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A NEW SPECIES OF *NEANTHES* (POLYCHAETA: NEREIDIDAE) FROM SOUTHERN AUSTRALIA

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Abstract

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A new species of *Neanthes* from southern Australia is described. Examination of several species of *Neanthes* has resulted in a re-interpretation and stronger emphasis of parapodial characters than is usual in descriptions of nereidid species. These characters are used to describe *Neanthes tasmani* sp. nov. and to distinguishing the new species from the closely related *Neanthes bassi* Wilson, 1984.

Introduction

In an earlier study of *Neanthes* from Victoria, Wilson (1984) found four specimens closely allied to *Neanthes bassi* Wilson, 1984 that possessed characters indicating they belonged to a different species. Re-examination of these four specimens and additional material, as well as more material of *N. bassi*, confirms that this material belongs to a new species.

This study has also resulted in a re-evaluation of parapodial characters used to describe nereidids. The use of detailed descriptions of morphology of parapodia in nereidids was presented by Hylleberg et al. (1986) and Hylleberg and Nateewathana (1988). The importance of these characters is evident in several apparently closely related species of *Neanthes* from southern Australian waters. Parapodial characters tend to vary with specimen size. Wilson (1984) showed that parapodial ligules and lobes tend to occur over a smaller range of chaetigers in specimens with body width less than 1.5 mm than in larger specimens. Parapodial ligules and lobes may be missing altogether in specimens with body width less than 1 mm, especially pre- and postchaetal lobes.

In the present study a distinction is made between a prechaetal or postchaetal lobe and an acicular process. These features are used in the present description to distinguish *N. tasmani* sp. nov. from closely related taxa. My own examination of several nereidine taxa has proved these features to be important characters over a wide range of taxa within the subfamily. In the notopodium a prechaetal lobe is clearly present as

a lobe (Fig. 1B) but might be of any size from a small lobe barely evident beyond the dorsal collar to a lobe as long as the dorsal and ventral ligules. An acicular process on the other hand is fused to the ventral notopodial ligule as a ridge on the ligule itself (Fig. 1D). In the neuropodium a clearly identifiable postchaetal lobe is found in many species. This lobe might be digitiform or flattened, a distinction that should be explicit in descriptions. The postchaetal lobe may be reduced in posterior chaetigers, present throughout the body or be absent. If the lobe is absent an acicular process might be present instead, most often seen as an oval process protruding beyond the tip of the aciculum. Pre- and postchaetal lobes and acicular processes can be seen in figures in earlier studies (e.g. Hutchings and Turvey, 1982; Wilson, 1984), but it is important that they are clearly outlined in species descriptions so that otherwise similar species can be distinguished using these characters. To give parapodial characters a stronger emphasis an end-view of parapodia are drawn for *N. tasmani* following the example of Hylleberg and Nateewathana (1986).

The material presented in this work is deposited in Museum Victoria, Melbourne (NMV), Australian Museum, Sydney (AM) and the South Australian Museum, Adelaide (SAM). Measurements of body width are measured without parapodia at about chaetiger 10. This is consistent with earlier studies (e.g. Wilson, 1984) and will be used in future studies as a standard measurement.

Neanthes Kinberg, 1866

Type species. Neanthes vaalii Kinberg, 1866.

Diagnosis. Eversible pharynx with conical paragnaths on both rings, bar-shaped paragnaths in Area IV may be present. Four pairs of tentacular cirri. Parapodia biramous. Notochaetae homogomph spinigers; neurochaetae including homogomph and heterogomph spinigers (after Wilson, 1988).

Neanthes bassi Wilson

Neanthes bassi Wilson, 1984: 210–212, fig. 1.

Material examined. Holotype, NMV F50005. Paratypes, NMV F50006–F50011 (fully location data given in Wilson, 1984).

Additional material. Victoria. NMV F50012–F50017; NMV F50123 (2 specimens); NMV F41866 (referred to as G1866 with full data in Wilson, 1984).

Tasmania. Coles Bay, near boatramp (42°7.0'S 148°17.0'E), 0.5 m, *Zostera* sediment, airlift, 21 Apr 1985, R.S. Wilson (stn TAS 18), NMV F88282.

South Australia. Upper Spencer Gulf (33°16'S 137°51'E), 16 km SW of First Creek, subtidal sand, 12.1 m, T.J. Ward and P.C. Young (stn 795 CG/7), AM W21787; Spencer Gulf, Sir Joseph Banks, Group Reevesby Is, Home Bay South, seagrass bed, upper subtidal, 22 Jan 1986, S.A. Parker, SAM T.E5831 (32 specimens); Pt Lincoln, SAM T.E5859 (1 specimen, epitoke).

