DESCRIPTIONS OF NEW SPECIES AND COMMENTS ON PREVIOUSLY DESCRIBED SPECIES OF TEREPELLID POLYCHAETES FROM NEW ZEALAND AND AUSTRALIA

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ABSTRACT

One new genus (Pseudopista) and six new species (Streblosoma toddae, Thelepus australiensis, Neoleprea papilla, Nicolea armilla, Pista pegma, and Pseudopista rostrata) of Terebellidae are described from New Zealand and Australia. Terebella plagiostoma Schmarda is redescribed and a neotype designated.

In the course of a stay in New Zealand in March 1992, the second author collected several species of terebellid polychaetes from the vicinities of Portobello Marine Laboratory, University of Otago (South Island) and Leigh Marine Laboratory, University of Auckland (North Island). The purpose of these collections was to gather material to extend previous studies (Smith, 1988, 1989, 1992, 1994) on the nephromixial systems of terebellid genera. That work will be presented elsewhere (Smith and Hutchings, in prep.). Because some of the species collected were undescribed and others posed taxonomic problems, it seems advisable to present the taxonomic and distributional results first in this paper.

MATERIAL AND METHODS

In the descriptions of new species, length measurements exclude buccal tentacles and the width measurements are of anterior segments unless otherwise stated. All scale bars on figures are in mm. Material has been deposited at The Australian Museum (AM), with location of type material indicated under Material Examined. The following abbreviations have been used: AM Australian Museum, Sydney, BMNH Natural History Museum, London, LACM Los Angeles County Museum, Los Angeles, formerly Allan Hancock Foundation, NMNZ Museum of New Zealand, Wellington, formerly Dominion Museum of New Zealand (DMNZ), OMNZ Otago Museum, Dunedin, USNM National Museum of Natural History, Smithsonian Institution, Washington, DC, ZMH Zoologisches Institut und Zoologisches Museum der Universität, Hamburg, WAM Western Australian Museum, Perth. All material collected by R. I. Smith unless otherwise stated.

SYSTEMATICS

Family Terebellidae Malmgren, 1866
Subfamily Thelepodinae Hessle, 1917

Thelepinae Hessle, 1917: 144-149.
Thelepodinae.—Holthe, 1986a: 139 (nomen correctum); 1986b: 71; Hutchings, in press b.

Diagnosis.—Thorax and abdomen usually not well demarcated. Tentacular membrane compact or expanded. Branchiae usually present as simple filaments. Ventral pads well-developed. Noto.setae simple capillaries, either smooth or with apical serrations along one margin. Neurosetae avicular uncini, arranged in single, sometimes irregularly folded, rows or loops.
Remarks.—Hutchings (in press b) has described a new genus of Thalepodoidea and provides a key to all described genera as well as a table documenting the major distinguishing characteristics of each genus. In addition, a discussion is given of the diversity and abundance of the subfamily in Australia. This may also prove relevant to the New Zealand thalepodin fauna.

The term thorax in the Terebellidae is typically used to define anterior segments with notopodia and notosetae and the abdomen is defined as segments without notopodia and notosetae. However it is not particularly useful in the Thalepodinae as often notopodia continue for many segments along the body. See Holthe (1986b) for additional comments.

**Streblosoma** Sars, 1872


*Type Species.—*Grymaea bairdi* Malmgren, 1866, designation by Sars, 1872.*

**Diagnosis.**—Tentacular membrane short and compact, numerous buccal tentacles. Lateral lobes absent. Zero to 3 pairs of simple, unbranched branchial filaments. Notopodia beginning on segment 2 (1st branchiferous segment) and continuing for variable number of segments, smooth-tipped capillary notosetae. Neurosetae from segment 5 (setiger 4) continuing to pygidium; avicular uncini, typically arranged in single rows throughout (occasionally arranged in an incomplete loop).

**Streblosoma toddae** new species

*Figures 1, 2a–d*

*Type Material.—*New Zealand, Leigh Harbor, 36°20'S 174°48'E, Holotype (AM W22586). Paratypes: 1(AM W22788) branchiae removed on 1 side for counting, length 27 mm, width 2.6 mm, complete with about 115 segments; 1(USNM 170022) length 47 mm, width 5.3 mm, incomplete with 49 segments; 1(BMNH 1995.1657) length 48.6 mm, width 3.4 mm, incomplete with 53 segments; 1(NMNZ 1433) length 45 mm, width 3.8 mm, incomplete with 63 segments. All type material collected from Leigh Harbor, 21 Mar 1992, intertidally.

*Additional Material Examined.—*New Zealand: Lyttleton, 43°36'S 172°42'E (OMNZ Iv2505); Dunedin Harbor, 43°52'S 171°30'E (OMNZ A'98–59A); Auckland Harbor, Waiheka Island 36°48'S 175°00'E (OMNZ A02–74); Auckland, 36°50'S 174°46'E (OMNZ Iv2507) material identified by Benham; Kau Point, Wellington 41°17'S 174°49'E (NMNZ 1424); East of Kau Point, 41°17'S 174°49'E (NMNZ 1425); Mohanga Bay, Wellington, 41°23'8 173°24'E (NMNZ 1426). All NZ material collected by G. B. Read, Sept-Oct. 1970.

**Description.**—Complete holotype, length 180 mm, width 10 mm, with about 150 segments. Alcohol preserved animal palish yellow. In life body yellow-brown, with numerous long brownish tentacles, yellowish ventral shield, and dark-speckled abdomen. Large numbers of grooved buccal tentacles, all of similar width, margins of groove crinkled. Branchiae, 3 pairs, filiform, dull red tufts in life.

Prostomium compact, with extremely glandular inverted U-shaped upper lip, margins thinner and less glandular, and small glandular lower lip (Fig. 1). Peristomium with narrow band of numerous small discrete eye-spots, darkly pigmented.

Segments 2,3 and 4 branchiferous, branchiae consisting of numerous simple, short, coiled filaments, arising directly from slightly elevated glandular pads. Branchial filaments on segment 2 extending laterally towards ventral pads, however those on segment 3 and 4 not extending beyond notopodia. Segment 2 with approximately 40 filaments on either side of distinct medial gap. Segments 3 and 4 each with about 15 filaments either side, medial gap between right and left hand group of filaments distinct but not as large as on segment 2. Exact number of...
branchial filaments per segment difficult to count. Filaments on segment 4 reaching to segment 7 (Fig. 2a).

