



Two new Otoplanid species (Platyhelminthes: Rhabditophora: Proseriata) of the genera *Orthoplana* Steinböck, 1932 and *Postbursoplana* Ax, 1956 from the Tuscan coast (Italy)

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Abstract

Two new species of marine flatworms, collected on the sandy shores of Tuscany, are described. These species exhibit the morphological characteristics of the subfamilies Otoplaninae and Parotoplaninae (“Turbellaria”, Otoplanidae), but clearly differ from other described species. *Orthoplana lunae* sp. nov., is characterized by a body length of 1.4–1.6 mm, distinctive features of the testes and vitellaries, the male sclerotic apparatus composed of a median stylet (48–49 µm long), and 19 spines (17–44 µm long). *Postbursoplana donoraticensis* sp. nov., is characterized by a body length of 1.6–1.8 mm, the distribution of testes and vitellaries, the male sclerotic apparatus composed of 10 spines (46–70 µm). This new species has a greater body length relative to other species in this genus. They were collected along the sandy shores at low water mark at Partaccia (Marina di Massa, Ligurian Sea, Italy) and Marina di Donoratico (Livorno, Ligurian Sea, Italy), respectively.

Key words: Mediterranean Sea, marine biodiversity, small benthic organisms, proseriate, “Turbellaria”, male sclerotic apparatus, mesopsammon, new species

Introduction

In this paper two new species of “Turbellaria” from north-western Italian sea coasts are described, belonging to the family Otoplanidae (Platyhelminthes, Rhabditophora, Proseriata) (Table 1). These mainly marine interstitial flatworms are globally distributed on sandy shores associated with varying-sized sediments from sand to gravel. They are the dominant taxon in the surf-zone of high energy beaches, defined as ‘Otoplanen-Zone’ of Remane (1933). The new species, *Orthoplana lunae* sp. nov., and *Postbursoplana donoraticensis* sp. nov., belonging to this group of mesopsammitic animals, exhibit the peculiar characteristics of two different subfamilies.

O. lunae belongs to the subfamily Otoplaninae, on the basis of a partially ciliated body, a ciliated creeping ventral body surface, and above all a cylindrical pharynx lying horizontally and ventrally in the posterior trunk region. This species is included in the genus *Orthoplana* (Steinböck, 1932) considering the presence of an epidermis with depressed nuclei and the lack of an accessory male pore, a primary bursa and *receptacula seminis* (Ax 1956 b, Ax & Ax 1967, Karling 1973, Ax & Armonies 1990).

P. donoraticensis is assigned to the subfamily Parotoplaninae on the basis of a partially ciliated body, the ventral ciliate creeping sole and mainly by the collar-shaped pharynx, transversely or obliquely positioned along the longitudinal body axis. This species belongs to the genus *Postbursoplana* (Ax 1956) because of an epithelium with intraepithelial nuclei in all the body and the lack of the antero-ventral row of adhesive papillae; with primary bursa which opens to the genital atrium posteriorly to the copulatory organ and the common germovitellocduct.

Currently, the genus *Orthoplana* includes five valid species: *O. mediterranea* Ax (1956) from Canet Plage on the French Mediterranean coast; *O. kohni* Ax and Ax (1967) from San Juan Island (Pacific Ocean); *O. bregazzii* Karling (1973) from South Georgia; *O. seawardensis* Ax and Armonies (1990) from Seward (Alaska), and the poorly known *O. borealis* Steinböck (1931) from Greenland (Table 2).

On the base of the data presented, *P. donoraticensis* differs from the previously described species in body dimensions and, above all, the characteristics of the sclerotic apparatus. The new species has a close relationship with *P. fibulata*, but represents a new species.

Etymology: The name *donoraticensis* refers to the type locality where this species has been collected. The site of sampling is very close to the village of Marina di Donoratico (Tuscany, Ligurian Sea, Italy), and *donoraticensis* means “coming from Donoratico”.

Habitat. Surf zone.

Distribution. Known only from type locality.

Discussion

Orthoplana lunae **sp. nov.**, differs from the other species of the genus in their body dimensions, the different arrangement of the vitellaries, the location and number of the testes, and especially in the characteristics of the male sclerotic apparatus. This species appears most similar to *O. mediterranea* collected on the French Mediterranean coast. *Postbursoplana donoraticensis* **sp. nov.**, differs from the other species of the genus in their body dimensions, and especially the characteristics of the male sclerotic apparatus. This species appears most similar to *P. fibulata* collected on the French Mediterranean coast.

