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Review of the Types and Key to the Species of *Eunice* (Eunicidae: Polychaeta) from the Australian Region

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ABSTRACT. Nineteen species of *Eunice* have been described from Australia, New Zealand and adjacent areas. The types of these species are redescribed and illustrated. Of the 19 species, two can no longer be recognized and no types are available. These two species, *E. gaimardi* and *E. quoya*, both described by Quatrefages (1866), are here considered indeterminable. A key to all species recorded from the area is given.

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About 30 species of *Eunice* have been identified from Australia and New Zealand (Day & Hutchings, 1979: 114-116); of these Day & Hutchings (1979) recognized 23 as valid. Nineteen species were originally described from Australia and New Zealand (cf. Hartman, 1959, 1965); the remaining species were originally described from other areas and subsequently recorded from New Zealand and Australia. Some taxa originally named from New Zealand and Australia that are often considered synonymous with other, widespread species, have been recognized as distinct in this paper. This brings the total known species from the region back up to 30. Most species of *Eunice* were described before the turn of the century, and have remained poorly known. This paper updates the description of all species originally named from Australia and New Zealand for which types were available. A complete treatment of the material deposited in the Australian Museum is in preparation, but cannot be completed until a revision of types of all species of *Eunice* has been performed. The world-wide revision will take several years to complete; members of the genus are important in ecological studies and a separate paper covering the species from this region will be useful to ecologists. A detailed discussion of the interrelations within *Eunice* must be postponed until all described species have been reviewed.

Standard illustrations and descriptions are given for all taxa available for examination and the separation

from related taxa is indicated. A key to all species currently recognized from the area is given. The character-set used to separate the species was discussed in detail by Hartman (1944) and Fauchald (1970); no additional characters have been added here.

Synonymies include only those that concern the type species examined. The often very brief original descriptions, usually without illustrations, has resulted in a very large number of incorrectly identified specimens. Without a complete review of the material on which these records were based, such synonymies would be more hindrance than help.

Scalemarks are 1 mm for all illustrations, except in all setal drawings in which the scalemarks are 0.1 mm.

ABBREVIATIONS

AM	Australian Museum, Sydney
BM(NH)	British Museum (Natural History), London
CM	Canterbury Museum, Christchurch
MNHN	Museum nationale d'Histoire Naturelle, Paris
MPW	Museum Przdnicze, Wroclaw
ZMH	Zoologisches Institut und Zoologisches Museum der Universitet, Hamburg
ZMB	Museum für Naturkunde, Berlin.

1	2	3	4	5	6	7	8	9	10
<i>E.aequabilis</i> *	Grube, 1878	C2	6	1	M	26,32	2	A	Number of branchial filaments decrease towards rear
<i>E.afra</i>	Peters, 1854	B4	18+	1	T	28,30	2	A	Maximally 5-6 branchial filaments
<i>E.afra paupera</i>	Grube, 1878	B4	20+	1	T	30	2	A	Maximally 1-2 branchial filaments
<i>E.antennata</i>	(Savigny, 1818)	C2	4-6	1	M	25	3	M	Decrease in numbers of branchial filaments in a median body region
<i>E.aphroditois</i>	(Pallas, 1788)	B2	5-7	1	T	35+	2	A	Summary description
<i>E.australis</i> *	Quatrefages, 1866	C1	7	1/3	T	31	2	A	Compound falcigers with blunt hoods
<i>E.bassensis</i> *	McIntosh, 1885	C2	?	(1)	T	?	2	?	Type incomplete
<i>E.bowerbanki</i> *	Baird, 1869	B2	5	1	T	31	2	M	Maximally 15 branchial filaments
<i>E.complanata</i> *	Grube, 1877	B4	19	1	T	28	2	S	Type dry; body cylindrical
<i>E.curticirris</i> *	Knox, 1960	B0	0	0	T	16	3	M	Type not seen; abranchiata, subacicular hooks tridentate
<i>E.dilitata</i> *	Grube, 1856	B4	19	1	T	28	2	S	Body strongly flattened
<i>E.elseyi</i> *	Baird, 1869	C2	6	1	M	30	3	M	Number of branchial filaments decrease towards rear
<i>E.filamentosa</i>	Grube, 1856	B2	26	1	M	26	2	S	
<i>E.franklini</i> *	Monro, 1924	B2	6	1	T	34	2	A	Branchial filaments very short, numbering up to 25
<i>E.gracilis</i>	(Crossland, 1904)	B0	0	0	T	31	2	S	Abranchiate, subacicular hooks bidentate
<i>E.grubei</i>	Gravier, 1900	B2	3	?	?	27	2	A	Maximally 8 branchial filaments
<i>E.indica</i>	Kinberg, 1865	C1	3	1/3	T	?	2	S	Compound falcigers with pointed hoods
<i>E.laticeps</i> *	Ehlers, 1868	B2	4	1	T	38	2	A	Maximally 18 branchial filaments
<i>E.longicirris</i>	Grube, 1869	B2	3	1	T	30	2	A	Maximally 8 branchial filaments
<i>E.makemoana</i>	(Chamberlin, 1919)	C2	7	1	T	28	2	M	All branchiae single filaments
<i>E.microprion</i>	Marenzeller, 1879	B2	4	1	T	33	2	A	Maximally 8 branchial filaments
<i>E.plicata</i> *	Baird, 1869	B2	7	1	T	25	2	A	Ventral cirri tipless
<i>E.pycnbranchiata</i> *	McIntosh, 1885	B2	6	1	T	28,29	2	A	Ventral cirri not inflated in median setigers
<i>E.rubella</i> *	Knox, 1951	B1	5	3/4	T	27	2	M	Type not seen
<i>E.torresiensis</i> *	McIntosh, 1885	C2	5	1	T	24	2	M	Numbers of branchial filaments decrease in a median region
<i>E.tribranchiata</i> *	McIntosh, 1885	B2	4,5	1	T	30	2	A	Ventral cirri scoop-shaped in median and posterior setigers
<i>E.tridentata</i> *	Ehlers, 1905	A1	3	1/2	T	51	2	A	
<i>E.tubifex</i>	Crossland, 1904	A4	35	1	T	29,32	2	S	Spinigers present
<i>E.vittata</i>	(delle Chiaje, 1828)	C1	3	1/3	T	16-24	2	A	Compound falcigers with pointed hoods

Table 1. Review of important morphological features of species of *Eunice* from Australia, New Zealand and adjacent areas. Species treated in detail are marked with an asterisk. The columns are: **1**, species; **2**, author; **3**, species group *sensu* Fauchald (1970); **4**, first occurrence of branchiae; **5**, last occurrence of branchiae in fraction of the total body length; **6**, shape of distal end of aciculae (M = modified, T = tapering); **7**, first occurrence of subacicular hooks; **8**, number of teeth in appendage of compound falcigers; **9**, structure of antennae (A = cylindrical articulations, M = moniliform articulations, S = articulations absent); **10**, remarks. ? in a column indicates missing information; parentheses indicates assumed condition.

TAXONOMY

Family EUNIDICAE Savigny, 1818

Eunice Cuvier, 1817

Prostomium with five antennae; peristomial cirri present. Maxillae include four pairs and one, unpaired MX III on the left side. Branchiae absent or present as single filaments or complex, pectinate structures. Setae including aciculae, subacicular hooks, pectinate setae and limbate setae. Aciculae and subacicular hooks translucent, yellow or light brown to black.

Type species. *Nereis aphroditois* Pallas, 1788 by subsequent designation (Hartman, 1959: 308).

Eunice aequabilis Grube, 1878

Figs 1-8

Eunice aequabilis Grube, 1878: 102.

Material examined. SYNTYPES: MPW 273 and ZMB 3993; Cape York, Australia, coll. Salmin (the label for the ZMB specimen suggests, incorrectly, that Grube collected the specimens).

Description. MPW syntype complete; 158 setigers; 175 mm long; 7 mm wide at setiger 15; length through setiger 10, 16 mm. ZMB syntype complete; 151 setigers; 183 mm long. Both syntypes flabby but otherwise in good condition.

Prostomium (Fig. 1) about 2/3 peristomial width; anteriorly truncate. Eyes not visible. Outer lateral antennae reaching posterior end of first peristomial ring; inner lateral and median antennae reaching setiger 3; all antennae articulated; inner lateral and median antennae with 12 articulations; outer lateral antennae with 6 articulations. Peristomium nearly cylindrical; anterior ring 5/6 of peristomial length; separation between rings well marked dorsally and ventrally, but not laterally. Peristomial cirri slender; reaching front edge of peristomium; with 5 articulations.

Jaws everted in ZMB syntype. Maxillary formula 1 + 1, 6 + 5, 8 + 0, 5 + 4 and 1 + 1. Mx III long; located behind left Mx II.

Branchiae (Fig. 2) from setiger 6 to end of body. All branchiae strongly pectinate; first branchia with 13 filaments; maximum 17 filaments at about setiger 20; number of filaments decreasing slowly posteriorly, but

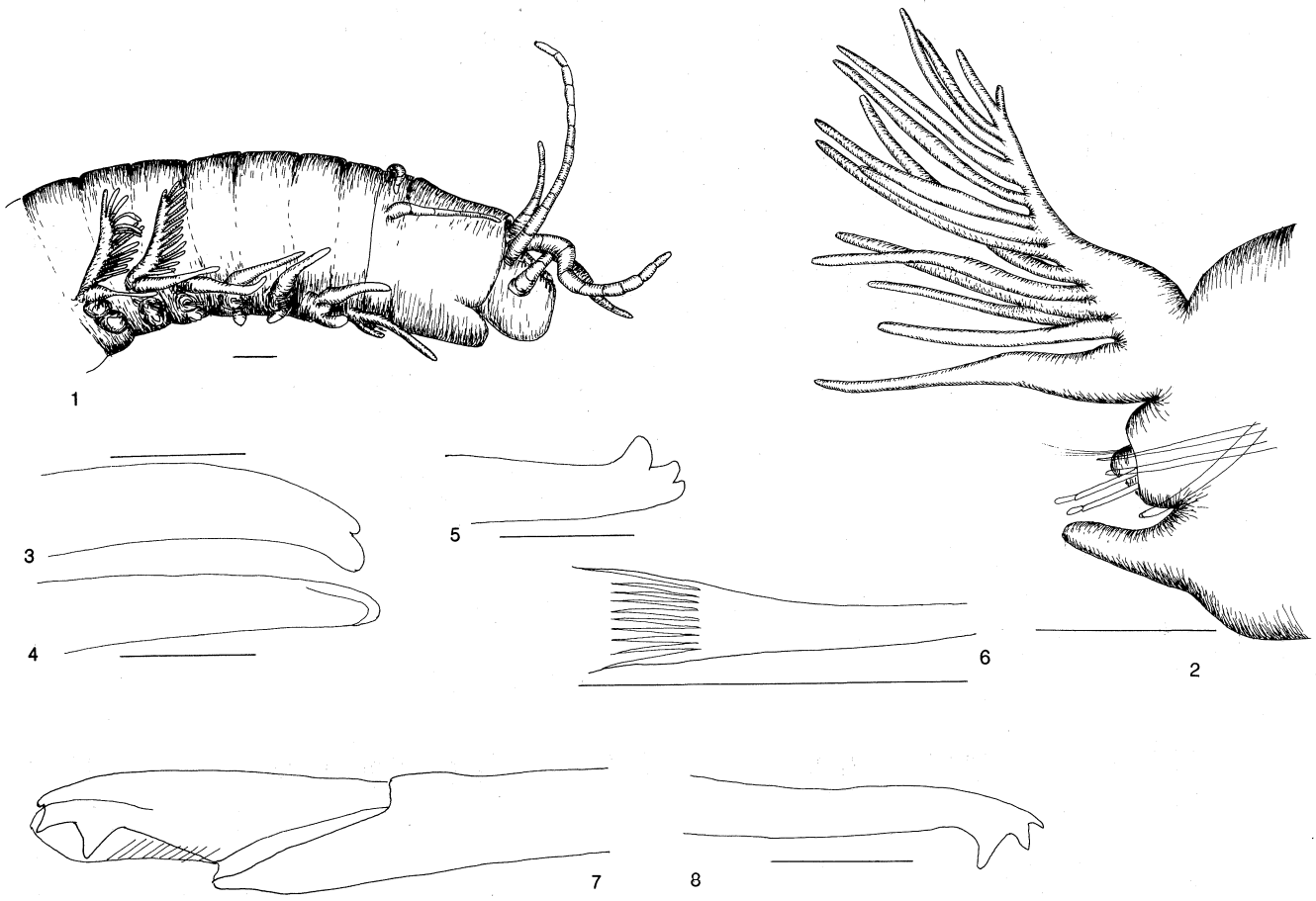
even in last segments 12 filaments present; median region with reduced numbers of filaments absent. Branchial stems conical; most filaments slender; about $\frac{2}{3}$ length of branchial stem in any segment. Branchiae never meeting in midline.

All acicular lobes (Fig. 2) distally obliquely truncate. Pre- and postsetal lobes low folds. Ventral cirri conical in first 3 setigers; thereafter basally inflated; inflated region decreasing posteriorly; by setiger 50 ventral cirri again conical; remaining conical in rest of body. Notopodial cirri basally inflated, in most setigers as long as branchial stems; articulations absent. Limbate setae marginally frayed, appearing brittle. Pectinate setae (Fig. 6) flat, tapering, with about 12 teeth; both marginal teeth longer than other teeth. Shafts of compound falcigers (Fig. 7) tapering evenly; appendages short, tridentate; proximal tooth largest; teeth decreasing evenly in size distally. Hoods short, distally rounded and marginally serrated. Aciculae (Fig. 4) yellow, paired; superior aciculae laterally flattened;

distally expanded into rounded tabs; inferior aciculae distally bidentate; dorsal teeth very much smaller than ventral teeth. Subacicular hooks (Figs 5, 8) yellow, tridentate; from setiger 26 in MPW syntype and from setiger 32 in ZMB syntype. Proximal teeth separated from 2 other teeth by distinct gaps.

Anal cirri long, slender with about 10 articulations.

Remarks. *Eunice aequabilis* belongs to the same group as *Eunice antennata* (C2, as defined by Fauchald, 1970) from which it appears to differ in that the branchiae retain a high number of branchial filaments in all setigers, in that the articulations on the long antennae are not moniliform and in the presence of a gap between the proximal and the 2 other teeth in the subacicular hooks. In *E. antennata* the number of branchial filaments decreases in a median region and increases again towards the posterior end; the antennae have moniliform articulations and the teeth of the subacicular hooks are evenly spaced.



