

THE FAMILY RHAPHIDOPHORIDAE (ORTHOPTERA) IN GREECE

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1. Introduction

In Greece, three cavernicolous Orthopteran genera have been reported: one that belongs to the family Gryllidae (the genus *Discoptila*) and two that belong to the family Rhaphidophoridae (genera *Dolichopoda* and *Troglophilus*) (Willemse 1984, Kollaros *et al.* 1987, Baccetti 1992).

The family Rhaphidophoridae Walker, 1871, has a broad geographic distribution in both hemispheres and includes several cave-adapted species. It is considered as phylogenetically old family. Two genera occur in the Mediterranean area, *Dolichopoda* and *Troglophilus*, both morphologically quite similar. They are apterous (wingless), with long legs, long antennae and relatively small eyes. About pigmentation, only species of *Dolichopoda* show a significant reduction of body colour, while in most of *Troglophilus* species, body and legs are well ornamented and coloured. They largely occur in allopatry, colonizing both natural and artificial caves where they accomplish all or a part of their life cycle. These two genera are thought to originate from sylvicolous (inhabiting woodlands) ancestors. Some individuals are

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often observed outside their caves in wet woodlands, especially at night to feed on vegetable matters.



Troglophilus lagoi, © M. Rampini

1.1 Genus *Dolichopoda* Bolivar, 1880

Genus *Dolichopoda* is distributed in caves of N Mediterranean, from Pyrenees to Caucasus, with 48 species described so far (Rampini *et al.* 2008, 2012). Greece is the main center of distribution for the genus with 28 species. Each species has a very limited distribution (often found only in a single cave) and there is a very limited gene flow among populations (Allegrucci *et al.* 2005, 2009, 2011, Martinsen *et al.* 2009). Based on morphology, Greek *Dolichopoda*, are subdivided in three subgenera: *D.* (*Dolichopoda*) with 19 species, *D.* (*Petrochilosina*) with 7 species and *D.* (*Chopardina*), with two species.

1.2 Genus *Troglophilus* Krauss, 1879

Troglophilus is distributed in caves of N Mediterranean, including at present 19 species (Ketmaier *et al.* 2000, Karaman *et al.* 2011, Taylan *et al.* 2012, 2013, Kaia *et al.* 2013). *Troglophilus* crickets are found mainly at the entrances of caves, or cavities and under big rocks, showing a less adaptation to cave habitat respect to *Dolichopoda* species. They are active by night, while at day they hide in small holes, under stones or among leaf litter. They can coexist with *Dolichopoda* species (Kollaros *et al.* 1991). Five species have been reported so far from Greece, four are members of subgenus *T.* (*Troglophilus*) and one of subgenus *T.* (*Paratroglophilus*).

2. List of Species

Order **Orthoptera**
Superfamily **Gryllacridoidea**
Family **Rhabdophoridae**
Subfamily **Dolichopodainae** Brunner von Wattenwyl, 1888

Parnassiana Archives 1

Genus *Dolichopoda* Bolivar, 1880
(fig.1)

1. *Dolichopoda (Dolichopoda) annae* Boudou-Saltet, 1973
Endemic to caves around Larissa (cave Agia Paraskevi Tempa and caves at Kato Olimpos, Leptokaria and Kalipefki).
2. *Dolichopoda (Dolichopoda) calidnae* Rampini & Di Russo, 2012
Endemic to cave of Epta Parthenes (or of the Nymphs) and cave Skalia, Kalimnos.
3. *Dolichopoda (Petrochilosina) cassagnai* Boudou-Saltet, 1971
Endemic to cave of Agia Triada, Karistos, Evvoia isl.
4. *Dolichopoda (Dolichopoda) dalensi* Boudou-Saltet, 1972
Endemic to cave of Kefalovrisi, near Kefalari, Argos, NE Peloponnisos.
5. *Dolichopoda (Dolichopoda) gasparoi* Rampini & Di Russo, 2008
Endemic to cave Kirospilia, Lefkada isl.
6. *Dolichopoda (Dolichopoda) giachinoi* Rampini & Di Russo, 2008
Endemic to cave Megalo Spilio, Monastiraki, Aetolia-Acarnania.
7. *Dolichopoda (Dolichopoda) giulianae* Rampini & Di Russo, 2012
Endemic to cave of Panagia Spiliani monastery, Samos isl.
8. *Dolichopoda (Dolichopoda) graeca* Chopard, 1964
Endemic to cave of Perama, Ioannina, Ipeiros.
9. *Dolichopoda (Dolichopoda) hussoni* Chopard, 1934
Endemic to caves around Naoussa.
10. *Dolichopoda (Petrochilosina) insignis* Chopard, 1955
Endemic to caves of Attiki (Koutouki cave, Mt Imittos and Panos cave, Marathon).
Often syntopic with *D. petrochilosini*.
11. *Dolichopoda (Dolichopoda) ithakii* Rampini & Di Russo, 2008
Endemic to cave Marmarospilia, Ithaki isl.
12. *Dolichopoda (Dolichopoda) kalithea* Di Russo & Rampini 2012
Endemic to cave at Kakoperato gorge and cave Sarantaskaliotissa, Kalithea, Mt Kerkis, Samos isl.
13. *Dolichopoda (Dolichopoda) kiriakii* Rampini & Di Russo, 2008
Endemic to cave near Agia Kiriaki village, Parga, Ipeiros.
14. *Dolichopoda (Chopardina) lustriae* Rampini & Di Russo, 2008
Endemic to cave Agios Andreas, near Halkiopoulos, Aetolia-Acarnania.
15. *Dolichopoda (Petrochilosina) makrykapa* Boudou-Saltet, 1980
Endemic to caves near Makrikapa (Pigi Nifi etc.), C Evvoia.