Notopodia from segment 2, continuing to within 4–5 segments of the pygidium, holotype with 140 pairs of notopodia. Thoracic notopodia rectangular, erect, with notosetae arranged in 2 tiers, setae within each tier graded in length. Podia become progressively smaller posteriorly. Noto setae smooth-tipped and narrow-limbate capillaries (Fig. 2b).

Neuropodia from segment 4 to pygidium. Tori, initially short and sessile, increasing in length until about segment 25 and then decreasing to form small, more erect rectangular pinnules. Uncini initially arranged in single rows. By uncinigerous segment 25, slightly hooked row and subsequently form almost complete

Figure 1. Strebiosoma toddae new species. Holotype, latero-ventral view of anterior segments.
Figure 2. *Streblosoma toddae* new species. Paratype (AM W22788) a. dorsal view of anterior segments to show the arrangement of the branchiae which have been removed from left side, Holotype b. notoseta from segment 22, c. lateral view of uncini from segment 10 (6th uncinigerous segment), d. lateral view of uncini from segment 31.
loops. Uncini avicular, almost rectangular in outline with 2 or 3 heavy teeth above main fang, thoracic dental formula MF:2–3 (Fig. 2c), abdominal dental formula MF:2 (Fig. 2d). Abdominal uncini slightly longer than thoracic ones.

In thorax, notopodia and neuropodia arise from single glandular structure; white glandular material between rami extending dorsally to level of notopodia. Dorsum smooth.

Ventral pads not well-developed, instead whole of venter glandular, anteriorly forming crenulated structure with no segmentation visible, by segment 6 distinct segmentation visible ventrally. Nephridial papillae, smooth, spherical on segments 3–6 inclusive. These represent external openings of 4 pairs of nephromixia (Smith, 1988). Loops of pair 2 (excretory nephromixia), when dissected, lie alongside the gut posterior to septum. Loops of pairs 3 and 4 (reproductive nephromixia) lie beneath oblique musculature. Coelom full of ripe male gametes.

Remarks.—Day and Hutchings (1979), in their checklist of the polychaetes recorded from Australia and New Zealand, do not list any species of Streblosoma as being present in New Zealand. However, it seems likely that at least one species of Streblosoma in New Zealand has been misidentified as Thelepus, as the figure of Thelepus spectabilis (Ehlers, 1897) in Morton and Miller (1968: 235, fig. 80.1), clearly shows notopodia on the first branchiferous segment. Also, it is likely that the species commonly identified as Thelepus spectabilis (Schmarda, 1861) in New Zealand is a species of Streblosoma. For a discussion of this problem see the Remarks section of Thelepus spectabilis. T. spectabilis, which was described from Patagonia, was tentatively synonymised with T. setosus (Quatrefages, 1865) a species described from the St. Vaast, France, by Hartman (1959). Hutchings (in prep.) has found that T. setosus does not occur in the southern hemisphere. The true identity of T. spectabilis must remain in doubt until type material is examined but it appears unlikely to occur in New Zealand.

Streblosoma toddae n.sp. can be distinguished from all other species of Streblosoma by the presence of the notopodia on almost all segments and the looped arrangement of the uncini in median and posterior regions of the body. In addition, branchial filaments on the first segment are more numerous than on any other Australian species (Hutchings and Glasby, 1990: table 1). This combination of characters easily distinguishes it from other species of Streblosoma (Hutchings and Murray, 1984; Hutchings and Glasby, 1987). Streblosoma uncinatus (Kudenov, 1975) and S. hesslei (Day, 1955) have mid- and posterior uncini arranged in U-shaped loops, but differ from Streblosoma toddae n.sp. in the number of segments with notopodia, far fewer branchial filaments present, and by the fact that the uncini are arranged almost in a closed loop. Typically species of Streblosoma have uncini arranged in single rows throughout.

Etymology.—This new species of Streblosoma is named after the wife of Ralph Smith, Todd, who accompanied him on his collecting trip to New Zealand and facilitated the preparation of this paper.

Habitat and Habit.—The species makes strong, coarse, shelly/gravelly tubes which are attached to undersides of rocks, found between wedged or impacted boulders in the low intertidal zone of semi-exposed coasts and in similar, but somewhat muddy situations, in Leigh Harbor. The reddish-brown tubes suggest that this worm requires fairly well-oxygenated waters, and only empty tubes are found in black, anoxic, muddy substrates. The tubes often wander for 30–40 cm or more on the rock surfaces.

Distribution.—New Zealand (Leigh, Lyttleton, Auckland, Wellington and Dunedin, probably widespread).
Thelepus Leuckart, 1849

**Type Species.**—Amphitrite cincinnata Fabricius, 1780, by monotypy.

**Diagnosis.**—Tentacular membrane short, compact, collar-like, usually with numerous eye-spots. Branchiae consisting of numerous simple filaments arranged in transverse rows, usually on segments 2–4, sometimes on segments 2 and 3 or segment 2 alone; occasionally branchiae completely absent. Notopodia from segment 3 (2nd branchiferous segment), extending for variable number of segments, notosetae smooth-edged and tipped capillaries. Neuropodia from segment 5 (setiger 3), continuing for variable number of segments; neurosetae avicular uncini with prow below attachment button variously developed.

**Thelepus australiensis** new species

**Figures 3, 4a–e**

**Type Material.**—Australia: South Australia, Victor Harbor, 35°33'57"S 138°38'E, Holotype (AM W22559). Paratypes: South Australia, Victor Harbor, 35°33'57"S 138°38'E, 3 (AM WI98777) 2 incomplete individuals, complete individual, length 55 mm, width 1.5 mm, with about 140 segments; 1 (USNM 170023) length 45 mm, width 3 mm, complete with about 110 segments.

**Additional Material Examined.**—Australia: Western Australia, Rottnest Island, 32°01'57"S 115°30'E, ZMH V8268, identified by Augener, 1914; Perth, Cottesloe Beach, 31°59'57"S 115°45'E, 2 (AM W4356); Cockburn Sound, Woodman's Point groyne, 32°08'57"S 115°44'E, 1 (WAM 77–72); Albany, Oyster Harbor, 34°58'57"S 117°57'E, 2 (WAM 97–74); South Australia, Lady Bay, 35°28'30"S 138°18'E, several (AM W198778); Port Noarlunga, 35°11'57"S 138°30'E, 7 (AM W13614); Sellicks Beach, 35°20'57"S 138°27'E, many (AM W198773); Kangaroo Island, Emu Bay, 35°35'57"S 137°31'E, many (AM W141120); Maston Point; American River, Kangaroo Island, 35°48'57"S 137°46'E, 2 (AM W198770); Stokes Bay, Kangaroo Island, 35°37'57"S 157°12'E, 3 (AM W14108).

