

Amazing Diversity of *Nothria* (Annelida, Onuphidae) in the Australian Deep Sea

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ABSTRACT. The epibenthic onuphid genus *Nothria* Malmgren, 1867 presently comprises 21 accepted species. We are reporting here on specimens collected during six deep-sea expeditions of the RV *Investigator* from 2015–2018 to the Great Australian Bight (GAB) and off eastern Australia from Tasmania to Queensland, describing eight new species of *Nothria*. This is the first integrated study of the genus, sequencing the markers COI, 16S rDNA and 28S rDNA from 37 specimens and employing conventional and exploratory morphological characters as well as tube consistency and structure for identification. Molecular data provided strong support for recognition of the eight new species and the *Nothria otsuchiensis* Imajima, 1986 species complex. Since the analysis of morphology between the specimens of this complex has not revealed any obvious differences, it may represent a complex of cryptic species. *Nothria digitata* sp. nov. was collected at a depth of 400 m whilst the remaining seven new species are from depths of 980–2751 m. *Nothria deltasigma* sp. nov., *N. digitata* sp. nov. and *N. minima* sp. nov. were collected at a single station each, while *N. josae* sp. nov. and *N. simplex* sp. nov. were found at two stations. However, *N. delta* sp. nov. displayed the widest distribution, occurring at GAB, Tasmania and Jervis Bay Marine Park, NSW. Most stations yielded only one species, Jervis Bay Marine Park and south of Brians, Tasmania, harboured two, but an astounding example of sympatry was discovered at Huon Marine Park, Tasmania, where three species, *N. delta* sp. nov., *N. lizae* sp. nov. and *N. orensanzi* sp. nov. were collected together in one station.

Introduction

Onuphid annelids of the genus *Nothria* Malmgren, 1867 construct distinctive dorsoventrally flattened tubes, externally covered mainly with shell fragments, foraminiferans, sand grains, spines and other materials. As they extend their greatly enlarged anterior parapodia from this tube, moving along the sea floor in a caterpillar-like fashion, they are known as epibenthic crawlers and have been

reported worldwide from shallow subtidal waters to abyssal depths (Kucheruk, 1980, 1985; Paxton, 1986a; Budaeva & Paxton, 2013). The number of recognized species of *Nothria* was listed as 19 by Budaeva & Paxton (2013) and rose to the presently accepted 21 species with the description of *N. nikitai* Budaeva, 2014 and the addition of *N. edwardsi* (Roule, 1898) originally described as *Hyalinoecia* and transferred to *Nothria* by Arias & Paxton (2016).

Six *Nothria* species have been reported from depths below

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