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## Revision of *Flabelligera* Sars, 1829 (Polychaeta: Flabelligeridae)

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## Abstract

*Flabelligera* Sars, 1829 is the type genus for Flabelligeridae de Saint-Joseph, 1894 and includes species common in temperate or cold waters in the world oceans. Together with *Flabelliderma* Hartman, 1969 they are the only genera whose neurohooks have multiarticulate handles and bending crests. However, *Flabelliderma* species differ because they form large notopodial lobes, and often have dorsal sediment tubercles. The revision of all type and non-type materials resulted in the distinction of five body patterns within *Flabelligera*; they can be recognized on the basis of body shape, tunic development, parapodial position, notopodial alignment, and shape of neurohooks. *Flabelligera* is restricted and four genera are proposed: *Annenkova* (neurohooks with crests tapered, apparently segmented), *Flabegraviera* (notopodia in laterally descending series, notochaetae and neurochaetae in cylindrical sheaths, markedly longer than body width), *Flabehlersia* (body fusiform, notopodia ventrolateral) and *Flabesymbios* (body papillae not covered by tunic, notopodia dorsal with papillae in fan-shaped pattern, neuropodia ventral). *Flabelligera* contains 16 species with three newly described and a re-

placement name is proposed: *F. haswelli* n. n. *pro F. affine* Haswell, *F. nuniezi* n. sp. from the Northeastern Atlantic and Mediterranean Sea, *F. orensanzi* n. sp. from the Southwestern Atlantic, and *F. salazarae* n. sp. from the Eastern tropical Pacific. *Annenkova* is monotypic: *A. mastigophora* (Annenkova, 1952) n. comb. from the Northwestern Pacific. *Flabegraviera* contains *F. mundata* (Gravier, 1906) n. comb. and *F. profunda* n. sp. both from the Antarctic. *Flabehlersia* includes two species: *F. induta* (Ehlers, 1897) n. comb. from Tierra del Fuego and *F. persimilis* (Annenkova-Chlopina 1924) n. comb. from the Northwestern Pacific. *Flabesymbios* contains two species living on Northeastern Pacific sea-urchins: *F. commensalis* (Moore, 1909) n. comb. on *Strongylocentrotus* and *F. roberti* n. sp. on *Centrostephanus*.

**Key words:** *Siphonostoma*, *Pherusa*, hard-bottoms, soft-bottoms.

## Introduction

Current understanding of the flabelligerid polychaetes is quite irregular since some groups have received more attention than others. For example, deep-sea, borers, or those provided with very thick cuticles are relatively less known than the more active, shallow water forms. Among the latter are the members of *Flabelligera* Sars, 1829. However, despite the fact that many species were described in the 19<sup>th</sup> century, there are many taxonomic problems in the whole family. Thus, after Grube's (1877) revision, the definition of flabelligerid genera has been based upon the relative tunic development, together with the pattern of anterior end appendages, including branchiae, and chaetal features. Some later publications have been refining the early proposals, especially those made by Støp-Bowitz (1948a), Day (1961, 1967), whereas the anterior end appendages were clarified by Spies (1975). Some species previously regarded as members of *Flabelligera* Sars, 1829 have been transferred to *Flabelliderma* Hartman, 1969; further, some morphological features like the formation of large, dorsal tubercles, were employed to provide a general approach to re-organize the species belonging to these two genera (Salazar-Vallejo 2007).

Because *Flabelligera* is the type genus for the family, understanding some historical details is relevant for the Flabelligeridae. Oken (1807:1168) proposed *Pherusa* for *Amphitrite plumosa* Müller, 1776; a few years later (Oken 1815:377), he defined the genus and the species. The first publication was overlooked while the second one prompted discussion, and even some replacement names, because by using the second publication by Oken, it would become a junior homonym of some previously used names in other groups. The date issue was resolved by Støp-Bowitz (1948a:13), such that *Pherusa* has been retained for polychaetes.

In the original description for *A. plumosa*, Müller (1776:216) stated: “*cirro longo utrinque, flabellis caput setasque pediformis tegentibus*” (long lateral branchiae, head with (chaetal) fan and chaetose foot-like). He attributed the name to Fabricius, probably because he had access to a supposedly, soon-to-be-published manuscript. Fabricius (1780:288–289) provided a more complete description; the more relevant features are (p. 288): “*Haec sub involucri suo pupam mentitur ... Corpus integrum pellucidum ... Sub singulo flabello versus abdomen seta simplex robustior s. aculeus longior retro curvatus, aureo-nitidus ... cuius labium superius tenuissimis brevibus numerosis purpureis obsitum ... Flabella 2 maiora antrorsum tendentia caput obtegunt antice supraque connivencia, infra patentia. Involucrum cinereum sericeum, quasi exuviae, totum corpus cingit tam accurate...* (p. 289) *Interdum contingit feminudum vel plane nudum conspiciere vivaciorem.... Extremitatibus suis connuens larvam simulat.*” These fragments translate as (p. 288): ‘It simulates a pupa in its involucrium ... Body completely transparent ... Ventrally, one simple robust acicula-like chaeta, curved, golden... over the lip abundant thin purple filaments... Two large fans cover the head, imperceptible from above but visible from below. Involucrum gray, silky, dehiscent, cover the body ... (p. 289) It can be seen without the cover behaving more actively ... Resembles a larva by retracting the appendages.’

By following these characteristics, one has the impression that Fabricius studied at least two different forms: one would correspond with what is currently regarded as *Flabelligera*, because most of the above features can be easily seen in that genus; however, by referring to a form without a tunic, he might have included what we now regard as *Pherusa*. Conversely, the retractable appendices should be assigned to *Flabelligera*, since there are only eight branchial filaments in *Pherusa*. However, despite the fact that most features could be linked to *Flabelligera*, the confusion remained and was continued by the redescription made a few years later (Müller, 1789:16–17, Pl. 90, Figs. 1, 2). There, he still referred to the dehiscent tunic, added some biological notes, and two figures belonging to what now is regarded as *Pherusa*.

The confusion was resolved by Sars (1829:31–34, Pl. 3, Figs. 16–19). First, he restricted *P. plumosa* to those forms with long cephalic cage chaetae and only eight branchial filaments. Second, he described *F. affinis* to include