Figs 1-8. *Eunice aequabilis* Grube (1878). 1, anterior end, lateral view; 2, parapodium 55 in anterior view; 3, acicula, parapodium 55, lateral view; 4, acicula, parapodium 55, ventral view; 5, subacicular hook, parapodium 55, lateral view; 6, pectinate seta, parapodium 134; 7, compound falciger, parapodium 134; 8, subacicular hook, parapodium 134. (Syntype, MPW 273.)

Eunice australis Quatrefages, 1866

Figs 9-14

Eunice australis Quatrefages, 1866: 321.

Eunice leuconuchalis Benham, 1900: 21-22.

Material examined. HOLOTYPE MNHN A1(R.)-1868-No.56a; New Zealand, coll. Quoy & Gaimard.

Description. Holotype complete, in posterior regeneration; 109 setigers; last 10 in regenerate; 70 mm long; 4 mm wide; length through setiger 10, 9 mm.

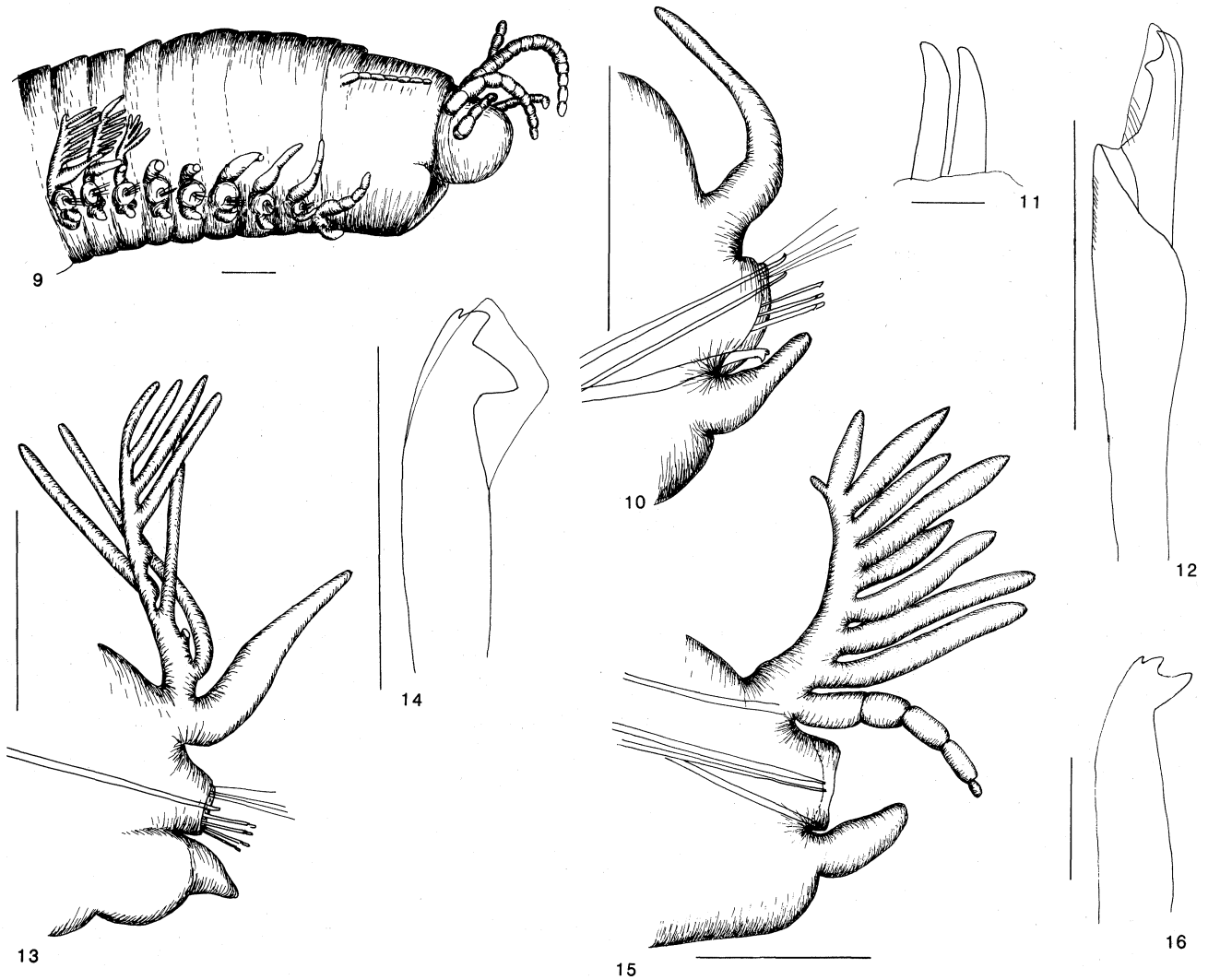
Prostomium (Fig. 9) 2 rounded lobes; nearly as wide as peristomium. All antennae articulated; articulations distinct, but not moniliform, except distally in median and inner lateral antennae; median antenna with 15 articulations. Outer lateral antennae reaching middle of peristomium; inner lateral antennae reaching setiger 1; median antenna reaching setiger 3. Separation between peristomial rings distinct dorsally and ventrally but not

laterally; anterior ring about $\frac{3}{4}$ of peristomial length. Peristomial cirri slender, not reaching anterior edge of peristomium; with 7 articulations.

Specimen ventrally dissected; maxillary formula 1 + 1, 6 + 6, 6 + 0 and 1 + 1. Mx III long; located behind left Mx II.

Branchiae (Fig. 13) from setiger 7 through 33; all except last 2 pairs pectinate; maximum number of filaments 8, at setiger 10.

Anterior parapodia (Fig. 13) distally truncate, becoming increasingly obliquely rounded posteriorly with high side dorsally (Fig. 10). Pre- and postsetal lobes low folds in all setigers. Ventral cirri digitiform in pre- and post-branchial setigers; basally inflated in branchial region. Prebranchial notopodial cirri digitiform; basally slightly inflated; with 2 long articulations. Notopodial cirri more distinctly inflated in branchial region, becoming increasingly slender in posterior setigers,



Figs 9-16. *Eunice australis* Quatrefages (1866). 9, anterior end, lateral view; 10, parapodium 68, anterior view; 11, acicula, parapodium 68; 12, compound falciger, parapodium 21; 13, parapodium 21, anterior view; 14, subacicular hook, parapodium 68; (MNHN, Paris, A1(R.) 1868-No. 56a). *Eunice bassensis* McIntosh, 1885. 15, parapodium 4, anterior view; 16, subacicular hook, parapodium 4. (Holotype, BM(NH) ZK 1885.12.1.207.)

remaining of similar length in all setigers. Limbate setae slender, marginally serrated. Pectinate setae tapering, flat; with about 12 teeth; both marginal teeth longer than other teeth. Shafts of compound hooks (Fig. 12) distally inflated; marginally finely serrated. Appendages short; relatively thick; bidentate; both teeth well developed; curvature of distal teeth varying somewhat in each fascicle, but teeth always distinctly curved, rather than erect. Hoods short; blunt with fine marginal serrations. Aciculae (Fig. 11) yellow, paired, distally tapered, bent dorsally. Subacicular hooks (Fig. 14) from setiger 31, yellow, tridentate, with large main fang and small secondary fang; third fang very small, closely appressed to secondary fang.

Remarks. *Eunice australis* has been widely reported from the Indian Ocean and the Southwest Pacific Ocean, but appears to have been confused with a number of similar species. Quatrefages had more than one specimen available, since he referred to the species as having 120–130 segments. The present specimen has 109. In other respects, Quatrefages' description is accurate, if somewhat incomplete. The relationships between *E. australis* and related species will be explored in detail elsewhere. It can be separated from other species reported from the region as indicated in the key and table. Justification for considering *E. leuconochalis* as a synonym is given in some detail below.

Eunice bassensis McIntosh, 1885

Figs 15–16

Eunice bassensis McIntosh, 1885: 298, pl. 39, fig. 16, pl. 21A, figs 8–9.

Material examined. HOLOTYPE: BM(NH) ZK 1885.12.1.207; off East Montcoeur Island, Bass Strait, 2 April 1874, 38–40 fms, dredged, sand, *Challenger* stn 162.

Description. Holotype anteriorly incomplete when first described; now consisting of 55 median and posterior setigers, last 22 plus pygidium in regeneration; 50 mm long; 3 mm wide.

Branched branchiae (Fig. 15) with relatively short filaments present; maximal number of filaments 9; continuing with 6–8 filaments through setiger 33; in regenerate 1–2 filaments per segment; branchiae present in all but last 2 or 3 setigers. Notopodial cirri (Fig. 15) with 3–4 distinctly marked articulations. Subacicular hooks (Fig. 16) in all setigers; yellow, tridentate. Compound falcigers bidentate. Hoods distally blunt. Aciculae yellow; distally tapering; bent.

Integument light coloured; containing numbers of white granules.

Remarks. The holotype appears to be the middle and last third of a very large specimen from which the head and at least 35 setigers are missing. Material identified as *E. bassensis* by Benham and resembling the type, is present in the collections of the Australian Museum, Sydney. These specimens were collected from the same geographical area and same habitat as the type. They

will be described in detail elsewhere.

Eunice bassensis was considered a junior synonym of *E. antennata* by Hartman (1959) and the features present in the type certainly resemble the conditions in that species. However, the notopodial cirri are very distinctly articulated in *E. bassensis* in median and posterior setigers and lack articulations in *E. antennata* in the same body region. The number of branchial filaments does not increase toward the posterior end in *E. bassensis* as it does in *E. antennata*; however, the regenerating condition of the posterior end of the type of *E. bassensis* may have confounded the development of the branchiae. The shape of the tridentate subacicular hook is distinctly different in the two species. *Eunice bassensis* is here considered valid despite the incomplete condition of the holotype.

Eunice bowerbanki Baird, 1869

Figs 17–23

Eunice bowerbanki Baird, 1869: 349–350.

Eunice bowerbanki.—Grube, 1878: 149.

Material examined. HOLOTYPE: BM(NH) ZH 1863.923.41; Australia, coll. Bowerbank.

Description. Holotype complete specimen in excellent condition; 142 setigers; 95 mm long; 7 mm wide; length through setiger 10, 11 mm.

Prostomium (Figs 17, 21) 2 well separated, spherical halves; distinctly narrower than peristomium. Inner lateral and median antennae reaching setiger 1; outer lateral antennae somewhat shorter. All antennae distinctly articulated; distalmost articulations moniliform; maximal number of articulations 8. Peristomium massive, especially ventrally (possibly through protrusion of jaws), dorsally divided into 2 rings; anterior ring $\frac{2}{3}$ of peristomial length. Peristomial cirri digitiform, not reaching frontal edge of peristomium, with 4 articulations.

Jaws (Figs 17, 21) everted. Maxillary formula 1 + 1, 4 + 4, 5 + 0, 5 + 8 and 1 + 1. Max III very small; closely appressed to left Max IV.

Branchiae (Fig. 18) from setiger 5–136. First branchia with 3 filaments; number increasing rapidly to maximum 15 by setiger 12. Number and length of filaments decreasing rapidly from setiger 18; by setiger 25 only 5–6 short, digitiform filaments left. Posterior $\frac{1}{2}$ of branchiated region with single filaments only.

Acicular lobes (Fig. 18) distally triangular, nearly symmetrical, supported by 1 or 2 acicula. Anterior postsetal lobes distally rounded, as high as setal lobe, becoming reduced to low folds by setiger 20. All presetal lobes low folds. Ventral cirri thick, digitiform in all setigers; basal inflated region poorly developed. Notopodial cirri basally supported by paired aciculae, increasing in length through setiger 4, then decreasing in length through next several setigers; by setiger 20 notopodial cirri no longer than branchial filaments. First few notopodial cirri digitiform, tapering evenly from

bases, with 2-3 articulations; next several cirri more pyriform, with distinct basal swellings decreasing posteriorly; by setiger 20, cirri thick, digitiform, lacking articulations, resembling branchial filaments in size and shape. Limbate setae slender. Pectinate setae (Fig. 23) short, slender, flat, flaring, with about 15 teeth; both marginal teeth somewhat thicker than other teeth, but not remarkably longer. Shafts of compound falcigers (Fig. 22) tapering; marginally smooth with internal oblique striations; appendages short, bidentate; distal teeth gently curved, more slender than proximal teeth. Hoods blunt, following outline of appendages closely. Aciculae (Fig. 19) black, single or paired; superior aciculae slender, tapering to straight tips; inferior aciculae thick, distally distinctly bent ventrally. Subacicular hooks (Fig. 20) from setiger 31, single or paired, black, bidentate, tapering smoothly toward tips; distal ends gently curved; teeth similar in size, both directed distally; hoods not observed.

Remarks. *Eunice bowerbanki* has not been reported since its original description, nor has it ever been illustrated. The species belongs to group B2 (Fauchald, 1970). It is differentiated from other species in the group by a combination of features including the beaded antennae, the bent acicular tips and the structure of the compound falcigers, with their nearly straight tips, in

addition to the reduction in size of Max III.

Eunice bowerbanki was described from Australian waters, no further locality information is available.

Eunice complanata Grube, 1877

Eunice complanata Grube, 1877: 529.

