



# **The Marine Fauna of New Zealand: Pelagic Calanoid Copepods: Family Aetideidae**

by

J. M. BRADFORD and J. B. JILLET



**New Zealand Oceanographic Institute Memoir 86**

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NEW ZEALAND  
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH

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by

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## ABSTRACT

The distribution and taxonomy of aetideid calanoid copepods from the south-west Pacific in the vicinity of New Zealand (20–64° S, 146° E–164° W) is recorded. The material reported on comes from the collections of the New Zealand Oceanographic Institute, Auckland University Zoology Department, Victoria University Zoology Department and Otago University Zoology Department; also all previous records from the area are included in distribution maps.

All genera in the Aetideidae are defined and a list of their species provided even though no examples of some have been recorded from the south-west Pacific. Species of the following genera are described and figured and their distributions mapped in the south-west Pacific: *Aetideus*, *Aetideopsis*, *Bradyidius*, *Chiridius*, *Chirundina*, *Comantenna*, *Crassantenna*, *Euchirella*, *Gaetanus*, *Gaidius*, *Lutamator*, *Pseudeuchaeta*, *Pseudochirella*, *Pseudotharybis*, *Sursamucro*, *Undeuchaeta*, and *Valdiviella*. Twenty-two of the species are new records for the area.

## INTRODUCTION

The distribution of pelagic copepods in the New Zealand region of the south-west Pacific (Fig. 1) is largely unknown. Knowledge of the Copepoda in this region has stemmed mainly from the expeditions which came into the area: the Challenger Expedition (Brady 1883), the British Antarctic Terra Nova Expedition (Farran 1929), and the British, Australian and New Zealand Antarctic Expedition (Vervoort 1957). Other localised studies have been carried out: off Sydney (Dakin and Colefax 1940), in Auckland's harbours and the Hauraki Gulf (Fuller 1953, Kramer 1895, Jillett 1971), at Kaikoura (Bradford 1972); and at Dunedin (Brady 1899, Jillett 1968, Thomson and Anderton 1921). Certain other authors have referred to the region as a whole but in a restricted manner (Bary 1951, Brodsky 1967, Heinrich 1968).

The New Zealand region of the south-west Pacific is considered for the purposes of this study as being contained by latitudes 20°–64° S and longitudes 146° E–164° W. This area then accommodates records from the work of Vervoort (1957) and Dakin and Colefax (1940).

It is intended that this work shall record species and distributions from recent collections, include previous records from the region, and also provide a handbook for those wishing to go a stage further and identify a species not recorded from the region previously. All pelagic copepods will be dealt with in a series of papers, by family or group of families. Hyperbenthic species are also included as a number are already in works recording pelagic copepods when plankton nets fished near the bottom and there is no other formal vehicle for

recording these species. Where appropriate or possible any taxonomic ambiguities which exist have been investigated.

For each family a definition is given and one species in the family, common in the south-west Pacific, is figured in full as an example of the family. Each genus, treated alphabetically, is also defined even when no example has been taken in the south-west Pacific. A list of all species in each genus is provided with their junior synonyms noted. Synonyms of each species recorded are generally not given as they have been fully listed previously by other workers, for example, Vervoort (1949, 1957, 1963). In a few cases where a new synonym has been discovered, usually one particularly relevant to the New Zealand region, it has been included before the description of the species concerned. Material under "Description" refers principally to the original description and appropriate references are listed in brackets at the end of the section. Any differences in the south-west Pacific specimens are noted under "Remarks".

An attempt was made to construct keys to the species, but because of incomplete descriptions in the literature this attempt was abandoned. A key to the genera of pelagic Copepoda has been given by Bradford (1972).

The ultimate goal of this work is to gain a knowledge of the fauna of the New Zealand region of the south-west Pacific and to analyse the distribution patterns and their relationships to the known physical environment and behaviour of the species when understood. The calanoid family Aetideidae is considered first.

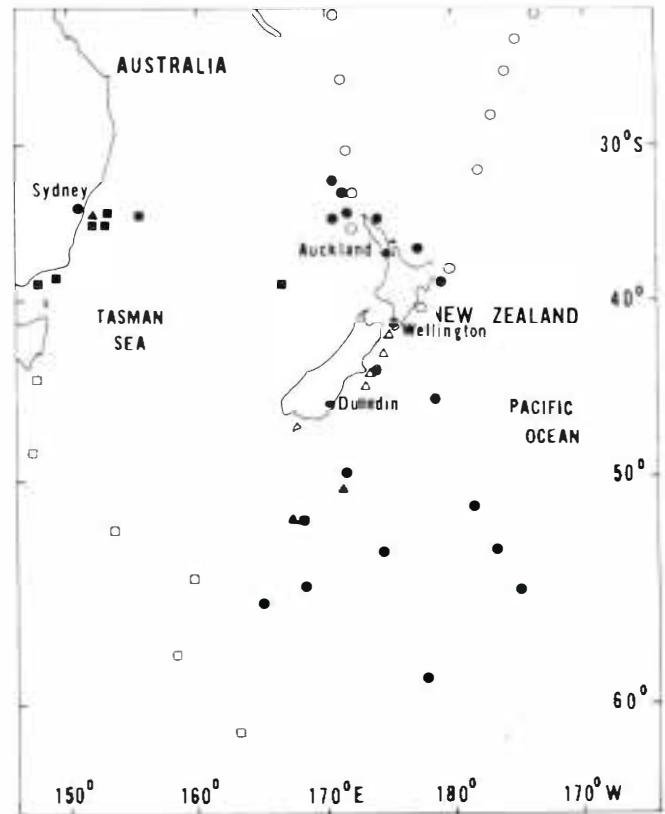


FIG. 1. Map of the south-west Pacific Ocean indicating the positions of stations from which copepods have been previously recorded in the literature: □ = Vervoort 1957; ▲ = Dakin and Colefax 1940; ■ = Brady 1883; ● = Farran 1929; △ = Bary 1951; ○ = Heinrich 1968; + = Jillet 1971; ▽ = Bradford 1972.

## ACKNOWLEDGMENTS

Thanks are due to all those who provided material and gave encouragement to this work: Victoria, Auckland, and Otago University Zoology Departments

and New Zealand Oceanographic Institute, DSIR.

The drawings were inked by Mrs G. Crook from the authors' pencil originals.

## MATERIALS AND METHODS

The material used in this study was collected by the New Zealand Oceanographic Institute (NZOI), Victoria University Zoology Department (VUZ), Auckland University Zoology Department (AUZ), and Otago University Zoology Department. The stations (Fig. 2) were occupied by a variety of vessels using various combinations of sampling gear (see table at end

of station data).

Samples had been preserved in 5% formalin in sea water. Parts were dissected from the animals and examined in lactic acid or were mounted permanently in Euparal, Canada Balsam, or Polyvinyl Alcohol Lactophenol and drawings made using a "camera lucida".





## STATION DATA

Stn No.	Date	Time	Latitude	Longitude	Gear*	Depth of Haul (m)
<b>New Zealand Oceanographic Institute Stations</b>						
<b>A292</b>	5.6.56	1530	30°45'S	173°16'E	N70	500-1000
		1050-1150			L50	surface
<b>A295</b>	7.6.56	2210-2227	29°03.5'S	168°36'E	N70	400-1000
		2255-2308			N70	0-500
		2115-2345			L50	surface
<b>A301</b>	1.7.56	0955-1010	28°56'S	179°56'W	N70	0-500
<b>A302</b>	1/2.7.56	2220-2320	28°52'S	178°05'W	L50	surface
		0108-0125			N70	500-1000
		0148-0200			N70	0-500
<b>A303</b>	3.7.56	0920-1025	31°40'S	177°33'W	L50	surface
		1440-1447			N70	450-1000
<b>A307</b>	20.7.56	1630-2000	42°55'S	177°26'W	N50	surface
<b>A313</b>	17.8.56	0245-0606	46°46'S	164°35'E	N70	0-914
<b>A315</b>	19.8.56	-	39°56'S	167°45'E	N70	0-500
<b>A318</b>	10.1.57	0845-1430	36°36'S	179°18'W	N50	surface
					L50	0-88
<b>A331</b>	1.2.57	0430-0810	41°46'S	163°51'E	N70	surface
<b>A332</b>	1/2.2.57	2300-0225	41°41'S	167°03'E	N70	surface
<b>A341</b>	12.2.57	0912-1012	39°41'S	172°06'E	L50	surface
		1030			N70	0-250
		2230-2400			L50	surface
<b>A343</b>	13.2.57	1400-1700	37°46'S	167°28'E	N70	0-500
		1412-1520			L50	surface
<b>B97</b>	23.11.58	1630-1650	49°32'S	167°22.5'E	N70	surface
<b>B98</b>	24.11.58	1110-1130	51°41.5'S	163°49'E	N70	surface
<b>B99</b>	25.11.58	0955-1015	54°05.5'S	160°26'E	N70	surface
<b>B105</b>	26.11.58	1430-1450	57°36'S	161°02'E	N70	surface
<b>B106</b>	27.11.58	1450-1500	55°42.5'S	165°23'E	N70	surface
<b>B107</b>	28.11.58	1015-1025	58°19'S	167°18'E	N70	surface
<b>B108</b>	30.11.58	2245-2255	63°45.65'S	172°30'E	N15	surface
		2300			N15	0-125
		2315			N15	0-500
<b>B109</b>	1.12.58	1500	62°37'S	169°51'E	N15	0-125
		1515			N15	0-500
<b>B110</b>	1.12.58	1900	61°55.5'S	170°26'E	N15	0-125
		1915			N15	0-500
<b>B111</b>	2.12.58	0830	61°25.5'S	170°41'E	N15	0-500
<b>B112</b>	2.12.58	1408	60°47'S	170°44'E	N15	0-125
<b>B113</b>	2.12.58	1900	60°22'S	170°54'E	N15	0-125
<b>B114</b>	3.12.58	0115	59°39'S	171°02'E	N15	0-125
		0130			N15	0-500
<b>B116</b>	3.12.58	1730	58°20'S	171°14'E	N15	0-125
		1745			N15	0-500
<b>B117</b>	4.12.58	0330	57°11'S	171°06'E	N15	0-500
<b>B118</b>	4.12.58	1145	55°34.5'S	170°27'E	N15	0-125
		1200			N15	0-500
<b>B119</b>	4.12.58	2330	54°31'S	170°20'E	N15	0-500
<b>B120</b>	5.12.58	0700	53°26.34'S	170°15'E	N15	0-400
		0715			N15	0-150
<b>C525</b>	7.9.60	1140-1210	34°40'S	177°46'E	N70	surface
		1215-1235			N70	0-250
<b>C526</b>	17.9.60	1139-1148	33°40'S	179°09'E	N70	0-250
		1125-1155			N70	surface
<b>C532</b>	20.9.60	2105-2135	27°49'S	175°53'W	N70	surface

\*Symbol only, details of the gear used at stations are given at the end of the station data.

Stn No.	Date	Time	Latitude	Longitude	Gear*	Depth of Haul (m)
<b>C537</b>	22.9.60	2130-2200 2215-2235	25°46'S	170°16'W	N70 N70	surface 0-250
<b>C544</b>	24.9.60	0550-0620	23°01.2'S	166°19'W	N70	surface
<b>C575</b>	13.10.60	1100-1130	31°49'S	164°30'W	N70	surface
<b>C587</b>	15.10.60	1430-1500	35°10'S	170°55'W	N70	surface
<b>D599</b>	10.4.67	1732-	47°58'S	176°10'E	MPS	0-100 100-250 250-500
<b>D614</b>	16.4.67	0318 2240	41°20'S	178°48'E	MPS	0-100 100-250 250-500
<b>D619</b>	18.4.67	1030	41°56'S	175°17.5'E	MPS	0-100 100-250 250-500
<b>E774</b>	15.10.67	0921-1011	42°00'S	169°15'E	MT	0-1165
<b>E788</b>	17.10.67	1620-1748	44°00'S	168°11'E	MT	0-1193
<b>E800</b>	20.10.67	1805-1840	45°20'S	166°41.5'E	MT	0-700
<b>E881</b>	22.3.68	0954-1308	35°20'S	172°15'E	MT	0-1371
<b>E882</b>	22.3.68	2037-2354	36°00'S	172°42'E	MT	0-1212
<b>E891</b>	24.3.68	0507-0545	36°40'S	173°27'E	MT	0-1245
<b>E892</b>	24.3.68	1458-1543	37°20'S	173°35'E	MT	0-1224
<b>E901</b>	25/6.3.68	0107-0150	38°00'S	173°19'E	MT	0-1248
<b>E904</b>	28.3.68	0249-0335	38°39'S	172°24'E	MT	0-1243
<b>F745</b>	4.4.66	1123-1440	41°47'S	175°22'E	MT	0-1170
<b>F753</b>	18.8.66	1857-1932	44°45'S	174°30'E	MT	0-790
<b>F760</b>	20.8.66	0949-1030	42°45'S	176°30'E	MT	0-710
<b>F874</b>	3.10.68	0703-0848	37°18'S	178°11'E	MT	0-1357
<b>F879</b>	4.10.68	0040-1224	37°25.5'S	177°30'E	MT	0-1267
<b>F881</b>	4.10.68	1000-1125	37°07.5'S	177°14'E	MT	0-1260
<b>F892</b>	5.10.68	1945-2146	36°58.5'S	176°41'E	MT	0-1260
<b>F897</b>	6.10.68	0240-0329	37°25'S	177°30'E	MT	0-1269
<b>F910</b>	10.10.68	1548-1734	34°56'S	175°23'E	MT	0-1397
<b>F911</b>	11.10.68	0147-0321	34°38'S	174°36'E	MT	0-1697
<b>F945</b>	22.10.68	1458-1505 1538-1555 1645-1700	31°19.5'S	165°19'E	N70	0-200 0-500 500-1000
<b>F946</b>	2/3.11.68	2308-2315 2335-2344 0025-0100	34°32.5'S	157°31.5'E	N70	0-200 200-500 0-1000
<b>F947</b>	5.11.68	1350-1355 1446-1500 1529-1540	36°18.5'S	165°05.5'E	N70	0-200 0-500 500-1000
<b>G142</b>	20/1.9.67	2100	42°24.5'S	174°01.8'E	MPS	0-100 100-250 250-500
		2400	42°24.5'S	174°01.8'E	MPS	0-100 100-250 250-500
		0600	42°24.5'S	174°01.8'E	MPS	0-100 100-250 250-500
		1200	42°24.5'S	174°01.8'E	MPS	0-100 100-250 250-500
<b>G144</b>	21.9.67	1800	42°24.8'S	174°01.6'E	MPS	0-100 100-250 250-500

\*Symbol only, details of the gear used at stations are given at the end of the station data.

Stn No.	Date	Time	Latitude	Longitude	Gear*	Depth of Haul (m)
<b>Auckland University Zoology Department Stations</b>						
AUZ15	8.7.62	0932-0946	29°26'S	169°49'E	1mC	surface
AUZ46	14.7.62	0926-1026	32°40'S	171°02'E	1mC	surface
AUZ49	14.7.62	2124-2155	32°40'S	171°02'E	1mC	surface
AUZ51	15.7.62	0750-0823	33°59'S	172°06'E	1mC	surface
AUZ75	22.7.62	1938-2010	35°15'S	176°15'E	1mC	0-200?
AUZ78	23.7.62	0537-0856	33°09'S	176°06'E	IKMT	0-870
AUZ82	23.7.62	1903-1945	33°09'S	176°06'E	1mC	0-100?
AUZ87	24.7.62	1630-1721	31°57'S	177°38'E	1mC	0-100?
AUZ88	24.7.62	1828-1918	31°57'S	177°38'E	1mC	0-100?
AUZ108	29.7.62	0215-0705	30°14'S	176°42'W	IKMT	0-823
AUZ111	30.7.62	0557-0656	30°26'S	178°15'W	1mC	0-100?
AUZ123	2.8.62	0730-0823	33°13'S	178°24'E	1mC	0-100?
A	15.5.63-	1000-1300	36°49'S	174°50'E	.5mC	0-18
	21.5.65					
B	1.3.64-	1000-1300	36°16'S	174°54'E	CB	0-45
	24.4.65					
<b>Victoria University Zoology Department Stations</b>						
VUZ93	24.8.57	1515-1815	41°53'S	175°14'E	4m	0-1097
VUZ105	28.12.57	1130-1440	41°47'S	175°01'E	4m	0-914
VUZ107	28.12.57	1850-2200	41°52'S	175°06'E	4m	0-914
VUZ112	29.1.61	1143-1335	41°45'S	174°55'E	4m	0-732
<b>Otago University Stations</b>						
Mu66/44	21.10.66	—	45°55'S	171°05'E	CB	0-200
Mu66/46	21.10.66	—	45°55'S	171°05'E	CB	0-200
Mu66/49A	21.10.66	—	45°55'S	171°05'E	CB	0-200
Mu66/56B	2.11.66	—	45°47'S	170°57'E	CB	0-80
Mu67/44	24.2.67	—	45°52'S	171°16'E	CB	0-150
Mu67/46	22.3.67	—	45°48'S	170°57'E	CB	0-150
Mu67/48	22.3.67	—	45°52'S	171°18'E	CB	0-150
Mu67/48s	22.3.67	—	45°52'S	171°18'E	S	0-1000
Mu67/49	14.4.67	—	45°46'S	170°47'E	CB	0-25
Mu67/52s	14.4.67	—	45°55'S	171°05'E	S	0-1000
Mu67/56	19.5.67	—	45°50'S	170°48'E	CB	0-150
Mu67/57s	19.5.67	—	45°50'S	170°48'E	S	0-1000
Mu67/62s	19.6.67	—	45°50'S	170°48'E	S	0-500
Mu67/88	14.7.67	—	45°50'S	170°48'E	CB	0-150
Mu67/88s	14.7.67	—	45°50'S	170°48'E	S	0-600
Mu67/94s	18.8.67	—	45°50'S	170°48'E	S	0-1000
Mu67/104s	18.9.67	—	45°50'S	170°48'E	S	0-823
Mu67/106s	18.9.67	—	45°50'S	170°48'E	S	0-1000
Mu67/116s	24.10.67	—	45°50'S	170°48'E	S	0-1000
Mu67/147s	15.12.67	—	45°50'S	170°48'E	S	0-1000

\*Symbol only, details of the gear used at stations are given at the end of the station data.

