

1-1-2008

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### Recommended Citation

MISIRLIOĞLU, METE (2008) "A Preliminary Study of Earthworms (Oligochaeta, Lumbricidae) from the City of İzmir, Turkey," *Turkish Journal of Zoology*. Vol. 32: No. 4, Article 19. Available at: <https://journals.tubitak.gov.tr/zoology/vol32/iss4/19>

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## A Preliminary Study of Earthworms (*Oligochaeta*, *Lumbricidae*) from the City of İzmir, Turkey

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Received: 19.09.2007

**Abstract:** The results of an earthworm survey of 11 different localities in the city of İzmir (Turkey) are presented. The samples were collected by digging and hand sorting. The 3 following species belonging to 3 different genera were identified in the studied regions: *Allolobophora chlorotica*, *Aporrectodea caliginosa trapezoides* and *Dendrobaena veneta*. In addition, juvenile specimens representing the genera *Dendrobaena*, *Lumbricus*, and *Allolobophora* were collected.

**Key Words:** Earthworms, Lumbricidae, İzmir, fauna of Turkey

### İzmir İli Topraksolucanları (*Oligochaeta*, *Lumbricidae*) Üzerine Bir Ön Çalışma

**Özet:** Bu çalışmada İzmir ilinin 11 farklı alanından toplanan topraksolucanı örneklerinin teşhis sonuçları sunulmuştur. Örnekler toprak kazılarak ve elle ayıklanarak toplanmıştır. Çalışılan bölgede *Allolobophora chlorotica*, *Aporrectodea caliginosa trapezoides* ve *Dendrobaena veneta* olmak üzere üç farklı cinse ait üç tür tespit edilmiştir. Buna ek olarak *Dendrobaena*, *Lumbricus* ve *Allolobophora* cinlerine ait türü belirlenemeyen juvenil örnekler de kaydedilmiştir.

**Anahtar Sözcükler:** Topraksolucanları, Lumbricidae, İzmir, Türkiye faunası

Earthworms are among the most important members of the soil fauna because they influence the structure, chemical composition, and distribution of plant nutrients in soil (Darwin, 1881; Zicsi, 1975; Lee, 1985).

Despite the importance of earthworms to the ecosystem, their systematics, biology, and ecology are poorly known in the Eastern Mediterranean region (Pavlıcek et al., 1996), including Turkey (Omodeo and Rota, 1999). Only about a dozen papers have been published on the earthworm fauna of Turkey and the East Mediterranean (Misirlioğlu et al., 2008). Furthermore, most of these studies are based on accidentally sampled material collected as a by-product of other research activities (Csuzdi and Pavlıcek, 1999; Pavlıcek et al., 2003; Csuzdi et al., 2006).

Although İzmir is one of the largest cities in the Aegean region of Turkey, there are almost no records on its earthworm fauna in previously published papers (Zicsi, 1973; Omodeo and Rota, 1989, 1991). This motivated me to organize and carry out a sampling survey in the city and its surroundings. The results of the survey and the identification of the collected specimens presented herein contribute to the understanding of the composition of the earthworm fauna in İzmir and of the earthworm biodiversity in the Aegean region of Turkey.

The samples were collected from İzmir and its surroundings by digging and hand sorting. Collected specimens were fixed and preserved in 70% ethanol.

### List of Localities, and Gathered Species and their Abundance

1. Seferihisar, house garden, grassy area, 05/11/2003.  
*Aporrectodea caliginosa trapezoides* (Dugés, 1828): 2 adult specimens.  
*Allolobophora chlorotica* (Savigny, 1826): 4 adult specimens.
2. Foça, woody area, under the litter layer, 06/11/2003.  
*Dendrobaena veneta* (Rosa, 1886): 1 adult + 3 juvenile specimens.
3. Güzelyalı, sea shore, grassy area, 10/11/2003.  
*Allolobophora chlorotica* (Savigny, 1826): 1 juvenile specimen.
4. Güzelbahçe, sea shore, grassy area, 25/11/2003.  
*Allolobophora chlorotica* (Savigny, 1826): 4 adult + 2 juvenile specimens.
5. Balçova, edge of a road, 25/11/2003.  
*Allolobophora chlorotica* (Savigny, 1826): 1 adult specimen.
6. Sahil Evleri, near the sea coast, under trees, 25.11.2003.  
*Lumbricus* sp.: 4 juvenile specimens.  
*Allolobophora* sp.: 4 juvenile specimens.
7. Narlıdere, tangerine grove, 25/11/2003.  
*Allolobophora chlorotica* (Savigny, 1826): 1 adult specimen.
8. Karaburun, thickly wooded area, 29.11.2003.  
*Dendrobaena* sp.: 6 juvenile specimens.
9. Urla, woody area, 30.11.2003.  
*Allolobophora chlorotica* (Savigny, 1826): 2 adult specimens.  
*Aporrectodea caliginosa trapezoides*: 5 adult specimens.
10. Çeşme, woody area, 02.01.2004.  
*Aporrectodea caliginosa trapezoides* (Dugés, 1828): 1 adult + 1 juvenile specimen.
11. Çeşme-Alaçatı, grassy area, 02.01.2004.  
*Aporrectodea caliginosa trapezoides* (Dugés, 1828): 1 adult + 2 juvenile specimens.