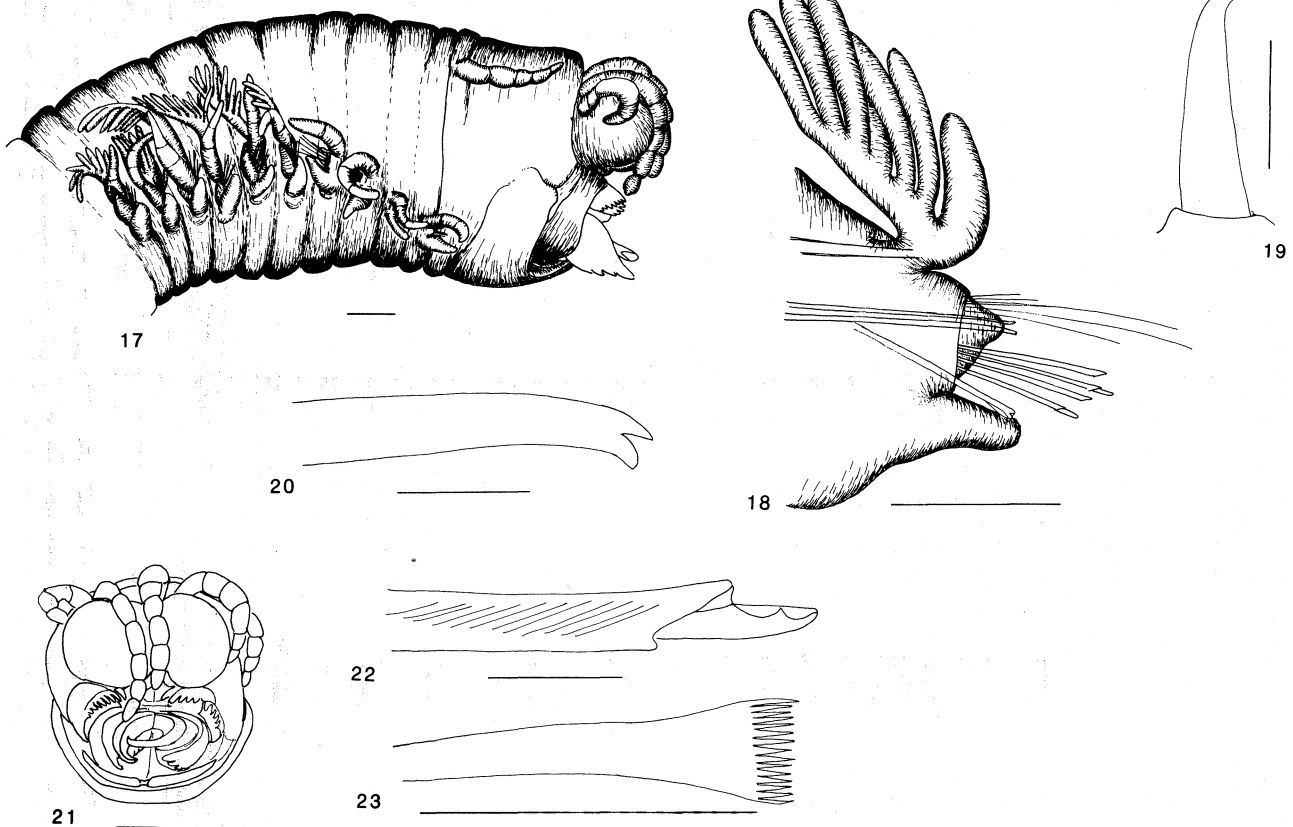
Material examined. HOLOTYPE: ZMB type 880, Timor, Atapupa and Salawatti, coral reef, dry.

Description. Holotype completely dry; incomplete; about 100 setigers; original reported length, 72 mm, apparently correct.

Prostomium completely shrunken; black eyes between inner and outer lateral antennae. Antennae perhaps reaching beyond tip of prostomium; apparently without articulations. Peristomial rings distinct dorsally and ventrally, but not laterally; anterior ring more than 5% of peristomial length. Peristomial cirri at least as long as outer lateral antennae, apparently reaching well beyond frontal margin of peristomium, apparently without articulations.

Jaws half everted; maxillary formula 1+1, 5+5, 5+0, 4+8 and 1+1. Mx III short; part of distal arc with left Mx IV and V.

Branchiae from setiger 19, well developed on last



Figs 17-23. *Eunice bowerbanki* Baird, 1869. 17, anterior end, lateral view; 18, parapodium 34, anterior view; 19, acicula, parapodium 34; 20, subacicular hook, parapodium 34; 21, anterior end, frontal view; 22, compound falciger, parapodium 34; 23, pectinate seta, parapodium 34. (Holotype, BM(NH) ZM 1863.9.23.41.)

setigers present (setiger 100), with strong branchial stems; maximally 6 filaments. First 2 pairs single filaments only; all other branchiae pectinate.

Parapodia too distorted for adequate description. Ventral cirri basally inflated in some anteromedial segments; free tips distinct in all segments. Limbate and pectinate setae present. Compound falcigers bidentate. Aciculae and subacicular hooks dark. Aciculae tapering to points. Subacicular hooks from setiger 28; bidentate; rather thick.

Remarks. *Eunice complanata* belongs to group B4 (Fauchald, 1970); it resembles *E. afra* Peters (1854) in important respects, but the antennae appear to have been longer than usual in that species and the relation between the start of the branchiae and the subacicular hooks is also unusual for that group of species. It can be separated from other species reviewed in this paper by features indicated in Table 1.

Eunice curticirris Knox, 1960

Figs 24–28

Eunice (*Nicidion*) *curticirris* Knox, 1960: 125–126.

Material examined. HOLOTYPE: CM; Chatham Islands, 43°36.2'S, 176°48.5'W, south of the Sisters, 38 fms, coarse shell, sand, gravel, Chatham Islands Expedition stn 24.

Description. Holotype complete; 55 setigers; 12 mm long; 1 mm wide; length through setiger 10, 2.25 mm.

Prostomium (Fig. 24) large; frontally rounded lobe with longitudinal ventral groove. All antennae reaching setiger 1; consisting of 3 or 4 very large, angular articulations and short, ring-shaped ceratophores. Large, reddish eyes between bases of outer and inner lateral antennae. Peristomium about as long as prostomium, flaring, especially antero-ventrally;

separation between peristomial rings very distinct dorsally, less so ventrally and totally obscure laterally; anterior ring roughly $\frac{3}{4}$ of peristomial length.

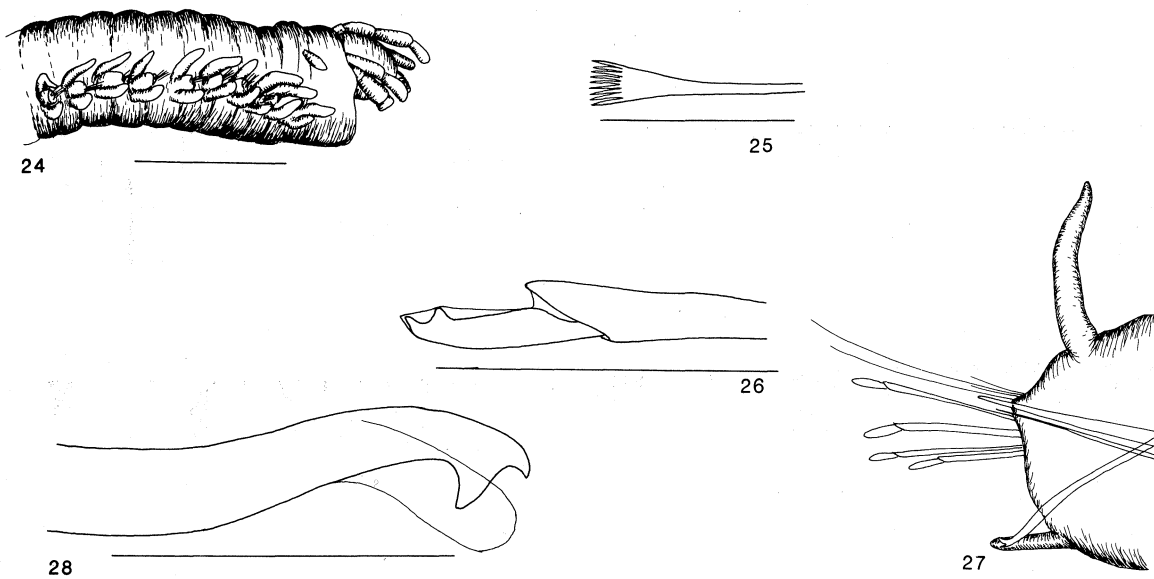
Peristomial cirri ovoid; reaching middle of peristomium.

Maxillary formula unknown.

Branchiae absent.

Acicular lobes of first 20 parapodia distinct and distally transverse; becoming reduced posterior to setiger 20 with aciculae emerging direct from the bodywall in posteriorly to setiger 25. Anterior notopodial cirri thick, Anterior ventral cirri thick, tapering, basally inflated from about setiger 12; retaining distinct, rounded tips, becoming tapering and nearly triangular in outline posterior to setiger 25. Anterior notopodial cirri thick, digitiform, becoming more slender posterior to setiger 20 (Fig. 27). Limbate setae slender. Pectinate setae (Fig. 25) tapering, flat, with about 10 teeth; marginal teeth no longer than other teeth. Shafts of compound hooks (Fig. 26) distally slightly inflated, marginally smooth; appendages bidentate; proximal teeth large, triangular; distal teeth well developed, angularly bent. Hoods distally bluntly and symmetrically truncate. Aciculae paired, black, smoothly tapering, distally pointed. Subacicular hooks from setiger 16, black, bidentate. Each hook (Fig. 28) distinctly S-shaped, with a tapering neck; distal and proximal teeth very large, curved; distal end nearly clear and translucent. No tridentate hooks observed.

Remarks. Knox (1960) mentioned that tridentate hooks with the distal tooth divided laterally were present in this species. No such hooks were observed in the specimen, but several parapodia are missing and such hooks could have been present in at least a few parapodia. *Eunice curticirris* can be separated from all other abranchiata species of the genus by the extremely strongly beaded antennae.



Figs 24–28. *Eunice curticirris* Knox, 1960. 24, anterior end, lateral view; 25, pectinate seta, parapodium 35; 26, compound falciger, parapodium 35; 27, parapodium 35, anterior view; 28, subacicular hook, parapodium 35. (Holotype, CM.)

Eunice dilatata Grube, 1877

Figs 29-34

Eunice dilatata Grube, 1877: 530.**Material examined.** HOLOTYPE: ZMB 896: Salavatti, Timor, coll. S.M.S. *Gazelle*.**Description.** Holotype incomplete; 92 anterior setigers; 70 mm long; 5 mm wide at setiger 10; nearly 10 mm wide at posterior end of fragment; length through setiger 10, 16 mm. Anterior part of body cylindrical; body becoming strongly flattened with very short, crowded segments posteriorly.

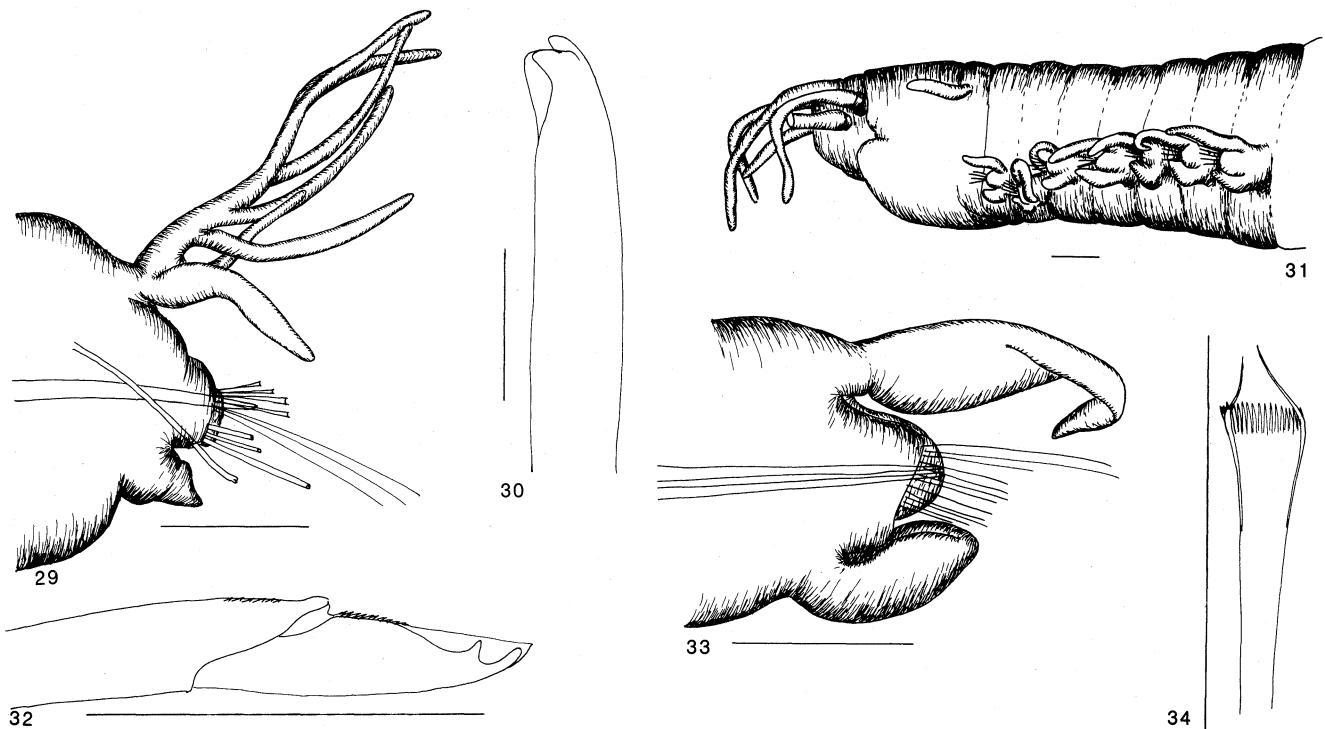
Prostomium (Fig. 31) 2 flattened lobes, well separated medially. Black eyes between bases of outer and inner lateral antennae. All antennae lacking articulations. Outer lateral antennae reaching second peristomial ring; inner lateral antennae reaching of setiger 1; median antenna reaching end of setiger 2; base of median antenna well forward of base of inner lateral antennae; median antenna about $\frac{1}{2}$ as wide as inner lateral antennae. Peristomium about twice as long as prostomium; separation between rings indistinct; visible only dorsally; anterior ring $\frac{3}{4}$ of peristomial length. Peristomial cirri short, digitiform.

Maxillary formula 1 + 1, 5 + 5, 8 + 0, 6 + 7 and 1 + 1; teeth of maxilla II unusually large and heavy. Mx III part of distal arc with left Mx IV and V.

Branchiae (Fig. 29) from setiger 19. First several pairs simple filaments; number of filaments increasing to maximum of 6; most branchiae with 5 filaments; this

number continuing to end of fragment. Filaments increasing in length posteriorly.