Western Australia. Stuart Head, Yacht Club, Princess Royal Harbour (35°04'S, 117°55' E), *Posidonia australis*, 1 m, handheld corer on SCUBA, P. Hutchings, Jan 1988 (site 7), AM W26811; Bramble Point, Princess Royal Harbour (35°02'S, 117°55'E), *Posidonia sinuosa*, 2.5 m, handheld corer on SCUBA, P. Hutchings, Jan 1988 (site 11), AM W26812.

Description. Size range of material examined from 3 mm long, 15 chaetigers and less than 1 mm wide to 22 mm, 70 chaetigers, 1.5 mm wide (complete specimens); from 10 mm, 20 chaetigers, 2 mm wide to 38 mm, 58 chaetigers, 4 mm wide (anterior fragments). Pharynx with conical paragnaths and bars in Area IV, paragnath counts for 29 specimens includes: I = 0–4; II = 6–27; III = 1–14; IV = 1–18, in addition 2–7 bars on each side; V = 0–1; VI = 2–16, usually less than 10; VII–VIII = 5–30. Glandular patches in notopodia present from midbody chaetigers. Prechaetal notopodial lobe (as described by Wilson, 1984) absent but notopodial acicular process present in chaetigers 5–25.

Habitat. Some of the material reported here was collected in the intertidal and upper subtidal, extending the depth-range for this species from intertidal to 51 m. The shallower records are

from seagrass-beds including *Posidonia* and *Zostera*.

Distribution. *Neanthes bassi* is recorded for the first time in Western Australia at Albany and in South Australia from Spencer Gulf. This species is only known from southern Australia, Albany, WA, to off Lakes Entrance, Vic., including north and east coasts of Tasmania.

Remarks. The material examined agrees well with the original description, although parapodial characters are reinterpreted. Numbers of paragnaths are extended for some Areas. Dorsal pigment spots described from the material in the original description are absent in some specimens from Spencer Gulf (SAM T.E5831), and tend to vary in prominence in other specimens.

Neanthes tasmani sp. nov.

Figure 1

Neanthes cf. *bassi* Wilson, 1984: 212.

Material examined. Holotype. Eastern Bass Strait, 100 km off North Point, Flinders I., (31°51.8'S, 148°26.5'E), 130 m, fine sand, Smith-MacIntyre grab, R. Wilson, 15 Nov 1981, RV *Tangaroa* (stn BSS 170-G), NMV F50018.

Paratypes. Eastern Bass Strait, 100 km off North Point, Flinders I. (31°52.6'S, 148°25.2'E), 140 m, WHOI epibenthic sled, R. Wilson, 15 Nov 1981, RV *Tangaroa* (stn BSS 170-S), NMV F50019–F50021 (3 specimens). Tasmania, E of Maria I. (42°36.0'S, 148°10.0'E), 75 m, fine bryozoa and shell, WHOI epibenthic sled, R.S. Wilson, 23 Apr 1985 (stn TAS 30), AM W27491 (2 specimens).

Description. Holotype, complete specimen 9 mm long for 44 chaetigers, 1.5 mm wide. Body robust, flattened, tapering posteriorly. Colour in alcohol creamy yellow. Prostomium slightly wider than long. Two pairs of dark red to black eyes. One pair of antennae 1.5 times longer than palps. Palps stout with conical palpostyles, wider than long. Four pairs of tentacular cirri, faintly annulated, longest (posterodorsal) pair reaching to chaetiger 9. The first (apodous) segment broadened, enclosing the posterior part of prostomium. Pharynx with translucent yellow to light brown jaws with 7 teeth. Conical paragnaths present on both rings and short bars also present in Area IV, arranged as follows: I = 3 in a longitudinal row; II = 18 (left), 20 (right), 2 rows in an arc; III = 5 in a diamond-shaped group; IV = 15 (left), 7 (right), bars missing on left side, 4 bars on right side; V = 0; VI = 3 (left), 3 (right), in one row; VII–VIII = 8, in single row.