Details of gear used at stations.

Symbol	Net	Closing	Mesh Aperture µm	Diam. m	Source
N70	Discovery N70 net	yes	240	0.7	Kemp and Hardy 1929
LS0	Lachlan 50 net	no	240	0.5	Bary 1956
N50	Discovery N50 net	no	53	0.5	Kemp and Hardy 1929
N15	—	no	240	0.15	—
MPS	Bé Multiple Plankton Sampler	yes	200	0.7×0.7	Bé 1962
MT	Modified Menzies Trawl	no	1200	1×0.15	Menzies 1962
1mC	1 m Cone net	no	1225	1	Tait <i>et al.</i> 1965
IKMT	Isaacs-Kidd Mid-water Trawl	no	12500	3	Tait <i>et al.</i> 1965, Isaacs & Kidd 1953
4m	4 m conical net*	no	25000	4	Records held in Island Bay Marine Laboratory, Victoria University, Wellington
CB	Clarke-Bumpus Sampler	yes	200-130	0.125	Clark and Bumpus 1940
S	Stramin net	no	1400	1	Jillett (pers. comm.)
1mC	1 m Cone net	no	250	0.5	Jillett 1971

\*Copepods were captured by this net only when it became clogged with medusae, etc.

## SYSTEMATICS

### FAMILY AETIDEIDAE Sars, 1903

**DEFINITION:** Body swollen; head and pedigerous segment 1, also pedigerous segments 4 and 5, usually fused. Last metasomal segment usually prolonged into two posterior points. Rostrum short, strongly sclerotised, simple or bifid, rarely absent; reduced in male. Urosome with four segments in female; male with five segments, anal segment short. Antenna 1 23- to 25-jointed in female; male with reduced number of joints, proximal joints swollen with many club-shaped aesthetes. Exopod of antenna 2 often bigger than endopod. Maxilla 1 inner lobe 1 usually with nine marginal spines, four setae on posterior surface and one small seta on inner proximal border; sometimes number of posterior surface setae reduced. Maxilla 2 lobe 5 usually large with one seta spine-like. Male mouthparts reduced compared with female. Leg 1 endopod one-jointed, leg 2 endopod two-jointed, all other rami three-jointed. Some degree of fusion between swimming leg joints may occur. Basipod joint 1 of female leg 4 often with spines on inner border. Leg 5 nearly always absent in female; in male leg 5 endopod has varying degrees of development. (Rose 1933).

A typical example of this family is *Euchirella rostrata* (Figs 3,4).

Members of the family Aetideidae tend to be larger forms which have a pelagic or hyperbenthic habit. Some genera are clearly either pelagic (e.g., *Euchirella rostrata*, *Undeuchaeta plumosa*) or hyperbenthic (*Bradyidius*, *Comantenna*, *Bradyetes*, *Aetideopsis*), but a number of genera (*Pseudeuchaeta*, *Sursamucro*, *Lutinator*, *Crassantenna*, *Aetideus*) are difficult to place either because of a lack of direct evidence of a hyperbenthic habit or because there is a gradation in characters which reflect the closeness of association

with the bottom. Matthews (1964) found that in truly benthic species there are fewer naupliar stages, eggs are either self adhesive and attach to the sea bed or are even stuck down by the female, and there are larger numbers of setae on the first antenna.

Most pelagic aetideids have a mesopelagic or bathypelagic habit. However, the genus *Aetideus* has a tendency to occur at epipelagic depths in relatively shallow water. Members of this genus may be partially hyperbenthic (Mathews 1964).

Aetideids are mixed feeders with mouthparts adapted for seizing and filtration (Arashkevich 1969). Gut contents include a wide variety of organisms (Mullin 1966, Arashkevich 1969, Harding 1974). Experimental feeding has demonstrated that both plant and animal material is taken (Mullin 1966, Arashkevich and Timonin 1970, Lillelund and Lasker 1971, Alvarez and Matthews 1975, Robertson and Frost 1977). Alvarez and Matthews (1975) working with *Aetideopsis armata* (as *Chiridius*), demonstrated that this species can be an active predator which thrives better on *Artemia* nauplii than on either mixed plankton or algal food.

### *Aetideus* Brady, 1883

*Euaetideus* Sars, 1925  
*Snelliaetideus* Vervoort, 1949

**DEFINITION:** Head and pedigerous segment 1, also pedigerous segments 4 and 5, fused. Posterolateral metasomal margin usually with acute, backwardly directed points. Female with strongly chitinised two-pointed rostrum. Head vaulted. Anterior integument usually covered with chitinous thickenings. Antenna 1

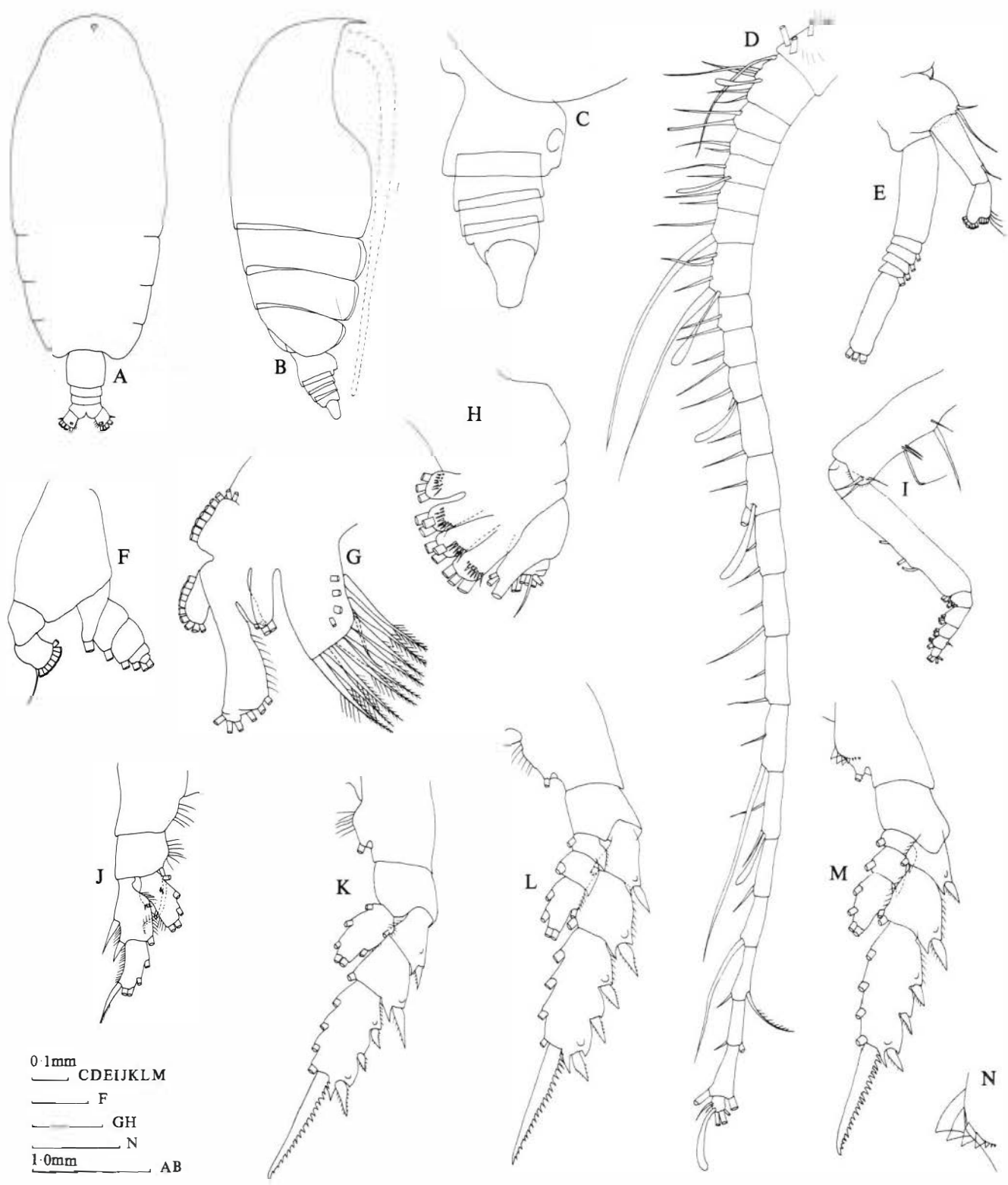


FIG. 3. *Euchiarella rostrata* female from NZOI Stn G142: A, ventral view; B, lateral view; C, lateral view of urosome; D, antenna 1; E, antenna 2; F, mandibular palp; G, maxilla 1; H, maxilla 2; I, maxilliped; J, leg 1; K, leg 2; L, leg 3; M, leg 4; N, inner part of basipod 1 of leg 4.

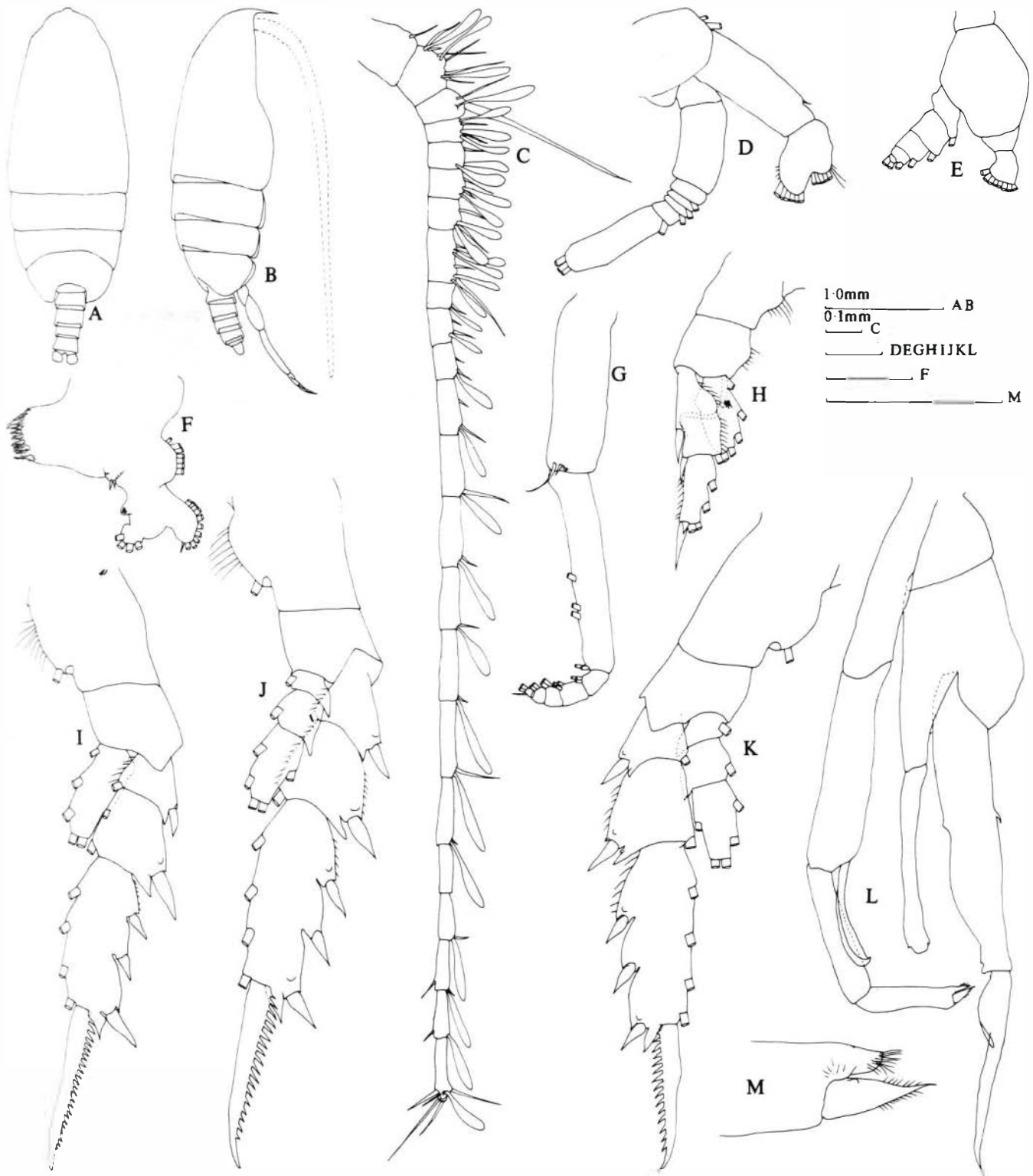


FIG. 4. *Euchirella rostrata* male from NZOI Stn G142: A, dorsal view; B, lateral view; C, antenna 1; D, antenna 2; E, mandibular palp; F, maxilla 1; G, maxilliped; H, leg 1; I, leg 2; J, leg 3; K, leg 4; L, leg 5; M, terminal part of left leg 5 exopod.

of 23 joints (joints 8 and 9, 24 and 25 fused). Maxilla 1 endopod with 12 or 13 setae. Leg 2 endopod joints fused. Exopod joint 1 of leg 1 without outer edge spine. Basipod 1 of leg 4 usually with row of small spines at base of internal seta. Leg 5 absent.

Male without rostrum; posterior metasomal points reduced in length. Antenna 1 of 21 joints, last joint very small (joints 8–10, 12 and 13, 20 and 21 fused). Oral parts reduced. Leg 5 present on left side, five-jointed, elongate.

Bradford (1971a) redefined the genus *Aetideus* so as to include *Euaetideus*. Roe (1975), after discovering a male of *Snelliaetideus arcuatus*, concluded that this genus is also a junior synonym for *Aetideus*. The genus as now defined contains the following species: *A. acutus* Farran, 1929; *A. arcuatus* (Vervoort, 1949) ( $\delta$  see Roe 1975); *A. armatus* (Boeck, 1872); *A. australis* (Vervoort, 1957); *A. bradyi* A. Scott, 1909; *A. divergens* Bradford, 1971; *A. giesbrechti* Cleve, 1904; *A. mexicanus* Park, 1974; *A. pacificus* Brodsky, 1950; *A. pseudarmatus* Bradford, 1971 and *A. truncatus* Bradford, 1971.

The following species have been taken in the south-west Pacific:

***Aetideus acutus* Farran, 1929 (Figs 5, 60)**

**DESCRIPTION:** *Size:* ♀♀ 1.50–1.80 mm, ♂♂ 1.22–1.58 mm.

*Female:* Rostrum similar to that of *A. giesbrechti* except that in dorsal view rostral plate distinctly set off from rest of head. Anterior integument of pedigerous segments 4 and 5 with conspicuous chitinous thickenings. Posterior metasomal points extend further than posterior border of urosomal segment 2. Antenna 1 extends beyond caudal rami.

*Male:* Posterior metasomal points extend beyond urosome segment 1. Urosomal segments 2–4 and caudal rami with width:length ratios of 1:0.83–0.88, 1:0.75–0.81, 1:0.78–0.81 and 1:1.64–1.83 respectively. Leg 5 segment 3 slender, length 6.72–7.33 times width. (Bradford 1971a, Park 1974).

**REMARKS:** Females of this species are superficially like *A. bradyi* from which they are distinguished by the possession of knobs at the base of the rostral excavation. Males are distinguished from those of *A. giesbrechti* by the short caudal rami.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Farran (1929), Bradford (1971a).

**NEW RECORDS:** Nil.

**DISTRIBUTION:** Tropical and subtropical waters in all oceans (Bradford 1971a).

***Aetideus australis* (Vervoort, 1957) (Figs 6, 60)**

**DESCRIPTION:** *Size:* ♀♀ 1.75–2.14 mm, ♂♂ 1.49–1.64 mm.

*Female:* Rostrum large, points with wide bases, width:depth ratio of excavation between points 1.07–1.47. Chitinous thickenings only just evident on

anterior integument. Seminal receptacle on genital segment with short, thick neck, length at most three times width, joining dorsal and ventral sacs. Posterior metasomal points reach just over half-way along urosomal segment 2.

*Male:* Posterior metasomal points extend beyond urosomal segment 1. Caudal rami length 2.80–3.12 times width. Leg 5 joint 3 long and slender, length more than seven times width.

**REMARKS:** This species is distinguished from all others in the genus by its large rostrum with smoothly rounded excavation between the points, and its long posterior metasomal points.

**PREVIOUS SOUTH WEST PACIFIC RECORDS:** Vervoort (1957), Bradford (1971a).

**NEW RECORDS:** Nil.

**DISTRIBUTION:** Most previous records of this species are from subantarctic waters although it has been recorded once north of the Subtropical Convergence off southern Africa (Bradford 1971a), and once south of the Antarctic Convergence (Vervoort 1957).

***Aetideus giesbrechti* Cleve, 1904 (Figs 7, 60)**

**DESCRIPTION:** *Size:* ♀♀ 1.80–2.20 mm, ♂♂ 1.52–1.70 mm.

*Female:* Rostrum represented by large plate not divided to its base, with two thickenings at base of excavation between rostral points. Anterior integument and pedigerous segments 4 and 5 covered with conspicuous chitinous thickenings. Posterior metasomal border extended into large wings reaching at least posterior border of urosomal segment 2. Antenna 1 extends just beyond anal segment.

*Male:* Rostrum replaced by two knob-like thickenings. Posterior metasomal points extend beyond urosomal segment 1. Urosomal segments 2–4 and caudal rami with width:length ratios 1:0.93–0.95, 1:0.85–0.86, 1:0.88–0.89, and 1:2.27–2.38 respectively. Leg 5 joint 3 relatively short and thick, length less than 6.4 times width. (Bradford 1971a, Park 1974).

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Farran (1929), Bradford (1971a, 1972).

**NEW RECORDS:** Nil.

**DISTRIBUTION:** Tropical and subtropical waters in all oceans (Bradford 1971a).

***Aetideus pseudarmatus* Bradford, 1971 (Figs 8, 60)**

?*A. armanus* Brady, 1883 (pars.)