The composition of the meiofaunal taxa in the Mediterranean has been object of recent interest but it still remains largely unknown. Small benthic cosmopolitan organisms are poorly known and understood, with many potentially new species, limiting the current knowledge on marine biodiversity. The majority of the recognized phyla have meiofaunal representatives and without adequate knowledge of their features, it will never be possible an adequate protection and preservation of marine environmental heritage.

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References

- Ax, P. (1956) Monographie der Otoplanidae (Turbellaria): Morphologie und Systematik. *Akademie der Wissenschaften und der Literatur, Abhandlungen der Mathematisch-Naturwissenschaftlichen Klasse*, 13, 159–278.
- Ax, P. (1959) Zur Systematik, Ökologie und Tiergeographie der Turbellarienfauna in den Ponto-kaspischen Brackwassermeeren. *Zoologische Jahrbücher Abteilung für Systematik, Ökologie und Geographie der Tiere*, 87, 71–89.
- Ax, P & Ax, R. (1967) Turbellaria Proseriata von der Pazifikküste der USA (Washington). *Zoologische Morphologie Tière*, 61, 215–254.
- Ax, P. & Armonies, W. (1990) Brackish water Plathelminthes from Alaska as evidence for the existence of boreal brackish water community with circumpolar distribution. *Microfauna Marina*, 6, 7–109.
- Claus, C. (1887) Lehrbuch der Zoologie. *Bd. 4. Auflage, N. G. Elwertsche Verlagsbuchhandlung, Marburg u. Leipzig*. [unkown pagination, cited from Ehlers & Sopott-Ehlers, 1995]
- Ehlers, U. (1984) Phylogenetisches System der Plathelminthes. *Verhandlungen des Naturwissenschaftlichen Vereins in Hamburg (NF)*, 27, 291–294.
- Ehlers, U. & Sopott-Ehlers, B. (1995) Plathelminthes or Platyhelminthes? *Hydrobiologia*, 305, 1–2.
<http://dx.doi.org/10.1007/BF00036354>
- Hallez, P. (1892) Classification des Triclaides. *Bulletin de la Société Zoologique de France*, 17, 106–109.
- Hallez, P. (1910) Un nouveau type d'Alloiocoele (*Bothriomolus constrictus* n. g. n. sp.). *Archive de Zoologie Expérimentale et Générale*, 3, 611–664.
- Karling, TG. (1973) Anatomy and taxonomy of a new Otoplanid (Turbellaria, Proseriata) from south Georgia. *Mikrofauna des Meeresbodens* 16, 362–269.
- Lanfranchi, A. (1969) Nuovi Otoplanidi (Turbellaria, Proseriata) delle coste della Liguria e della Toscana. *Bollettino di*

Zoologia, 36, 167–188.

<http://dx.doi.org/10.1080/11250006909436914>

Lanfranchi, A. (1978) Morphology and taxonomy of two new Otoplanids (Turbellaria, Proseriata) from the Ligurian Sea. *Zoologica Scripta*, 7, 249–254.

<http://dx.doi.org/10.1111/j.1463-6409.1978.tb00606.x>

Lanfranchi, A., Melai, M. & Meini, G. (2010) *Postbursoplana parafibulata* sp.nov.: A new flatworm from the Ligurian Sea (Plathelminthes, Rhabditophora, Otoplanidae). *Italian Journal of Zoology*, 77, 168–171.

<http://dx.doi.org/10.1080/11250000903037277>

Remane, A. (1933) Verteilung und Organisation der benthonischen Mikrofauna der Kieler Bucht. *Wissenschaftliche Meeresuntersuchungen (N.F.), Abteilung Kiel*, 21, 161–221.

Schneider, A. (1873) Untersuchungen über Plathelminthen. Separatabdruck aus d. 14. *Jahresbericht Oberhessen Gesellschaft für Natur- und Heilkunde Giessen*, 14, 1–78, Tables 3–7.

Steinböck, O. (1931) Marine Turbellaria. *Zoology of the Faroe*, 8, 1–26.