**Description.**—Holotype, length 50 mm, maximum width 4.5 mm, complete with about 80 segments. Body widest in mid-thoracic region tapering gradually posteriorly.

Alcohol preserved individual reddish-brown in color. Prostomium with compact tentacular membrane, with numerous long, thin, grooved buccal tentacles. Upper lip large, folded and glandular; lower lip small, semi-spherical and glandular. Faint eye-spots present, numerous, arranged in 2 rows across posterior margin of tentacular lobe. Peristomium 1–2 times longer than segment 2 dorsally, reduced ventrally (Fig. 3).

Lateral lobes absent. Branchiae simple, short, filaments arising directly from glandular body wall on segments 2, 3 and 4. Segment 2 with few filaments displaced laterally beyond the line of notopodia, with 18 and 15 filaments on each side with a distinct medial gap, filaments arranged in 2 rows. Segments 3 and 4 with no filaments displaced laterally, and with smaller medial gap. Segment 3 with 12 and 13 filaments, and segment 4 with 10 and 12 filaments on each side respectively. Branchial filaments of segment 4 extending to setiger 4.

Notopodia from segment 3 (2nd branchiferous) continuing for 66 segments, almost to pygidium. (Holotype regenerating posterior segments, and 9 of these have notopodia)—see also Variation section). Notopodia rectangular inserted at an angle, pre- and post setal lobes similar in length. Notopodia well-developed on all segments except for last 25 segments which have recently regenerated; notopodia considerably smaller than anterior notopodia. Notosetae smooth-tipped,
narrow-winged capillaries slightly expanded behind tips, arranged in 2 tiers, graded within a tier (Fig. 4a).

Neuropodia from segment 5 (setiger 3), continuing to pygidium. Anteriorly noto- and neuropodia forming single glandular structure which includes glandular tissue between dorsal end of neuropodia and notopodia. This glandular structure expanded on anterior segments. On posterior segments notopodia and neuropodia becoming 2 distinct structures with white glandular material restricted to around notopodia. Posteriorly, neuropodia becoming glandular and forming slightly erect tori. Uncini initially arranged in straight rows, posteriorly arranged in slight curved row. Neuropodia decrease in length from mid-anterior region. Uncini with dental formula of MF:2–5:0–3 usually MF:2:1 (anteriorly), and MF:2–4:0–3 (posteriorly), uncini with slightly upturned terminal button, prow absent or developed as slight bump below button (Fig. 4b–e).
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Figure 4. *Thelepus australiensis* new species. Holotype a. notoseta, b. lateral views of uncini from segment 32 (setiger 30), c. lateral views of uncini from segment 52 (setiger 50), d. lateral views of uncini from segment 94, e. lateral views of uncini from segment 114.

Dorsum smooth anteriorly, each segment dorsally with a series of transverse striations. Venter glandular, slightly corrugated with marked intersegmental grooves, developing mid-ventral groove after segments 20–34.

Nephridial papillae not visible, holotype with no coelomic gametes.

Variation.—Some of the additional material examined have small nephridial papillae above the tori on segments 4–7. The paratype (AM W198777) has a total of 139 segments of which 119 have notopodia. Within the additional material ex-
The number of pairs of notopodia varies from 93 to 122, with 10 to 22 subsequent posterior segments with neuropodia only.

**Remarks.**—Hutchings and Glasby (1987) described *Thelepus plagiostoma* (Schmarda, 1861) from Australia without having access to the original colored plates of Schmarda. Examination of the original plate (pl. XXIV, fig. 196) of *T. plagiostoma* shows 3 pairs of dichotomous branching branchiae and the figures of the notosetae and neurosetae (text figs. a–c) are difficult to interpret. The uncinus was not drawn flat and the notosetae may or may not have serrated margins. No information was given by Schmarda in his brief description as to the segments on which the notopodia and neuropodia began. Therefore, the material identified by Schmarda was a member of the Amphitritinae, perhaps a species of *Terebella* but certainly not a species of *Thelepus*.

The transferring of *Terebella plagiostoma* to *Thelepus* by Benham (1909) was incorrect and not based on examination of Schmarda’s material. This was lost in a ship’s fire off the coast of Chile (for more details see the Introduction of Schmarda, 1861). Benham’s discussion is somewhat confused. No explanation was given as to why the species was transferred to *Thelepus*. Benham accepted Ehlers (1904) synonymization of *Terebella plagiostoma* and *T. heterobranchia* Schmarda, 1861, both of which he recorded from New Zealand. Ehlers (1904) had suggested that *T. heterobranchia* be used, but Benham’s suggestion that *Thelepus plagiostoma* be used, has been accepted in New Zealand. Material identified by Benham as *Thelepus plagiostoma* has been found to be *Terebella* (see Material Examined of *Terebella plagiostoma*—this paper). Subsequent material identified by Ehlers (1917) and re-examined (Senckenberg Museum 2231) is in fact a species of *Thelepus* (Hutchings, in prep). The locality for Schmarda’s material was given only as New Zealand. Schmarda’s species was probably a species of *Terebella* as no lateral lobes are discernable on his figure. For these reasons and because the name *plagiostoma* is widely used in New Zealand, *Terebella plagiostoma* is redescribed in this paper and a neotype designated.

The name *Thelepus plagiostoma* (Schmarda) has been widely used and the species has been reported from South Africa, Madagascar, Chile (Day, 1955, 1967), as well as New Zealand and Australia (Morton and Miller, 1968; Hutchings and Glasby, 1987). Therefore the Australian material of *T. plagiostoma* [non Schmarda] which is a species of *Thelepus* is described here as a new species, *T. australiensis* n.sp. It seems likely that material of *Thelepus plagiostoma* [non Schmarda] from elsewhere other than New Zealand is also likely to belong to *Thelepus* but material from each of these localities needs to be examined. No material of *Thelepus* was collected intertidally by RIS in New Zealand although an undescribed species of *Thelepus* is present in the Antarctic and subantarctic islands (Hutchings, in prep.) and perhaps may occur in southern localities in New Zealand.