**DESCRIPTION:** *Size:* ♀♀ 1.65–1.80 mm, ♂♂ unknown.

*Female:* Rostrum small, points with wide bases, width:depth ratio of excavation between points 0.83–1.07. Chitinous thickenings evident on anterior integument. Posterior metasomal points do not extend beyond posterior border of genital segment. In lateral



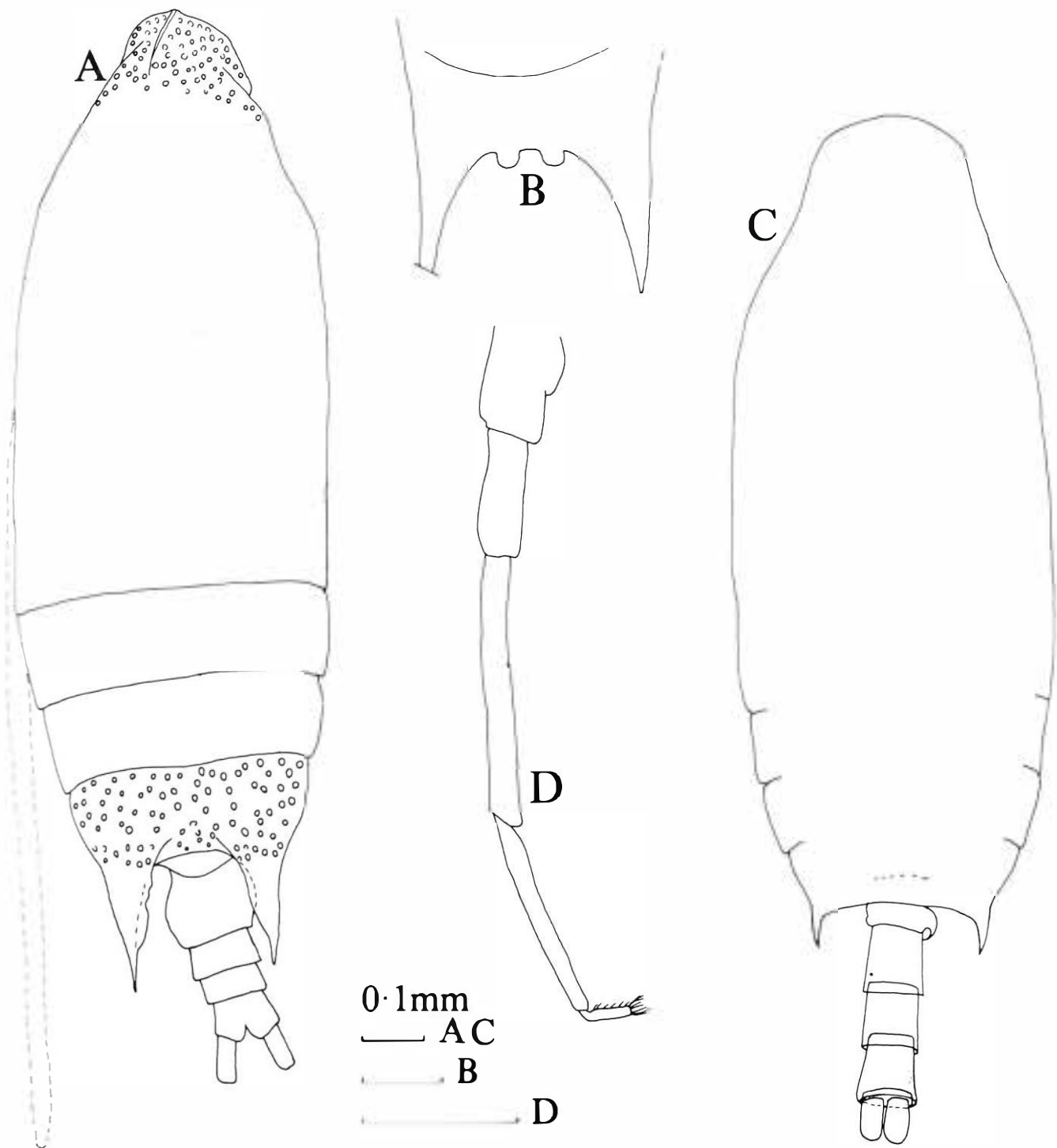


FIG. 5. *Aetideus acutus* female from NZOI Stn A302: A, dorsal view; B, rostrum. Male from NZOI Stn A295: C, ventral view; D, leg 5.

view seminal receptacles on genital segment have long, uniformly narrow tube, length at least five times width, connecting dorsal and ventral sacs. Antenna 1 shorter than whole body when urosome extended directly backwards.

REMARKS: This species is very like *A. armatus* from which it is distinguished by the longer and narrower connecting tube between the dorsal and ventral seminal receptacle sacs, slightly shorter posterior metasomal points and wider bases to the rostral points.

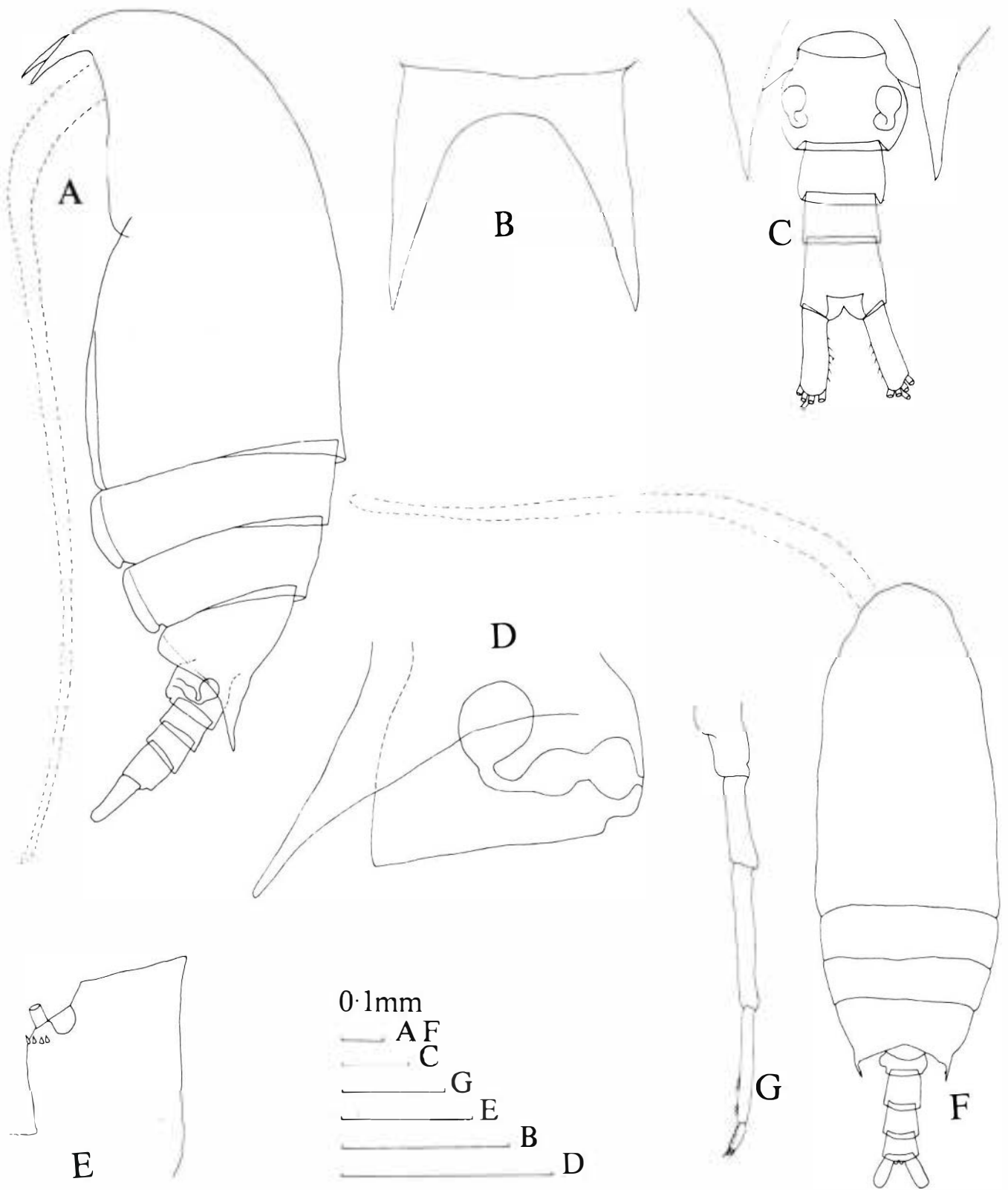


FIG. 6. *Aetideus australis* female from NZOI Stn B109: A, lateral view; B, rostrum; C, dorsal view of urosome; D, lateral view of genital segment (NZOI Stn B119); E, basipod 1 of leg 4 (NZOI Stn G142). Male from NZOI Stn G144: F, dorsal view; G, leg 5.

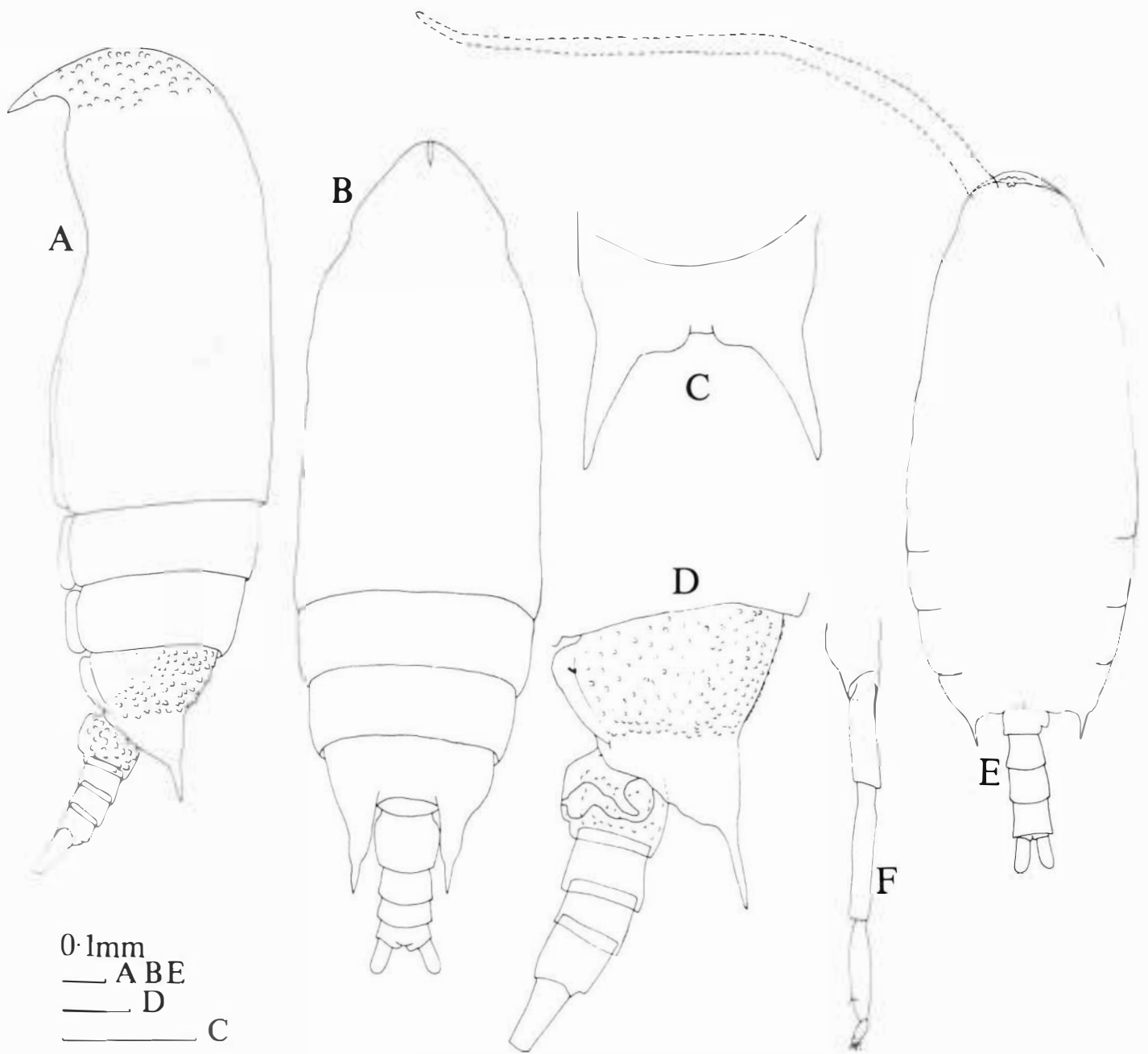


FIG. 7. *Aetideus giesbrechti* female from NZOI Stn F946: A, lateral view; B, dorsal view; C, rostrum; D, lateral view of urosome. Male: E, ventral view; F, leg 5.

PREVIOUS SOUTHWEST PACIFIC RECORDS: Bradford (1971a).

NEW RECORDS: Nil.

DISTRIBUTION: Off southern Africa and New Zealand. In the south-western Pacific region this species has only been taken from waters over the New Zealand Plateau (Bradford 1971a).

***Aetideopsis* Sars, 1903**

*Faroella* Wolfenden, 1904

*Pseudaetideus* Wolfenden, 1904

DEFINITION: Head and pedigerous segment 1 fused or separate, pedigerous segments 4 and 5 usually separate. Female rostrum bifurcate with deep incision between points. Posterolateral metasomal borders acutely

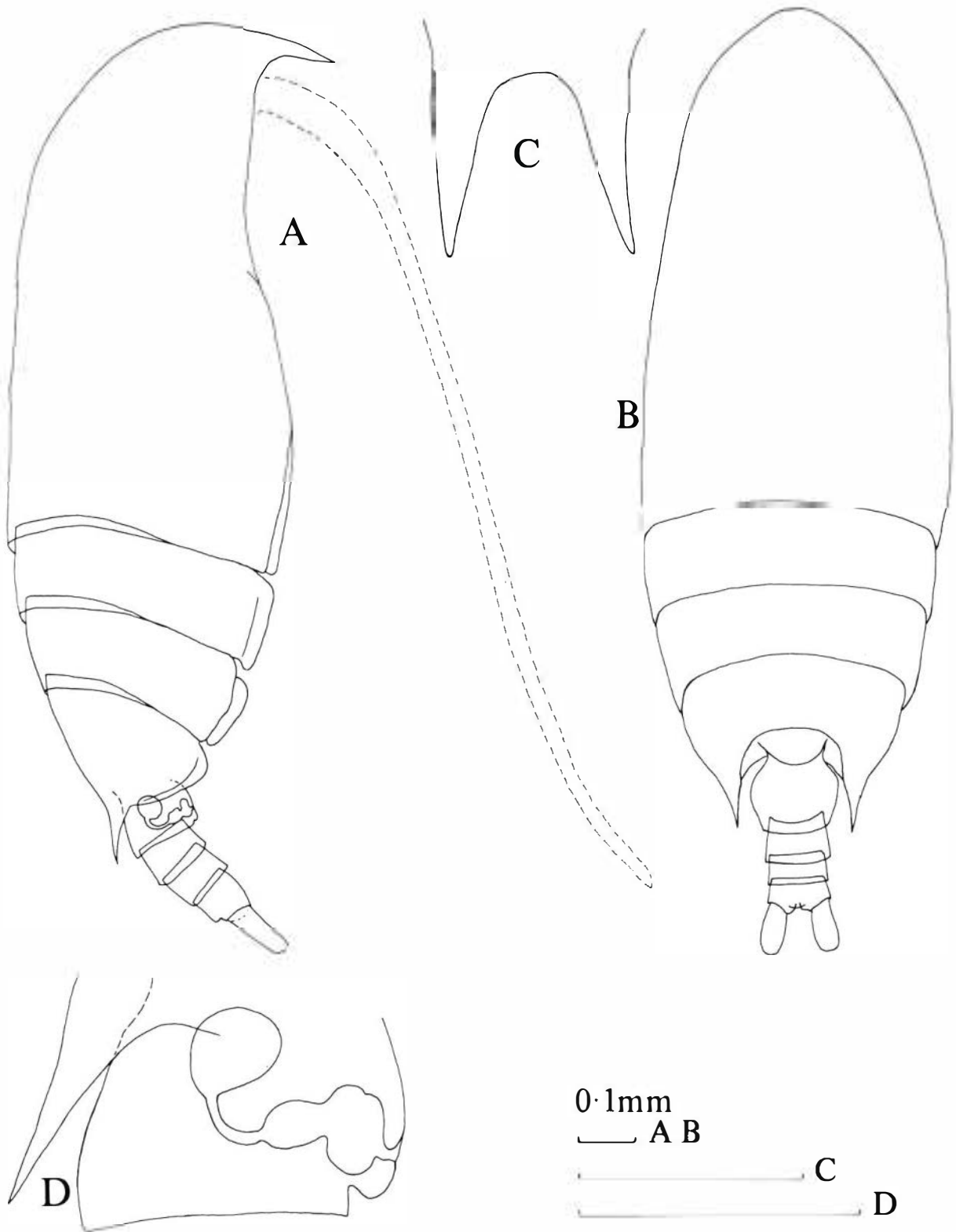


FIG. 8. *Aeideus pseudarmatus* female from OU Stn Mu67/48: A, lateral view; B, dorsal view; C, rostrum; D, lateral view of genital segment.

pointed. Antenna 1 24-jointed, annulate setae not elongate on distal joints. Maxilliped basipod 2 longer than basipod 1. Two proximal endopod joints of legs 2 and 3 may be partly fused. Leg 1 exopod joints all with external spines. Terminal exopod spines on legs 2-4 with numerous, sharp, closely spaced teeth along outer edge. External spines of exopods moderately large; slightly smaller than *Bradyidius*.

Males slender with comparatively long urosome. Rostrum bifurcate. Antenna 1 23-jointed. Leg 5 biramous with one-jointed endopods: tapering on left, rounded on right; right exopod two-jointed; left three-jointed, last joint small, hirsute. (Bradford 1969a).

Bradford (1969a) considers that the genus *Pseudaetideus* may be accommodated by the definition of *Aetideopsis* and is therefore a junior synonym. This view is shared by Park (1975b).

