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Six new species of the gutless genus *Olavius* (Annelida: Clitellata: Tubificidae) from New Caledonia

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Abstract

Six species of the gutless marine tubificid genus *Olavius* Erséus, 1984 (Phallodrilinae), *O. paraloisae* sp. nov., *O. amplectens* sp. nov., *O. isomerus* sp. nov., *O. fidelis* sp. nov., *O.lifouensis* sp. nov., and *O. nivalis* sp. nov., are described from shallow-water sediments in New Caledonia (including the Loyalty Islands), in the South West Pacific Ocean. *Olavius amplectus* is similar (but not necessarily closely related) to a North West Atlantic species. The others appear closely related to previously described taxa in the Indo-West Pacific region, but they differ in the number of secondary body annuli, the number, shape and arrangement of chaetae, or in details of the male genitalia and/or spermathecae. Moreover, fixed (contracted) specimens of *O. nivalis* measured up to 34 mm length, which makes it one of the largest species of gutless Phallodrilinae known to date.

Key words: Clitellata, Tubificidae, gutless oligochaetes, *Olavius*, new species, New Caledonia

Introduction

Tubificidae is a large family of small worms of Clitellata. It is a well-known component of freshwater bottom fauna, and also the most abundant clitellate group in marine habitats (Erséus 1990a, 2005). Two marine genera, *Inanidrilus* Erséus, 1979, and *Olavius* Erséus, 1984, comprise a group of interstitial gutless Phallodrilinae (a subfamily within Tubificidae) discovered in the late 1970s (Erséus 1979; Giere 1979). The species included in these genera are mostly restricted to the tropical and subtropical seas of the world, and they are particularly dense in the layers of the sediments where oxygen levels are low, and where hydrogen sulphide provides energy to the bacterial symbionts that live underneath the cuticle of the worms (Giere & Langheld 1987; Giere et al. 1995, Dubilier et al. 2001). So far 79 gutless species have been named and described, and the number of new species is continuously growing (Erséus 2003).

The species dealt with in this study are members of the genus *Olavius*, which early on was separated from *Inanidrilus* by its horizontally located atria and possession of distinct copulatory sacs (Erséus 1984). Most species of *Inanidrilus* lack copulatory sacs, and their atria are vertically oriented in the body. Moreover, *Inanidrilus* has sickle-shaped "penial chaetae" (i.e., modified chaetae associated with the male genitalia), and they are typically two per bundle. In *Olavius*, the penial chaetae vary in shape and number, sometimes being about ten or more per bundle (Erséus 1984). Recent analyses of DNA data, however, suggest that, while *Inanidrilus* is likely to be a monophyletic group, *Olavius* is paraphyletic (Erséus et al. in prep.).

While participating in two expeditions to New Caledonia, in the South Pacific Ocean, arranged by French colleagues (principal investigator, Dr. Philippe Bouchet) in 1993 and 2000, the first author collected an extensive material of gutless Phallodrilinae. The aim of the present paper is to describe six new species of *Olavius* from this material.

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