*Thelepus australiensis* n.sp. is most similar to *T. robustus* (Grube, 1878) described originally from the Philippines which, in Australia, is restricted to more northern localities. It differs in having fewer branchial filaments and these arise directly from a glandular area of the body wall rather than from prominent raised glandular pads. *T. robustus* has branchiae arranged as follows, segment 2 with 38–59 in transverse band, segment 3 with 20–35 in transverse band, and segment 4 with 31–39 in oblique oval-crescent shaped patch. For a further discussion on *Thelepus* see Hutchings and Glasby (1987).

**Etymology.**—The specific name refers to the Australian distribution of the species.
Habitat.—Intertidal to 5 m, under stones, among algae, including calcareous algae in reefal areas.

Distribution.—Australia (Western Australia, South Australia).

Subfamily Amphitritinae Malmgren, 1866

Diagnosis.—Tentacular membrane compact (= prostomium compact). Branchiae present or absent, 0 to 3 pairs, typically branched or tufted. Lateral lobes present or absent on anterior segments 2–4. Peristomium may be expanded to form a ventral, flattened lobe. Notopodia present for variable number of segments; notosetae smooth or serrated. Neuropodia present on large number of segments; neurosetae avicular uncini, short or long-handled, initially arranged in single rows but subsequently arranged in double rows on some segments. Distinct ventral glandular pads present on anterior thoracic segments, but may not be segmentally demarcated.

Neoleprea Hessle, 1917


Type Species.—Leprea streptochaeta Ehlers, 1897, designated by Hessle, 1917.

Diagnosis.—Two or three pairs of branched branchiae; lateral lobes absent. Notopodia present from segment 3, (2nd branchiferous) with notosetae consisting of some smooth and some distally denticulate or 2 types of distally denticulate setae. Seventeen to 40 thoracic setigers. Nephridial papillae present on segments 3 to 9.

Remarks.—Currently some of the species described as belonging to the genus have notopodia from segment 4 including non type material of the type species examined by Hessle (1917), although the syntype material of Ehlers, has notopodia from segment 3 (see Hutchings, in press, b, table 2). Fauchald (1977) in his generic definition clearly states that notopodia are present from segment 3, and this definition is used in this study. For further discussion on this matter see Hutchings and Glasby (1988) and Hutchings (in press b).

Neoleprea papilla new species

Figure 5a–d

Type Material.—New Zealand, Leigh Harbor, 36°20'S 174°48'E. Holotype (AM W22581), Paratype 1 (USNM 170020), length 120 mm, width 2.66 mm, complete with about 180 segments, both types collected intertidally, 21 Mar 1992.

Description.—Holotype, length 130 mm, width 8 mm, complete with about 190 segments. Thorax bulbous, tapering rapidly with abdomen long and slender, majority of abdomen only 2–3 mm in width. Alcohol preserved holotype pale yellow in color. In life, body color is deep reddish brown with cream colored masses of spermatids visible through the thin and transparent body wall, abdomen finely flecked with white. Numerous tentacles, long and slender, translucent, light brown, lower ones with an opaque white line in life. Compact tentacular membrane, upper lip trefoiled, red eye-spots present along tentacular ridge.

Two pairs of similar sized branchiae on segments 2 and 3, each with short basal stalk and numerous short dichotomous branches (Fig. 5a).
Figure 5. *Neolepnea papilla* new species. Holotype a. latero-ventral view of anterior segments, b. notosetae from segment 12 (setiger 10), c. lateral views of uncini from segment 11 (7th uncinigerous segment), d. lateral views of uncini from segment 34.
Notopodia begin on segment 3 (2nd branchiferous), continuing for 22 segments. Notopodia not well-developed, swollen glandular compact, all similar in size. Notosetae, arranged in 2 tiers, graded in length within a tier. Notosetae narrow-winged, broad-bladed capillaries with flail tips serrated along one margin, often twisted, so that viewed in certain angles appear smooth-tipped (Fig. 5b).

Neuropodia from setiger 3 (segment 5), continuing to pygidium. Initially tori long and inserted medially on sessile glandular structure, posteriorly neuropodia becoming slightly more elevated but decreasing in length. Posterior neuropodia small with few uncini, tori inserted ventrally, almost touching in ventral midline. Neurosetae initially arranged in single rows, in double rows from 7th uncinigerous segment, this arrangement continuing until about 10 segments beyond last thoracic notopodia. Neurosetae avicular uncini with thoracic dental formula of MF:3-4:4-5:∞:∞ (Fig. 5c), abdominal uncini from 30th uncinigerous segment with dental formula MF:3-4:3-5:∞:∞ (Fig. 5d). Thoracic and abdominal uncini similar in size (ca. 30-36 mm in longest dimension).

Lateral lobes absent. Venter of segments 2 to 5, glandular and corrugated but not forming ventral pads, ventral pads present on following 8-9 segments, then reduced to form medial ventral stripe. Dorsum smooth.

Genital papillae present on antero-ventral sides of notopodia 4, 5, and 6 (segments 6 to 8), with internal orange bodies visible in life below these notopodia, representing 3 pairs of reproductive nephromixia, confirmed histologically (Hutchings and Smith, in prep.). Small rectangular renal (“excretory”) papillae present on segment 3 inserted anterior to notopodia 1 (Fig. 5a). An internal orange body is visible in life, below this notopodium, representing single pair of large anterior “excretory” nephromixia, presence confirmed histologically.

Variation.—The paratype has 24 pairs of notopodia but in all other respects resembles the holotype. Individuals up to 20 cm or more in length observed by RIS.

Remarks.—No species of Neoleprea has previously been described from New Zealand (Day and Hutchings, 1979). Currently eight species of Neoleprea have been described and these can be distinguished by the number of pairs of notopodia present and the segment on which the neurosetae are first arranged in double rows (Table 3 in Hutchings, in press b). N. papilla n. sp. can be distinguished from other described species by having 22-24 pairs of notopodia from segment 3, neurosetae arranged in double rows from segment 11, and by the arrangement of nephridia. No other described species has this combination of characters. N. papilla most closely resembles N. amoyensis Monro, 1934 and N. japonica Hessle, 1917 with regards to the number of pairs of notopodia, but N. amoyensis has neurosetae arranged in double rows from segment 8 and nephridial papillae on segments 3 and 6-15, and N. japonica has neurosetae arranged in double rows from segment 12 and nephridial papillae on segments 4, and 6-15.