The genus *Aetideopsis* contains the following species: *A. antarctica* (Wolfenden, 1908) ( $\delta$  see Bradford 1971b); *A. armata* (Boeck, 1872) ( $\delta$  see Sars 1903); *A. carinata* Bradford, 1969a; *A. cristata* Tanaka, 1957a; *A. divaricata* Esterly, 1911 ( $\delta$  unknown); *A. divergens* Tanaka, 1957a; *A. inflata* Park, 1978; *A. minor* (Wolfenden, 1911) ( $\delta$  unknown); *A. modesta* (With, 1915) ( $\delta$  unknown); *A. multiserrata* (Wolfenden, 1904) ( $\delta$  see Tanaka 1957a) (= *A. nasutus* (With, 1915)); *A. retusa* Grice and Hulsemann, 1967 ( $\delta$  unknown); *A. rostrata* Sars, 1903 ( $\delta$  unknown) (= *A. pacifica* Esterly, 1911); *A. trichicus* Vervoort, 1949 ( $\delta$  unknown) (= ? *A. divaricata* Esterly, 1911); *A. tumorosa* Bradford, 1969a.

Grice and Hulsemann (1970) describe a male *A. magna* in this genus. The leg 5 of this species is not like any other known *Aetideopsis* male and *A. magna* is here tentatively placed in the genus *Pseudotharybis*. Zvereva (1976b) describes *A. rakuma* which is here assigned to *Bradyidius* because of the general body shape, long distal setae on antenna 1 and large outer edge spines on exopods of swimming legs 2 and 3. The lack of clear distinction between *Aetideopsis*, *Bradyidius* and *Pseudotharybis* is pointed out by Bradford (1976).

The following species have been taken in the southwest Pacific:

***Aetideopsis minor*** (Wolfenden, 1911) (Figs 9, 61)

**DESCRIPTION:** Size: ♀♀ 2.87-3.25 mm, ♂♂ unknown.

**Female:** Body similar in shape to *A. tumorosa* but integument covered with conspicuous chitinous thickenings. Rostrum with V-shaped notch between slightly divergent points. Posterolateral metasomal borders extend one third length of genital segment. Genital swellings moderate and central. Antenna 1 slightly longer than metasome. Leg 1 endopod with outer swelling. Leg 2 endopod one-jointed with fusion line visible. Terminal exopod spines with about 70-80 teeth. (Vervoort 1951).

**REMARKS:** This species and *A. antarctica* have conspicuous chitinous thickenings on the integument but *A. antarctica* is larger (4.3-4.6 mm) and does not have divergent rostral points.

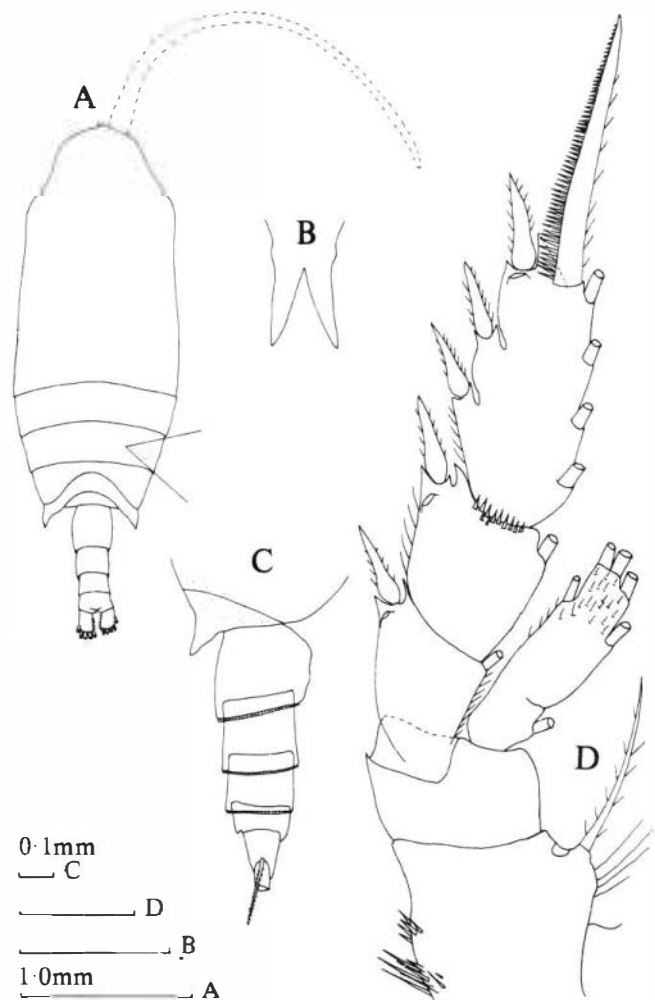


FIG. 9. *Aetideopsis minor* female: A, dorsal view; B, rostrum; C, lateral view of urosome (from Vervoort 1951); D, leg 2 (from Bradford 1971b).

PREVIOUS SOUTH WEST PACIFIC RECORDS: Vervoort (1957).

NEW RECORDS: Nil.

DISTRIBUTION: Entirely an Antarctic form (Vervoort 1951).

***Aetideopsis tumorosa*** Bradford, 1969 (Figs 10, 61)

**DESCRIPTION:** Size: ♀♀ 2.50-2.77 mm, ♂♂ 2.40-2.60 mm.

**Female:** In dorsal view frontal organ prominent. Pedigerous segments 4 and 5 completely separate. Rostrum with deep U-shaped notch, points slightly divergent. Posterolateral metasomal borders do not quite reach hind border of genital segment. Genital segment lateral swellings situated anteriorly and moderate ventral swelling central. Antenna 1 reaches urosomal segment 2. Leg 1 endopod without outer swelling. Leg 2 one-jointed without sign of fusion line, leg 3 endopod joints 1 and 2 partly fused. Terminal

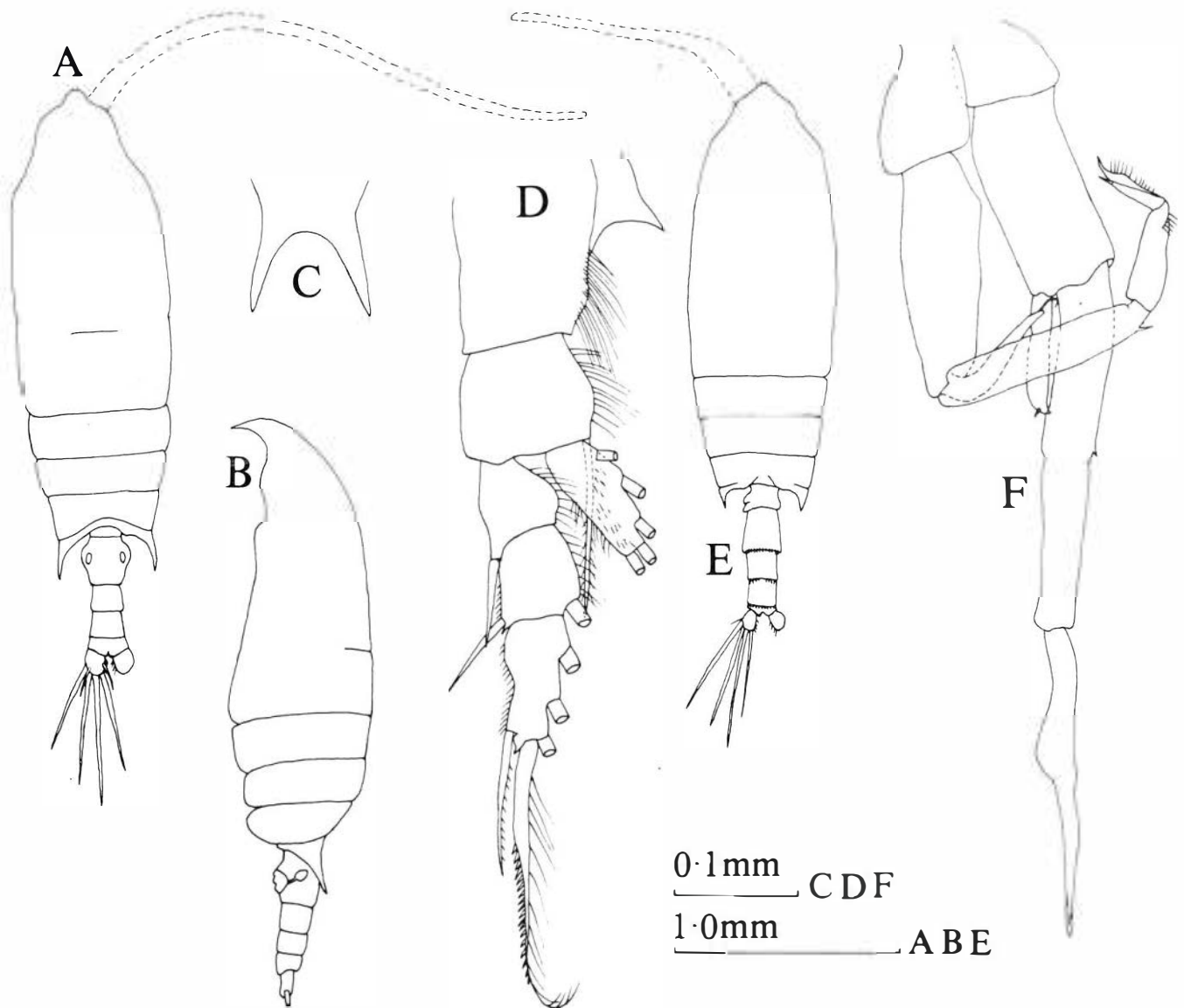


FIG. 10. *Aetideopsis tumorosa* female: A, dorsal view; B, lateral view; C, rostrum; D, leg 1. Male: E, dorsal view; F, leg 5 (from Bradford 1969a).

exopod spines of legs 2–4 with 48, 50, 60 closely placed teeth.

**Male:** Head and pedigerous segment 1 completely fused, pedigerous segments 4 and 5 partially fused. Posterolateral metasomal points reach hind border of urosomal segment 1. Antenna 1 does not reach first free metasomal segment. Swimming legs as in female although endopods of legs 2 and 3 more distinctly jointed. Leg 5 without distinctive characteristics. (Bradford 1969a).

**REMARKS:** The lack of an outer swelling on the endopod of leg 1 distinguishes this species from all others described.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Bradford (1969a).

**NEW RECORDS:**

Station Number	Depth of Haul (m)	Specimens
VUZ 105	0–914	1♀, 2.4 mm
Mu67/88s	0–1000	3♀♀; 1♂, 2.6 mm
Mu67/94s	0–1000	3♀♀
Mu67/104s	0–1000	5♀♀

**DISTRIBUTION:** The known distribution of this species is the southern part of the New Zealand Plateau (Fig. 61) and subantarctic Pacific Ocean (Park 1978). The distribution, as well as the large external spines on the swimming leg exopods, indicate that the life-habit of this copepod may be connected with the sea floor in some manner.

### **Batheuchaeta** Brodsky, 1950

**DEFINITION:** Body large with short urosome. Head and pedigerous segment 1, also pedigerous segments 4 and 5, fused. Female rostrum atrophied, posterior corners of metasome produced into terminally rounded lobes, urosomal segments with spinulose posterior margins. Antenna 2 endopod well developed, over half length of exopod. Maxilla 1 setation not known. Maxilla 2 very short with two large, smooth, curved spines on distal joints. Exopod of leg 1 three-jointed, but without complete separation between joints 2 and 3, with three outer spines. Endopod of leg 2 one-jointed. Leg 4 basipod 1 without spines.

Male rostrum slightly more developed than in female, posterior metasomal lobes very small. Antenna 2 endopod slightly shorter than in female. Leg 5 large, longer than urosome; endopods well developed, lamelliform, irregular in outline; left exopod three-jointed with appendage distally on joint 2; right exopod two-jointed; left basipod very large. (Brodsky 1950).

This genus appears to be very close to *Chirundina*.

The following species are contained in the genus: *B. lamellata* Brodsky, 1950; *B. enormis* Grice and Hulsemann, 1968. Neither species has been taken in the south-west Pacific.

### **Bradyetes** Farran, 1905

**DEFINITION:** Female head and pedigerous segment 1 imperfectly separate, pedigerous segments 4 and 5 fused. Rostrum absent. Posterior metasomal margin rounded. Antenna 1 with numbers of joints, especially distal joints, with strong annulate setae. Antenna 2 exopod longer than endopod. Mandible with endopod smaller than exopod. Maxilla 1 with very small exopod, setation of inner lobe 1 not known. Maxilliped not markedly elongate, last five joints short. Exopod joint 1 with three external spines; marginal spines large on legs 2-4, especially on joint 2. Leg 5 absent.

Male not known. (Sewell 1947).

The genus *Bradyetes* contains the following species: *B. brevis* Farran, 1936; *B. inermis* Farran, 1905.

Grice and Hulsemann (1967) placed a species, *B. florens*, in this genus. It has a very reduced maxilla 1 (especially the endopod and inner lobe 3) and lacks external spines on leg 1 exopod joints 1 and 2. This species appears to have greater affinities to the family Bathypontiidae.

Sewell (1947) points out the possibility that *Bradyetes* could be a synonym for *Pseudeuchaeta*.

No example of this genus has been taken in the south-west Pacific.

### **Bradyidius** Giesbrecht, 1897

*Undinopsis* Sars, 1903

**DEFINITION:** Head and pedigerous segment 1 fused, pedigerous segments 4 and 5 usually completely fused. Female rostrum bifurcate with two acute points. Posterolateral metasomal borders produced into strong, acute, posteriorly directed points. Urosome short. Antenna 1 usually as long as or shorter than

metasome, 24-jointed with many thickened annulate setae, elongate on distal joints. Antenna 2 exopod and endopod almost equal. Maxilliped basipod 2 elongate. Leg 1 exopod joints all have external spine. Terminal exopod spine of swimming legs 2-4 with fine, widely spaced teeth. External exopod spines thick, long and bordered with hairs. Posterior endopod surface of legs 2-4 usually with spinules.

Males more slender with comparatively longer urosome. Leg 1 exopod joint 1 with external spine reduced or absent. Leg 5 styliform and uniramous with 2-5 joints on right, five joints on left; or biramous, similar to that of *Aetideopsis* with rudimentary endopods one of which is sometimes two-jointed. (Bradford 1969a).

The genus *Bradyidius* contains the following species: *B. angustus* Tanaka, 1957a (♀ unknown); *B. arnoldi* Fleminger, 1957; *B. bradyi* (Sars, 1903); *B. hirsutus* Bradford, 1976; *B. luluae* Grice, 1973; *B. pacificus* (Brodsky, 1950); *B. plinioi* Campaner, 1978 (two subspecies); *B. rakuma* (Zvereva, 1976b); *B. saanichi* Park, 1966; *B. similis* (Sars, 1903); *B. spinifer* Bradford, 1969a; *B. tropicus* (Wolfenden, 1905a) (♂ unknown). The species *B. brevispinus*, *B. dentatus*, *B. robustus* and *B. spinibasis* all described by Bradford (1969c) have been reassigned to *Pseudotharybis* (Bradford 1976).

The following species has been taken in the south-west Pacific:

### **Bradyidius spinifer** Bradford, 1969 (Figs 11, 61)

**DESCRIPTION:** Size: ♀ 2.74 mm, ♂ 1.96 mm.

**Female:** Metasome viewed dorsally similar to that of *B. bradyi*. Pedigerous segments 4 and 5 incompletely fused laterally, posterolateral metasomal borders extend posteriorly and dorsally into acute points which do not reach posterior border of genital segment. Rostrum of two medium sized points. Genital segment little swollen laterally or ventrally. Antenna 1 reaches posterior border of pedigerous segment 3. Antenna 2 endopod joint 2 with two extra setae on internal protuberances. Posterior endopod surfaces of legs 2-4 entirely covered with numerous, minute spinules.

**Male:** Posterolateral metasomal borders extend in sharp points halfway along urosomal segment 2. Antenna 1 reaches beyond urosomal segment 3. Swimming legs as in female. Leg 5 uniramous, equal, five-jointed on both sides: right leg has two small basal joints and three narrower joints, last one tapering; left leg has two longer basal joints, two elongate joints, and small apical joint covered with hairs. (Bradford 1969a).

**REMARKS:** This species differs from all others in the genus by the densely placed spinules on the posterior surfaces of swimming legs 2-4. The exact shape of the rostrum has yet to be described.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Bradford (1969a).

**NEW RECORDS:** Nil.

**DISTRIBUTION:** Type locality only, off the central east

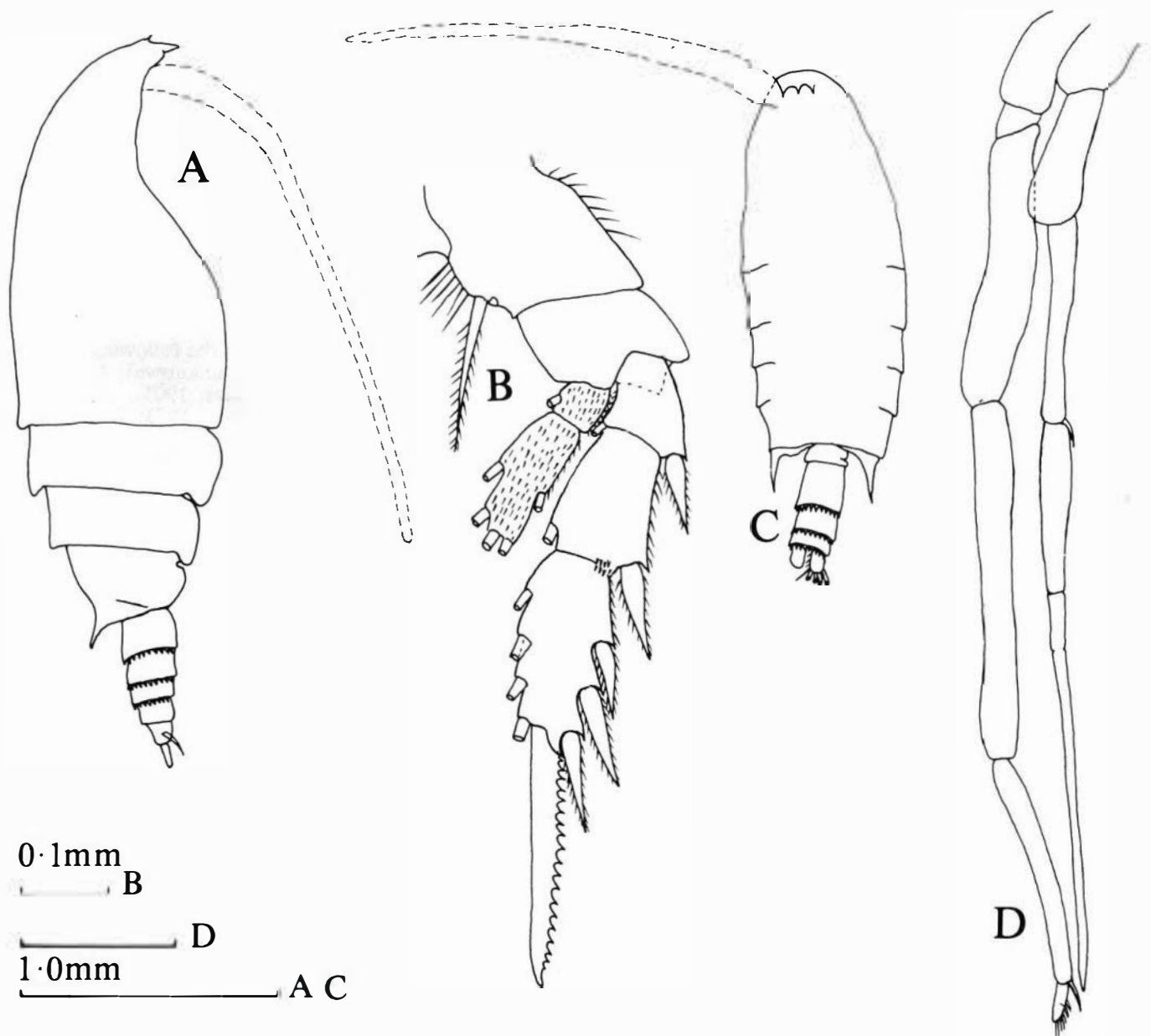


FIG. 11. *Bradyidius spinifer* female: A, lateral view; B, leg 2. Male: C, ventral view; D, leg 5.

coast of New Zealand. It is supposed that this species is benthic as it was taken in a plankton haul which touched the sea floor at about 500 m.