Anterior acicular lobes (Fig. 33) rounded; symmetrical; becoming distally transverse (Fig. 29) in median setigers. All presetal lobes low, obliquely transverse folds. Anterior postsetal lobes free, rounded, about as high as acicular lobes; becoming reduced to low folds in median setigers. Median and posterior parapodia carried on high ridges so that whole parapodial structure, including acicula are free of body wall, resembling large, flattened paddles with parapodial structure at distal end. Anterior ventral cirri large, tapering, folded over ventral edge of parapodia like a scoop. Ventral cirri basally inflated in branchial region, retaining rectangular free tips in all setigers. Anterior notopodial cirri pyriform, basally distinctly inflated with narrowed necks attaching to bodywall, decreasing in size in branchial region, remaining pyriform in all setigers. Limbate setae narrow, nearly capillary, in sparse dorsal fascicles. Pectinate setae (Fig. 34) narrow, tapering, furred, with about 15 teeth; both marginal teeth prolonged. Shafts of compound hooks (Fig. 32) smoothly tapering, marginally serrated; appendages large, bidentate, with both teeth similar in size and distinctly curved. Hoods distally blunt, marginally serrated. Compound hooks in thick fascicles in prebranchial region, decreasing in number posteriorly, in last segments only 4 or 5 hooks present in a parapodium. Aciculae dark yellow in anterior setigers; darkening to dark brown in last setigers; tapering to



Figs 29-34. *Eunice dilatata* Grube, 1877. 29, parapodium 81, frontal view; 30, subacicular hook, parapodium 81; 31, anterior end, lateral view; 32, compound falciger, parapodium 6; 33, parapodium 6, anterior view; 34, pectinate seta, parapodium 81. (Holotype, ZMB 896.)

smooth, sharp tips. Subacicular hooks (Fig. 30) from setiger 28, single in a parapodium, brown, bidentate, distally abruptly tapered; both teeth similar in size.

Remarks. The type has been laterally dissected so the lower outline of the peristomium has been reconstructed in Fig. 31.

The strongly flattened body and the large numbers of compound hooks in anterior setigers are features often present in the genus *Marphysa* as are the relatively light brown, rather than black aciculae and subacicular hooks. Other features, most importantly the presence of peristomial cirri, align the species with the genus *Eunice*.

Eunice dilatata belongs to group B4 (Fauchald, 1970). It resembles *E. afra* Peters (1854) in several important features, but differs from all species in the group by having the posterior end strongly flattened, and by having brown, rather than black, subacicular hooks. The shape of the subacicular hooks is also unusual in the group. All other species in the group have cylindrical, only slightly flattened bodies, and the subacicular hooks are black or dark brown throughout the body in large specimens.

Eunice elseyi Baird, 1869

Figs 35-40

Eunice elsyi (sic) Baird, 1869: 344.

Eunice elseyi.—McIntosh, 1885: 286.

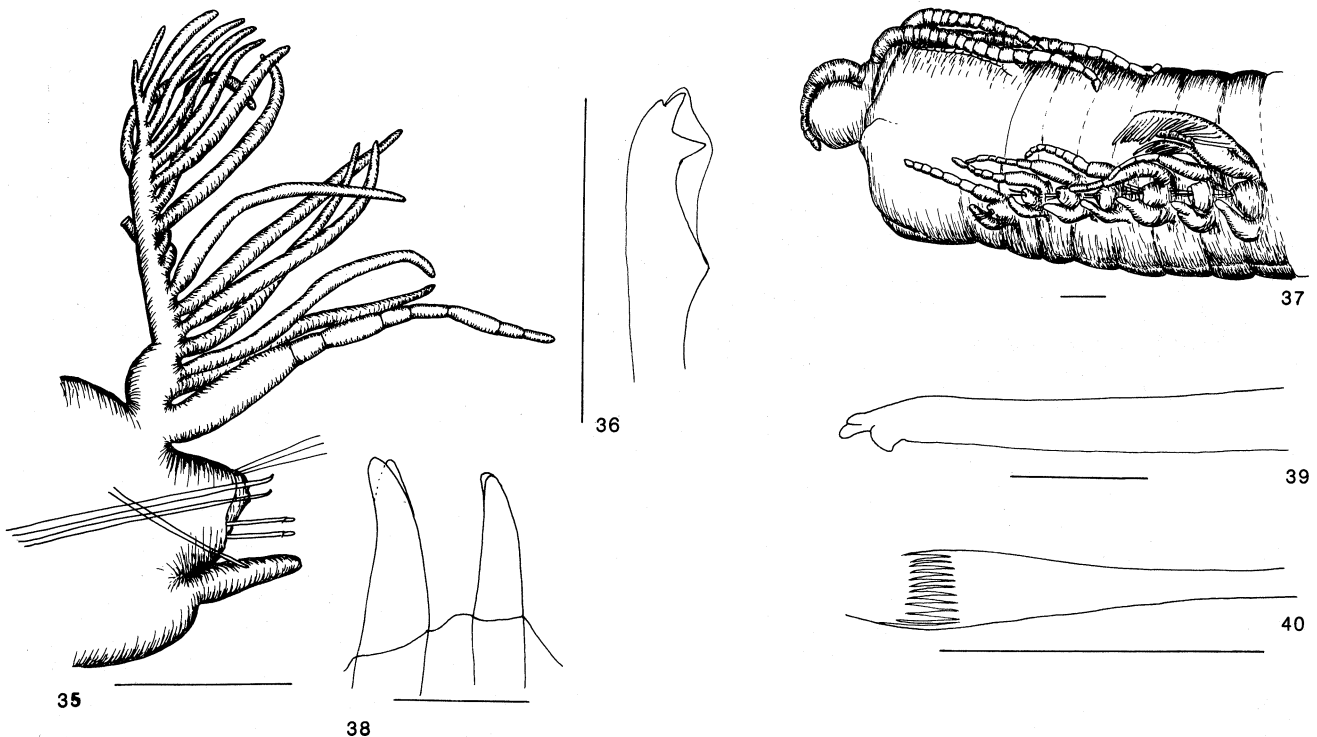
Material examined. SYNTYPE: BM(NH) ZH 1857.11.18.249; North Australia, coll. J.R. Eelsey, North Australia Exploring Expedition, 1855-56. One specimen in 2 pieces, 2 mounted slides with parapodia and 1 slide with the jaws.

Description. Syntype complete; cut in 2 pieces; 120 segments; last 16 in regeneration; 64 mm long; 7 mm wide; length through setiger 10, 13 mm. Anterior end deeply dissected; jaws removed.

Prostomium (Fig. 37) 2 short, rounded lobes, well separated medially. All antennae strongly articulated with moniliform articulations; maximum number of articulations 22 in median antenna. Outer lateral antennae reaching posterior edge of first peristomial ring; inner lateral antennae reaching setiger 3; median antenna reaching setiger 5. Nuchal fold everted. Peristomium massive; separation between rings well marked ventrally, less distinct dorsally and missing laterally. Peristomial cirri slender, reaching frontal edge of peristomium; with about 10 articulations.

Jaws, presumably of syntype described, mounted on a slide; maxillary formula 1 + 1, 5 + 7, 6 + 0, 5 + 10 and 1 + 1. Mx III long; located behind left Mx II.

Branchiae (Fig. 35) from setiger 6; continuing to all but last 16 segments (in regeneration). All branchiae strongly pectinate; first branchia with 5 filaments; most other branchiae with at least 10 filaments; maximum 18. Branchial stems strong, erect; shortening posteriorly. Numbers of filaments high even in last segments; length of filaments decreasing posteriorly.



Figs 35-40. *Eunice elseyi* Baird, 1869. 35, parapodium 103, anterior view; 36, appendage of compound falciger, parapodium 103; 37, anterior end, lateral view; 38, both acicula, parapodium 103; 39, subacicular hook, parapodium 103; 40, pectinate seta, parapodium 103. (Holotype, BM(NH) ZH 1857.11.18.249.)

Acicular lobes (Fig. 35) distally transverse; pre- and postsetal lobes forming transverse folds. Ventral cirri digitiform in first 5 setigers, basally inflated, with distinct, digitiform tips in median setigers, becoming slender, digitiform in last branchiated segments. Notopodial cirri long, basally somewhat inflated, articulated in all segments except in regenerating portion, usually about as long as branchial stems, reaching nearly halfway across body. Limbate setae slender. Pectinate setae (Fig. 40) tapering, flat, with about 10 teeth; 1 marginal tooth longer than other. Shafts of compound hooks distally inflated; smooth; appendages (Fig. 36) distally tridentate; small third teeth closely appressed to second teeth. Aciculae (Fig. 38) yellow; distally bent towards dorsal side, distally shallowly bidentate in anteroposterior axis. Subacicular hooks (Fig. 39) from setiger 30, yellow, tridentate; main fang large; secondary fang small; third fang very small, closely appressed to side of secondary fang rather than emerging from back of hook.

Remarks. Another syntype in poor condition is present in BM(NH) (A. Muir, in litt.). The jaws and one parapodial slide fit with the specimen that is currently in good condition.

Baird referred to the aciculae as dark-coloured and specifically stated that no subacicular hooks (called uncini) were supposed to be present. The syntype has yellow aciculae and tridentate subacicular hooks. Combined with the presence of strongly moniliform antennae and tridentate compound hook, these features place the species in the same group as *Eunice antennata*, from which it can be separated on the high number of branchial filaments in the median segments and on the shape of the aciculae, which are bifid in *E. elseyi* and hammer-headed in *E. antennata*.

Another slide made of the parapodia, indicates that part of the original material belonged to a species with black, bidentate subacicular hooks and black, slender, tapering, bent aciculae. The segments, from which these parapodia had been removed, were branchiated, but the number of filaments cannot be accurately determined: the slide appears to have been compressed. However, the branchial stem was poorly developed and the number of filaments probably less than 10. These parapodia resemble those of species in group B2.

The specific name was spelled *elsyi* in Baird's original description, nevertheless he spelled the name of the collector correctly as Elsey at the end of the description. The label accompanying the type spells the name *elseyi* as did McIntosh (1885). It is here assumed that Baird's spelling of the specific name was a *lapsus calami* and that the corrected spelling of the name should be used.

Eunice franklini Monro, 1924

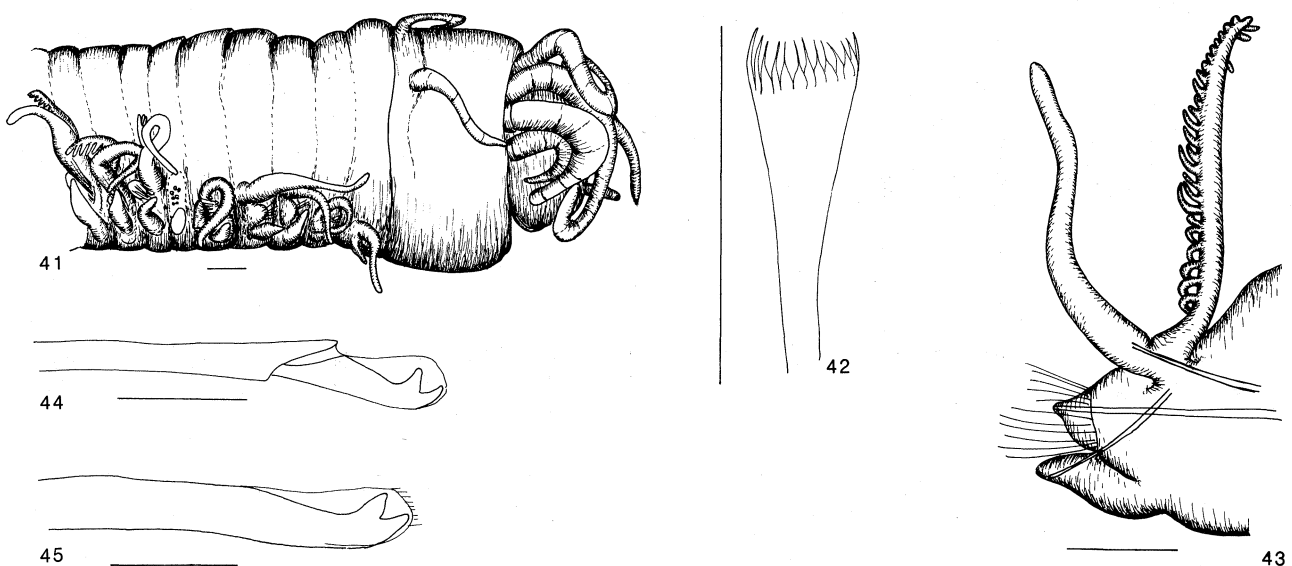
Figs 41–45

Eunice franklini Monro, 1924: 56–57, figs 14–16.

Material examined. HOLOTYPE: BM(NH) ZK 1924.1.28.81; the Franklin Shoal, Arafura Sea, 9°53'S, 129°19'E, one specimen, plus the jaws mounted on a slide.

Description. Holotype incomplete; frontally dissected; 92 setigers; 105 mm long; 7 mm wide; length through setiger 10, 15 mm.

Prostomium (Fig. 41) short, distinctly bilobed, narrower than peristomium. All antennae distinctly articulated; maximum 10 irregular articulations. Outer lateral antennae reaching setiger 1; inner lateral antennae (only left antenna intact) reaching setiger 4; median antenna reaching setiger 7. Separation between



Figs 41–45. *Eunice franklini* Monro 1924. 41, anterior end, lateral view; 42, pectinate seta, parapodium 69; 43, parapodium 69, anterior view; 44, compound falciger, parapodium 69; 45, subacicular hook, parapodium 69. (Holotype, BM(NH) ZK 1924.1.28.81.)

peristomial rings distinct dorsally; indistinct ventrally and laterally; anterior ring $\frac{5}{6}$ of peristomial length. Peristomial cirri tapering, more slender than antennae, similar in length to outer lateral antennae, with 5 indistinct articulations.

Jaw apparatus mounted separately; maxillary formula 1 + 1, 6 + 6, 8 + 0, 6 + 8 and 1 + 1. Mx III part of distal arc with left Mx IV and V.

Branchiae (Fig. 43) from setiger 6; continuing to end of fragment; all branchiae distinctly pectinate with very short, digitiform branchial filaments; maximum 27 filaments. Branchial stems well developed; shorter than notopodial cirri in most setigers.

Acicular lobes (Fig. 43) triangular with pointed area surrounding projecting aciculae. In first 15 setigers pre- and postsetal lobes distinct and free; rounded; thereafter reduced to transverse folds. Ventral cirri tapering towards blunt tips in all setigers; basal inflated region present, but indistinct. Notopodial cirri very long, basally supported by prominent aciculae, pyriform, longer than branchial stems in most segments. Limbate setae slender, marginally serrated. Pectinate setae (Fig. 42) flat, tapering, with about 12 teeth; both marginal teeth slightly longer than other teeth. Shafts of compound hooks (Fig. 44) slender, smoothly tapering, without distinct ornamentation; appendages short, slender, bidentate; distal teeth slightly slimmer than proximal teeth. Hoods distally rounded. Aciculae black, tapering evenly from base, distally straight. Two of 4 notopodial aciculae black; other 2 translucent. Subacicular hooks (Fig. 45) from setiger 34, black, bidentate; both teeth similar in size, covered by short, blunt hood.

