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Spionidae (Polychaeta: Canalipalpata: Spionida) from seamounts in the NE Atlantic

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Abstract

Spionidae (Polychaeta) collected from seamounts in the Atlantic Ocean were studied. Altogether six species were found of which two are new to science and one belongs to a new genus. *Aonidella* cf. *dayi* Maciolek in López-Jamar, 1989 and *Glandulospio orestes* **gen. et sp. nov.** were the most common species and occurred on both the Great and Little Meteor Seamount, the Irving Seamount and the Hyeres Seamount. *Laonice norgensis* Sikorski, 2003 and *Malacoceros jirkovi* Sikorski, 1992 have a wider distribution in the North Atlantic, including the Mediterranean Sea in case of *L. norgensis*. *Aonides selvagensis* Brito, Núñez and Riera, 2006 is only known from the Macaronesian Region. *Dipolydora paracaulleryi* **sp. nov.** has been collected from both the Great and Little Meteor Seamounts. All species are compared with morphological similar species and their taxonomy is discussed. Detailed descriptions are provided for the species new to science and descriptions of the previously known species are amended. Accompanying histological studies revealed the presence of very strong dorsoventral musculature in *A.* cf. *dayi* and for *G. orestes* **gen. et sp. nov.** the presence of glandular organs in the middle body region. *Laonice maciolekae* Aguirrezabalaga & Ceberio, 2005 was found to be a junior synonym of *L. appellöfi* Söderström, 1920 and is formally synonymised. Molecular data suggest gene flow between seamounts and autochthonous as well as allochthonous larval recruitment for different species. The results of previous studies by other authors, that polychaete communities of the North Atlantic Seamounts are characterized by low diversity, low rates of endemism, and the predominance of widely distributed (and cosmopolitan) species is not corroborated by our results.

Key words: *Aonidella* cf. *dayi*, *Aonidella insolita* **comb. nov.**, *Aonides selvagensis*, COI, *Dipolydora paracaulleryi* **sp. nov.**, *Glandulospio orestes* **gen. et sp. nov.**, *Laonice norgensis*, larval dispersal, *Malacoceros jirkovi,* Meteor seamounts, morphology, taxonomy, 16S rDNA, 18S rDNA

Introduction

Spionidae is a group of polychaetes that inhabits virtually all marine habitats from the littoral to the deep sea. They are often common and one of the dominant groups within polychaete communities (e.g., Hempel 1957, Britayev *et al.* 1994, Eibye-Jacobsen 1997, Paterson *et al.* 1998, Probert *et al.* 2001, Glover *et al.* 2001, Cañete *et al.* 2004, Cinar *et al.* 2006, Alalykina 2013). More than 40 genera could currently be regarded as well known with rather detailed generic diagnoses available and more than 500 species assigned to them. Almost 20 additional spionid genera are formally accepted based on information from the World Register of Marine Species (WoRMS, www.marinespecies.org), but are poorly known.

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the dataset. This might suggest additional larval recruitment from other source populations. The genetic variability is even found in the 16S dataset of *A.* cf. *dayi* obtained from six specimens from four different seamounts. In contrast, a complete lack of genetic variability in the 16S gene of *G. orestes* **gen. et sp. nov.** (11 specimens from three seamounts) was observed. This might point to a more limited larval dispersal ability and an autochthonous larval recruitment in this species. Additional data from the faster evolving COI gene would have been helpful here but unfortunately we obtained only one COI sequence. In conclusion, our molecular data corroborate gene flow between the studied seamounts for *A.* cf. *dayi* and *G. orestes* **gen. et sp. nov.**, but propose different larval dispersal abilities and varying recruitment strategies.

Studying the distribution of two gastropod species with different modes of larval development Johannesson (1988) developed a theory known as the "Paradox of Rockall". According to this theory, isolated islands and seamounts are more likely to be populated by species with limited larval dispersal abilities; moreover many taxa adapted to seamount conditions limit their dispersal to maintain their populations. De Forges *et al.* (2000) explain this phenomenon with the generally small size of seamounts, the considerable distance between them and their unique oceanographic environment. At this time we can only speculate about reproductive biology and larval development of spionid species found in the study area, but it seems that settlement of allochthonous as well as (and probably mostly) autochthonous larvae occurs. Local hydrographic conditions induced by the seamount topography particularly favour the settlement of autochthonous larvae with shorter planktonic phases since there is a strong retention potential above seamount plateaus with a tenfold-increase in residence time postulated for the Great Meteor Seamount (Beckmann & Mohn 2002). Teleplanic larvae on the other hand may be passively dispersed thousands of kilometers by ocean currents (including the Canary current as part of the North Atlantic gyre) and eventually reach the seamounts of the central Atlantic Ocean (Scheltema 1992).

Seamounts are increasingly exploited by humans (e.g. fisheries, mineral extraction; Gubbay 2003, Clark *et al.* 2012). The assessment of risk exposure and recovery potential of seamount communities requires detailed knowledge about species composition and species ecology. Our study on the Spionidae has altered our idea about polychaete communities populating the seamounts of the Great Meteor Seamount group significantly. The study of further polychaete taxa will not only improve our understanding of these interesting ecosystems but also deepen our knowledge of polychaete systematics and evolution.

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