Etymology.—The specific name refers to the prominent renal papilla present on segment 3, and is from the Latin.

Habitat and Habit.—Collected at about the 0.0 to 0.3 m tidal level in Leigh Harbor. This conspicuous terebellid is soft-bodied and lacks a definite tube occurring, coiled in an ovoid mass in sand lightly cemented with mucus, in cavities and rock crevices.
Nicolea Malmgren, 1866

Nicolea.—Hutchings and Glasby, 1988: 35.

Type Species.—Terebellula zostericola Ørsted, 1844, designation by Malmgren, 1866.

Diagnosis.—Two pairs of dichotomously branched branchiae, on segments 2 and 3. Lateral lobes absent. Notopodia from segment 4, 15–40 pairs; notosetae smooth-tipped capillaries. Neuropodia from segment 5 (setiger 2) continuing to pygidium; uncini avicular initially arranged in single rows, arranged in double rows on posterior thoracic segments and then again in single rows on posterior segments.

Nicolea armilla new species

Figure 6a–e

Type Material.—New Zealand, Matheson Bay, near Leigh, North Island, 36°18.5'S 174°48.2'E, Holotype (AM W22585), intertidal, 18 Mar 1992.

Description.—Holotype, length 85 mm, width 6 mm, complete with about 75 segments. Alcohol preserved worm palish yellow in color. In life, brown or greenish-brown, with numerous slender, long, light-brownish tentacles, all similar in thickness; ventral pads pinkish, branchiae red.

Compact tentacular membrane without eye-spots. Lower lip rectangular, rugose and partially hidden; upper lip withdrawn. Peristomium expanded mid ventrally to form ventral collar. Lateral lobes absent (Fig. 6a).

Two pairs of robust dichotomous branchiae on segments 2 and 3, inserted slightly dorsal to line of notopodia. Left branchiae on segment 2 regenerating, smaller than others. Main stalks of branchiae annulated with pale brown speckles, each branch also annulated.

Notopodia from segment 4, continuing for 18 segments. Podia rectangular, all similar in size except for first, a small globular pigmented gland on each anterior face, notosetae golden. Notosetae arranged in 2 tiers, graded in length within a tier, narrow-winged, broad-bladed, smooth-tipped capillaries (Fig. 6b).

Neuropodia from segment 5 (setiger 2), continuing to pygidium. Thoracic neuropodia elongate sessile tori, forming a single glandular structure with notopodia. Abdominal neuropodia shorter, erect pinnules with uncini arranged in shallow curve, size of tori progressively declining posteriorly. All uncini avicular, short-handled, uncini on 7th uncinigerous segment with dental formula of MF:3–2:2–3 (Fig. 6c). Abdominal uncini with dental formula MF:2–3:2–3 (Fig. 6e). Uncini initially arranged in single rows, from 7th uncinigerous segment arranged in double rows to end of thorax (Fig. 6d) and then arranged in single rows again on abdomen.

Dorsum smooth. Venter with thoracic ventral pads distinct, rectangular, raised with longitudinal striations, inserted as discrete mid-ventral block, tapering gradually posteriorly, by segment 17 reduced to mid-ventral glandular groove.

One pair of small but distinct renal papillae occurring just behind the base of second branchiae, representing aperture of first pre-septal excretory nephromixium. Other preseptal excretory nephromixium may or may not be fused with it. In addition 2 pairs of hemispherical elongated genital papillae present on segments 6 and 7, located dorsally and just behind respective notopodia. No coelomic gametes visible, but coelomic fluid full of dense mass of coelomic corpuscles.

Remarks.—Hutchings and Murray (1984) described a new species of Nicolea, N. amnis which occurs throughout Australia and they also provide a discussion on this genus. The only other species reported from Australia is N. bilobata (Grube,
Figure 6. *Nicolea armilla* new species. Holotype a. latero-ventral view of anterior segments, b. notoseta from segment 14 (setiger 11), c. lateral views of uncini from segment 11 (7th uncinigerous segment), d. head on views of uncini from segment 11 to show arrangement of uncini, e. lateral views of uncini from segment 28.
To date 21 species have been described and the majority have 17 pairs of notopodia, although many are poorly known and the species characters are poorly understood. *N. armilla* n. sp. can be distinguished from the two species known from Australia, by the number of pairs of notopodia present (18), the dentition of the uncini and the well-developed and annulated branchiae. *N. amnis* has 16 pairs of notopodia and poorly developed dichotomously branched branchiae, and *N. bilobata* (Grube, 1878) has 17 pairs of notopodia and more teeth above the main fang of the uncinrus.

**Etymology.**—The specific name refers to the well-marked annulated rings on the branches of the branchiae and is the Latin word for bracelet.

**Habitat.**—Found in soft, sandy tubes, between embedded, firmly impacted boulders, at ca. 0.3 to 0.4 m intertidal level.

**Distribution.**—New Zealand (Matheson Bay near Leigh).

*Pista* Malmgren, 1866, emended


**Type Species.**—Amphitrite cristata Müller, 1776, by monotypy.

**Diagnosis.**—Compact tentacular lobe with numerous buccal tentacles. Lateral lobes on segments 2 to 4 and sometimes on peristomium. Branchiae, 1 to 3 pairs on segments 2 to 4. Notopodia from segment 4, continuing for 17 segments; notosetae smooth-tipped, winged capillaries. Neuropodia beginning on segment 5 (setiger 2); uncini of anterior thoracic segments typically with posteriorly elongated bases, following uncini lacking elongated bases. Uncini arranged in single rows initially, in double rows from uncinigerous segment 7 to end of thorax, abdominal uncini arranged in single rows.

**Remarks.**—Hutchings and Glasby (1988) expanded the generic diagnosis of _Pista_ to include species with well developed lateral lobes on the peristomium and restricted the diagnosis to species with only 17 pairs of notopodia.

