Freshwater planarians (Platyhelminthes, Tricladida) from the Iberian Peninsula and Greece: diversity and notes on ecology

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Table of contents

Abstract ........................................................................................................................................................................... 2
Introduction ................................................................................................................................................................. 2
Material and methods ............................................................................................................................................... 4
Order Tricladida Lang, 1884 ...................................................................................................................................... 5
Suborder Continenticola Carranza, Littlewood, Clough, Ruiz-Trillo, Baguñà & Riutort, 1998 ........................................ 5
Family Dendrocoelidae Hallez, 1892 ......................................................................................................................... 5
Genus Dendrocoelum Örsted, 1844 ............................................................................................................................ 5
  Dendrocoelum spatiosum Vila-Farré & Sluys, sp. nov. ........................................................................................... 5
  Dendrocoelum inexpsectatum Vila-Farré & Sluys, sp. nov. .................................................................................. 10
Family Planaridae Stimpson, 1857 ........................................................................................................................... 12
Genus Phagocata Leidy, 1847 ..................................................................................................................................... 12
  Phagocata flamenca Vila-Farré & Sluys, sp. nov. ................................................................................................. 12
  Phagocata asymmetrica Vila-Farré & Sluys, sp. nov. ............................................................................................ 15
  Phagocata gallaeciae Vila-Farré & Sluys, sp. nov. ............................................................................................. 18
  Phagocata pyrenaica Vila-Farré & Sluys, sp. nov. ............................................................................................... 20
  Phagocata sp. ........................................................................................................................................................... 24
  Phagocata hellenica Vila-Farré & Sluys, sp. nov. ............................................................................................... 24
  Phagocata graeca Vila-Farré & Sluys, sp. nov. ................................................................................................. 27
Genus Polycelis Ehrenberg, 1831 .............................................................................................................................. 30
  Polycelis nigra (Müller, 1774) ............................................................................................................................... 30
Family Dugesiidae Ball, 1974 .................................................................................................................................... 30
Genus Girardia Ball, 1974 .......................................................................................................................................... 30
  Girardia tigrina (Girard, 1850) ............................................................................................................................... 30
Genus Schmidtea Ball, 1974 ...................................................................................................................................... 31
  Schmidtea polyhroma (Schmidt, 1861) .................................................................................................................. 31
  Schmidtea mediterranea (Benazzi, Baguñà, Ballester & Del Papa, 1975) ......................................................... 31
Acknowledgements ...................................................................................................................................................... 35
References ................................................................................................................................................................... 35

Abstract

Few studies have examined the diversity of freshwater planarians in the Iberian Peninsula and Greece. We have searched extensively for specimens, mainly in the Iberian Peninsula, and have gathered information on their taxonomy and biogeography. Two new species of Dendrocoelum and six new species of Phagocata are described. We also review the status of five other species and present distribution maps that summarize records of freshwater planarians in the Iberian Peninsula. The diversity of three ecological groups of freshwater planarians in this area is discussed and we show that it has a rich, stream-dwelling freshwater triclad fauna, contrary to the findings of earlier studies. But our findings support the traditional viewpoint that European lake-dwelling species are scarce in Spain. The distribution pattern of Girardia tigrina is also discussed. We conclude that the critical status of Schmidtea mediterranea in this area is partly due to habitat alteration through human interference.

Key words: Dendrocoelum, Phagocata, Girardia, Schmidtea, Polycelis, taxonomy, biogeography, biology

Introduction

There are few taxonomic studies of planarians from the Iberian Peninsula (see Vila-Farré et al. 2008). Recent studies have yielded interesting results (Vila-Farré et al. 2008; Mateos et al. 2009; Vila-Farré et al. 2010). However, they have focused mainly on the regions of Catalonia and Valencia (Baguñà et al. 1980; Ribas et al. 1989; Sluys et al. 1990; Sluys et al. 1995), while the rest of the Iberian Peninsula is largely ignored.

Baguñà et al. (1980, 1981) reviewed the few papers that contain Iberian and Balearic records of freshwater planarians before 1981. García-Mas & Jiménez (1984) updated the list, although most of their data was repeated in Baguñà et al. (1981). Since then, our knowledge of the Iberian fauna of freshwater planarians has hardly increased (Gamo, 1987; Ribas, 1990; Carranza & Giribet, 1997). Consequently, the studies by Baguñà et al. (1980, 1981) still hold true for several species.

The freshwater planarian diversity of Greece is poorly documented, apart from species of Dugesia, several of which have been reported from Greek islands, and three from the mainland (De Vries, 1984, 1988/89). Common, widespread European species such as Polycelis felina (Dalyell, 1814), Polycelis nigra (Müller, 1774), P. tenuis Ijima 1884 and Dendrocoelum lacteum (Müller, 1774), may be present in Greece. However, to our knowledge, this has not been documented.

Here we describe two new species of Dendrocoelum Órsted, 1844 and six new species of Phagocata Leidy, 1847. We also provide new distribution records for the species Phacocata sp., Schmidtea polychroa (Schmidt, 1861) (Fig. 1), Girardia tigrina (Girard, 1850) (Fig. 2), and Polycelis nigra (Fig. 3).

The genus Dendrocoelum is widely distributed in Europe and adjacent areas of Asia and North Africa. However, only a few dendrocoeloids have been reported in the Iberian Peninsula (Fig. 3). Dendrocoelum lacteum is present at a single locality near the Ebro Delta (Carranza & Giribet, 1997). Another, Dendrocoelopsis brenemti (De Beauchamp, 1919), has been reported in the Bujaruelo Cave, Huesca, in the Pyrenees (De Beauchamp, 1920). De Beauchamp (1932) mentioned two dendrocoeloids in two caves in the Basque Country (northern Spain). Further, one unidentified dendrocoelid has been reported on Menorca (Ribas, 1990).

The genus Phagocata has a Holarctic distribution (cf. Sluys et al. 1995, Fig. 1). However, records for Spain are scarce. Phagocata vitta (Dugès, 1830) is restricted to Tarragona and Girona (northeastern Spain; Arndt, 1926; Baguñà et al. 1980). Arndt’s (1926) conclusion that specimens from Tarragona belonged to Ph. vitta was based only on their external appearance. Here, we assign these specimens to Ph. cf. vitta, as a study of the copulatory apparatus is required to assign them to a particular species. Gourbault (1972, Fig. 4; see also Sluys, 1995) reports Ph. vitta on Mallorca. Unfortunately, we could not trace the original reference. In addition, a cave planarian was reported by Racovitza (1905) from the Coves del Drac in Mallorca (cf. Gourbault & Lescher-Moutoue, 1979). We believe that the record of Ph. vitta mentioned in Gourbault (1972) and this record of a cave planarian are based on the same specimen, i.e. an unidentified cave planarian that could be a Phagocata or a dendrocoelid (both taxa have several cave-dwelling species; cf. Gourbault, 1972). Furthermore, Orghidan (cf. Gourbault & Lescher-Moutoue, 1979) collected an interstitial triclad in a temporary creek near Alaró that could be a Phagocata or a dendrocoelid. Gourbault & Lescher-Moutoue (1979) mentioned that they did not collect any true hypogean triclad in the island’s caves. Phagocata allala (Sluys, 1995) has been reported in the Ebro Delta and in the Pyrenees (cf. Sluys et al. 1995). Gourbault (1981) reported an unidentified species of Phagocata in Nerja (Málaga, Southern Spain; reported as Ph. sp. 2 in Fig. 3).