This study was conducted with samples collected from 11 different localities in and around the city of İzmir. In all, 3 species were recorded, representing 3 different earthworm genera.

*Allolobophora chlorotica*, which was recorded from 6 out of the 11 sampled localities, proved to be the most common species in the area studied. This outcome is interesting because this species is quite rare in Turkey. Previously, only a few specimens were recorded from the cities of Balıkesir and Eskişehir (Omodeo and Rota, 1989, 1991; Mısırlıoğlu, 2001; Csuzdi et al., 2006). It is well known that *A. chlorotica* can be found in damp soils containing a lot of organic material, such as can be found in farming areas, gardens, pastures, and the shores of lakes and rivers (Perel, 1997; Sims and Gerard, 1999; Csuzdi and Zicsi, 2003). All localities in which this species occurred, including grassy and forested areas, had high organic content. Most likely the altitude and the mild climate of İzmir are the 2 main factors that influence the regional distribution and abundance of this species. *Aporrectodea caliginosa trapezoides*, which was recorded in 4 localities, was another common species in the study area. This species is one of the most widespread species in Turkey and, as a matter of fact, it was previously recorded in almost all parts of the country, including the city of İzmir (Omodeo and Rota, 1989, 1991; Mısırlıoğlu, 2002).

*Ap. caliginosa trapezoides* is abundant and predominant in humid areas greatly disturbed by human activity, like riversides and farming areas (Perel, 1997; Sims and Gerard, 1999; Mısırlıoğlu, 2002, 2004). Not surprisingly, in this study the localities where this worm species was collected were humid, woody, and grassy areas disturbed by human activity.

*Dendrobaena veneta* was recorded only from 1 locality in Foça, İzmir. This earthworm species is also widespread in Turkey (Omodeo and Rota, 1989, 1991; Mısırlıoğlu, 2001, 2002, 2004; Csuzdi et al., 2006), like *Ap. caliginosa trapezoides*. According to earlier observations (Sims and Gerard, 1999; Csuzdi and Zicsi, 2003), *D. veneta* lives under decayed leaves in soil with high organic material content, such as manure, and also under sewer systems. It is not surprising that this species was found under the litter layer in a humid woody area.

The collected juvenile earthworm specimens in localities 6 and 8 belong to the genera *Dendrobaena*, *Lumbricus*, and *Allolobophora*.

Specimens from locality 8 belong to the genus *Dendrobaena*, but they are probably different than *D. veneta*.

Juvenile specimens from locality 6 belong to the genus *Allolobophora*. We expect that they could be identical to *A. chlorotica* because this species is the most common *Allolobophora* species in the study area.

Another juvenile specimen from locality 6 belongs to the genus *Lumbricus*. As presently known, the genus *Lumbricus* is represented in Turkey only by a unique species, *L. rubellus*. Probably not by coincidence, *L.*

*rubellus* has also been recorded from İzmir in previous studies and it is a common species in the northern part of Turkey, preferring humid gardens and woody areas (Omodeo and Rota, 1989, 1991; Perel, 1997; Sims and Gerard, 1999; Misirlioğlu, 2001).

### Acknowledgments

My thanks are due to Prof. Dr. Andras Zicsi (University of Budapest, Hungary) for his kind help in the identification and confirmation of the collected specimens, and to Dr. Csaba Csuzdi (University of Budapest, Hungary) and Dr. Tomas Pavlíček (University of Haifa, Israel) for revision of the English text and their valuable comments on the manuscript.

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