Remarks. *Eunice franklini* remains known only from the type specimen which is incomplete, but the development of the branchiae indicate that most of the posterior segments must have been branchiated. The number of branchial filaments is reduced towards the posterior end, but even in the last setiger present 17 short branchial filaments are present. Judging from the tapering of the body, it appears that less than 50 segments are missing from the body and unless the branchial distribution is vastly different from the normal pattern in the genus, the species can be assumed to retain branchiae into the far posterior setigers. The species must belong to group B2 as defined by Fauchald (1970).

The relationship to similar species from Australian waters is indicated in the Key and Table 1. The combination of numerous very short branchial filaments and extremely long notopodia is unique to the genus.

Eunice gaimardi Quatrefages, 1866

Eunice gaimardi Quatrefages, 1866: 321.

Remarks. No material is available of this species in the MNHN (J. Renaud-Mornant, in litt.). The species was described by Quatrefages (in Latin, K. Fauchald translation with updated terminology) as follows: "The

prostomium is shallowly incised. The antennae are nearly moniliform. The peristomium is somewhat elongated. Short, indistinctly articulated peristomial cirri. Superior maxillae slender, inferior ones with 6 teeth. Teeth rounded. The mandible curved, shallowly incised frontally. Body with 120 segments. Notopodial cirri long and thick, ventral cirri very short. Branchiae with six branchial filaments."

Quatrefages' comments (in French, translation with updated terminology) read: "This species, reported by Quoy & Gaimard, is represented only by a single individual in rather poor state of preservation. The prostomium is shallowly incised. The median antennae are missing. The outer ones are nearly moniliform. The peristomium is as long as the next 3 segments together. The peristomial cirri are short and indistinctly articulated. The upper jaws are slender, the lower jaws have 6 small teeth. The margins of the jaws are undulating rather than denticulated. The mandible is straight and only a little incised. The body, which is incomplete, is 90 mm in length and consists of about 120 segments. The parapodia do not protrude much. The notopodial cirrus is thick and moderately long; the ventral cirrus is very small. The neuropodium, conical and distinct, carries compound setae in which the appendage has a large smooth tooth at the base of the spoon (?) and two strong teeth distally. Branchiae are first present from the sixth segment and have only six filaments."

The information is not sufficient to allow identification of the species and *E. gaimardi* is here considered indeterminable.

Eunice laticeps Ehlers, 1868

Figs 46-50

Eunice laticeps Ehlers, 1868: 312.

Eunice tentaculata Quatrefages, 1866: 317.

Material examined. HOLOTYPE of *E. tentaculata* Quatrefages, MNHP A1(R.)-1868-No. 52b; Port Western, Australia, coll. Quoy & Gaimard, 1839.

Description. Holotype of *E. tentaculata* incomplete; in 3 fragments. In addition a small posterior fragment with a pygidium present; its relation to holotype undetermined. Other fragments comprising 81 segments; 126 mm long; 10 mm wide; length through setiger 10, 21 mm. Anterior fragment with pro- and peristomium and first 38 setigers.

Prostomium (Fig. 46) has 2 massive rounded lobes, well separated medially. Antennal bases overlapped by overhanging nuchal fold. All antennae digitiform. Inner lateral and median antennae reaching middle of second peristomial ring; with 10 distinct, but not moniliform articulations. Outer lateral antennae reaching middle of first peristomial ring. Left outer lateral antenna doubled and left inner lateral antenna missing. Peristomium massive; separation between rings distinct dorsally, and visible ventrally, missing laterally. Peristomial cirri

short, slender; with 6 articulations.

Jaws halfway everted. Maxillary formula (as far as determinable) 1+1, ?4+?, 6+0, 6+9 and 1+1. Mandibles massive, strongly calcified, very friable. Mx III short; part of distal arc with left Mx IV and V.

Branchiae (Fig. 47) from setiger 4 to end of fragments. All branchiae pectinate; first branchia with 4 filaments; maximum number 18 at about setiger 20; most median segments with 10 or fewer filaments.

Acicular lobes (Fig. 47) distally truncate, with distinct steps from dorsal sections supported by aciculae to ventral, lower sections. Pre- and postsetal lobes low folds. Ventral cirri digitiform in anterior setigers; becoming basally inflated in branchial region; basal inflation less distinct in posterior fragments; ventral cirri more distinctly digitiform than in early branchial region. Anterior notopodial cirri digitiform; with 2 or 3 articulations, losing articulations posteriorly. Limbate setae narrow; marginally smooth. Pectinate setae (Fig. 48) usually at least 10 per segment, flat, flaring, with 15–20 teeth; 1 marginal tooth longer than other. Shafts of compound hooks (Fig. 49) tapering, marginally smooth, internally distinctly striated; appendages narrow, bidentate, with small proximal and distal teeth. Hoods short, blunt (not illustrated). Subacicular hooks (Fig. 50) from setiger 38; mostly singly, sometimes paired, black, bidentate, tapering; proximal teeth distinctly larger than distal teeth.

Remarks. The combination *Eunice tentaculata* was published by Kinberg (1865: 562) in a paper issued early in the year 1865. Quatrefages published his systematic scheme, including a revision to the generic level, but no species, in March, 1865 (Quatrefages, 1865a). This preview was reviewed by Claparède (anonymously, in April 1865) and the review led to a later rebuttal, and

reiteration of the same scheme by Quatrefages (1865b). Quatrefages' completed volumes, including the description of species was not issued until 1866, despite the date on the title page of the first volume (Wright, 1866: 578). The name *E. tentaculata* Quatrefages is thus a junior homonym, as Ehlers (1868: 312) noted in a footnote in which he re-named the species, without seeing any specimens and without adding anything to the description.

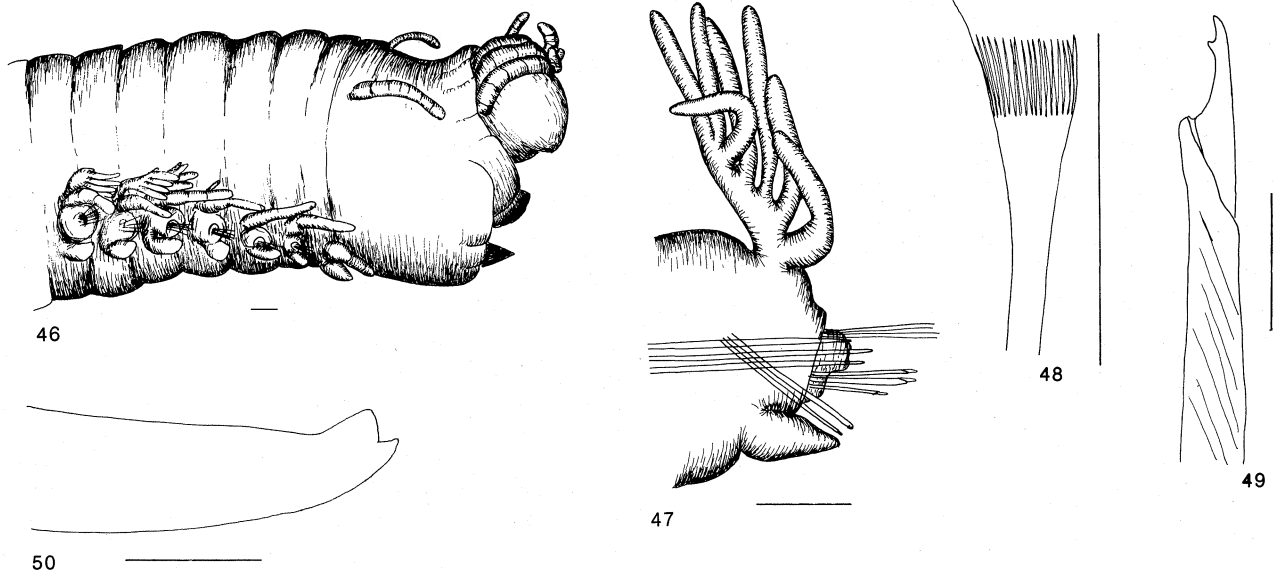
The issue was confused by Grube (1878: 99) who proceeded to replace *E. tentaculata* Kinberg with *E. valenciennesi*, on grounds of the supposed preoccupation of the combination; Hartman (1948: 76) accepted Grube's replacement name in a review of Kinberg's material. Clearly, Kinberg's name was published earlier than Quatrefages. The two names do not apply to the same species. The name *E. tentaculata* Quatrefages, while well known in the systematic literature, has not been used extensively in non-taxonomic contexts, thus there are no grounds for setting aside the rules of priority. Ehlers' name, *E. laticeps*, is the valid name for this species.

Eunice laticeps has been confused with a number of similar species; a detailed review of the problem is in preparation; the relation to similar species known from New Zealand and Australia is indicated in the key and table.

Eunice leuconuchalis Benham, 1900

Eunice leuconuchalis Benham, 1900: 21–22.

Remarks. Day & Hutchings (1979: 115) indicated that the type of *E. leuconuchalis* might be present in the Otago Museum, New Zealand. An inquiry showed that



Figs 46–50. *Eunice laticeps* Ehlers, 1868. 46, anterior end, lateral view; 47, parapodium 50, anterior view; 48, pectinate seta, parapodium 50; 49, compound falciger, parapodium 50; 50, subacicular hook, parapodium 50. (Holotype of *Eunice tentaculata* Quatrefages, 1866, MNHN, Paris, A1(R.)-1868-No. 52b.)

no material of this species is present in the holdings of that Museum (A.C. Harris, in litt.).

Benham's description includes the following statements: *Eunice leuconuchalis* is very common. The antennae are moniliform and the median antenna reaches setiger 4 and is the longest of the antennae. Branchiae are present from setiger 7 through setiger 35 and have up to 15 filaments.

The maxillary formula was in part indicated by Benham (1900) as 1+1, 5+?, 6+0. The species was considered synonymous with *E. australis* by Ehlers (1907: 12) and listed as such without comment by Fauvel (1917: 228). The differences between *E. leuconuchalis* as described by Benham and *E. australis* as described above based on the type specimen are minor and *E. leuconuchalis* is here considered a synonym of *E. australis* as originally suggested by Ehlers (1907).

Eunice plicata Baird, 1869

Figs 51–55

Eunice plicata Baird, 1869: 348–349.

Material examined. HOLOTYPE: BM(NH) ZH 1861.9.20.25; Fremantle, Australia, coll. Bowerbank.

Description. Holotype complete, but in 2 pieces; 126 setigers; 80 mm long; 5 mm wide at the widest; length through setiger 10, 8 mm.

Prostomium (Fig. 51) 2 short, rounded lobes, distinctly narrower than peristomium. Antennae very thick, prominent, digitiform. Outer lateral antennae reaching posterior edge of first peristomial ring; inner lateral and median antennae reaching setiger 2, with short basal ceratophores and 2 or 3 long articulations. Peristomium ventrally widely flaring; nuchal fold very deep; separation between rings distinct dorsally only; anterior ring about 9 times longer than posterior ring. Peristomial cirri without articulations; reaching middle of peristomium.

Maxillary formula 1+1, 4+4, 6+0, 6+7 and 1+1. Mx III part of distal arc with left Mx IV and V.

Branchiae (Fig. 52) setiger 7 to 115, all pectinate except last 30 pairs; maximum 5 filaments; filaments short; thick. Branchial stems very short; branchiae appearing nearly palmately branching. Filaments shorter than notopodial cirri in all but a few median segments.

Parapodia ventrolateral in first setigers, strictly lateral from setiger 10. Acicular lobes (Fig. 52) short, triangular. Presetal lobes low folds. Postsetal lobes as long as setal lobes in anterior setigers, reduced to low folds by setiger 30. Ventral cirri anteriorly thick, tapering, projecting as far as postsetal lobes, strongly inflated in median setigers; distal tip lost by setiger 50; ventral cirri present only as inflated glandular ridges along ventral side of neuropodia. Notopodial cirri thick, basally somewhat inflated, with 2 or 3 distinct articulations. Limbate setae slender, a few in all parapodia. Pectinate setae (Fig. 53) flat, flaring, with about 15 teeth; 1 marginal tooth slightly longer than

other. Shafts of compound hooks (Fig. 54) tapering, marginally smooth; appendages bidentate; distal teeth smaller than proximal teeth and curved at right angle. Hoods bluntly rounded. Notopodial aciculae black. Neuropodial aciculae black, straight, tapering, distally bluntly pointed, up to 3 in a parapodium. Subacicular hooks (Fig. 55) from setiger 25, black, bidentate; both teeth pointing distally and similar in size.

Remarks. As far as known, this species has remained unreported since it was briefly described by Baird (1869); it belongs to group B2 (Fauchald, 1970). Relations between *E. plicata* and other taxa from New Zealand and Australia are indicated in the Key and Table 1.

Nothing is known of its habitat, beyond what is indicated above.

Eunice pycnbranchiata McIntosh, 1885

Figs 56–61

Eunice pycnbranchiata McIntosh, 1885: 249–297, pl. 39, figs 13–15, pl. 21A, figs 4–5, textfigs 54–55.

Material examined. SYNTYPE: BM(NH) ZK 1921.5.1.1997; *Challenger* stn 162, off East Moncoeur Island, Bass Strait, 39°10'30"S, 146°37'E, 38–40 fms, dredged, sand, 2 April 1874. SYNTYPE: BM(NH) ZK 1921.5.1.1998; *Challenger* stn 163A off Port Jackson, 20–25 fms, rock.

Description. Port Jackson syntype incomplete; 63 segments; 50 mm long, 8 mm wide; length through setiger 10, 12 mm. Bass Strait syntype; 76 setigers; 55 mm long; 10 mm wide; length through setiger 10, 10 mm.

Port Jackson syntype frontally dissected; jaws now missing. Prostomium (Fig. 59) frontally rounded; covered by nuchal fold. Antennae reaching second peristomial ring. Outer lateral antennae somewhat shorter than other antennae; irregularly, but distinctly articulated with up to 15 articulations. Peristomium flaring anteriorly; separation between peristomial rings distinct dorsally and ventrally; anterior ring $\frac{1}{2}$ of peristomial length. Peristomial cirri not reaching front edge of peristomium, with three articulations.