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16. *Dolichopoda (Dolichopoda) matsakisi* Boudou-Saltet, 1972
Endemic to cave Ton Limnon, Kastri, and cave Analipsi, Pititsa, N Peloponnisos.
17. *Dolichopoda (Dolichopoda) naxia* Boudou-Saltet, 1972
Endemic to cave of Zeus and a cave near Stavros, Naxos isl.
18. *Dolichopoda (Petrochilosina) ochtoniai* Boudou-Saltet, 1983
Endemic to an unnamed cave at NE Evvoia.
19. *Dolichopoda (Dolichopoda) paraskevi* Boudou-Saltet, 1973
Endemic to cave Agia Paraskevi, Skotinion, C Kriti and cave Atzigano, Adrianos, E Kriti.
20. *Dolichopoda (Dolichopoda) patrizii* Chopard, 1964
Endemic to caves of Petalas islet, Ionian Sea.



Dolichopoda cassagnai, © M. Rampini

21. *Dolichopoda (Dolichopoda) pavesii* Galvagni, 2002
Endemic to caves Drakotripa and Drogarati, near Sami, Kefalonia isl.

22. *Dolichopoda (Petrochilosina) petrochilosi* Chopard, 1954
Endemic to caves of Attiki (Panos, Koutouki, Daveli, etc.)
23. *Dolichopoda (Chopardina) remyi* Chopard, 1934
Endemic to caves of Pella district (Loutraki, Agras, small caves under the Edessa waterfalls), Makedonia.
24. *Dolichopoda (Petrochilosina) saraolacosi* Boudou-Saltet, 1983
Endemic to Lynaria caves, Skiros isl.
25. *Dolichopoda (Dolichopoda) steriotisi* Boudou-Saltet, 1972
Endemic to caves of Kerkira isl.
26. *Dolichopoda (Dolichopoda) thasosensis* Chopard, 1964
Endemic to cave of Drakotripa, Thasos isl.
27. *Dolichopoda (Dolichopoda) unicolor* Chopard, 1964
Endemic to cave Kataphigi, near Selenitsa and cave Gliphada, Areopolis, S Peloponnisos.
28. *Dolichopoda (Petrochilosina) vandeli* Boudou-Saltet, 1970
Cave of Hermes, Dionisos and cave over Lake Kopais, near Orchomenos, Viotia.

Subfamily **Troglophilinae**

Genus *Troglophilus* Krauss, 1879
(fig.2)

29. *Troglophilus (Troglophilus) cavicola* (Kollar, 1833)
Mt Parnassos and Mt Iti. Also SE Europe (from NE Italy to FYROM). Caves and often in nearby woodland (also inside the mountain refuges).
30. *Troglophilus (Troglophilus) marinae* Rampini & Di Russo, 2003
Endemic to cave Zoodochos Pigi, Santorini isl.
31. *Troglophilus (Paratroglophilus) neglectus neglectus* Krauss, 1879
Cave near Naoussa. A species of SE Europe (from NE Italy to FYROM).
32. *Troglophilus (Troglophilus) lagoi* Menozzi, 1934
Endemic to Rodos (cave Paradiso Afandou, Mt Attaviros, Mt Profitis Ilias, Mt Akramitis, etc.), Kos and Tilos islands.
33. *Troglophilus (Troglophilus) spinulosus* Chopard, 1921
{*T. roeweri* Werner 1927,
T. petrochilosi Boudou-Saltet 1978}
Endemic to Kriti isl.

