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Revision of *Piromis* Kinberg, 1867 and *Pycnoderma* Grube, 1877 (Polychaeta: Flabelligeridae)

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Abstract

The taxonomy of flabelligerid polychaetes has been difficult because of three main problems: 1) the eversible anterior end is rarely exposed and its appendices are poorly known, 2) there is no standard terminology for chaetae, and 3) most generic definitions have been unstable or improperly defined. A redefinition and revision of all species in *Piromis* Kinberg, 1867 and *Pycnoderma* Grube, 1877 is herein presented. *Piromis*, *Pycnoderma*, and *Trophoniella* Caullery, 1944 share a thick tunic and a projected, tongue-shaped branchial plate. Their main difference is the type of neurochaetae in median and posterior chaetigers; thus, *Piromis* has multiarticulate, often bidentate neurochaetae, whereas *Pycnoderma* has oligoarticulate, often mucronate neurochaetae, while *Trophoniella* has anchylosed neurochaetae. This latter genus is being revised elsewhere. The species in *Piromis* or *Trophoniella* are separated depending on the extent and type of sediment cover, together with the presence of notopodial or dorsal lobes, the relative length of chaetal articles, especially in neurochaetae, and the relative abundance of body papillae or cephalic cage chaetae. As herein defined, *Piromis* includes 12 species with five being newly described, while *Pycnoderma* includes eight species with three being newly described. The species in *Piromis* are *P. arenosus* Kinberg, 1867 (type species), *P. amoureuxi* **n. sp.** from the Lesser Antilles, *P. brisegnoi* **n. sp.** from the Gulf of California, *P. capulata* (Moore, 1909) **n. comb.**, *P. eruca* (Claparède, 1869), *P. fauchaldi* **n. sp.** from the Gulf of California, *P. kisemboanus* (Augener, 1918) **n. comb.**, *P. robertsi* (Hartman, 1951), *P. suni* **n. sp.** from the South China Sea, *P. vossae* **n. sp.** from the Strait of Florida, *P. websteri* Day, 1973 n. status, and *P. wehei* **n. sp.** from the Indian Ocean. On the other hand, the species in *Pycnoderma* are *P. congoense* Grube, 1877 (type species), *P. dannyi* **n. sp.** from tropical Western Africa, *P. escobarae* **n. sp.** from the Gulf of Mexico, *P. ferruginea* (Gallardo, 1968) **n. comb.**, *P. glabra* (Treadwell, 1901) **n. comb.**, *P. glasbyi* **n. sp.** from Northeastern Australia, *P. gracilis* (Hartman, 1961) **n. comb.**, and *P. talehsapensis* (Fauvel, 1932) **n. comb.** Another species, *P. fernandense* Augener, 1918, described from two localities from Ghana and Equatorial Guinea, is transferred to *Trophoniella* Caullery, 1944, by having anchylosed neurospines in posterior chaetigers. All *Piromis* and *Pycnoderma* species thrive in sediments, sometimes in mixed environments, in tropical to temperate regions. *Piromis* includes mostly shallow water species while *Pycnoderma* includes species living in greater depths.

Key words: *Aristenia, Balanochaeta, Trophoniella*, benthos, sediments

Introduction

For many polychaete families, the compilation by Fauchald (1977) is the only worldwide definition of genera. For the flabelligerids, Fauchald (1977:116) included *Piromis* Kinberg, 1867, and *Trophoniella* Caullery, 1944, with the former provided with a tongue-shaped branchial plate, while the latter was stated to have four pairs of branchiae. He regarded *Pycnoderma* Grube, 1877 as a junior synonym of *Piromis*. On the other hand, Day (1967:654–655) regarded these two genera as distinct, but since there were no species recorded from South Africa, *Trophoniella* was not included.

A recent study (Salazar-Vallejo *et al.* 2008) has shown that the type species for these three genera have a tongue-shaped branchial plate, with many branchial filaments and very thick tunics, with a variable amount of sediment particles. However, there is some confusion over the composition of the genera and a worldwide revision is necessary to clarify these issues. The tunic is very thick in several flabelligerid genera, especially in these three, and resembles a tube fixed over the body wall (Borodin 1929:43), while the branchial plate is rarely exposed, thus limiting its relevance as a diagnostic feature. Thus, the taxonomy of the group has been problematic especially due to inadequate generic definitions, particularly since little attention has been paid to chaetal patterns. Consequently, together with a revision of any available specimens, a detailed history is required.

As physician and zoologist during the Swedish *Eugenie* expedition around the world (Sep. 1851 – Jul. 1853), Kinberg (1867) had the opportunity to study polychaetes alive. For some collected in South Africa, he proposed *Piromis* for the species *Piromis arenosus*. Why he had chosen this name is enigmatic; perhaps it was after observing the eversible anterior end, because the tongue-shaped branchial plate is roughly pear-shaped (L. *pirum*, *pirus*, pear). However, for the diagnosis, Kinberg (1867:338; 1910:337) indicated: "… bases branchiarum duæ, conicæ, branchiis terminalibus cirrosis;" (two branchial bases, conical, branchial filaments marginal). As in many other genera, the taxonomic definition was often confused and therefore unstable.

Thus, this diagnosis combined with an apparent confusion about the figures in Kinberg (1910, Pl. 26, Figs. 2 vs. 3) prompted Chamberlin (1919:396) to regard, in his key to flabelligerid genera, that *Piromis* had pedunculate branchiae and regarded it, consequently, as being closely allied to *Coppingeria* Haswell, 1892. In the same key,