in Garrique, 1 adult ex., leg. V. Mahnert, 04.V.1974.

Family HORMOGASTRIDAE Michaelsen, 1900

Hormogaster sp.

EXAMINED MATERIAL. 1 juvenile ex.

REMARKS. We have only one juvenile specimen representing this Mediterranean family Hormogastridae, therefore, the exact species identification is not possible.

DISCUSSION

This small sample from Malta consisted of seven earthworm species of which four lumbricids

(*A. chlorotica*, *A. rosea*, *A. trapezoides* and *E. tetraedra*) are widely distributed, peregrines which most probably were introduced by human activities. The other two lumbricid species (*O. complanatus* and *O. transpadanus*) possess more restricted area (Circum-Mediterranean and Trans-Aegean respectively) however, they are also capable for human introduction (see e.g. Mischis et al., 2005; Blakemore, 2008).

The only species which can be endemic in the island is the unidentified *Hormogaster* species. *Hormogaster* are distributed over the Western Mediterranean basin (Omodeo & Rota, 2008) and seemingly have no tendency for human introduction. Consequently, the presence of this species in Malta can be connected with the island's geological history.

The Maltese islands are situated on a shallow shelf called Malta-Ragusa Rise extending from the Ragusa Peninsula of Sicily toward the African coast (Magri et al., 2008). The presence of many Siculo-Maltese endemic species proves the close biogeographic relationships between Malta and Sicily which is a consequence of land connections with Sicily either in the Quaternary or in the Messinian stage of the Miocene Epoch (Hunt & Schembri, 1999).

Therefore, the abundant presence of *Hormogaster redii* Rosa, 1887 in Sicily (Omodeo & Rota, 2008) provides an apparent explanation of the origin of *Hormogaster* in Malta, however to draw more specific conclusions exact species identification is needed.

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