#### **Chiridiella** Sars, 1907

**DEFINITION:** This genus is distinguished by the structure of the apical lobes of maxilla 2 of the female, which are provided with strong curved denticulate hooks. Rostrum absent. Head and pedigerous segment 1 fused or indistinctly separate, pedigerous segments 4 and 5 fused, posterolateral borders rounded. Maxilla 1 inner

lobe may have 1-4 setae on posterior surface. Maxillipeds with elongate basipods. Leg 1 exopod one-jointed with one or two outer edge spines. Endopod of leg 2 one-jointed.

Male antenna 1 with large aesthetes. Maxilla 2 in form of small unjointed rudiment with some well developed spine-like setae. Exopod of leg 1, one- or three-jointed. Leg 5 resembles those of *Gaidius*: endopods rudimentary, larger on left; left exopod two- or three-jointed, three-jointed on right. (Vervoort 1952b, Brodsky 1950, Tanaka 1957a).

The genus *Chiridiella* contains the following species: *C. abyssalis* Brodsky, 1950; *C. atlantica* Wolfenden,



1911; *C. bichela* Deevey, 1974; *C. bispinosa* Park, 1970; *C. brachydactyla* Sars, 1907 ( $\delta$  see Tanaka 1957a); *C. brooksi* Deevey, 1974; *C. chainae* Grice, 1969; *C. gibba* Deevey, 1974; *C. kuniae* Deevey, 1974; *C. macrodactyla* Sars, 1907; *C. megadactyla* Bradford 1971b; *C. ovata* Deevey, 1974; *C. pacifica* Brodsky, 1950; *C. reducta* Brodsky, 1950 ( $\delta$  see Brodsky 1950); *C. subaequalis* Grice and Hulsemann, 1965; *C. trihamata* Deevey, 1974.

No example of this genus has been taken in the south-west Pacific.

### *Chiridius* Giesbrecht, 1892

**DEFINITION:** Head and pedigerous segment 1, also pedigerous segments 4 and 5, fused. Female posterolateral metasomal borders acutely pointed, points directed posteriorly. Rostrum completely absent. Antenna 1 24-jointed. Mouthparts as in *Aetideopsis*. Endopod of leg 2 one-jointed, leg 1 exopod with three external spines. Terminal spines on exopods of legs 2-4 with 22-28 strong spines along external border.

Male with posterolateral metasomal points shorter than in female. Antenna 1 with reduced number of joints. Mouthparts reduced. Leg 2 endopod may be two-jointed. Leg 5 uniramous on both sides, four- or five-jointed without traces of endopods (Vervoort 1952b).

The genus *Chiridius* contains the following species: *C. carnosus* Tanaka, 1957a ( $\delta$  unknown); *C. gracilis* Farran, 1908 (= *C. molestus* Tanaka, 1957a); *C. longispinus* Tanaka, 1957a ( $\delta$  unknown); *C. mexicanus* Park, 1975b; *C. obtusifrons* Sars, 1903; *C. pacificus* Brodsky, 1950 ( $\delta$  unknown); *C. polaris* Wolfenden, 1911 ( $\delta$  unknown); *C. poppei* Giesbrecht, 1892 ( $\delta$  see Tanaka 1957a); *C. subantarcticus* Park, 1978; *C. subgracilis* Park, 1975b.

The following species have been taken in the south-west Pacific:

### *Chiridius subgracilis* Park, 1975b (Figs 12, 71)

*C. molestus* Tanaka, 1957a

*C. gracilis*: Farran 1929; Bradford 1970a,b (not Farran)

**DESCRIPTION:** *Size:* ♀♀ 2.10-2.45 mm, ♂♂ 1.80-2.10 mm.

**Female:** Superficially very like *C. gracilis*, but posterior metasomal points slightly longer. Prosome covered with chitinous thickenings. Leg 2 exopod joint 3 external distal edge of characteristic form: very outer edge delicate and thinly sclerotised, into this curved fringe bulges thicker piece of integument (Fig. 12C). Anterior surface of leg 2 endopod nearly always with full-width sclerotised ridge marking fusion line of two endopod joints, small ridge evident on posterior surface.

**Male:** Posterior margin of last metasomal segment with small convergent spines. Rostrum lacking as in female. Antenna 1 extends to middle of urosome segment 3. None of four terminal setae on maxilliped armed with conspicuous setules. Leg 1 exopod joint 1 with long

spine. Left leg 5 two-thirds length of right leg. (Tanaka 1957a as *C. molestus*).

**REMARKS:** This species is easily recognised by the bulge in the external distal edge of the leg 2 exopod joint 3 in the female and by the robust male prosome which is 2.5 times the length of the urosome. In the present males the maxilliped has one of the four terminal setae with hairs, but not conspicuous setules as in the case of *C. gracilis*.

The only male *Chiridius* taken in the south-west Pacific occurred with females of *C. subgracilis* and is most likely the male of this species. It is identical with the male Tanaka (1957a) assigns to *C. molestus*.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** As *C. gracilis*, Farran (1929), Bradford (1970a, b).

#### NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
A292	500-1000	4 ♀♀, 2.2 mm
A313	0-914	2 ♀♀, 2.35, 2.35 mm
D614	0-500	2 ♀♀, 2.1, 2.2 mm
F946	0-200	2 ♀♀, 2.40, 2.44 mm
	200-500	10 ♀♀, 2.20-2.45 mm
		1 ♂, 2.0 mm
	0-1000	5 ♀♀, 2.1-2.4 mm
		2 ♂♂, 2.1, 2.0 mm

**DISTRIBUTION:** Atlantic Ocean (Park 1975b) and Pacific Ocean (present records). This is a deep-water species and at Kaikoura (New Zealand) was found above 250 m only at 2100 hours (Bradford 1970a). Males appear to exist at greater depths, only occasionally appearing above 500 m.

### *Chiridius pacificus* Brodsky, 1950 (Figs 13, 71)

**DESCRIPTION:** *Size:* ♀♀ 2.7-3.5 mm, ♂ unknown.

**Female:** General appearance like *C. poppei* but much larger. Metasome covered with small chitinous thickenings. Leg 2 with long slender external spines on exopods, distal external exopod border smoothly curved, terminal spine of exopod has more than 30 teeth, endopod has fusion line between two joints clearly marked on anterior surface.

**REMARKS:** This species is clearly recognised as that of Brodsky (1950) because of its size and number of teeth on the terminal spine of the exopod. It is possible that Tanaka's (1957a) *C. carnosus* is a male of *C. pacificus* judging by the long slender exopod spines on leg 2.

The setation of the mouth parts of female *C. pacificus* is identical with that of *C. poppei*.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Nil.

#### NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
E788	0-1193	1 ♀, 3.1 mm
VUZ105	0-914	4 ♀♀, 3.25-3.35 mm
VUZ112	0-732	7 ♀♀, 3.15-3.40 mm
Mu67/48s	0-1000	2 ♀♀, 3.2, 3.2 mm

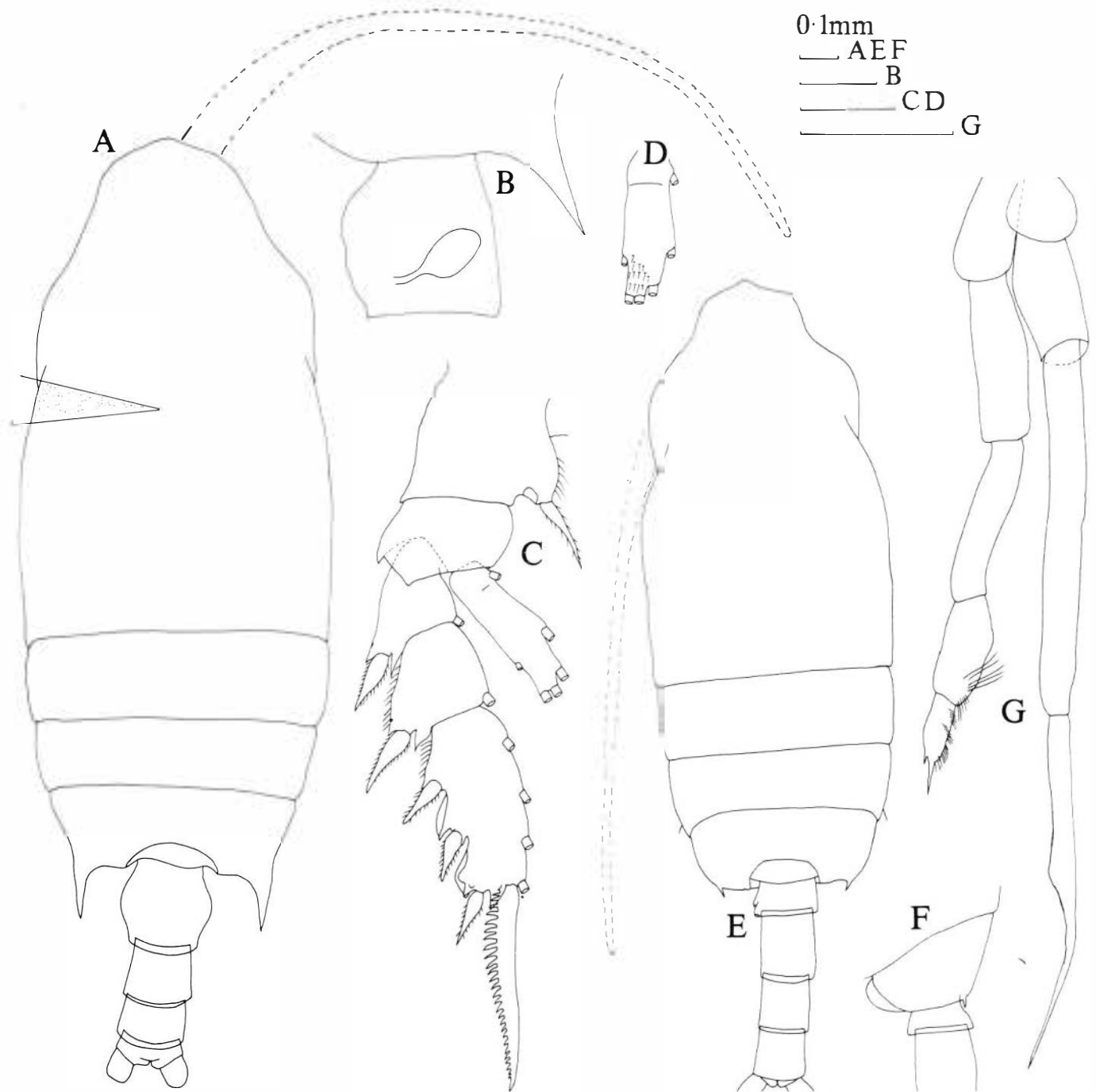


FIG. 12. *Chiridius subgracilis* from NZOI Stn F946. Female: A, dorsal view; B, lateral view of genital segment; C, leg 2; D, anterior surface of endopod of leg 2. Male: E, dorsal view; F, lateral view of posterior metasome; G, leg 5.

Mu67/57s	0-1000	1 ♀, 3.5 mm
Mu67/94s	0-1000	2 ♀♀, 3.2, 3.1 mm
Mu67/104s	0-1000	1 ♀, 2.7 mm
Mu67/116s	0-1000	1 ♀, 3.2 mm
Mu67/147s	0-1000	1 ♀, 3.3 mm

only taken at stations which were sampled to about 1000 m.

*Chiridius poppei* Giesbrecht, 1892 (Figs 14, 71)

**DISTRIBUTION:** As well as the present localities this species has been taken in the Sea of Okhotsk. It was

**DESCRIPTION:** Size: ♀♀ 1.6-2.0 mm, ♂♂ 1.50-2.13 mm.

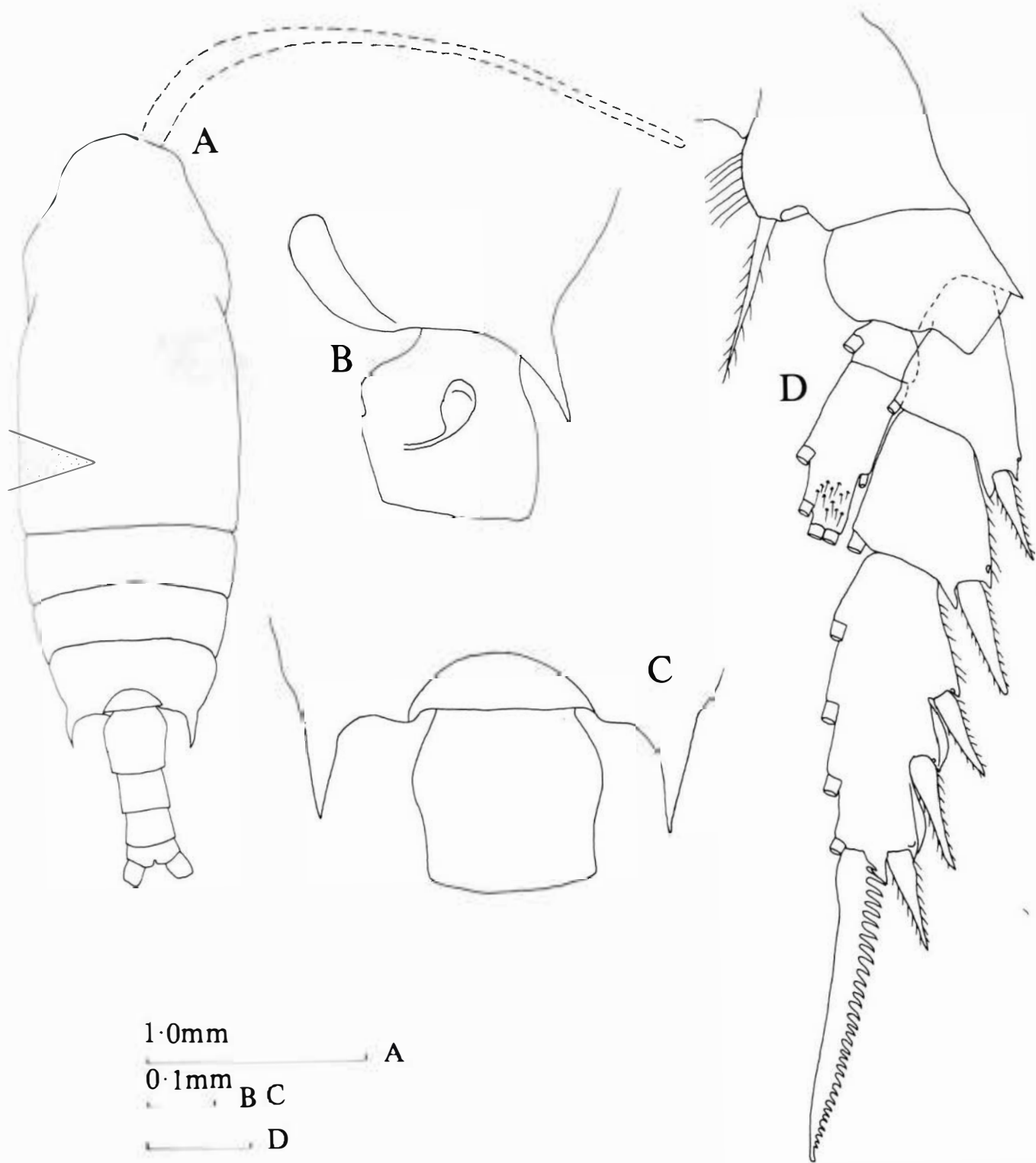


FIG. 13. *Chiridius pacificus* female from VU Stn VUZ105: A, dorsal view; B, lateral view of posterior metasome; C, dorsal view of posterior metasome; D, leg 2.

