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The caudinid sea cucumbers of New Zealand (Echinodermata: Holothuroidea: Molpadida: Caudinidae)

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Abstract

Five species of Caudinidae occur in New Zealand waters. Two new species are described: *Paracaudina alta* **sp. nov.**; *Paracaudina reductia* **sp. nov.** Two species reported previously are discussed: *Paracaudina chilensis* (Müller) and *Paracaudina coriacea* (Hutton). A lectotype has been established for *P. coriacea* (Hutton). *Hedingia albicans* var. *glabra* (Théel) is raised out of synonymy with *Hedingia albicans* (Théel), and the variety elevated to species status as *Hedingia glabra* (Théel). A key is provided for the New Zealand species of Caudinidae.

Key words: *Hedingia*, *Paracaudina*, synonymy, variety, new species, key

Introduction

Recently O'Loughlin *et al.* (2011) published a revision of the paracaudinid sea cucumbers of Australia and New Zealand and anticipated this revision of Caudinidae species of New Zealand. They raised the New Zealand species *Paracaudina coriacea* (Hutton, 1872) out of synonymy with the circum-Pacific species *Paracaudina chilensis* (Müller, 1850), and reported that both species occur in New Zealand waters. The Invertebrate collection (NIC) at the National Institute of Water and Atmospheric Research Ltd (NIWA) in Wellington, New Zealand holds many lots of specimens of Caudinidae collected from shallow and deep water around New Zealand. We have examined all of these and confirm the presence of both these as discrete species.

After examining a small sample of NIWA caudinid lots, O'Loughlin *et al.* (2011) concluded that at least two additional undescribed species occur in New Zealand waters. We confirm two new species and describe them here. Théel (1886) referred four *Challenger* specimens taken in the northwest Atlantic to his new species *Trochostoma albicans*. Subsequently a number of Atlantic specimens were collected for which Deichmann (1938) erected the new genus *Hedingia* with *T. albicans* Théel, 1886 as type species. Amongst the *Challenger* specimens there was a single specimen taken from deep water off East Cape on the North Island of New Zealand. Théel (1886) erected the variety *Hedingia albicans* var. *glabra* for this specimen. H. L. Clark (1908) and Deichmann (1930) included this variety in their synonymies of *Caudina albicans* (Théel, 1886), although H. L. Clark noted his confidence that the variety would be found to be "specifically distinct". In the absence of specimens the status of the variety has remained unresolved. NIWA holds good specimens of this variety from deep water east of New Zealand and our examination of them confirms the anticipation of H. L. Clark (1908) that the variety represents a discrete species. We, therefore, raise *H. albicans* var. *glabra* (Théel, 1886) out of synonymy to species status.

We also examined three British Natural History Museum (NHMUK) specimens collected from New Brighton, New Zealand. These are labelled "syntypes" of *Molpadia coriacea* Hutton, 1872 and have been previously discussed and illustrated by Heding (1933). Heding did not specifically refer to these New Brighton specimens as types, nor did he note any other known type material. In the absence of any confirmed holotype of *M. coriacea*, we here select a lectotype for the Hutton species from these specimens.