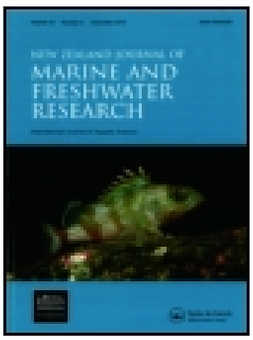

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NEW SPECIES OF *EUZONUS* (POLYCHAETA: OPHELIIDAE) FROM A NEW ZEALAND SANDY BEACH

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ABSTRACT

Euzonus otagoensis n.sp. is described from a wave-exposed, sandy beach on the Otago Peninsula, New Zealand. This is the first published record of the genus for the New Zealand region. *E. otagoensis* is mainly distinguished from the other species of the genus by its 14 prebranchial setigers and bifurcate branchiae with small pinnae on the superior filament.

INTRODUCTION

During an incidental examination of the intertidal sand fauna of Allans Beach, Otago Peninsula (45° 53′ S, 170° 42′ E), a dense population of an opheliid polychaete was discovered at about mid-tide level. The worm belongs to the genus *Euzonus*, hitherto unknown from the New Zealand region in published literature. Whitley (unpublished 1966) records the genus from material collected north of Auckland, and refers his single specimen to the Magellanic species *E. furcifera* (Ehlers). Material examined in the present study, however, is considered sufficiently distinct to warrant the description of a new species.

Hartman (1956) recognises two subgenera of *Euzonus*: *Euzonus, sensu stricto,* in which the branchiae are pectinate or secondarily dichotomously divided, and *Thoracophelia,* in which the branchiae are bifurcate. This division has not been adopted here because of confusion in the literature, particularly in the subgeneric placing of *E. williamsi* (Hartman) (Hartman 1967, 1969) and the anomalous position of *E. flabellifera* (Ziegelmeier).

Apart from the abyssal species *E. profundus* Hartman, the genus is typically associated with shallow-water or clean intertidal sand habitats. *E. mucronata* (Treadwell), for example, is a characteristic member of the exposed beach fauna of the north-eastern Pacific (McConnaughey & Fox 1949) where its abundance and availability have resulted in its use in a variety of studies (e.g., Fox *et al.* 1948; Dales 1952). Possibly *E. otagoensis,* which is at least locally abundant, may be a suitable species for similar laboratory and field studies in New Zealand.

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Family OPHELIIDAE

Genus **Euzonus** Grube, 1866

Euzonus otagoensis n.sp. Fig. 1 a–c

MATERIAL EXAMINED: The species description is based on 89 specimens all collected from Allans Beach, Otago Peninsula: 60 specimens collected 2 March 1975, 14 specimens collected 30 June 1975, and 15 specimens collected 25 July 1975.

DESCRIPTION: The general body colour of live individuals is red. Preserved specimens are dull pink to white. Individuals measure 10–35 mm in length, and 1.0–2.5 mm in diameter. The body consists of 38 multi-annulate setigers, including 14 anterior abranchiate setigers, 18 branchiferous segments, and 6 posterior abranchiate setigers (Fig. 1a).

The prostomium is small and pointed, with a pair of nuchal pits, and without eyes. The prebranchial region is approximately cylindrical, first two setigers are slightly inflated and, as typical for the genus, are marked off from those following by a well defined constriction of the body. A conspicuous glandular ridge occurs on setiger 10, and a smaller glandular ridge is usually apparent on the following segment. A deep, mid-ventral groove commences in the region of setigers 10–11, and continues to the posterior end of the body. A pair of nephridiopores is present on each of setigers 12–16. The parapodia are biramous, with inconspicuous lobes, and carry unornamented capillary setae. The latter are short, and number about 6–12 per fascicle, except on setigers 2–4 and 34–38 which bear, in both rami, about 8–15 distinctly longer setae. Bifurcate branchiae, with branches of subequal length, are borne on setigers 15–32. The superior branch bears 1–3 poorly developed pinnae on the dorsal side of its distal half (Fig. 1b), except on the 4–6 most posterior pairs of branchiae, which lack pinnae. Distinct branchial pinnae were not detected on the smallest individuals. The pygidium is broad at its base, and tapers to a single, stout, ventral cirrus. Dorsal anal cirri, disposed as an inverted V over this ventral plate, most commonly number 14–16, with a range of 6–9 cirri per side (Fig. 1c).

HABITAT: Well sorted, clean, fine sand at about mid-tide level. In July 1975 the population density at Allans Beach was estimated at 690 per square metre (from five 0.1 m^2 samples). On the three occasions when worms were collected, there was no visual, surface evidence of burrowing activity, in contrast to the honeycombed beach surface illustrated by McConnaughey & Fox (1949) for *E. mucronata*.

TYPES: The holotoype and five paratypes are deposited in the National Museum, Wellington (registration numbers: holotype, Zw 1080; paratypes, Zw 1081).

TYPE LOCALITY: North-east end of Allans Beach, Otago Peninsula (approx. 45° 52.7′ S, 170° 42.2′ E), at about mid-tide level.

DISCUSSION

Of the nine species of *Euzonus* already described, four have predominantly bifurcate branchiae as in *E. otagoensis*, and the remaining five species have branchiae that are mainly trifurcate, e.g., *E. flabellifera* (Ziegelmeier), pectinate, e.g., *E. dillonensis* (Hartman) and *E. ezoensis* (Okuda), or pectinate with secondary dichotomous divisions, e.g., *E. arcticus* Grube and *E. yasudai* (Okuda).