*Pista pegma* new species

_Figures 7a–b, 8a–f_

**Type Material.**—New Zealand, Matheson Bay, 36°18.5'S 174°48.2'E, Holotype (AM W22574). Paratypes: 1(AM W22575) length 15.2 mm, width 1.5 mm, incomplete with 51 segments; 1(BMNH 1995.1656) length 12.9 mm, width 1.9 mm, incomplete with 42 segments; 1(USNM 170019) length 12.2 mm, width 2.3 mm incomplete with 45 segments; 1(LACM AHF Poly1728) length 6.8 mm, width 1.15 mm, incomplete with 43 segments; 1(NMNZ 1431) length 11.0 mm, width 1.5 mm, incomplete with 30 segments; 4(AM W22576), length 7.2–11.0 mm, width 1.2–1.9 mm, all incomplete. All type material collected intertidally from Matheson Bay, 22 Mar 1992.


**Description.**—Holotype, length 13 mm, width 1.5 mm, incomplete with 51 segments. Alcohol preserved worm Bluish-grey with turquoise-blue buccal tentacles and anterior lateral lobes. In life, body yellow-brown with maroon thoracic uncinigerous tori and ventral cross-bands; tentacles brownish, relatively few, short and stout, strongly grooved, many tightly coiled.

Compact tentacular membrane. Eye-spots absent. Peristomial lobes well-developed, connected mid-ventrally by shallow U-shaped structure, glandular with
thinner margins. Segment 2 with elongate rectangular ventral lobe, not developed laterally. Segment 3 with semi-circular lateral lobes, margins deflected posteriorly, glandular with thinner margins, continuous across venter as narrow connecting ridge. Segment 4 with narrow elongate extension to latero-anterior margins of segment 4, continuing across venter as narrow connecting ridge (Figs 7a, 8a). Lateral lobes on segments 3 and 4 extending across dorsum, on segment 3 forming thickened dorsal glandular shelf.

Two pairs of unequal, stalked, arborescent branchiae with numerous dichotomous branchings, on segments 2 and 3. Each branchia with long thickened annulated main trunk. Branchiae inserted in line with notopodia.

Figure 7. *PiSla pegma* new species. Holotype a. latero-ventral view of anterior segments, b. podia of abdominal segments.
Figure 8. *Pista pegma* new species. Holotype a. ventral view of anterior segments, b. notoseta from segment 13 (setiger 10), c. lateral views of uncini from segment 5 (1st uncinigerous segment), d. lateral view of uncinus from segment 11 (7th uncinigerous segment), e. lateral view of uncinus from segment 30, f. diagrammatic representation of abdominal neuropodium and neuropodial cirrus.
Notopodia from segment 4 and continuing for 17 segments. Podia rectangular, basally expanded, all similar in size, presetal lobe slightly longer than postsetal. Noto setae arranged in 2 tiers, graded in length within a tier. Notosetae narrow-winged, broad-bladed, with some expansion behind smooth tips (Fig. 8b). Neuropodia from segment 5 (setiger 2), continuing to pygidium. Thoracic podia long and sessile, forming single structure with notopodia. Abdominal tori short erect pinnules with neuropodial cirri (Figs 7b, 8f).

Neurosetae initially arranged in single rows, in double rows from 7th uncinigerous segment, then again in single rows on abdomen. Uncini avicular, anterior thoracic uncinigerous long-handled, dental formula of MF:4–6:7–8:6–8:∞ (Fig. 8c). Uncini of segment 6 similar, although uncinigerous slightly smaller and with less developed handles. By segment 11 (7th uncinigerous segment), uncinigerous short-handled, although still with strongly crested head and dental formula MF:3–5:7–8:6–8:∞ (Fig. 8d). Abdominal uncinigers smaller with dental formula of MF:3–5:5–6:∞ (Fig. 8e), about 20 uncinigers within a torus.

Two pairs of genital papillae occurring dorsally, behind the notopodia of segments 6 and 7, representing 2 pairs of reproductive nephromixia, characteristic of genus (Smith, 1992). These genital papillae difficult or impossible to see in small or preserved specimens, but readily detected in longitudinal histological sections, lying in deep intersegmental grooves.

Renal papillae not seen in life, but sections of non-type material confirm presence of single pair of anterior “excretory” nephromixia, as is also characteristic of Pista (Smith, 1992). They open by a pair of very inconspicuous renal papillae in shallow depressions situated dorsally on segment 3.

Variation.—The 2 specimens (AM W22588) resemble the type material in all ways except that the preserved animals almost completely lack blue pigment. They are a uniform color, although faint traces of pigment remain at the base of the tentacles. Thus the characteristic color is not always retained after fixation.

Remarks.—Day and Hutchings (1978) do not record the genus Pista from New Zealand, although a large number of species (11) are known to occur in Australia (Hutchings and Glasby, 1988, 1990; Hutchings, in press a), and the major characteristics of 9 of these species are given in Hutchings and Glasby (1988: table 1). The important specific characters are the number and type of branchiae, form and the distribution of the lateral and peristomial lobes, and the type of long-handled anterior thoracic uncinigers present. Unfortunately many earlier descriptions of species from elsewhere fail to provide information regarding these characters and the genus is in need of revision. P. pegma n.sp. can easily be distinguished from all other Australian species using these characters. The new species most closely resembles P. violacea Hartmann-Schröder, 1984, in terms of the development of a shelf dorsally on segment 3 and a dorsal ridge on segment 4. However, P. pegma has an rectangular ventral lobe on segment 2, and segment 4 has a narrow elongate extension to latero-anterior margins whereas P. violacea has a latero-ventral lobe on segment 2 and segment 4 has a small rectangular lobe (Hutchings and Glasby, 1988, fig. 18a,b), and in addition the amount of branching of the branchiae varies between the 2 species, with P. pegma having numerous branches and P. violacea having sparse branching.

Etymology.—The specific name refers to the shelf which is developed across the dorsum of segment 3 and is from the Latin.
Habitat.—Common, lives in sandy or shelly tubes in protected channels of the exposed rocky shore at Matheson Bay. In Leigh Harbor it is found clustering among well-embedded rocks.

Distribution.—New Zealand (Matheson Bay and Leigh).

**Pseudopista** new genus

*Type Species.*—*Pseudopista rostrata* new species

Diagnosis.—Compact tentacular lobe with numerous buccal tentacles. Lateral lobes on segments 2 and 3, poorly developed. Branchiae, 3 pairs on segments 2 to 4, dichotomously branched. Notopodia from segment 4, continuing for 21 segments; notosetae narrow-winged capillaries, with serrations along one margin, some appearing flail-tipped. Neuropodia beginning on segment 5 (setiger 2) and continuing to pygidium; uncini of anterior thoracic segments typically with posteriorly elongated bases, following uncini lacking elongated bases. Uncini arranged in single rows initially, in double rows from uncinigerous segment 7 to mid abdominal segments, posterior abdominal neuropodia with uncini arranged in single rows.

