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Dalytyphloplanida (Platyhelminthes: Rhabdocoela) from Andalusia, Spain, with the description of four new species

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Abstract

Nineteen taxa of Dalytyphloplanida Willems *et al.*, 2006 collected from southwestern Andalusia are discussed. Although most taxa were found in freshwater, three are marine, one occurred in brackish water and *Protoplanella simplex* Reisinger, 1924 was even collected in a dry, limnoterrestrial habitat. Four taxa are new to science. *Castrada purgatorialis* **n. sp.**, *Castrada paradisea* **n. sp.** and *Strongylostoma devleeschouweri* **n. sp.**, all belong to the Typhloplanidae Graff, 1905. The first two species differ from other species of *Castrada* Schmidt, 1861 by the presence of a large accessory bursa and the morphology of the copulatory atrium. *C. purgatorialis* **n. sp.** has zoochlorellae while these are lacking in *C. paradisea* **n. sp.** *Strongylostoma devleeschouweri* **n. sp.** is unique because of its coalescing testes and because of the presence of a sphincter around the stalk of the seminal receptacle. *Gieysztoria iberica* **n. sp.** belongs to the Dalyelliidae Graff, 1905 and is characterized by the extreme length of the girdle of the stylet. Except for five taxa, all specimens were collected within the boundaries of the Doñana National Park. Most of the taxa could easily be identified to species level except for one taxon of Kytorhynchidae Rieger, 1974 and one species of *Phaenocora* Ehrenberg, 1836. Four species are new for the Iberian Peninsula. Three of these, *Trigonostomum penicillatum* (Schmidt, 1857) Micoletzky, 1910, *Promesostoma maculosum* Ax, 1956 and *Gieysztoria macrovariata* (Weise, 1942) Ruebush & Hayes, 1939, were already known from other European localities, whereas *Parapharyngiella involucrum* Willems *et al.*, 2005, a marine species, has previously only been found in Zanzibar, Tanzania.

Key words: turbellaria, Dalytyphloplanida, Palearctic, taxonomy, new species

Introduction

Rhabdocoela is one of the most species-rich groups of free-living flatworms. In freshwater about 50% of the free-living flatworms belong to this group (Schockaert *et al.* 2008). As opposed to Northern and Central Europe, most regions of Southern Europe have been undersampled. Although some work has been done on the rhabdocoel fauna of Spain, there is no information on many parts of this vast peninsula. Previous research mainly focussed on the region around Valencia (Gieysztor 1931), Extremadura (Noreña *et al.* 1999) and the central areas of Spain such as Castilla y León, Castilla-La Mancha and Madrid (Gamo 1987a, 1987b; Farías *et al.* 1995; Gamo & Noreña-Janssen 1998), as well as brackish habitats of the coastal areas of Atlantic Spain including Galicia, Principado de Asturias, Cantabria and País Vasco (Noreña *et al.* 2007). For continental Portugal, Andorra and Gibraltar, no records exist up to date.

Recent molecular research split the Rhabdocoela into two monophyletic sister-clades, the Kalyptorhynchia Graff, 1905 and the Dalytyphloplanida Willems *et al.*, 2006. The latter clade consists of the "Dalyellioida" and "Typhloplanoida s.s." of the old phylogenetic system of Ehlers (1985) (see Willems *et al.* 2006). In total, 103 species (43 genera) of rhabdocoels have been reported from the Iberian Peninsula (Noreña 1997–2008, web reference [1]; Noreña *et al.* 2007). Ninety two of these taxa belong to the Dalytyphloplanida.

In this contribution, an overview is given of the dalytyphloplanid fauna found during a four-week sampling campaign in southwestern Andalusia. Eighteen taxa are discussed, four of which are new to science. The sampling

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