Maxillary formula (rewritten from McIntosh, 1885, textfigure 54) 1+1, 5+5, 6+0, 6+8, 1+1. Mx III part of distal arc with left Mx IV and V.

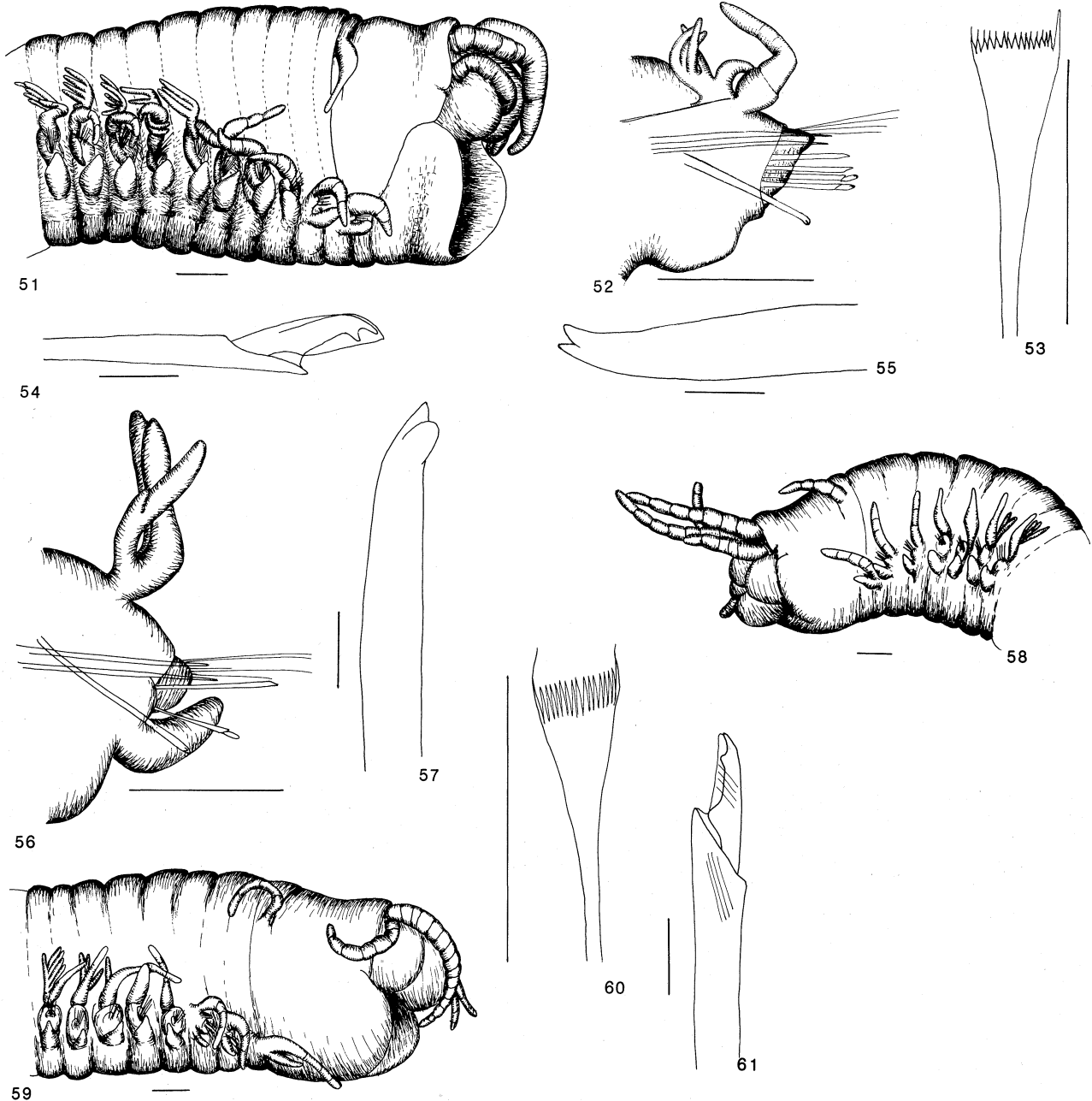
Branchiae (Fig. 56) from setiger 6 to end of both fragments. Maximum 4 short, thick filaments.

Acicular lobes (Fig. 56) rounded in all setigers. Presetal lobes low, transverse folds. Anterior postsetal lobes forming collars around dorsal edge of acicular lobes; posterior postsetal lobes low transverse folds. Ventral cirri digitiform; prominent in all setigers; basal inflated region indistinct. Anterior notopodial cirri digitiform with 2–4 irregular articulations; becoming basally somewhat inflated and loose articulations in branchial region. Limbate setae slender. Pectinate setae (Fig. 60) flat, flaring, with about 15 teeth; both marginal teeth slightly longer than other teeth. Shafts of compound hooks (Fig. 61) tapering, smooth, with

internal striations; appendages short, bidentate; proximal teeth short, triangular; distal teeth long, nearly erect. Aciculae black, tapering, paired in all but the first few setigers. Subacicular hooks (Fig. 57) from setiger 28 or 29; black, bidentate; distal teeth much smaller than proximal teeth; both teeth pointing obliquely distally.

Remarks. The Port Jackson syntype was described in detail by McIntosh and most of the description and

illustrations above are based on this specimen. The specimen from Bass Strait differs slightly from the specimen from Port Jackson in the length of the antennae (Fig. 58) and in the development of the branchiae, which tend to be more prominent in the Bass Strait specimen than in the other specimen. These differences are not considered to be of value as specific characters. McIntosh apparently got the information for Station 163A confused. The information given here is



Figs 51–61. *Eunice plicata* Baird, 1869. 51, anterior end, lateral view; 52, parapodium 46, anterior view; 53, pectinate seta, parapodium 46; 54, compound falciger, parapodium 46; 55, subacicular hook, anterior 46. (Holotype, BM(NH) ZH 1861.9.20.25). *Eunice pycnbranchiata* McIntosh, 1885. 56, parapodium 32, anterior view; 57, subacicular hook, parapodium 32; 58, anterior end, lateral view; 59, anterior end, lateral view; 60, pectinate seta, parapodium 32; 61, compound falciger, parapodium 32. (58 from Syntype, BM(NH) 1921.5.1.1997, all other figures of Syntype, BM(NH) ZK 1921.5.1.1998.)

taken from the official published station list for the expedition.

Eunice pycnbranchiata has been considered a junior synonym of *E. afra* and *E. laticeps*. *Eunice afra* has branchiae from about setiger 18 and *E. pycnbranchiata* has branchiae from setiger 6. *Eunice laticeps* has distinctly inflated ventral cirri in a median region and up to 18 branchial filaments; *E. pycnbranchiata* has digitiform ventral cirri in all setigers and up to 6 branchial filaments.

Eunice quoya Quatrefages, 1866

Eunice quoya Quatrefages, 1866: 318.

Remarks. No material of this species is available in MNHN (J. Renaud-Mornant, in litt.). The following translation of Quatrefages text indicates what is known about the species:

1. Diagnosis (in Latin, translation with terminology updated): "Prostomium deeply bilobed. Antennae lightly articulated. Peristomium long. Superior maxillae robust, the inferior ones with 4–5 teeth. Maxilla III (?) with two teeth. Mandible with entire margin. Notopodial cirri rather long, ventral cirrus thick, fused to the acicular lobe. Branchiae with 7–8 branchial filaments."

2. Comments (in French, translation with updated terminology): "This species is very close to the preceding one (*Eunice tentaculata* = *E. laticeps* is the species to which the comment refers, K. Fauchald comm.), even if the single specimen reported by Quoy & Gaimard is of considerably smaller dimensions. The prostomium, as in *E. tentaculata*, is large and deeply bilobed. But the antennae are indistinctly articulated and do not appear moniliform. The peristomium is equal in length to the next four segments, but the fold that carries the peristomial cirri resembles even more than in the preceding species a true segment and is equal in length to the first body segment. The peristomial cirri are nearly smooth. The upper jaws are robust as are the inferior ones, the latter carry 4–5 teeth which are proportionally smaller than in the preceding species. One finds only a single denticle on each side (this comment may refer to maxilla IV, K. Fauchald). The mandible is fused and is only shallowly incised along the anterior margin. The body is rounded in cross-section, rather than depressed, but this difference may be a result of age, as I have been able to demonstrate for *Marphysa sanguinea*. The parapodia are very inconspicuous. The notopodial cirri are shorter than in the preceding species. The ventral cirrus is thick, elongated and emerges directly at the base of the neuropodium; the latter is poorly developed. The setae resemble that of the preceding species, but the appendage is better developed than in that species. The branchiae do not start until towards setiger 20, and do not have more than 7–8 relatively short filaments."

Quatrefages thus essentially gave a differential

diagnosis of the species with respect to *Eunice laticeps*. It is not clear from his description if the species has dark (black) acicula and subacicular hooks. Assuming that such are present, the species should be compared to *E. afra* rather than to *E. laticeps* on the basis of the distribution of branchiae. The type locality is given as "Nouvelle-Hollande", which takes in the whole continent. Without access to the types, the species is indeterminable.

Eunice rubella Knox, 1951

Figs 62–66

Eunice rubella Knox, 1951: 66–69, figs 6–12.

Material examined. HOLOTYPE: CM; Banks Peninsula, New Zealand, 80 fms.

Description. Holotype 2 fragments; anterior fragment 46 segments; 27 mm long; 2 mm wide; length through setiger 10, 8 mm. Posterior fragment including pygidium 48 setigers; 21 mm long.

Prostomium (Fig. 62) short, truncate, anteriorly shallowly split; nuchal fold everted. Antennae reaching middle of peristomium, relatively stout; all antennae very distinctly articulated with moniliform articulations; maximum number of articulations 7 in inner lateral antennae; innermost article $\frac{1}{2}$ of each antenna. Black eyes between bases of outer and inner lateral antennae. Peristomium cylindrical, more than twice as long as prostomium; separation between peristomial rings distinct dorsally and laterally, but indistinct ventrally; anterior ring $\frac{3}{4}$ of peristomial length. Peristomial cirri reaching about middle of peristomium; with 3 articulations.

Jaw apparatus dissected out; now missing. Maxillary formula (Knox, 1951, fig. 12) 1 + 1, 5 + 6, 6 + 0, 6 + 7 and 1 + 1. Mx III short; part of distal arc with left Mx IV and V.

Branchiae (Fig. 63) from setiger 5; maximum of 2 short, thick filaments between setigers 7 and 29; otherwise all branchiae single filaments. Branchiae originally described as present to setiger 80; distribution on 2 fragments present agreeing with this pattern.

Anterior parapodia very short; acicular lobes distally truncate. Pre- and postsetal lobes low folds. Anterior ventral cirri thickset, tapering, becoming distinctly ventrally inflated with triangular tips by setiger 8; inflated region reduced by setiger 27; further posteriorly, ventral cirri forming large, open scoops (Fig. 63) covering emergent part of subacicular hooks. Anterior notopodial cirri thick, pyriform, with 3 articulations, becoming digitiform and losing articulations by setiger 20. Limbate setae slender. Pectinate setae (Fig. 65) tapering, flat, with 12 teeth; both marginal teeth slightly longer than other teeth. Shafts of compound hooks (Fig. 66) tapering; cutting edge finely dentate; appendages short, rather wide, bidentate; teeth short, blunt, roughly of same size. Hoods distally bluntly truncate, marginally serrated. Aciculae black, very thick, tapering to slender

tips, bent towards dorsal side, paired in median and posterior parapodia. Subacicular hooks (Fig. 64) from setiger 28, black, bidentate, distinctly curved; proximal teeth large, triangular; distal teeth short, erect, thick.

Remarks. The holotype was originally described as being in three pieces including 112 segments measuring 60 mm; presumably a fragment of 16 segments, 12 mm long, is now missing.

Eunice rubella differs sharply from other species with black, bidentate subacicular hooks from the region by having very strongly beaded antennae and by the poor development of the branchiae.

Eunice torresiensis McIntosh, 1885

Figs 67-70

Eunice torresiensis McIntosh, 1885: 270-272, pl. 37, figs 18-21, pl. 19A, figs 12-13, textfigs 32-33 (in part).

Material examined. LECTOTYPE and PARALECTOTYPE: BM(NH) ZK 1885.1.12.193; *Challenger* stn 186, Torres Strait, 10°30'S, 142°18'E, 8 fms, coral sand.

Description. Lectotype complete mature female with large eggs, cut in 2 pieces; 72 setigers; 47 mm long; 3 mm wide; length through setiger 10, 6.5 mm. Other specimen, illustrated by McIntosh; 16 setigers; cut, presumably from a much longer specimen.