Remarks.—*Pseudopista* resembles *Pista* in that both have anterior uncini with long-handles. It differs in that the lateral lobes represent just thickenings of anterior margins of segments 2 and 3, and that the notosetae are serrated along one margin. The new genus also resembles *Amphitrite* O. F. Müller 1771, which Hutchings and Glasby, 1988 suggested should include species of *Neoamphitrite* Hessle, 1917. *Pseudopista* differs from this genus in that the lateral lobes are poorly defined and that anterior uncini have some elongation to form a long handle. For these reasons a new genus is erected. However, the genus exposes two problems in Amphitritinae taxonomy: the definition of lateral lobes and the amount of elongation of anterior uncini necessary before the uncini are classified as long-handled. These problems will need to be addressed in any revision of the group.

Etymology.—The generic name reflects closeness to the genus *Pista*.

*Pseudopista rostrata* new genus, new species

Figure 9a–e

*Type Material.*—New Zealand, Leigh Harbor, 36°20'S 174°48'E, Holotype (AM W22583) intertidal, 23 Mar 1992. Paratypes: 1 (NMNZ 1434) length 30.4 mm, width 3 mm, incomplete with about 50 segments; 1 (USNM 170021) length 38.0 mm, width, 3.8 mm complete with about 80 segments; all type material from same locality.

Description.—Holotype, length 20 mm, width 2.5 mm. Alcohol preserved animal pale yellow in color, without pigmentation. Compact tentacular membrane with mass of thick grooved buccal tentacles, varying considerably in length. Upper lip triangular in shape, glandular with thinner margins; lower lip small rectangular, partially hidden. Eye-spots absent.

Three pairs of dichotomous branched branchiae on segments 2, 3 and 4, all of similar size, arranged in line with notopodia. Each branchia with short basal trunk, and 2 to 3 dichotomous branches, individual branches long (Fig. 9a).

Lateral lobes present but poorly developed. Segment 2 with slight expansion mid-dorsal to anterior margins of segment, folded over posteriorly. Segment 3 with ventro-lateral slight extension of anterior margin of segment, connected medially to form thickened margin. Segment 4 without lateral lobes, except slight lateral extension immediately behind notopodia.

Notopodia from segment 4, and continuing for 21 segments (on one side a few
Figure 9. *Pseudopista rostrata* new genus, new species. Holotype a. latero-ventral view of anterior segments, b. notoseta from segment 13 (setiger 10), c. lateral views of uncini from segment 5 (1st uncinigerous segment), d. lateral view of uncini from segment 11 (7th uncinigerous segment), e. lateral views of uncini from segment 28 (24th uncinigerous segment).
notosetae present on following segment). Podia oval-shaped, erect, glandular. Notosetae arranged in 2 tiers, graded in length within a tier, narrow-winged, broad-bladed and somewhat expanded just behind flail-tip. Flail-tips with serrations along one margin, some tips appear slightly twisted (Fig. 9b).

Neuropodia from segment 5 (setiger 2), continuing to pygidium, initially noto- and neuropodia forming a single glandular structure, then becoming separate structures. Abdominal neuropodia inverted triangular in shape, forming slightly erect pinnules, posteriorly declining in size. Uncini initially arranged in single rows, in double rows from uncinigerous segment 7, until about 12 segments past last thoracic notopodia, then arranged in single rows. Uncini of first row with short elongations (long-handled) with dental formula of MF:5–7:6–8:6–8:∞:∞ (Fig. 9c). Uncini from 7th uncinigerous segment without elongation, and with dental formula MF:5–7:6–8:7–8:∞:∞ (Fig. 9d). Abdominal uncini from segment 29 with dental formula MF:4–5:5:∞:∞ (Fig. 9e). Number of uncini present per torus declining posteriorly.

Dorsum smooth. Ventral pads well-developed and well-demarcated laterally and intersegmentally, present between segments 5 to 14, then forming mid-ventral groove. Nephridial papillae present ventro-lateral to notopodia or branchiae on segments 3, 4, 5 and 6, progressively declining in size posteriorly. Small spherical papillae present on segment 8–10 adjacent to notopodia. Material not dissected, therefore structure of nephridia not determined.

Holotype a ripe male with coloem full of spermatids.

Variations.—All type material similar with no apparent variation.

Etymology.—The specific name is the Latin word for beaked referring to the beaked shaped anterior uncini.

_Terebella_ Linnaeus, 1767


Type Species._—_Terebella lapidaria_ Linnaeus, 1767, by monotypy.

Diagnosis.—Three pairs of dichotomously branched branchiae from segment 2. Lateral lobes absent. Notopodia from segment 4, continuing for variable number of segments; notosetae distally serrated along one margin. Neuropodia from segment 5 (setiger 2); uncini initially arranged in single rows, from uncinigerous segment 7 to end of thorax uncini arranged in double rows, face to face or alternately; abdominal uncini arranged in single rows. Nephridial papillae from segment 3.

Remarks.—Hutchings and Glasby (1988) emended the generic diagnosis, to include several species of Australian _Terebella_.

_Terebella plagiostoma_ Schmarda, 1861

_Figure 10 a–f_


_Leprea haplochaeta_ Ehlers, 1904: 59, pl.8, figs. 13–18.—Benham, 1927: 106.


Type Material._—New Zealand, Papanui Inlet, 45°51'S 170°43'E, Neotype (AM W22578) intertidal, amongst _Chiona_ shells, March 1992.