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Agios Ioannis cave, Mt. Pendeli, Attiki: cave inhabited by *Dolichopoda petrochilosi*, © M. Rampini

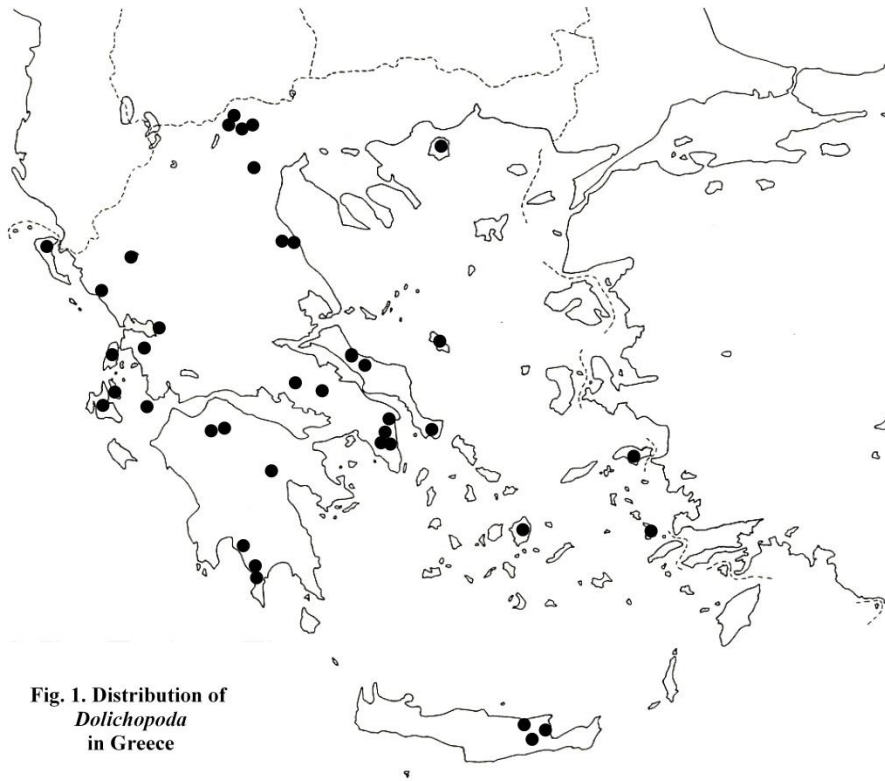


Fig. 1. Distribution of *Dolichopoda* in Greece

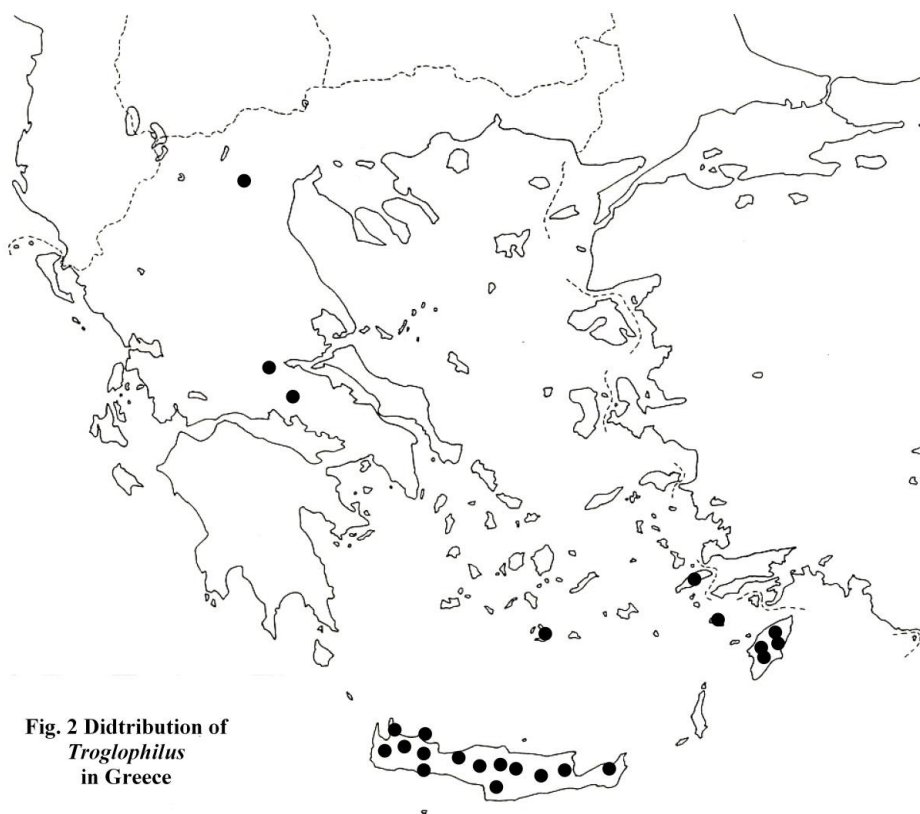


Fig. 2 Distribution of *Troglophilus* in Greece

3. Literature

- Allegrucci, G., Todisco, V. & Sbordoni, V. 2005. Molecular phylogeography of *Dolichopoda* cave crickets (Orthoptera, Rhaphidophoridae): A scenario suggested by mitochondrial DNA – *Mol. Phyl. Evol.* 37: 153-164.
- Allegrucci, G., Rampini, M., Gratton, P., Todisco, V. & Sbordoni, V. 2009. Testing phylogenetic hypothesis for reconstructing the evolutionary history of *Dolichopoda* cave crickets in the eastern Mediterranean – *J. Biogeogr.* 36: 1785-1797.
- Allegrucci, G., Trucchi, E. & Sbordoni, V. 2011. Tempo and mode of species diversification in *Dolichopoda* cave crickets (Orthoptera, Rhaphidophoridae) – *Mol. Phyl. Evol.* 60:108-121.
- Baccetti, B. 1992. Notulae Orthopterologicae. 50. Su alcuni Ortotteroidei del Mediterraneo Orientale – *Fragm. Entomol.* 23(2): 247-276.
- Karaman I., Hammouti N., Pavicevic D., Kiefer A., Horvatovic M. & Seitz A. 2011. The genus *Troglophilus* Krauss, 1879 (Orthoptera: Rhaphidophoridae) in the west Balkans - *Zool. J. Linn. Soc.* 163: 1035–1063.
- Kaya, S., Boztepe, Z. & Çiplak, B. 2013. Phylogeography of *Troglophilus* (Orthoptera: Troglophilinae) based on Anatolian members of the genus: radiation of an old lineage following the Messinian – *Biol. J. Linn. Soc.* 108: 335-348.