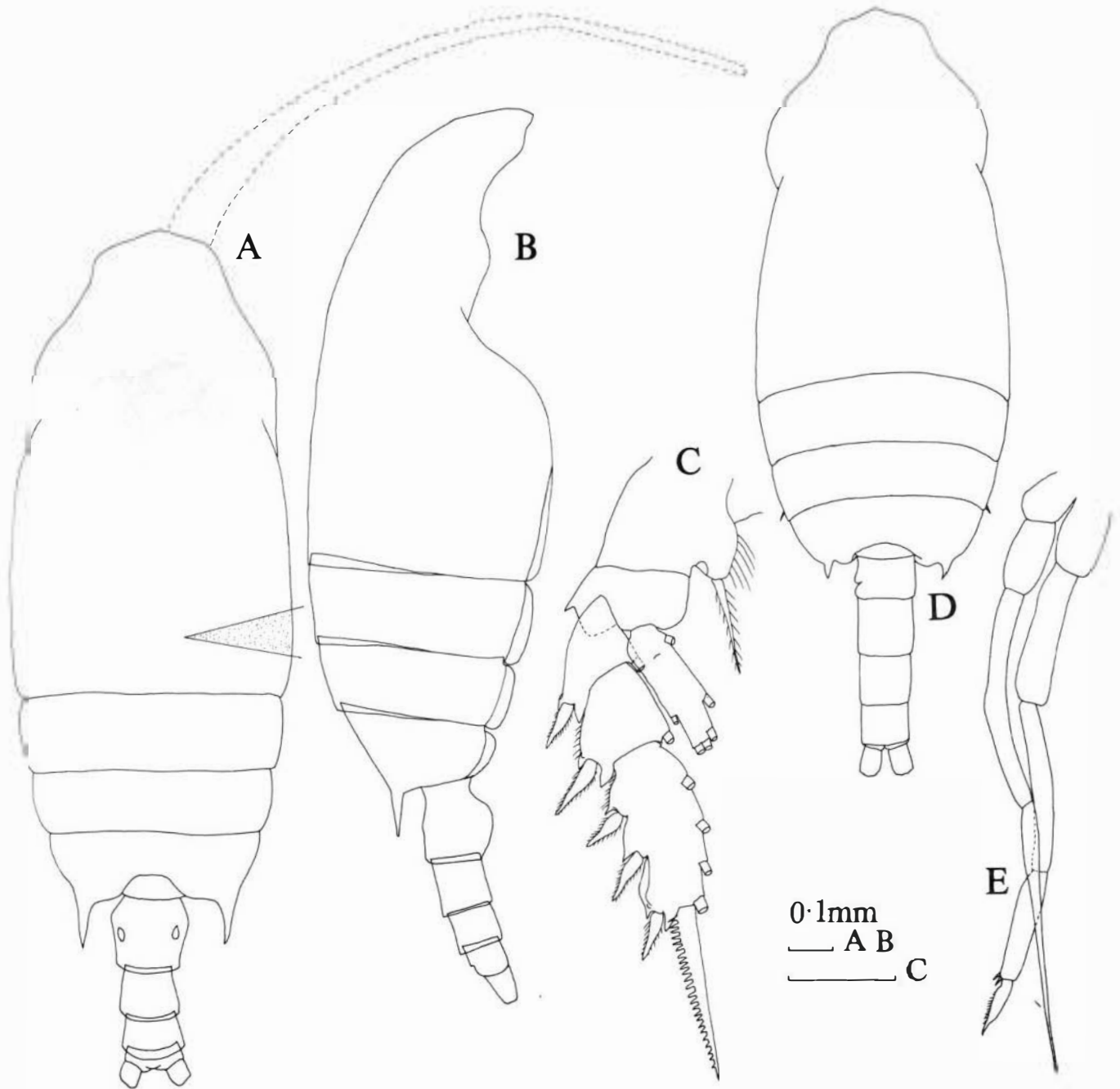


FIG. 14. *Chiridius poppei* female from NZOI Stn F946: A, dorsal view; B, lateral view; C, leg 2. Male, total length 1.52 mm (from Tanaka 1957a): D, dorsal view; E, leg 5.

**Female:** Posterior metasomal points extend just beyond middle of genital segment. Prosome covered with very small chitinous thickenings. Outer spines of leg 1 exopod relatively short. Exopod joint 3 of leg 2 with outer distal margin curved, terminal spine with less than 25 teeth, endopod extending beyond distal end of exopod joint 2. Usually there is no sign of demarcation between joints on endopod of leg 2, although a short sclerotised thickening is sometimes present, occupying

only one quarter of total endopod width on anterior surface.

**Male:** Last metasomal segment produced into small, slightly convergent spines on each side. Rostrum beak-like when viewed laterally. Antenna 1 reaches distal margin of urosomal segment 2. Leg 1 with very short outer spine on exopod joint 1. Right leg 5 slightly longer than left with last joint slightly longer than penultimate joint. (Tanaka 1957a).

REMARKS: Females of this species are distinguished by their small size, short outer exopodal spines, and long endopod of leg 2; males are distinguished by the fifth legs which are almost equal in length. Park (1975b) thinks that specimens at the large end of the size range may represent an undescribed sibling species.

PREVIOUS SOUTH WEST PACIFIC RECORDS: Farran (1929).

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
A302	0-500	1 ♀, 1.8 mm
A303	450-1000	1 ♀, 1.6 mm
F946	200-500	1 ♀, 1.9 mm

DISTRIBUTION: This species has been taken in the Pacific, Indian and Atlantic Oceans at tropical and subtropical localities (Vervoort 1963, Park 1975b, Bjornberg 1973).

**Chirundina** Giesbrecht, 1895

DEFINITION: Generally similar to *Pseudochirella*. Head and pedigerous segment 1, also pedigerous segments 4 and 5, fused. Female head usually with moderately high triangular crest; rostrum distinct, one-pointed. Posterolateral metasomal borders triangularly produced in lateral aspect with blunt point. Genital segment symmetrical, without ventral surface spines. Endopod of antenna 2 more than half length of exopod. Maxilla 1 basipod 2 with five setae, endopod with 16 setae. Exopod of leg 1 two-jointed with 2-3 external spines; endopod of leg 2 one-jointed. Basipod of leg 4 devoid of posterior surface spines.

Males more slender, crest low. Leg 5 biramous on both sides; basal joints swollen, right leg more strongly developed than left; endopod one-jointed, elongate, truncate at apices; left exopod three-jointed, right exopod three-jointed, apical joint styliform. (Vervoort 1952b).

The genus *Chirundina* contains the following species: *C. antarctica* Wolfenden, 1911 (♂ unknown); *C. indica* Sewell, 1929 (♂ see Sewell 1947); *C. streetsii* Giesbrecht, 1895.

The following species has been taken in the south-west Pacific:

**Chirundina streetsii** Giesbrecht, 1895 (Figs 15, 68)

DESCRIPTION: Size: ♀♀ 3.6-6.0 mm, ♂♂ 3.8-5.0 mm.

Female: Crest distinct, triangular, elevated. Antenna 1 slightly longer than metasome. Posterolateral metasomal border with distinct, blunt point. Urosome one quarter length of metasome, genital segment slightly swollen on both sides, genital tubercle distinct.

Male: Head with low crest not always obvious. Leg 1 exopod joint 1 with small external spine. Leg 5 with no distinct differences from other described male, *C. indica* Sewell, 1947.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Farran (1929), Bradford (1970a, b).

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
A292	500-1000	1 ♀, 5.1 mm
E891	0-1245	1 ♀, 5.1 mm
E892	0-1224	1 ♀, 4.9 mm
E901	0-1248	1 ♀, 5.0 mm
F874	0-1357	1 ♀
F881	0-1260	1 ♀, 5.6 mm
F911	0-1697	1 ♀, 5.1 mm
F945	0-500	1 ♂, 4.3 mm
F946	500-1000	3 ♀♀, 5.3, 5.1, 5.0 mm
	200-500	4 ♀♀, 5.3-5.6 mm
	0-1000	1 ♂, 4.7 mm
		2 ♀♀, 5.4, 5.7 mm
		1 ♂, 4.8 mm
Mu67/57s	0-1000	1 ♀, 6.0 mm
VUZ93	0-1097	1 ♀, 5.5 mm
VUZ105	0-914	4 ♀♀, 5.2-5.8 mm
		1 ♂, 3.4 mm
VUZ107	0-914	3 ♀♀, 5.75-5.90 mm
VUZ112	0-732	5 ♀♀, 4.9-5.6 mm
		3 ♂♂, 4.5-5.0 mm

DISTRIBUTION: This species appears to live in tropical and subtropical localities (Grice 1962) at moderate depths. At Kaikoura (Bradford 1970a) it was taken above 500 m only at 2400 and 0600 hours.

**Chirundinella** Tanaka, 1957b

DEFINITION: Metasome elongate, ovate, head and pedigerous segment 1 separate, pedigerous segments 4 and 5 fused. Caudal rami with large appendicular setae. Female head with crest, rostrum one-pointed. Antenna 1 24-jointed (joints 8 and 9 fused, 24 and 25 separate). Antenna 2 exopod longer than endopod. Mandible with small endopod, slightly more than half length of exopod. Maxilla 1 has four setae on basipod 2, 10 setae on endopod, three setae on posterior surface of inner lobe 1. Maxilla 2 and maxilliped like those of *Pseudochirella*. Leg 1 exopod joint 1 without external spine. Leg 4 basipod 1 with row of bristles on inner margin. Female leg 5 absent.

Male like female with small crest, head and pedigerous segment 1 fused. Leg 5 similar to that of *Pseudochirella* except that left leg exopod joint 3 has two terminal lobes. (Tanaka 1957b, Vervoort 1949)

This monotypic genus contains *C. magna* (Wolfenden, 1911) (= *C. cara* Tanaka, 1957b; see Tanaka 1969).

No example of this genus has been taken in the south-west Pacific.

**Comantenna** Wilson, 1924

*Bryaxis* Sars, 1903

DEFINITION: Head and pedigerous segment 1 completely or incompletely fused, pedigerous segments 4 and 5 fused or separate with posterior borders of last segment upturned. Female rostrum absent. Antenna 1 23- or 24- jointed, strongly setose. Exopods of antenna

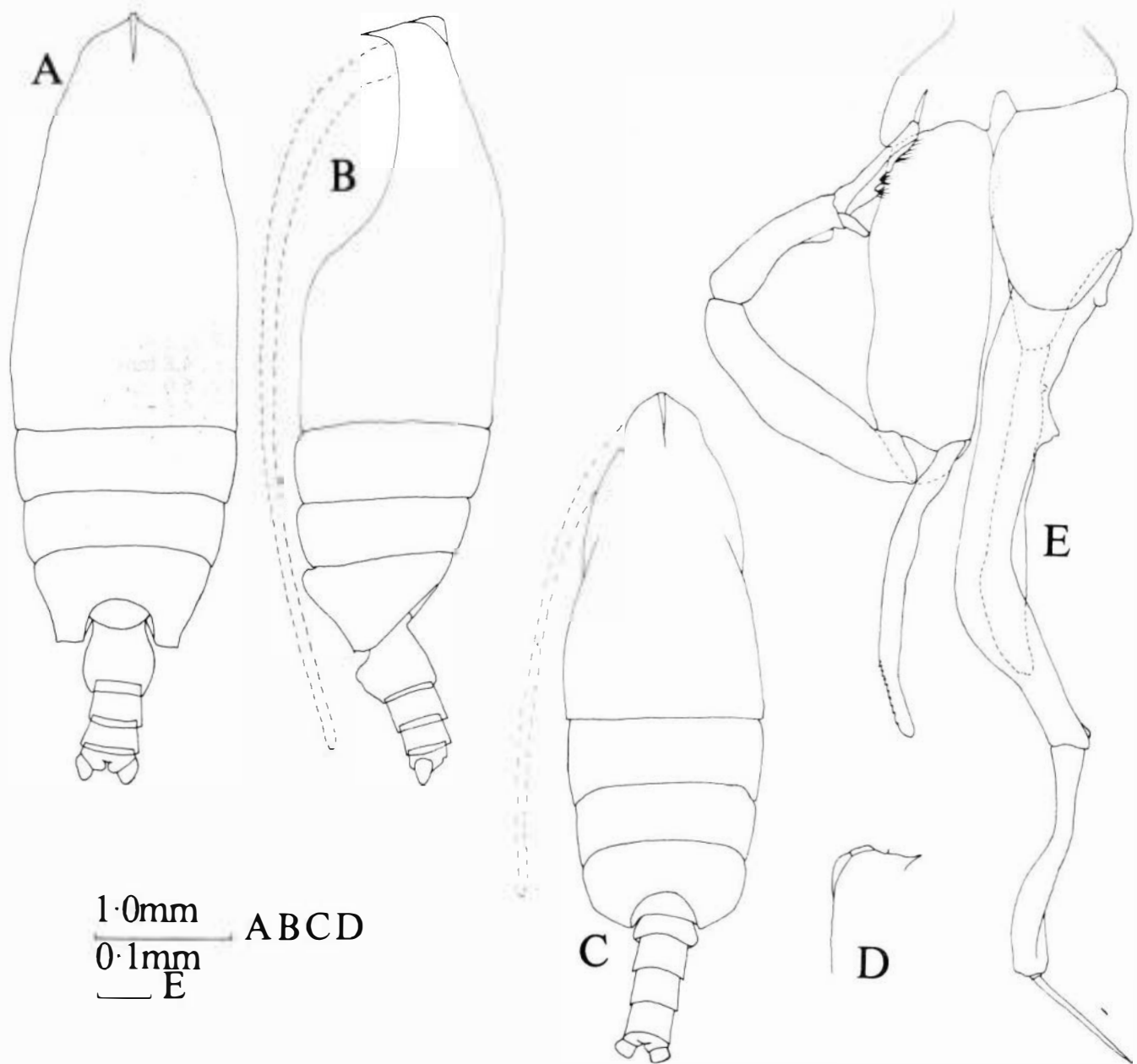


FIG. 15. *Chirundina streetsii* from NZOI Stn F946. Female: A, dorsal view; B, lateral view. Male: C, dorsal view; D, lateral view of anterior head; E, leg 5.

2 poorly developed, joint 7 very short with at least one of three terminal setae very short. Mandible with endopod much smaller than exopod. Maxilla 1 inner lobe 1 with 14 spines and setae. Maxilla 2 lobes 1–4 with tufts of spinules ventrally. Maxillipeds well developed with sausage-shaped sensory organ at end of basipod 1. Leg 1 exopod with three external spines, all external exopod spines large. Terminal exopod spine of legs 2–4 with serrate outer margin. Rudimentary leg 5 may be present.

Male posterior metasomal points straight. Antenna 1 23-jointed, antenna 2 as in female, oral parts reduced, maxilliped basipod 1 sensory organ lacking. Leg 5 biramous on both sides: left endopod two-jointed, right endopod one-jointed; left exopod three-jointed, last joint short; right exopod two-jointed with last joint, especially distal half, attenuated, ending in recurved process bordered by fine setae. (Vervoort 1952a, Matthews 1964, Campaner 1978).

The following species have been described in this genus: *C. brevicornis* (Boeck, 1872); *C. crassa* Bradford, 1969c; *C. recurvata* Grice and Hulsemann, 1970.

*Bryaxis minor* Farran, 1905 has been transferred to a new genus *Paracomantenna* by Campaner 1978. There is also a possibility that Grice and Hulsemann's species is synonymous with *C. crassa*.

The following species has been taken in the south-west Pacific:

***Comantenna crassa* Bradford, 1969c (Figs 16, 70)**

DESCRIPTION: Size: ♀ 3.8 mm, ♂ unknown.

Female: Suture line between head and pedigerous segment 1 visible, pedigerous segments 4 and 5 separate. Antenna 2 exopod six-jointed, last joint very small. Sensory organ on maxilliped basipod 1 large. Endopod of leg 1 narrow with small external lump. Terminal spines on exopods have numerous fine teeth. (Bradford 1969c).

REMARKS: The terminal setae of the exopod of antenna 2 is damaged so it is not possible to decide if Grice and Hulsemann's (1970) *C. recurvata* is synonymous with *C. crassa*.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Bradford (1969c).

NEW RECORDS: Nil.

DISTRIBUTION: This species is known from off the Bay of Plenty, north-eastern New Zealand. It was taken in a trawl from 1234–1260 m depth and is assumed to be hyperbenthic.

***Crassantenna* Bradford, 1969c**

DEFINITION: Body like *Comantenna*. Female head and pedigerous segment 1 fused with suture line visible dorsally. Pedigerous segments 4 and 5 separate, last segment with upturned corners. Genital segment slightly swollen anteriorly. Rostrum small, one-pointed. Antenna 1 25-jointed, reaching at least pedigerous segment 3, covered with annulate setae. Antenna 2 with thick squat endopod, two setae on exopod joint 2, exopod joint 1 with or without two setae. Mandibular palp large with small endopod. Maxilla 1 inner lobe 1 with 12 spines and setae, posterior surface having only two setae. Maxilliped basipod 1 short and thick without sensory appendage distally. External spines on swimming leg exopods large, terminal spines bearing numerous sharp teeth. Exopod joints where external spine inserted not produced into spines externally. Leg 5 absent.

Male unknown. (Bradford 1969c).

Type species designated here: *Crassantenna comosa* Bradford, 1969c.

The genus *Crassantenna* contains the following species: *C. comosa* Bradford, 1969c; *C. mimorostrata* Bradford, 1969c.

The following species have been taken in the south-west Pacific:

***Crassantenna comosa* Bradford, 1969c (Figs 17, 70)**

DESCRIPTION: Size: ♀ 3.7 mm, ♂ unknown.

Female: Rostrum bluntly rounded. Urosome less than one third length of metasome. Antenna 1 reaches pedigerous segment 5, antenna 2 exopod almost as wide as endopod, exopod joint 1 without setae but with two lumps. Maxilla 1 inner lobe 2 with four setae, inner lobe 3 with two setae.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Bradford (1969c).

NEW RECORDS: Nil.

DISTRIBUTION: This species is known only from east of North Cape, north of New Zealand. It was taken in a trawl at 1383–1397 m and is presumed to be hyperbenthic.

***Crassantenna mimorostrata* Bradford, 1969c**

(Figs 18, 70)

DESCRIPTION: Size: ♀ ♀ 3.1–3.3 mm, ♂ unknown.

Female: Rostrum represented by a very small point. Urosome more than one third length of metasome. Antenna 1 reaches pedigerous segment 3. Antenna 2 exopod more slender than endopod, exopod joint 1 bears two setae. Maxilla 1 inner lobe 1 with one of posterior surface setae rudimentary, inner lobes 2 and 3 bear four and three setae respectively. Leg 1 with three external exopod spines.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Bradford (1969c).

NEW RECORDS: Nil.

DISTRIBUTION: Continental slope off north-east coast of New Zealand. Taken in trawls from 1234–1697 m and presumed to be hyperbenthic.

