



Two new free-living nematode species (Comesomatidae) from the continental slope of New Zealand, with keys and notes on distribution

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Abstract

Two new free-living marine nematode species of the family Comesomatidae are described from the continental slope of New Zealand, and their distributions at 32 sites are investigated in relation to environmental factors. *Vasostoma aurata* n. sp. is characterised by a distinctly set-off head, amphideal fovea with 4.5 turns, conspicuous chords consisting of two bands fusing at body extremities, with outline of cell bodies usually golden-coloured, and relatively short spicules. *Setosabatieria conicauda* n. sp. is characterised by an amphid with 4.25–4.5 turns, the presence of only 1–3 sub-cephalic setae per file, several clusters of intracellular inclusions, sometimes brown-coloured, in the intestinal wall, and a conical tail. Keys to all known species of *Setosabatieria* and *Vasostoma* are provided. Both species were mostly restricted to subsurface (1–5 cm depth) sediments. The abundance of *V. aurata* n. sp. and *S. conicauda* n. sp. was significantly correlated with food quantity and quality, but the patterns differed between species. The effect of food-related factors may be directly linked to interspecific differences in food requirements, or mediated by biogeochemical processes (i.e., tolerance of sub-surface oxygen and sulphide concentrations). No significant correlations were found between sediment granulometry and abundances, despite the wide range of sediment grain-sizes (6–93% silt and clay) at the sampling sites.

Key words: biosystematics, dichotomous keys, Chatham Rise, Challenger Plateau, *Vasostoma aurata* n. sp., *Setosabatieria conicauda* n. sp., chloroplastic pigment concentration, sediment granulometry

Introduction

Deep-sea nematode communities exhibit high alpha diversity compared to shallow water communities (e.g., Lambhead & Boucher 2003). The number of free-living nematode species reported from the deep sea (< 700), however, is limited compared to the total number of free-living marine nematode species described to date (4000–5000) (Miljutin *et al.* 2010). Vast areas of the deep sea floor have not been studied due to logistical difficulties associated with deep-sea sampling and the scarcity of taxonomic expertise. The deep-sea nematode fauna in the south-western Pacific region, in particular, is very poorly known, with only eight species records to date (Miljutin *et al.* 2010). Two of these records were made within the New Zealand Exclusive Economic Zone (EEZ) based on material collected during the *Galathea* expedition in 1951 (Wieser 1956). The two species, *Thoracostoma bruuni* Wieser 1956 and *Synonchoides galathea* (Wieser 1956) Platonova 1970 were described from the eastern Tasman Sea (595 m water depth) and the southern Kermadec Trench (4510–4570 m water depth).

Nematode specimens are usually identified only to genus or putative species in deep-sea ecological studies. Consequently, very little information is available about the distribution of nematode species. About one hundred species are known to have a wide (> 1000 m) depth range; *Desmolorenzenia desmoscoleoides* Timm 1970, for example, has been found from depths of 460 to 6200 m and has the greatest depth range recorded so far for nematodes (Miljutin *et al.* 2010). Many species have been recorded from more than one ocean basin and may have cosmopolitan distributions (Miljutin *et al.* 2010). Thus, the evidence available to date suggests that some deep-sea nematode species have wide bathymetric and/or geographic ranges, but little is known about the potential influence of environmental factors (e.g., sediment granulometry, food availability) on their distribution. A better knowledge