



## ***Spiophanes norrisi* sp. nov. (Polychaeta: Spionidae)—a new species from the NE Pacific coast, separated from the *Spiophanes bombyx* complex based on both morphological and genetic studies**

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### **Abstract**

Morphological and genetic studies of specimens identified as *Spiophanes bombyx* (Claparède, 1870) revealed that the supposedly cosmopolitan species represents a species complex. Species belonging to this complex are *S. bombyx* (Claparède, 1870), *S. aucklandicus* Meißner, 2005, *S. uschakowi* Zachs, 1933 and the newly described *S. norrisi*. Morphological differences between these species are slight and concern the start of sabre chaetae, the shape of dorsal ciliated organs, and the start and number of neuropodial hooks in relation to body size. Specimens from the Atlantic Ocean examined in the course of this study also belong to this species complex but could not be assigned to any of the known species. Genetic differences between *S. bombyx* and *S. norrisi* in both examined genes (18S, COI) are significant and genetic distances are comparable to distances found between sister species in other spionid taxa. As expected, the nuclear 18S rRNA is generally more conserved than the mitochondrial COI gene. The significance beyond taxonomy of dorsal ciliated organs and of the presence of sabre chaetae in certain body regions is briefly discussed, but conclusions about the phylogenetic relationships and character evolution within *Spiophanes* must remain tentative.

**Key words:** 18S rRNA, cytochrome oxidase I, cryptic species, dorsal ciliated organs, genetics, nuchal organs, sabre chaetae, *Spiophanes anoculata*, *Spiophanes aucklandicus*, *Spiophanes uschakowi*, taxonomy

### **Introduction**

*Spiophanes* Grube, 1860 is a well-defined genus within the Spionidae. It is readily identified by the large crook-like hooks in the first neuropodia. Other important generic characters are the lack of branchiae and the division of the body into three morphologically distinct regions. A character that proved extremely valuable for the identification of *Spiophanes* species was recently documented by Meißner & Hutchings (2003). This character is referred to as the “chaetal spreader” and is related to glandular organs present in all known *Spiophanes* species in segments of the middle body region. Of particular relevance are the openings of glandular organs on chaetigers 5 to 8. Five different but species-specific types of openings (= chaetal spreader types) have been described (Meißner & Hutchings 2003). The discovery of this character together with the careful examination of previously described diagnostic characters enabled a major revision of the genus, which was published by Meißner (2005). Based on that revision, 29 species are currently considered valid.

However, not all problems have been solved. One of the still problematic species is the cosmopolitan *Spiophanes bombyx* (Claparède, 1870). The type locality of the species is the Gulf of Naples, Italy. In his description Claparède (1870) provided detailed information on the species. For example, he mentioned important diagnostic characters like the prostomial frontal horns, the presence of glandular organs in