- Ketmaier, V., Cobolli, M., De Matthaeis, E. & Rampini, M. 2000. Biochemical systematics and patterns of genetic divergence between the *Troglophilus* species of Crete and Rhodos (Orthoptera, Rhaphidophoridae) - *Belg. J. Zool.* 130 (suppl. 1): 49-53.

The Rhaphidophoridae of Greece

- Kollaros, D. Paragamian, K. & Legakis, A. 1987. Notes on the systematic of cavernicolous Orthoptera of Crete – *Biologia Gallo-hellenica* 13: 137-140.
- Kollaros, D. Paragamian, K. & Legakis, A. 1991. Revision of the genus *Troglophilus* (Orthoptera, Rhaphidophoridae) in Crete, Greece – *Int. J. Speleo.* 20: 37-45.
- Martinsen, L., Venanzetti, F. & Bachmann, L. 2009. Phylogeography and mitochondrial DNA divergence in *Dolichopoda* cave crickets (Orthoptera, Rhaphidophoridae) – *Hereditas* 146: 33-45.
- Rampini, M., Di Russo, C., Pavesi, F. & Cobolli, M. 2008. The genus *Dolichopoda* in Greece. A. Description of new species from the Ionian regions and Peloponnisos (Orthoptera, Rhaphidophoridae) – *Zootaxa* 1923: 1-17.
- Rampini, M., Di Russo, C., Taylan Sait, M., Gelosa, A. & Cobolli, M. 2012. Four new Species of *Dolichopoda* Bolivar, 1880 from Southern Sporades and Western Turkey (Orthoptera, Rhaphidophoridae, Dolichopodainae) – *ZooKeys* 201: 43-58.
- Taylan S, M., Di Russo, C., Cobolli, M. & Rampini, M. 2012. New species from the genus *Troglophilus* Krauss, 1879 (Orthoptera, Rhaphidophoridae) from Western and Southern Anatolian caves, Turkey – *Zootaxa* 3597: 33-40.
- Taylan S., M., Di Russo, C. Rampini, M. & Ketmaier, V. 2013. Molecular systematics of the genus *Troglophilus* (Rhaphidophoridae, Orthoptera) in Turkey: mitochondrial 16S rDNA evidences – *ZooKeys* 257: 33-46.
- Willemse, F. 1984. Catalogue of the Orthoptera of Greece - *Fauna Graeciae I*, Hellenic Zoological Society, Athens.