***Derjuginia* Jaschnov, 1947**

DEFINITION: Body oblong-oval in form. Head and pedigerous segment 1, also pedigerous segments 4 and 5, fused. Female posterior metasomal corners produced on each side. Head without any trace of rostrum. Hind margins of first three segments of urosome provided with short denticles. Antenna 1 24-jointed. Mouthparts as in other Aetideidae (maxilla 1 setation not known in detail). First two joints of maxilliped about equal in length. Exopod joint 1 of leg 1 without external spine. Leg 4 with numerous denticles on posterior surface, basipod 1 with five larger spines. Leg 5 absent in female.

Male with posterior metasomal corners less well developed than in female. Antenna 1 with reduced number of joints. Leg 5 large and greatly modified, exopod joint 1 armed with numerous hairs.

There is one described species in this genus, *Derjuginia tolli* (Linko, 1913), also figured by Jaschnov (1947). Johnson (1963) records it from the polar basin but notes that his specimens differ slightly from

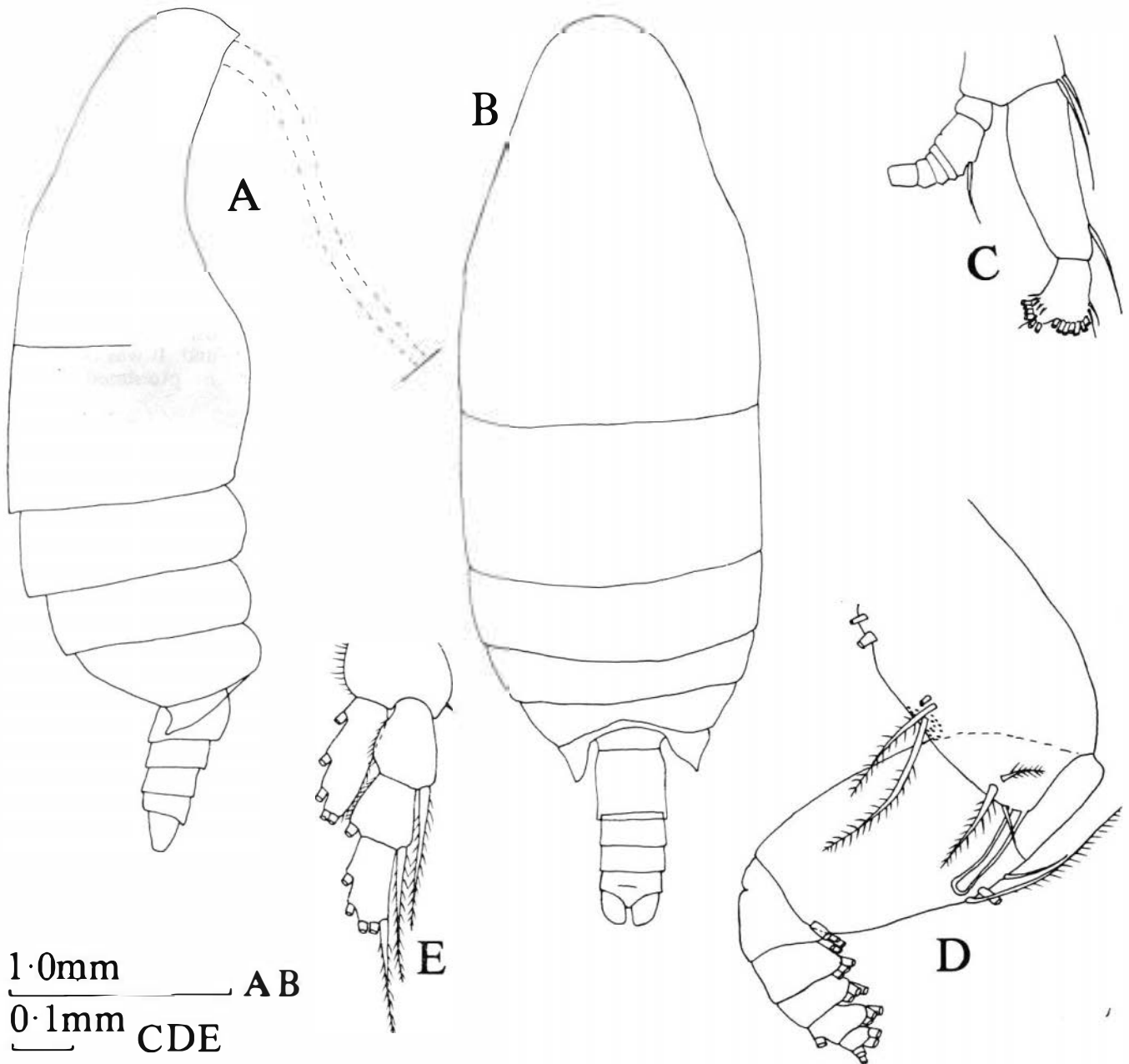


FIG. 16. *Comantenna crassa* female (from Bradford 1969c): A, lateral view; B, dorsal view; C, antenna 2; D, maxilliped; E, leg 1.

Jaschnov's description in having rounded posterior metasomal borders which do not extend as far down the genital segment.

This genus has been taken only in the north Polar Basin and its marginal seas (Brodsky 1950).

#### ***Euchirella* Giesbrecht, 1888**

**DEFINITION:** Large, strong copepods. Head and pedigerous segment 1 fused or separate, pedigerous

segments 4 and 5 fused. Female head rounded, smooth or with helmet-shaped crest. Posterolateral metasomal borders rounded. Rostrum strong, one-pointed, occasionally absent. Female genital segment in dorsal view usually asymmetrical, ventral swelling distinct, occasionally large. Antenna 1 23-jointed. Antenna 2 with endopods of reduced length. Maxilla 1 with reduced number of setae on basipod 2 (two or three setae) and endopod (4–6 setae) and sometimes inner lobe 1 with only three posterior surface setae. Maxilliped comparatively short. Exopod of leg 1 two-jointed, endopod of leg 2 one-jointed. Basipod 1 of leg



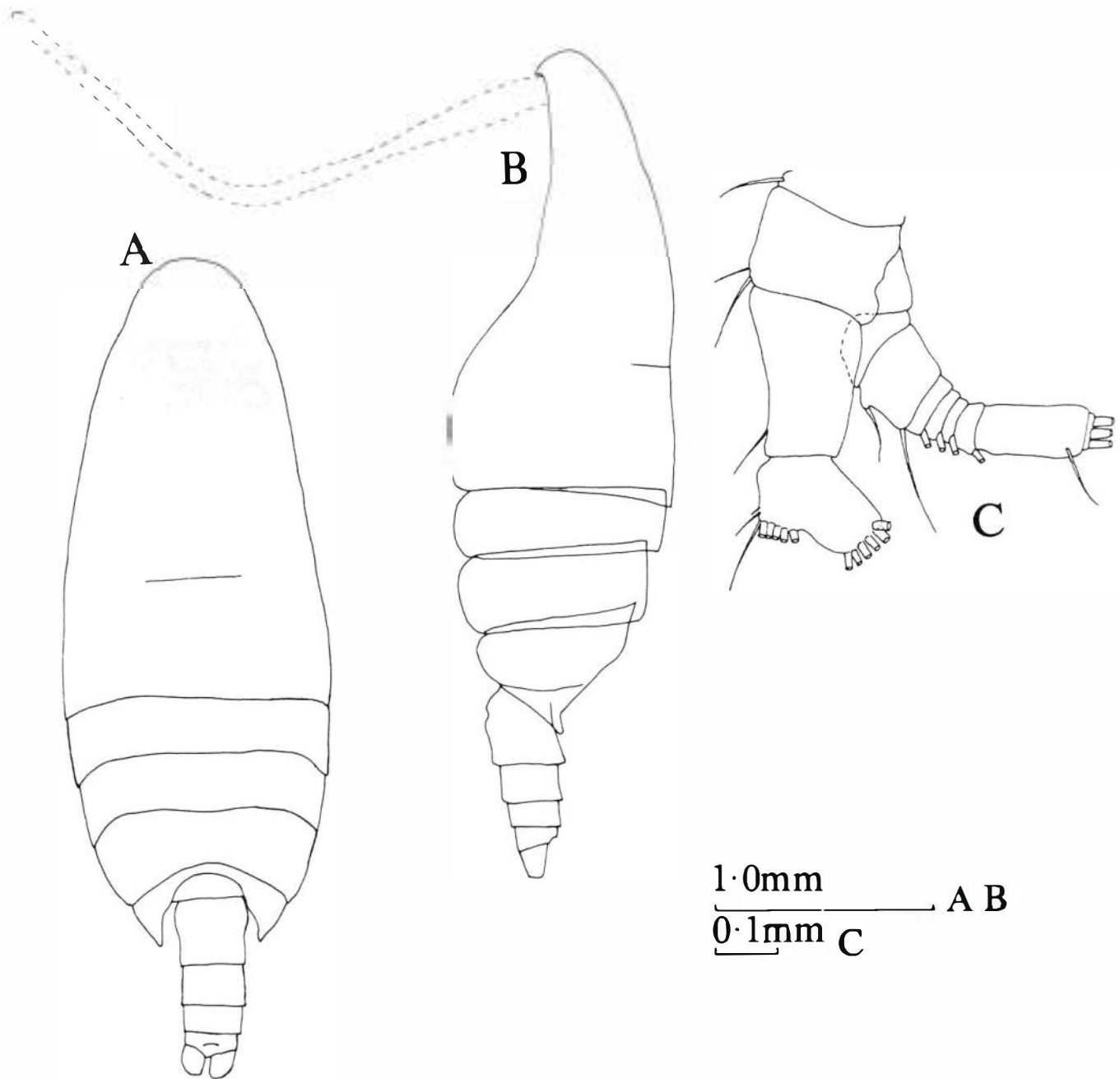


FIG. 17. *Crassantenna comosa* female (after Bradford 1969c): A, dorsal view; B, lateral view; C, antenna 2.

4 with distinct spine or spines on posterior surface, reduced in some species.

Males with more slender bodies, crest usually small and low. Antenna 1 with reduced number of joints, some setae strong. Mouthparts reduced. Leg 5 biramous on both sides: left leg with small one-jointed endopod, two proximal exopod joints elongate, exopod joint 3 of characteristic shape; basal joints on right leg much swollen, endopod strongly developed, exopod two-jointed, distal joint with teeth or plates along

terminal margin. Males not always known. (Vervoort 1952e).

Species may be divided into two groups on the form of legs 1 and 5 of the male (Sewell 1947). The "curticauda" group has leg 1 exopod with three external spines; left leg 5 with a well developed endopod, and basipod 2 extending well beyond right leg basipod 2. Right leg 5 endopod is short and does not extend beyond the first exopod joint. The females of this group have the spines of basipod 1 of leg 4

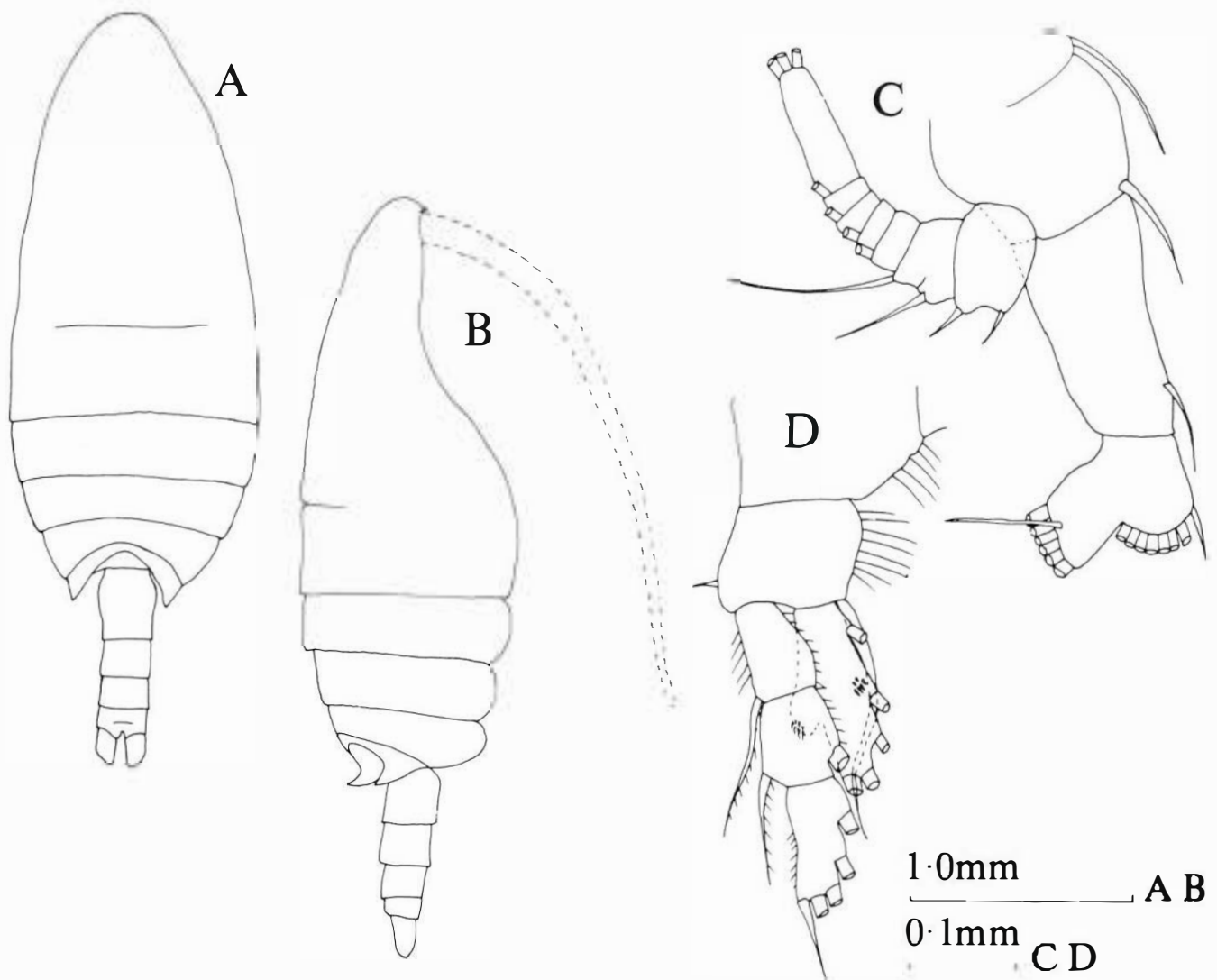


FIG. 18. *Crassantenna mimorostrata* female (from Bradford 1969c): A, dorsal view; B, lateral view; C, antenna 2; D, leg 1.

flattened. The “curticauda” group contains the species: *E. curticauda*, *E. latirostris*, *E. maxima*, *E. rostrata* and *E. rostromagna*.

The “messinensis” group has the exopod of leg 1 with one strong spine terminally and sometimes a small spine at the distal external corner of joint 2. Left leg 5 exopod is small or absent, and basipod 2 extends at most as far as the middle of the right leg 5 basipod 2. Right leg 5 endopod is long and extends as far as the end of the exopod to form pincers. All remaining species probably belong in this group although some, e.g., *E. grandicornis*, *E. similis* and *E. splendens*, are known from the females only.

There are two types of setation on inner lobe 1 of maxilla 1 in *Euchirella*. Three species have four setae on the posterior surface on inner lobe 1: *E. rostrata*, *E. latirostris* and *E. rostromagna* (personal observation), whereas the remaining species have three setae: *E. curticauda*, *E. similis*, *E. truncata*, *E. speciosa*

(personal observation), *E. indica*, *E. formosa* (as *E. orientalis*), *E. venusta*, *E. unispina* (as *E. acuta*), *E. grandicornis* (see Tanaka and Omori 1969a), *E. galeata* (see Sewell 1947), *E. splendens* (see Vervoort 1963) and *E. tanseii* (see Omori 1965).

Vervoort (1963) summarises the synonymies in *Euchirella* but does not mention *E. grandicornis* Wilson, 1950 which has been redescribed by Tanaka and Omori (1969a) and Wilson’s male recognised as *E. maxima*.

The genus *Euchirella* contains the following species: *E. amoena* Giesbrecht, 1888 (= *E. brevis* Sars, 1905); *E. bella* Giesbrecht, 1888 (= *E. areata* Tanaka 1957b) ( $\delta$  see Sewell 1947); *E. bitumida* With, 1915 ( $\delta$  see Tanaka and Omori 1969a); *E. curticauda* Giesbrecht, 1888; *E. formosa* Vervoort, 1949 (= *E. trigrada* Tanaka, 1957b) ( $\delta$  see Tanaka and Omori 1969a as *E. orientalis*); *E. galeata* Giesbrecht, 1888 ( $\delta$  see Wilson 1950); *E. indica* Vervoort, 1949; *E. grandicornis*

Wilson, 1950 ( $\delta$  unknown); *E. latirostris* Farran, 1929; *E. maxima* Wolfenden, 1905b (= *E. simplex* Esterly, 1911) ( $\delta$  see Sars 1925); *E. messinensis* (Claus, 1863) ( $\delta$  see Sars 1925); *E. orientalis* Sewell, 1929 ( $\delta$  see Sewell 1947); *E. pseudopulchra* Park, 1976a; *E. pseudotruncata* Park, 1975a; *E. pulchra* (Lubbock, 1856) ( $\delta$  see Sewell 1947); *E. rostrata* (Claus, 1866) (= *Euchaeta hessei* Brady, 1883 in part); *E. rostromagna* Wolfenden, 1911 (= *E. rostrata* var. *magna* Wolfenden, 1905b; = *E. plumosa* Brady, 1918) ( $\delta$  see Farran 1929); *E. similis* Wolfenden, 1911 ( $\delta$  unknown); *E. speciosa* Grice and Hulsemann, 1968 ( $\delta$  unknown); *E. splendens* Vervoort, 1963 ( $\delta$  see Park 1975a); *E. tanseii* Omori, 1965 ( $\delta$  unknown); *E. truncata* Esterly, 1911 (= *E. gracilis* Wolfenden, 1911; = *E. intermedia* With, 1915; = *E. acadiana* Willey, 1919; = ? *E. propria* Esterly, 1911); *E. unispina* Park, 1968 (= *E. acuta* Tanaka and Omori, 1969a); *E. venusta* Giesbrecht, 1888 ( $\delta$  see Sewell 1947).