Additional Material Examined._—New Zealand, Papanui Inlet, 45°51'S 170°43'E, 1(AM W22587) length 30.5 mm, width 2.66 mm, complete with about 95 segments; 1(USNM 170024) length 22.8
Figure 10. *Terebella plagiostoma*. Neotype a. latero-ventral view of anterior segments, AM W22587 b. details of single branchia. Neotype c. notoseta from segment 9 (setiger 6), d. lateral views of uncini from segment 10 (6th uncinigerous segment), e. lateral view of uncini from segment 29 (25th uncinigerous segment), f. lateral views of uncini from segment 49 (45th uncinigerous segment).
mm, width 2.28 mm, complete with about 95 segments; I (BMNH 1995.1657) length 22.0 mm, width 2.20 mm, incomplete with about 47 segments; I (LACM AHF unreg) length 36.6 mm, width 2.30 mm, complete with about 49 segments; 2 (AM W22579) length 24.0 to 26.0 mm, width 2.28 to 2.68 mm, incomplete with about 45 and 53 segments, all above material collected intertidally amongst Chion{shells, March 1992; Matheeson Bay, 36°18.5'5 174°48.2'E, 4 (AM W22580) intertidal, 18 Mar 1992; Whangateau Bay, 36°20'5 \]74°48'E, many(NNZ 1432), many(OMNZ 1v2509) intertidal in amongst mangroves, 23 Mar 1992; Omaha Causeway, 36°20.6'S 174°46.2'E, several(AM W22787) March 1992; Papapu Inlet, 45°51'S 170°43'E, several(AM W22584); Auckland Harbor, Waiheku Isl. 36°48'5 175°00'E 3(OMNZ A02-74) det. Benham.

Description.—Neotype, length 25 mm, width 1.5 mm, complete with about 130 segments, alcohol preserved animal pale yellow with no pigmentation pattern. In life, body pink, with narrow whitish ventral thoracic shield which tapers to point at about segment 17, with numerous, long white grooved tentacles, varying in length. Upper lip forming an expanded bulbous structure, fairly thin but lower lip circular, expanded and glandular (Fig. 10a). Peristomial eye-spots arranged in discrete line, although few present on neotype.

Three pairs of richly dichotomously branched branchiae, on segments 2,3 and 4, in life bright red. Each branchia with short main stalk, all branches coming off along one axis spirally (Fig. 10b). Branchiae of segment 4 inserted at posterior margin of segment. Lateral lobes absent.

Notopodia from segment 4 (third branchiferous segment) and continuing for 34 segments, thoracic region not sharply delimited posteriorly. Notopodia rectangular with setae inserted diagonally. Podia rapidly become smaller posteriorly, finally podia becoming almost sessile. Noto setae arranged in 2 tiers, graded in length within a tier. Setae, narrow-winged, broad-bladed, capillaries with fine serrations along one margin terminally (Fig. 10c).

Neuropodia from segment 5 (setiger 2), continuing to pygidium. Thoracic neuropodial tori long, flat sessile, not glandular. Uncini initially arranged in single rows, in double rows from segment 10, continuing until pygidium. Uncini avicular, broad based with thoracic dental formula of MF:3·4–5–6 (Fig. 10d). Dental formula of uncini from 25th uncinigerous segment MF:3·4–5 (Fig. 10e), uncini from 45th with dental formula of MF:3·4–3·5 (Fig. 10f).

Large pair of renal papillae present on segment 3, at base of second branchia representing 1 pair of pre-septal or “excretory” nephromia. Genital papillae visible on segments 6 to 9, although histological longitudinal sections, revealed 10 pairs of ciliated genital funnels of reproductive nephromia.

Dorsum smooth. Venter anteriorly with discrete ventral pads forming triangular shaped structure, by about segment 15 becomes mid-ventral glandular groove.

Variation.—The development of the eye-spots is highly variable, as is the expansion of the genital papillae. Some variation in the number of pairs of notopodia present, ranging from 32 to 34, although posterior podia may be small.

Remarks.—As discussed earlier in Remarks under Thelepus australiensis n. sp., the name Th. plagiosloma (Schmarda) has been widely used. The transfer of the species to Thelepus from its originally designated genus, Terebella, is inaccurate based upon the original figures of Schmarda. As Schmarda’s type material from New Zealand is no longer extant, it seems highly desirable to designate a neotype for Terebella plagiosloma and provide an expanded description of the species which appears to be a common intertidal New Zealand species. Material identified by Ehlers (1917) and described as Th. plagiosloma is in fact a species of Thelepus and probably represents an undescribed species (Hutchings, in prep.). At this stage, no other material identified by Ehlers (1904) or Augener (1924) from New Zealand as Th. plagiosloma has been examined. Some of the material identified by Augener (1914) as Th. plagiosloma is referred to Th. australiensis n. sp.
Prior to the redescription of *Terehella plagiostoma* the only other species of *Terehella* recorded from New Zealand waters was *T. haplochaeta* (Ehlers, 1904), described from subantarctic islands. From the re-description *T. plagiostoma* Schmarda, presented above and consultation of Schmarda’s original plate, it is now clear that the 2 species are identical. This synonymy was not appreciated when the type of *Leprea haplochaeta* (ZMH PE1188) was examined by Hutchings and Glasby (1988) as it was then believed (following Benham, 1909) that *T. plagiostoma* was a species of *Thelepus*.

At the date of collection (5 March 1992) females had oocytes of all sizes in the coelom, while males had well-developed sperm platelets at late pre-motile stages.

**Habitat and Habit.**—Common in *Chione* shell-banks, lives in sandy tubes clustered in empty shells of the bivalves *Chione* sp. and the less common *Macoma* sp. left after commercial harvesting on the low intertidal sands (ca. 0.2 m tidal level). Also found in muddy sand of mangrove flats in Whangiteau Bay, living in fragile, U-shaped, sandy tubes in the upper 3–4 cm of muddy sand among mangrove pneumatophores.

**Distribution.**—New Zealand (widespread).

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Note from P. A. H. This paper was partially written before Ralph Smith’s death and in finishing it, I have attempted to retain some of Ralph’s characteristic phraseology. Ralph collected additional specimens of the species described here but used them for histological sectioning for the interpretation of the nephridial structures. Some of that work will be published subsequently by me.

P. A. H. would like to thank Todd Smith, Ralph’s wife and his son Leverett for their hospitality while she was sorting out the material for this paper in his office after his death.

Anna Murray prepared the illustrations and Kate Attwood prepared the plates.

**LITERATURE CITED**


Fabricius, O. 1780. Fauna Groenlandica, systematice sistens, Animalia Groenlandica occidentalis
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hactenus indigata, quod nomen, specificum, triviale, vernaculumque; synonyma auctorum plurium, descriptionem, locum, victum, generationem, mores usum, capturamque singuli, pront detegend-icoc—casio fuit, maximaque pati secundum proprias observationes. Copenhagen XVI. 452 p.


HUTCHINGS AND SMITH: NEW TEREILLID POLYCHAETES


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