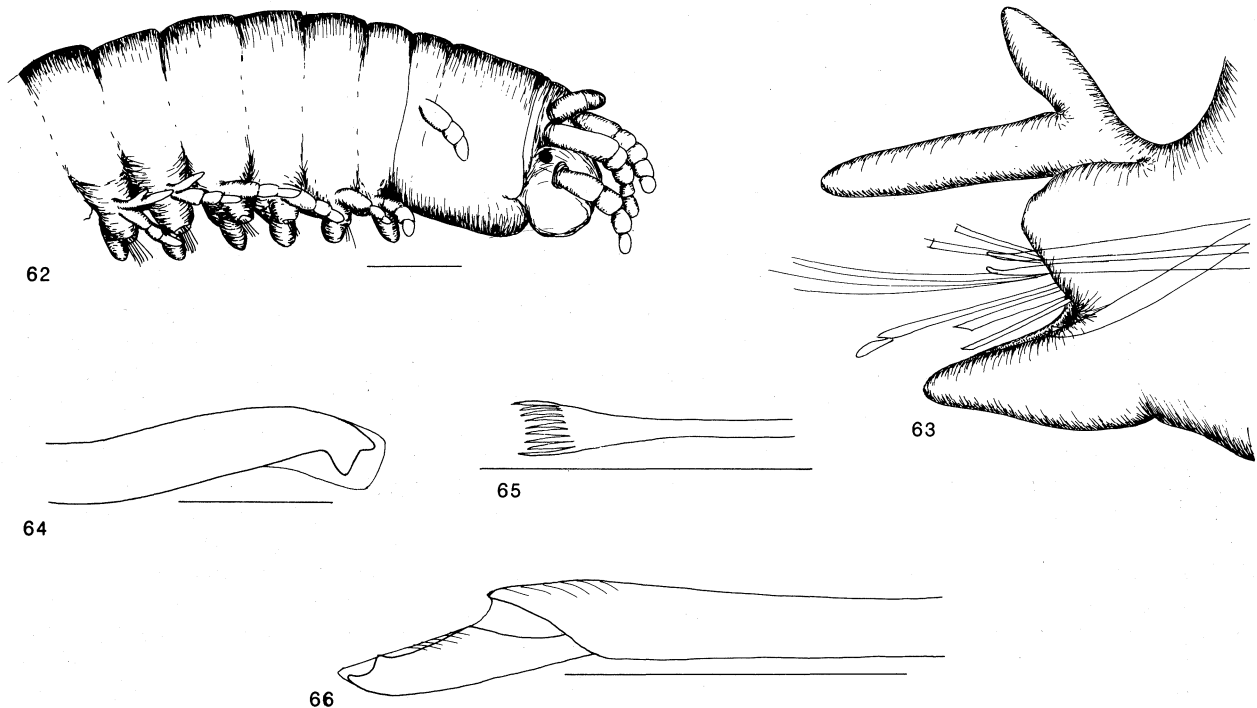
Prostomium (Fig. 67) 2 rounded lobes, well separated medially; about $\frac{1}{3}$ narrower than peristomium. Antennae strongly articulated; distal articulations

moniliform; maximal number of articulations about 30 in median antenna. Outer lateral antennae reaching setiger 1; inner lateral antennae reaching setiger 7; median antenna reaching setiger 9. Reddish eyes between bases of outer and inner lateral antennae. Peristomium about as wide as anterior part of body; separation between peristomial rings indistinct, noticeable only ventrally and in front of cirral bases; anterior ring nearly $\frac{3}{4}$ of peristomial length. Peristomial cirri slender, reaching front edge of peristomium, with about 12 articulations.

Jaws dissected out on paralectotype; maxillary formula (rewritten from McIntosh, 1885: 271, fig. 32) 1+1, 4+3, 6+0, 5-6+8, 1+1. Mx III long; located behind left Mx II.

Branchiae (Fig. 68) from setiger 5 as single filaments; number of filaments increasing to maximum of 7 by setiger 15, thereafter decreasing rapidly to 3; this number maintained in middle region of the body; towards posterior end number of filaments again increasing to 7; this number maintained in all but last few segments.

Acicular lobes (Fig. 68) distally truncate. Pre- and postsetal lobes low, transverse folds. Ventral cirri digitiform in prebranchial region, becoming basally inflated, retaining distinct tips in middle region; inflated region reduced by setiger 30; ventral cirri again digitiform in posterior setigers. Notopodial cirri long, digitiform in all setigers, with up to 6 moniliform articulations in prebranchial segments; articulations becoming elongated and reduced in number to 4 in



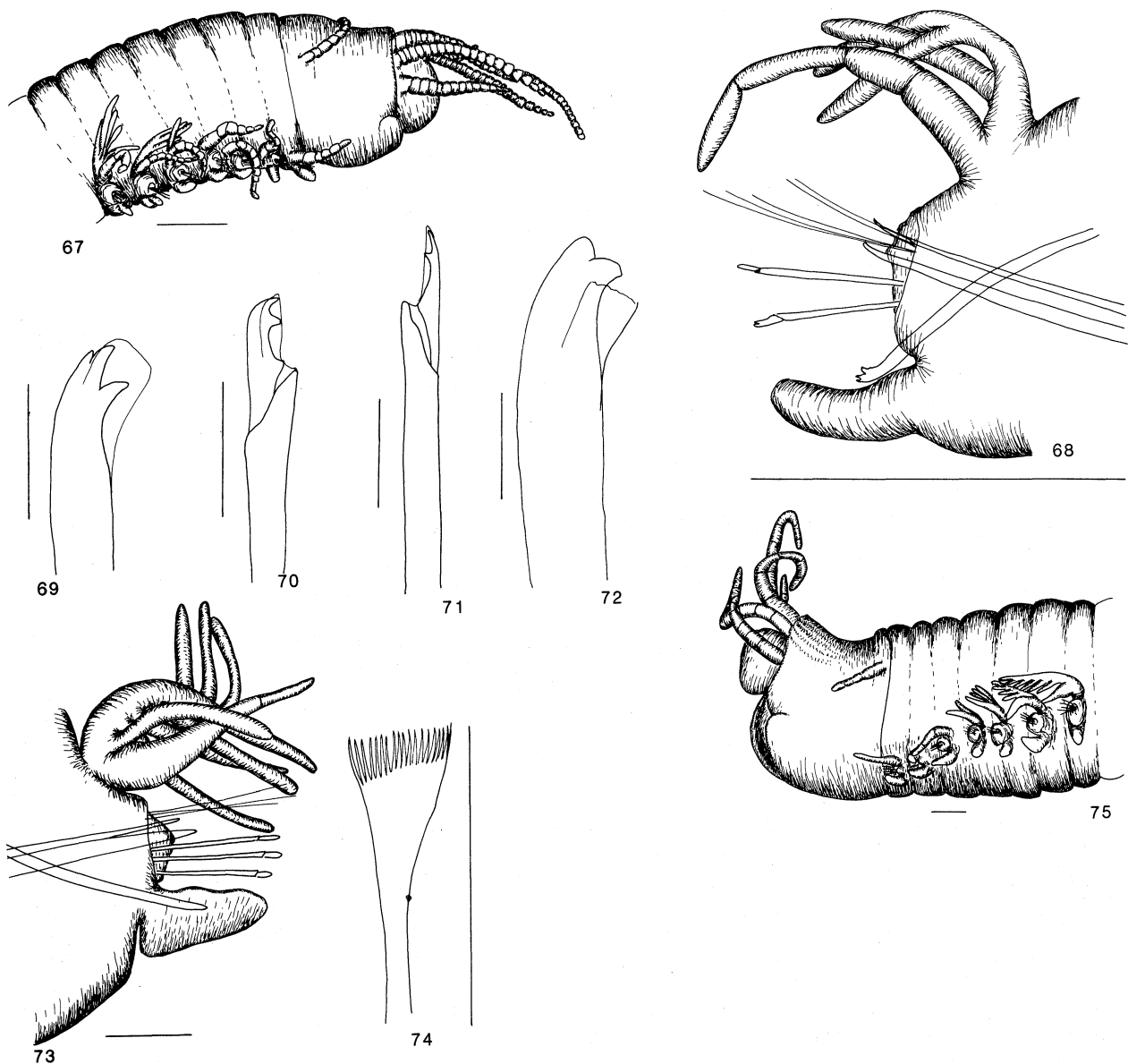
Figs 62-66. *Eunice rubella* Knox, 1951. 62, anterior end, lateral view; 63, parapodium 45, anterior view; 64, subacicular hook, parapodium 45; 65, pectinate seta, parapodium 45; 66, compound falciger, parapodium 45. (Holotype, CM).

branchial region. Shafts of compound hooks (Fig. 70) smoothly tapering, without ornamentation; appendages short, distally sharply bent, bidentate; both teeth large. Hoods bluntly rounded. Aciculae yellow, paired, tapering to sharp tips, bent. Subacicular hooks (Fig. 69) from setiger 24, yellow, tridentate, with large main fangs and 2 smaller distal teeth in crests.

Remarks. The type material of *E. torresiensis* originally consisted of two large anterior ends, one small complete specimen currently in two pieces and one small anterior end. One of the large fragments and the small fragment have both been dissected. The small fragment

is the specimen illustrated by McIntosh (1885: pl. 38, fig. 18). The two large anterior fragments do not belong to the same species as the small specimens. The large fragments have black, bidentate subacicular hooks, the small specimens have yellow, tridentate subacicular hooks, among other differences. The small specimens were described in great detail by McIntosh; the other two specimens belong to *E. tribranchiata* described by McIntosh from the same station (see below) on the basis of a posterior fragment only.

Eunice torresiensis resembles *E. antennata* in having moniliform articulations on the antennae and tridentate, yellow subacicular hooks. It further resembles *E.*



Figs 67–75. *Eunice torresiensis* McIntosh, 1885. 67, anterior end, lateral view; 68, parapodium 34, anterior view; 69, subacicular hook, parapodium 34; 70, compound falciger, parapodium 34. (Syntype, BM(NH) ZK 1885.12.1.193.) *Eunice tribranchiata* McIntosh, 1885. 71, compound falciger, parapodium 35; 72, subacicular hook, parapodium 35; 73, parapodium 35, anterior view; 74, pectinate seta, parapodium 35; 75, anterior end, lateral view. (Syntype of *Eunice torresiensis*, ZK 1885.12.1.193.)

antennata in having a median region of the body with reduced number of branchial filaments. *Eunice torresiensis* differs from *E. antennata* in the shape of the aciculae, which are bent and tapered in the former and hammer-headed in the latter. *Eunice torresiensis* has bidentate compound falcigers, *E. antennata* has tridentate falcigers.

Eunice torresiensis resembles *E. elseyi* in the shape of the prostomium, the antennae and the aciculae, but differs from it in that the branchiae have a reduced number of filaments in a median region in the former, but not in the latter and in that the overall maximal number of branchial filaments is about twice as high in the latter as in the former.

Eunice torresiensis resembles *E. bassensis* in having tridentate yellow subacicular hooks; the two species can be separated on the distribution of branchial filaments and the presence of white epidermal granules in the latter, but not in the former.

Eunice tribranchiata McIntosh, 1885

Figs 71–75

Eunice tribranchiata McIntosh, 1885: 297, pl. 21A, figs 6–7.
Eunice torresiensis McIntosh, 1885: 270–272, pl. 37, figs 18–21, pl. 19A, figs 12–13, textfigs 32–33 (in part).

Material examined. HOLOTYPE: BM(NH) ZK.1885.12.1.205; 2 SYNTYPES of *Eunice torresiensis*, BM(NH) ZK.1885.12.1.193; *Challenger* stn 186, Torres Strait, 10°30' S, 142°18' E, 8 fms, coral sand.

Description. Holotype posterior fragment of 90 setigers. Specimen described and illustrated (see comment below) incomplete; 35 setigers; 31 mm long; 7 mm wide; length through setiger 10, 13 mm. Other specimen incomplete; 18 setigers; 15 mm long; 8 mm wide; length through setiger 10, 11 mm.

Prostomium (Fig. 75) 2 well separated, rounded halves, distinctly narrower than peristomium. Antennae with maximum 6 articulations; most articulations longer than wide. Outer lateral antennae reaching second peristomial ring; inner lateral and median antennae reaching setiger 1. Peristomium as wide as anterior part of body; separation between peristomial rings well marked dorsally, less well marked ventrally, indistinct laterally; anterior ring more than $\frac{1}{2}$ of peristomial length. Peristomial cirri slightly inflated basally, reaching middle of peristomium, with 5 articulations.

Maxillary formula (illustrated in McIntosh, 1885, plate 37, fig. 20) 1 + 1, 4 + 4, ? + 0, 6 + 6, 1 + 1; unpaired maxilla III absent in illustration, possibly reduced and closely appressed to left Max IV.

Branchiae (Fig. 73) from setiger 4 or 5, continuing to ends of fragments; all branchiae consisting of 2 or more filaments; maximum 8 filaments.

Acicular lobes (Fig. 73) distally triangular, with both aciculae emerging at tip. Pre- and postsetal lobes low transverse folds in all setigers. Anterior ventral cirri very large, digitiform, becoming scoop-shaped with

subacicular hooks resting in base of scoop further posteriorly. All notopodial cirri basally inflated, with 2 or 3 long, indistinct articulations. Limbate setae slender, marginally serrated. Pectinate setae (Fig. 74) flat, flaring, with about 20 teeth; all teeth of about same length. Shafts of compound hooks (Fig. 71) long, essentially untapered, marginally smooth; appendages narrow, bidentate; proximal teeth larger than distal teeth; distal teeth very nearly erect, tapering to pointed tips. Hoods short, bluntly pointed. Aciculae dark, distally tapering, straight. Subacicular hooks (Fig. 72) from setiger 30, black, single, bidentate; both teeth similar; hoods short, truncate.

Remarks. The holotype of *E. tribranchiata* is a posterior fragment consisting of 90 median and posterior setigers. Two of the four syntypes of *Eunice torresiensis* described from the same station agree with this posterior fragment in all important features. The description is based on these two anterior ends.

Eunice tribranchiata resembles *E. laticeps* closely in that it has black, bidentate subacicular hooks, pectinate branchiae present from one of the first setigers and the distribution of the subacicular hooks also appears to fit. It differs from *E. laticeps* in the shape of the compound hooks and the subacicular hooks and in the structure of the pectinate setae. In addition, the scooped ventral cirri are characteristic of *E. tribranchiata*; all ventral cirri are tapering or basally inflated in *E. laticeps*.

Eunice tridentata Ehlers, 1905

Figs 76–82

Eunice tridentata Ehlers, 1905: 288–290, pl. 9, figs 3–10.

Material examined. HOLOTYPE: ZMH PE 699, New Zealand.

Description. Holotype complete mature female with eggs; 185 setigers; 170 mm long; 7 mm long; length through setiger 10, 12 mm.

Prostomium (Fig. 76) 2 very short, rounded lobes, well separated medially, less than $\frac{1}{2}$ as long as peristomium. Antennae slender, articulated; maximum 8 cylindrical articulations in median antenna. Outer lateral antennae reaching posterior margin of peristomium; inner lateral antennae reaching setiger 2; median antenna reaching posterior edge of setiger 3. Peristomium forming thick collar around prostomium; separation of peristomial rings very distinct dorsally and ventrally, appearing nearly as separate segment, but indistinct laterally; anterior ring $\frac{1}{2}$ of peristomial length. Peristomial cirri slender, reaching nearly tip of the prostomium, without articulations.

Jaw apparatus currently missing. Maxillary formula (Ehlers, 1905: pl. 9, fig. 4) 1 + 1, 7 + 6, ?14 + 0, 7 + 10 and 1 + 1. Mx III long, located behind left MX II.