Some of the characters of the species with mainly bifurcate branchiae are compared with those of *E. otagoensis* in Table 1, from which it can

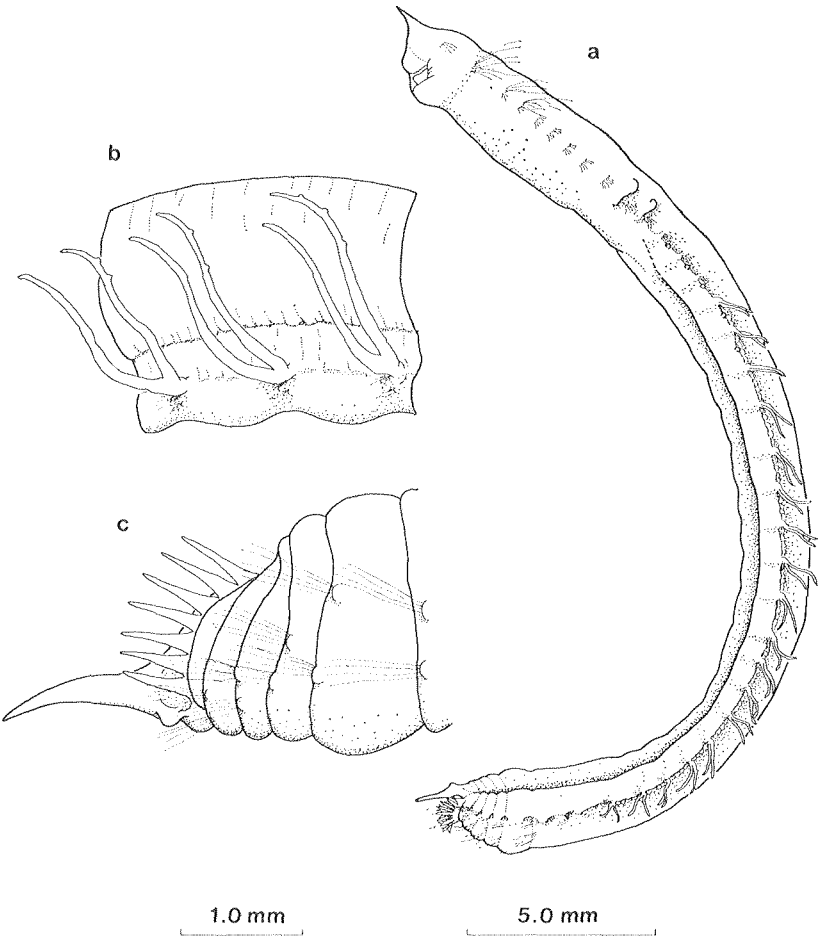

FIG. 1—*Euzonus otagoensis* n.sp.: (a) entire worm, ventrolateral view; (b) three branchiferous segments from middle of body, lateral view; (c) posterior region, lateral view—the anal cirri on the left side have been ommitted for clarity.

be seen that *E. otagoensis* is readily distinguished by its 14 anterior abranchiate setigers, whereas the other four species have a shorter prebranchial region of only 10 or 12 setigers. *E. otagoensis* also differs in having small pinnae on the superior branchial filament, and a secondary glandular area on setiger 11.

Although some degree of intraspecific variation in the number of segments comprising the main body regions is normal in many polychaete families, a surprising numerical constancy in segmentation is shown by

TABLE 1— Characters of the species of *Euzonus* with mainly bifurcate branchiae. The body formula, as originally used by Tebble (1952) for the genus *Ophelia,* gives the number of anterior abranchiate setigers, branchial setigers, and posterior abranchiate setigers respectively. The data are from original descriptions, as well as from Fauvel (1941), in brackets, for *E. furcifera*; McConnaughey & Fox (1949) for *E. mucronata,* who point out that the first setiger is overlooked in the original description; and Hobson (1974), in brackets, for *E. williamsi.*

	E. profundus Hartman	*E. furcifera* (Ehlers)	*E. mucronata* (Treadwell)	*E. williamsi* (Hartman)	*E. otagoensis* n.sp
No. of setigers	30	38 (36–38)	38	38	38
No. of pairs of branchiae	15	20	18	16 (19)	18
Branchial region setigers	11–25	13–32	13–30	13–28 (13–31)	15–32
Branchial pinnae	Absent	Absent	Absent	Well developed	Very small
Anal cirri	1 + 6	1 + 10 (13–15)	1 + 14	1 + 14 (13)	1 + 13–18
Body formula	10a +15b + 5a	12a + 20b + 6a	12a + 18b + 8a	12a + 16b + 10a (12a + 19b + 7a)	14a + 18b + 6a

some opheliids, as pointed out by Day (1967). Species descriptions appear to indicate that in the genus *Euzonus* the number of prebranchial setigers is a reliable diagnostic character, but the number of post-branchial setigers, or pairs of branchiae, is more likely to vary, as in *E. williamsi.* The 89 specimens of *E. otagoensis* examined in the present study all had the same number of prebranchial, branchial, and post-branchial setigers. The number of dorsal anal cirri, on the other hand, was variable in this species, as shown by the following figures which give the total number of dorsal anal cirri, with the percentage of individuals in brackets: 13 (9.0%), 14 (28.1%), 15 (27.0%), 16 (28.1%), 17 (6.7%), 18 (1.1%).

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