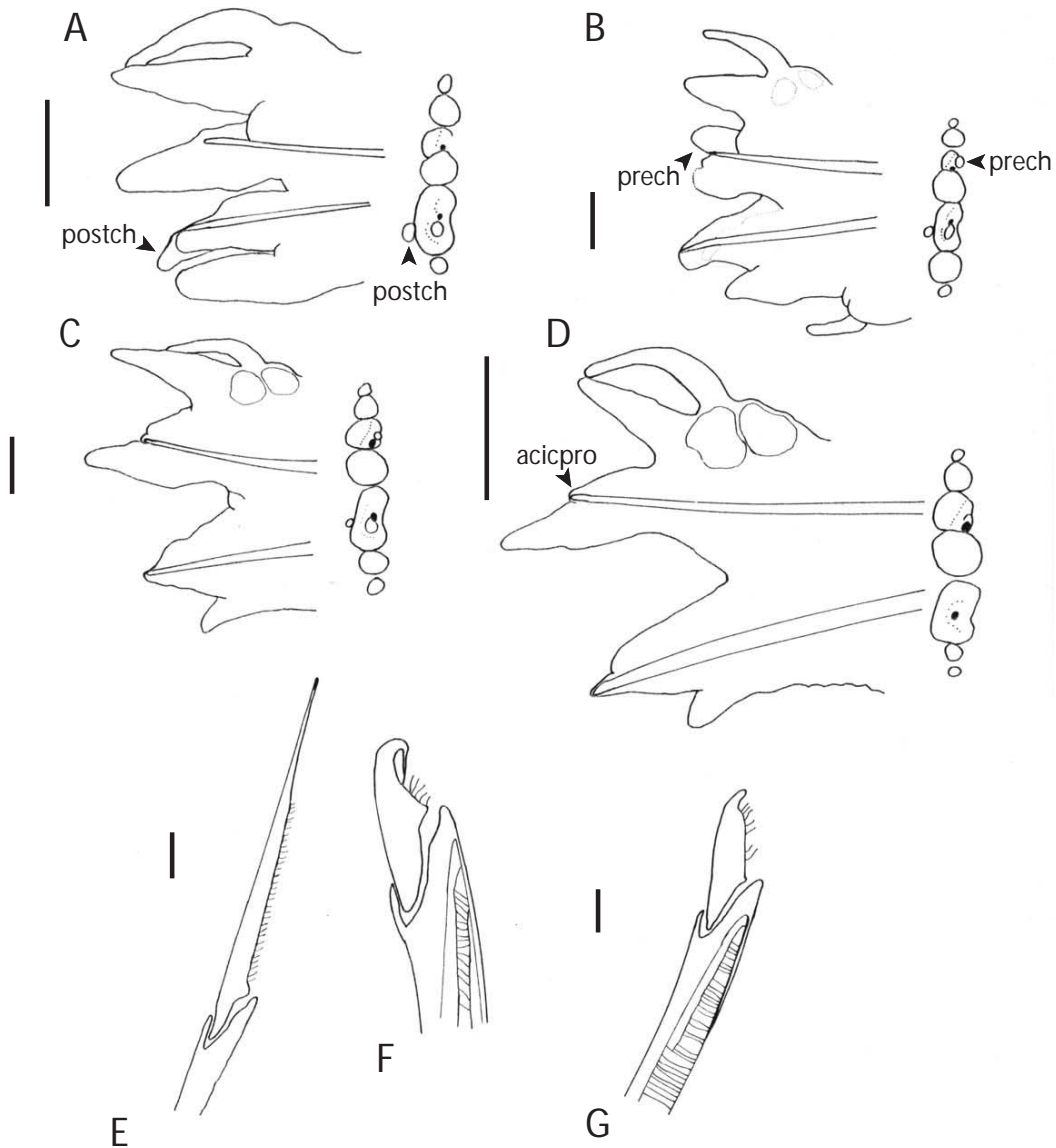


Figure 1. *Neanthes tasmani* sp. nov. Holotype, NMV F50018: a, anterior view of chaetiger 3; b, anterior view of chaetiger 10; c, anterior view of chaetiger 21; d, anterior view of chaetiger 30; g, heterogomph falciger from chaetiger 10.

Paratype, AM W27491: e, heterogomph spiniger with short blade from chaetiger 3; f, heterogomph falciger from chaetiger 30.

Abbreviations: postch = postchaetal lobe, prech = prechaetal lobe, acicpro = acicular process. Scale bars A–D, 0.1 mm; E–G, 0.01 mm. Drawings of the end-view of parapodia are not to scale. End-views are drawn with the anterior end of the specimens to the right.

Dorsal cirrus slightly shorter than ventral notopodial ligule in anterior chaetigers, becoming longer posteriorly up to 1.5 times longer in the few posteriormost chaetigers, basally attached throughout. Dorsal notopodial ligule conical, rounded anteriorly becoming pointed posteriorly; not more than 1.5 times as long as ventral ligule anteriorly, becoming smaller than ventral ligule in posterior chaetigers (Fig. 1D). Ventral ligule conical anteriorly slender and pointed in midbody and posterior chaetigers. Distinct digitiform prechaetal lobe present in chaetigers 5–15 (Fig. 1B). Glandular patches in mid-body and posterior chaetigers.

Neuropodia with prominent inferior lobe in anterior and midbody chaetigers, reduced posteriorly. A distinct digitiform postchaetal lobe present in chaetigers 1–22 (Figs 1A–C). Ventral neuropodial ligule conical, rounded, as long as acicular ligule in anterior chaetigers, smaller, pointed and reduced in posterior chaetigers. Ventral cirri approximately 0.5 times as long as neuropodial acicular ligule, basally attached throughout.