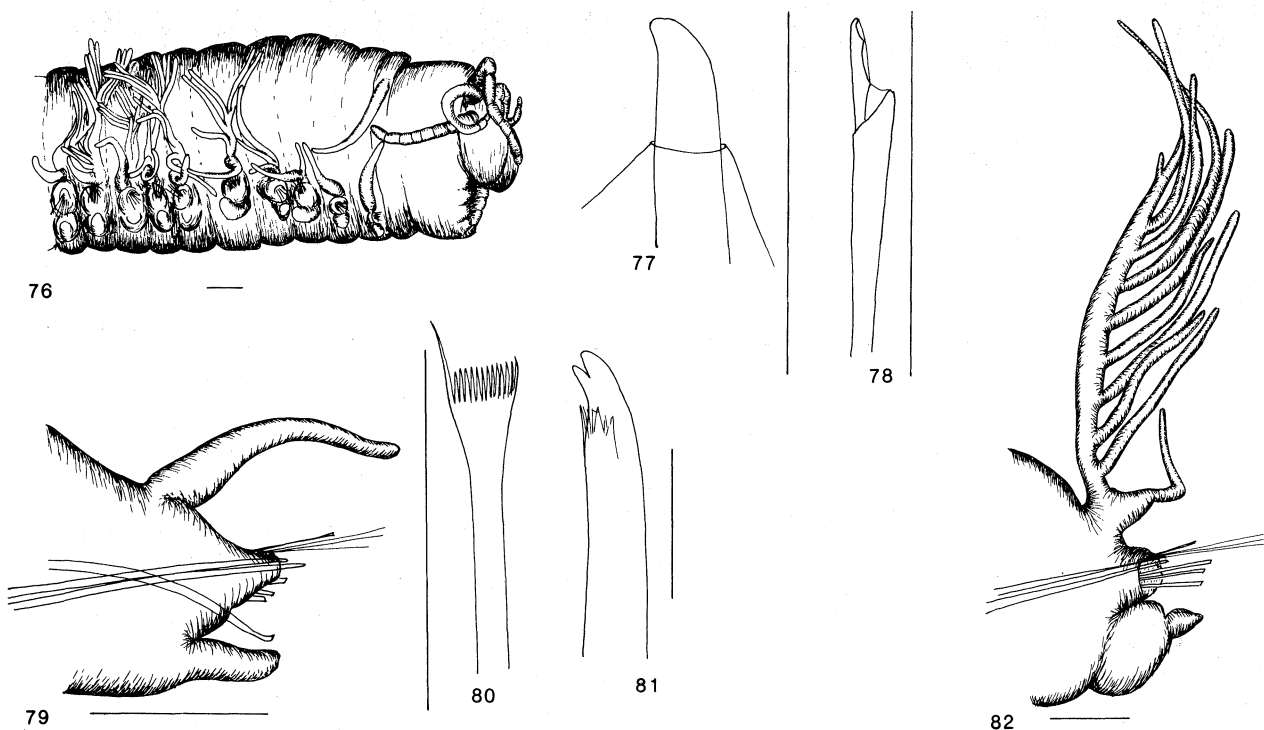
Branchiae (Fig. 82) from setiger 3 through 80; first and last 15 pairs simple filaments; other branchiae pectinate with soft, pliable branchial stems and long, slender branchial filaments; maximally 14 branchial

filaments at setiger 30.

Anterior acicular lobes rounded, with aciculae situated above highest point of lobe; posterior acicular lobes (Figs 79, 82) triangular, nearly pointed, with aciculae emerging at tips. Anterior presetal lobes obliquely transverse, sloping from high points at dorsal margin towards base of acicular lobe at ventral margin; posterior presetal and all postsetal lobes transverse low folds. First 4 ventral cirri thick, sharply tapering, becoming strongly basally inflated in next 20 parapodia, retaining distinct, nearly triangular tips; postbranchial ventral cirri becoming increasingly digitiform, gradually losing basal inflation. Prebranchial notopodial cirri pyriform, about $\frac{1}{2}$ as long as peristomial cirri, becoming distinctly inflated basally, abruptly tapering with long digitiform tips in branchial region; postbranchial notopodial cirri pyriform, shorter than those in prebranchial region. Limbate setae slender, nearly capillary. Pectinate setae (Fig. 80) flat, flaring, with about 15 teeth; 1 marginal tooth prolonged. Shafts

of compound hooks (Fig. 78) thick, smoothly tapering, without marginal dentition; appendages very small, narrow, bidentate; proximal teeth triangular; distal teeth nearly erect, much smaller than proximal teeth. Hoods short, blunt. Aciculae yellow, paired (Fig. 77), distally bent towards ventral side. Subacicular hooks (Fig. 81) from setiger 51, irregularly missing in several setigers, yellow, bidentate, distally abruptly tapered; teeth similar in size, both directed obliquely distally.

Remarks. Records of *E. tridentata* from the northern hemisphere must be considered doubtful. The species has been confused with a series of rather similar species, all with branchiae starting on setiger 3 and limited to a few anterior segments. Fauchald (1969) reviewed a series of related species, but did not consider *E. tridentata*. A complete revision of the genus will clarify the relation between this species and similar species from parts of the world.



Figs 76-82. *Eunice tridentata* Ehlers, 1905. 76, anterior end, lateral view; 77, acicula, parapodium 20; 78, compound falciger, parapodium 20; 79, parapodium 162, anterior view; 80, pectinate seta, parapodium 162; 81, subacicular hook, parapodium 162; 82, parapodium 20, anterior view. (Holotype, ZMH PE 699.)

**KEY TO THE SPECIES OF *EUNICE* REPORTED FROM
AUSTRALIA AND NEW ZEALAND**

Included in the key are all species listed by Day & Hutchings (1979) not originally described from Australia and New Zealand, in addition to the species reviewed here. The key must be considered temporary pending review of the types of species described from areas outside the region considered in this paper. I assumed that the original descriptions of all these species (as revised where appropriate) are accurate and that the material from Australia and New Zealand conform to these descriptions. Both assumptions are of dubious validity. The key has value in that it will allow workers on Australian material to assess whether they in fact have the species covered, as originally described, in their collections, or if they have new taxa or species not yet reported from the region.

The species treated in this review are marked by an asterisk.

1. Subacicular hooks and aciculae yellow or clear. 2
—Subacicular hooks and aciculae brown or black. 12
2. Subacicular hooks distally bidentate. 3
—Subacicular hooks distally tridentate. 4
3. Anterior parapodia with compound spinigers; compound falcigers present
in median and posterior setigers. *tubifex*
—Anterior parapodia without compound spinigers; compound falcigers present
in all setigers. **tridentata*
4. Branchiae present only on the anterior $\frac{1}{2}$ – $\frac{2}{3}$ of the body. 5
—Branchiae present to the posterior end. 7
5. Compound falcigers with distally blunt or rounded hoods. **australis*
—Compound falcigers with mucronate or sharply pointed hoods. 6
6. Antennae without articulations. *indica*
—Antennae articulated. *vittata*
7. Every branchia consisting of a single filament. *makemoana*
—At least some branchiae branched. 8
8. Anterior and far posterior branchiae with higher number of filaments than
median ones. 9
—Numbers of branchial filaments decreasing from a peak number at or near
setiger 20, or most branchiae with similar numbers of filaments. 10
9. Aciculae distally pointed and bent. **torresiensis*
—Aciculae distally hammer-headed. *antennata*
10. Integument with white pigment patches; maximum number of branchial
filaments about 10. **bassensis*
—Integument without white pigment patches; maximum number of branchial
filaments more than 15. 11
11. One acicula flattened with a rounded head, the other one bidentate;
subacicular hooks with all 3 teeth in the same plane. **aequabilis*
—Both aciculae distally bidentate; subacicular hooks with the distal tooth lateral
to the other teeth. **elseyi*
12. Branchiae absent. 13
—Branchiae present. 14

13. Antennae without articulations. *gracilis*
 —Antennae beaded. **curticirris*
14. Branchiae first present anteriorly to setiger 10. 15
 —Branchiae first present posteriorly to setiger 10. 25
15. Branchiae limited to the anterior ½ of the body. **rubella*
 —Branchiae present through most of the posterior part of the body. 16
16. Ventral cirri distinctly inflated basally in median setigers. 17
 —Ventral cirri tapering in all setigers. **pynobranchiata*
17. Inflated ventral cirri with free distal tip in all setigers. 18
 —Inflated ventral cirri without free tip in median and posterior setigers. **plicata*
18. Ventral cirri in median and posterior setigers forming a scoop around the lower edge of the parapodia. **tribranchiata*
 —Ventral cirri not wrapped around the lower edge of the parapodia in any setigers. 19
19. Antennae with monoliform articulations. 20
 —Antennae with long articulations. 21
20. Branchiae first present from setiger 3, with maximally 8 filaments. *grubei*
 —Branchiae first present from setiger 5, with maximally 15 filaments. **bowerbanki*
21. Branchiae with a very long stem and many (25+) very short branchial filaments. **franklini*
 —Branchial stem short, or if branchial stem long, then filaments not unusually short. 22
22. Branchiae first present from setigers 3–4. 23
 —Branchiae first present from setigers 6–8. *aphroditois*
23. Maximally 18 branchial filaments. **laticeps*
 —Maximally 6–8 branchial filaments. 24
24. Last 20–30 pairs of branchiae single filaments, peristomial cirri not reaching front of peristomium. *longicirris*
 —Last 20–30 pairs of branchiae with 3 filaments, peristomial cirri reaching well beyond front of peristomium. *microprion*
25. Aciculae hammer-headed. *filamentosa*
 —Aciculae tapering, straight or bent. 26
26. Branchiae first present from setiger 19, subacicular hooks from setiger 28. 27
 —Branchiae first present from setigers 18–21, subacicular hooks from setigers 35–42. 28
27. Body strongly flattened with crowded segments from about setiger 20. **dilatata*
 —Body at most lightly flattened in median and posterior setigers; segments not crowded. *complanata*
28. Maximum number of branchial filaments 4–6. *afra afra*
 —Maximum number of branchial filaments 4 or less. *afra paupera*

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References.

- Baird, W., 1869. Remarks on several genera of Annelides belonging to the group Eunicea, with a notice of such species as are contained in the collection of the British Museum and a description of some others hitherto undescribed. *Journal of the Linnean Society of London, Zoology* 10: 341-361.
- Benham, W.B., 1900. Polychaeta In 'Report on experimental trawling' (ed. L.F. Ayson). *Journal of the House of Representatives of New Zealand* 1900, appendix H15A: 1-24.
- [Claparède, E.], 1865. Review of: Quatrefages, A. de. Note sur la classification des Annélides. (Comptes Rendus des Séances de l'Académie des Sciences, Paris, 27 mars 1865). *Bibliothèque Universelle et Revue Suisse - Archives des Sciences Physiques et Naturelles, Genève, séries 2, 22*: 346-355.
- Day, J.H. & P.A. Hutchings, 1979. An annotated check-list of Australian and New Zealand Polychaeta, Archiannelida and Myzostomida. *Records of the Australian Museum* 32(2): 80-161.
- Ehlers, E. 1868. Die Borstenwürmer (Annelida Chaetopoda) nach systematischen und anatomischen Untersuchungen dargestellt. Second section: 269-748. Wilhelm Engelmann, Leipzig.
- 1905. Anneliden den Sammlung Schauinsland. Ergebnisse einer Reise nach dem Pazific, Schauinsland, 1896-97. *Zoologische Jahrbücher, Jena, Abteilung für Systematik* 22: 281-302.
- 1907. Neuseeländische Anneliden. II. Abhandlungen der königlichen Gesellschaft der Wissenschaften zu Göttingen. Mathematisch-Physikalische Klasse. Neue Folge 5(4): 1-31.
- Fauchald, K., 1969. A revision of six species of the *flavus-bidentatus* group of *Eunice* (Eunicidae: Polychaeta). *Smithsonian Contributions to Zoology* 6: 1-15.
- 1970. Polychaetous annelids of the families Eunicidae, Lumbrineridae, Iphitimidae, Arabellidae, Lysaretidae and Dorvilleidae from western Mexico. *Allen Hancock Monographs in Marine Biology* 5: 1-335.
- Fauvel, P. 1917. Annélides polychètes de l'Australie meridionale. *Archives de zoologie expérimentale et générale* 56:159-277.
- Grube, A.-E., 1877. [Die von der *Gazelle* mitgebrachten Anneliden, zu denen noch zwei von Dr Buchholz gesammelte kommen]. *Monatsberichte der deutsche Akademie der Wissenschaften zu Berlin* 1877: 509-554.
- 1878. [Familie Eunicea]. *Jahresbericht der Schlesische Gesellschaft für vaterlandische Cultur, Breslau* 55: 79-104.
- Hartman, O., 1948. The marine annelids erected by Kinberg with notes on some other types in the Swedish State Museum. *Arkiv för Zoologi, Stockholm* 42(1): 1-137.
- 1959, 1965. Catalogue of the polychaetous annelids of the world. *Allan Hancock Foundation Publications Occasional Paper* 23: 1-628 (1959). Supplement 1960-1965 and Index 23: 1-197 (1965).
- Knox, G.A., 1951. The polychaetous annelids of Banks' Peninsula. Part 2. A rock bottom fauna from 80 fathoms. *Records of the Canterbury Museum* 6(1): 61-81.
- 1960. Polychaeta Errantia. In: 'Biological Results of the Chatham Islands 1954 Expedition. Part 3.' *Bulletin of the New Zealand Department of Scientific and Industrial Research* 139(3): 77-143 (also issued as *Memoirs of the New Zealand Oceanographic Institute* 6: 77-146).
- McIntosh, W.C., 1885. Report on the Annelida Polychaeta collected by H.M.S. "Challenger" during the years 1873-76. *Challenger Reports* 12: 1-554.
- Monro, C.C.A., 1924. On the Polychaeta collected by H.M.S. "Alert", 1881-1882. Families Polynoidae, Sigalionidae and Eunicidae. *Journal of the Linnean Society, London Zoology* 36: 39-64.
- Quatrefages, A. de, 1865a. Note sur la classification des Annélides. *Comptes Rendu des Séances de l'Académie des Sciences, Paris* 40(13): 586-600.
- 1865b. Note sur la classification des annélides, et reponse aux observations de M. Claparède. *Annales des Sciences Naturelles, Paris, series 5, 3*: 253-296.
- 1866. *Histoire Naturelle des Anneles marins et d'eau douce. Annélides et Géphyriens. Paris, Libraire Encyclopédique de Rôret* 1: 1-588.
- Wright, E.P., 1866. Annelida. *Zoological Record* 1866: 578-600.

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