Notochaetae homogomph spinigers, in single straight row between dorsal and ventral ligules. Neurochaetae dorsal fascicle homogomph spinigers and heterogomph falcigers, falcigers with long blades in anterior chaetigers, with short blades in posterior ones (from approximately chaetiger 10). Ventral fascicle heterogomph spinigers with both short and long blades in anterior chaetigers (Fig. 1E), including falcigers (Fig. 1G) from approximately chaetiger 10, in posterior chaetigers heterogomph spinigers (long blades)

and heterogomph falcigers (Fig. 1F). Paired cirri-form pygidial cirri reaching back 6 chaetigers.

Variation. Variations of 5 paratypes, size range 3 mm long for 14 chaetigers, less than 1 mm wide to 12 mm long for 30 chaetigers, 2 mm wide (anterior fragments), one complete specimen (NMV F88283) 9 mm long for 41 chaetigers, 1 mm wide. Eyes black in paratypes (NMV F88283). Paragnath counts for 5 specimens as follows: I = 2–4; II = 10–25; III = 3–13, in transversal rows; IV = 8–23, also short bars 0–3 on either side; V = 0; VI = 2–8, in circular groups; VII–VIII = 4–7 in a single row. Paragnaths often pale and flattened with large base, including short bars present in Area IV. These might be difficult to distinguish from cones, as the cones are sometimes placed closely together.

Notopodial prechaetal lobe present from chaetiger 5–15. Neuropodial postchaetal lobe present from chaetiger 1 to 18–20.

Remarks. *Neanthes tasmani* closely resembles *N. bassi* but can be distinguished by the absence of a prechaetal notopodial lobe. Other distinguishing characteristics are given in Table 1. *Neanthes tasmani* also resembles *N. flindersi* Wilson, 1984 as this species has notopodial prechaetal lobes and neuropodial postchaetal lobes in the same range as *N. tasmani*. The two species can be distinguished by length of dorsal parapodial cirri which in *N. flindersi* is 1.5–2.5 times the dorsal notopodial ligule, and by the absence of bars in Area IV in the latter species. *Neanthes kerguelensis* McIntosh, 1885 and *N. nanhaiensis* Wu, Sun and Yang, 1985 both have

Table 1. Comparison of *Neanthes bassi* and *N. tasmani*.

	<i>Neanthes tasmani</i>	<i>Neanthes bassi</i>
Area I paragnaths	2–4	0–4
Area II paragnaths	10–25	5–27
Area III paragnaths	3–13	1–14
Area IV (bars) paragnaths	7–23 (0–4)	1–18 (2–7)
Area V paragnaths	0	0–1
Area VI paragnaths	2–8	2–16
Area VII–VIII paragnaths	4–8	5–30
Length of dorsal cirri (times length of dorsal notopodial ligule)	<1–1.5	1
Notopodial dorsal ligule	reduced in posterior chaetigers	as long as notopodial ventral ligule throughout
Notopodial prechaetal lobe	present, in chaetigers 3–15	absent, acicular process in chaetigers 5–25
Neuropodial postchaetal lobe	present, in chaetigers 1–21	present, in chaetigers 1–12
Habitat	fine biogenic sand, 75–140 m	sand, shell and mud, seagrass beds, intertidal to 51 m

notopodial prechaetal and neuropodial postchaetal lobes but can be distinguished from *N. tasmani* by the distribution of paragnath numbers and the length and form of the dorsal cirri and dorsal notopodial ligule (Wu et al., 1985; Wilson, 1984).

The reduced size of the dorsal notopodial ligule in the posteriormost chaetigers in *N. tasmani* (observed in the two complete specimens only) is also found in *N. isolata* Hutchings and Turvey, 1982 and *N. uniseriata* Hutchings and Turvey, 1982, but these species can be distinguished from *N. tasmani* by the absence of notopodial prechaetal and neuropodial postchaetal lobes, and by the number of paragnaths (Hutchings and Turvey, 1982; Wilson, 1984).

The faint short bars found in Area IV in *N. tasmani* are different from those present in *N. bassi*, which are very distinct and well developed, even in small specimens with body width less than 1 mm. In contrast, even in the largest specimens of *N. tasmani* the bars are faint and poorly developed, although clearly present. More material is needed to judge if there are further differences between the two species in this respect.

N. tasmani has a deeper depth range than the closely related *N. bassi*. Specimens were found from 75 m to 140 m, while *N. bassi* has a depth range from intertidal to 51 m.

Etymology. The species is named after Abel Tasman who was among the first Europeans to explore the southern seas of Australia and to set foot on Tasmania.

Distribution. Eastern Tasmania (east of Maria Island) and eastern Bass Strait; 75–140 m, fine biogenic sand.

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