The following species have been taken in the south-west Pacific:

***Euchirella amoena* Giesbrecht, 1888 (Figs 19, 65)**

**DESCRIPTION:** Size: ♀♀ 2.7–4.0 mm, ♂♂ 3.00–3.85 mm.

**Female:** Body compact, head without crest. Head and pedigerous segment 1 fused. Urosome short, one quarter to one fifth length of metasome. Head in lateral view arched, rostrum small. Posterior metasomal border in dorsal view cut off at right angles to body axis. Genital segment asymmetrical. Antenna 2 endopod one seventh length of exopod, joint 2 with 3+1 setae. Mandibular palp with strong spine on basipod 2. Leg 4 basipod 1 with three or four small spinules. (Vervoort 1952e).

**Male:** Head without crest. Leg 5 heavily built. Exopod joint 1 of right leg 5 with stout spine at midlength. (Giesbrecht 1892).

**REMARKS:** Grice (1962) summarises the evidence which indicates *E. brevis* is a junior synonym of *E. amoena*. No new females of this species have been taken in the south-west Pacific.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Farran (1929) as *E. brevis*.

**NEW RECORDS:**

Station Number	Depth of Haul (m)	Specimens
F945	0–200	1♂, 3.85 mm
AUZ111	0–100	1♂, 3.40 mm

**DISTRIBUTION:** Sparingly found over the whole of the tropical, subtropical and temperate Atlantic, Indian and Pacific Oceans (Vervoort 1963).

***Euchirella bitumida* With, 1915 (Figs 20, 67)**

**DESCRIPTION:** Size: ♀♀ 4.70–7.10 mm, ♂♂ 4.8–6.1 mm.

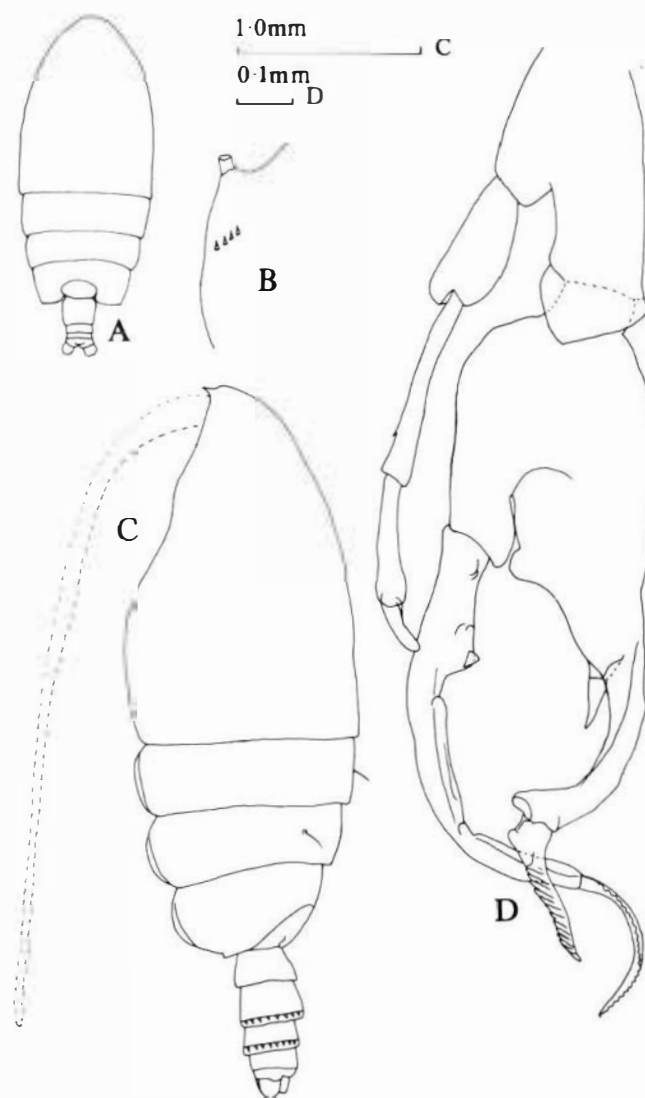


FIG. 19. *Euchirella amoena* female, total length 3.90 mm (from Sars 1925 as *E. brevis*): A, dorsal view; B, inner edge of basipod 1 of leg 4. Male from NZOI Stn F945: C, lateral view; D, leg 5.

**Female:** Head and pedigerous segment 1 fused, with high triangular cephalic crest, rostrum strong. Urosome about one fifth length of metasome. Genital segment asymmetrical, left side smoothly rounded, right side with sac-shaped tubercle at midlength. Endopod of antenna 2 one fifth length of exopod, endopod joint 2 with 6+6 setae. Leg 1 exopod two-jointed, with three outer edge spines. Basipod 1 of leg 4 with one strong, slightly curved spine on posterior surface which does not reach articulation between two basal joints.

**Male:** Head with triangular crest. Metasome less than four times length of urosome. Antenna 1 reaches posterior margin of urosomal segment 2. Leg 1 exopod with one long external spine terminally and two very small spines laterally. Left leg 5 extends beyond right leg endopod first thickening, left basipod 2 extends

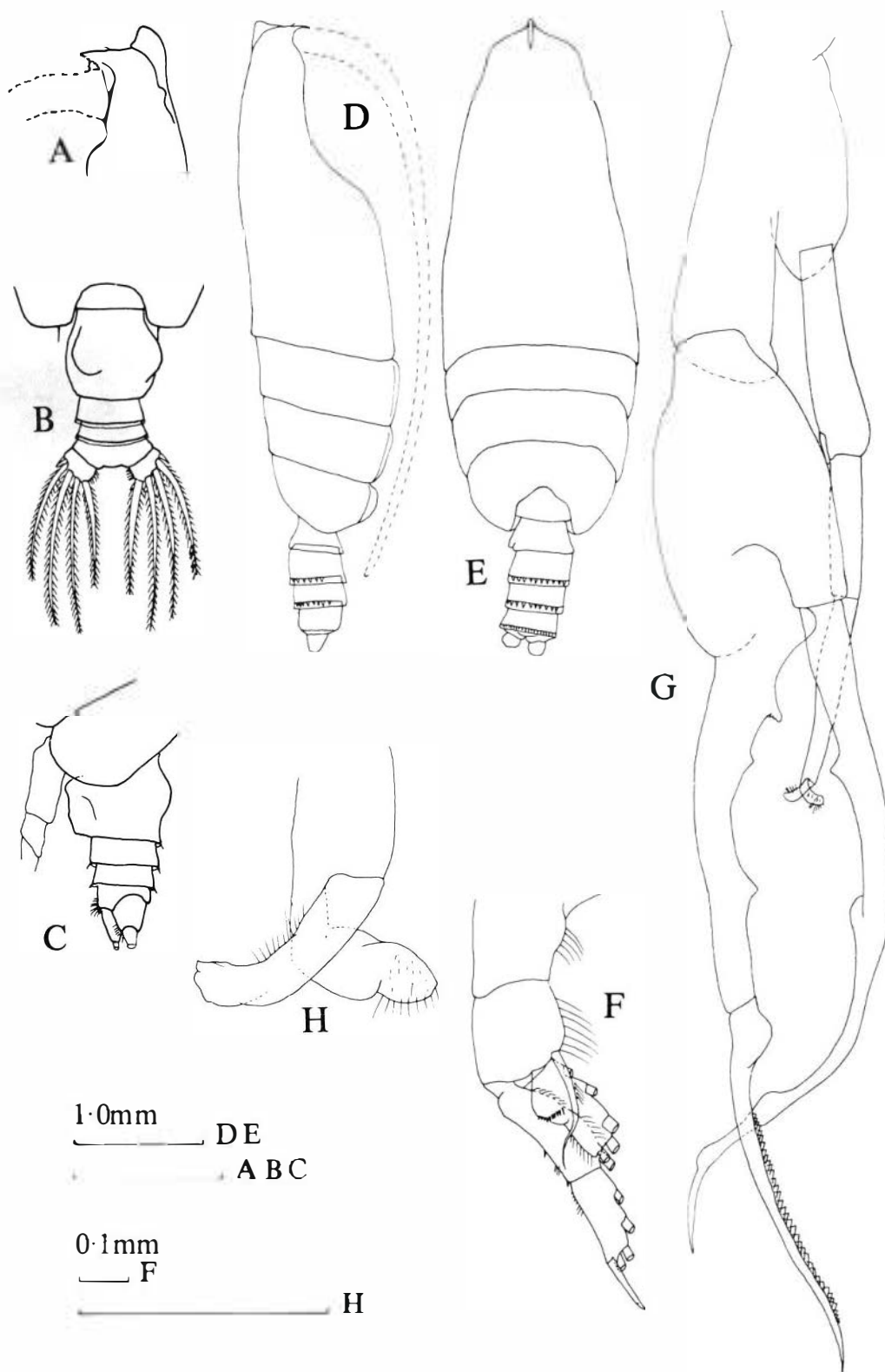


FIG. 20. *Euchirella binumida* female (from Vervoort 1949): A, head lateral view; B, urosome dorsal view; C, urosome lateral view. Male from NZOI Stn F911: D, lateral view; E, dorsal view; F, leg 1; G, leg 5; H, terminal part of exopod of left leg 5.

half-way along right basipod 2. Right leg 5 endopod shorter than exopod, process on inner edge of right exopod joint 1 with undulating distal border, right distal exopod joint with 54 closely packed semicircular teeth. (Vervoort 1952e, Tanaka and Omori 1969a).

**REMARKS:** The present male specimens agree well with those attributed to *E. bitumida* by Tanaka and Omori (1969a) except that the first outer lobe of maxilla 1 has seven setae.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Nil.

**NEW RECORDS:**

Station Number	Depth of Haul (m)	Specimens
F911	0-1697	1♂, 4.8 mm
F946	0-200	1♂, 4.9 mm

**DISTRIBUTION:** Taken from the North Atlantic and Indo-Pacific, usually in deep water, but occasionally from surface waters (Vervoort 1963, Tanaka and Omori 1969a).

***Euchirella curticauda*** Giesbrecht, 1888 (Figs 21, 66)

**DESCRIPTION:** Size: ♀♀ 3.50-4.55 mm, ♂♂ 3.14-4.30 mm.

**Female:** Head with triangular crest. Urosome short, one fifth to one sixth length of metasome. Rostrum almost absent. Posterior metasomal border in lateral aspect with small blunt points. Genital segment symmetrical. Antenna 2 endopod one quarter length of exopod, joint 2 with 3+2 setae. Basipod 1 of leg 4 with row of 12-13 teeth.

**Male:** Head crest small. Left leg 5 with well developed endopod. Right leg 5 distal exopod joint with strong inwardly curved teeth along internal margin at apex. (Vervoort 1952e).

**REMARKS:** In females of this species the number of teeth on basipod 1 of leg 4 varied from 9-18.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Nil.

**NEW RECORDS:**

Station Number	Depth of Haul (m)	Specimens	Number of teeth on B1 of P4
A292	500-1000	1♀, 3.4 mm	10
A295	0-500	1♀, 3.4 mm	14
A303	450-1000	1♀, 3.3 mm	9
E892	0-1224	1♀, 3.7 mm	15
F910	0-1397	1♀, 3.8 mm	15
AUZ75	0-200	2♀♀, 3.7, 3.8 mm	12, 8, 9
Mu67/94s	0-1000	1♂, 4.0 mm	
Mu67/116s	0-1000	1♀, 4.55 mm	18, 16

**DISTRIBUTION:** Atlantic, Pacific and Indian Oceans (Vervoort 1963, Bjornberg 1973).

***Euchirella formosa*** Vervoort, 1949 (Figs 22, 67)

*E. orientalis*: Tanaka and Omori 1969 (not Sewell).

**DESCRIPTION:** Size: ♀♀ 4.8-5.5 mm, ♂♂ 4.75-5.20 mm.

**Female:** Head without crest. Rostrum directed ventrally and slightly anteriorly. In dorsal view posterior metasomal corners cut off at right angles to body axis. Genital segment asymmetrical; two sac-shaped protuberances visible in dorsal view on left side, distal protuberance covers anterior part of urosomal segment 2, when viewed laterally dorsal surface with three distinct swellings; right side produced into rounded swelling. Antenna 2 endopod one half length of fused exopod joints 1 and 2, endopod joint 2 with 5+4 setae. Leg 4 basipod 1 has two unequal spines, internal spine longest, reaching articulation of basipods 1 and 2. (Vervoort 1949).

**Male:** Head with low crest. Urosome one quarter length of metasome. Antenna 1 extends to posterior border of urosomal segment 2. Leg 1 exopod two-jointed with one large and one small external spine. Left leg 5 basipod 2 extends just beyond right basipod 1, left exopod joint 1 distal border does not reach proximal border of right endopod, left exopod joint 3 shorter than distal extension of exopod joint 2. Right leg 5 exopod joint 1 second inner process triangular. (Tanaka and Omori 1969a).

**REMARKS:** The male leg 5 of *E. formosa* (described by Tanaka and Omori (1969a) as *E. orientalis*) differs from specimens attributed to *E. orientalis* by Sewell (1947) in having a small, distal, outer edge spine on left exopod joint 1, in having a shorter exopod joint 3 on the left, and in having the right exopod joint 1 with a triangular second process instead of the knob-like process of *E. orientalis*.

Tanaka and Omori (1969a) synonymised *E. formosa* with *E. orientalis*. There is nothing in Sewell's (1929) description of *E. orientalis* to suggest that the posterior, dorsal, left part of the genital segment carries three conspicuous swellings, which are quite constant in the south-west Pacific specimens of *E. formosa*. We do not accept the synonymy of Tanaka and Omori.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Nil.

**NEW RECORDS:**

Station Number	Depth of Haul (m)	Specimens
A303	450-1000	1♀, 4.8 mm
E882	0-1212	1♀, 5.02 mm
F881	0-1260	1♀
F892	0-1278	1♀
F945	500-1000	1♀, 5.5 mm
AUZ75	0-200	2♀♀, 5.0, 4.9 mm

**DISTRIBUTION:** Previously recorded from the Malay Archipelago (Vervoort 1949) and from the north-west Pacific (Brodsky 1962; Tanaka 1957b as *E. irigrada*; Bjornberg 1973).

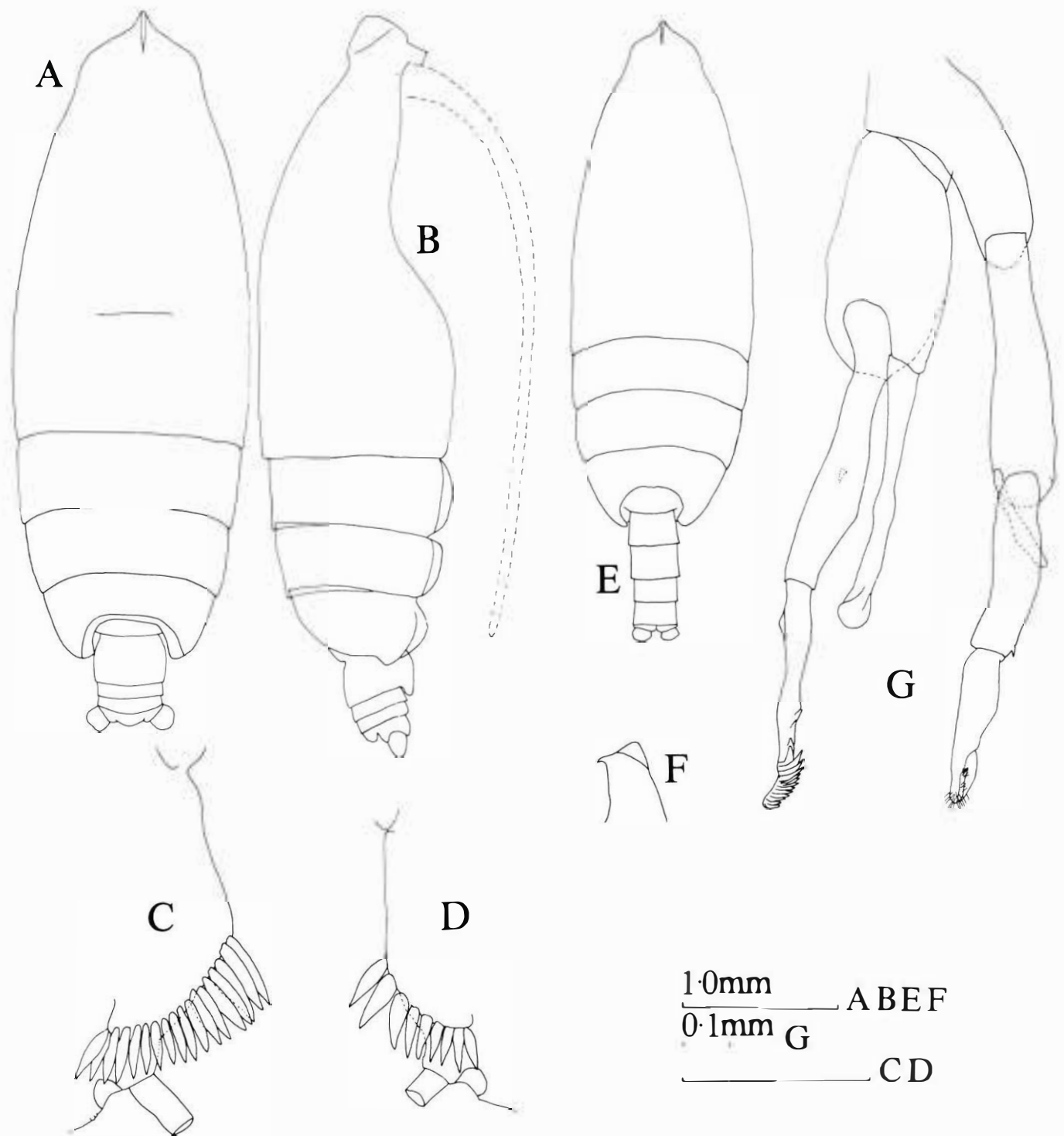


FIG. 21. *Euchirella curticauda* from OU Stn Mu67/94s. Female: A, dorsal view; B, lateral view; C, inner edge of basipod 1 of leg 4; D, inner edge of basipod of leg 4 (specimens from NZOI Stn A303). Male: E, dorsal view; F, lateral view of anterior of head; G, leg 5.

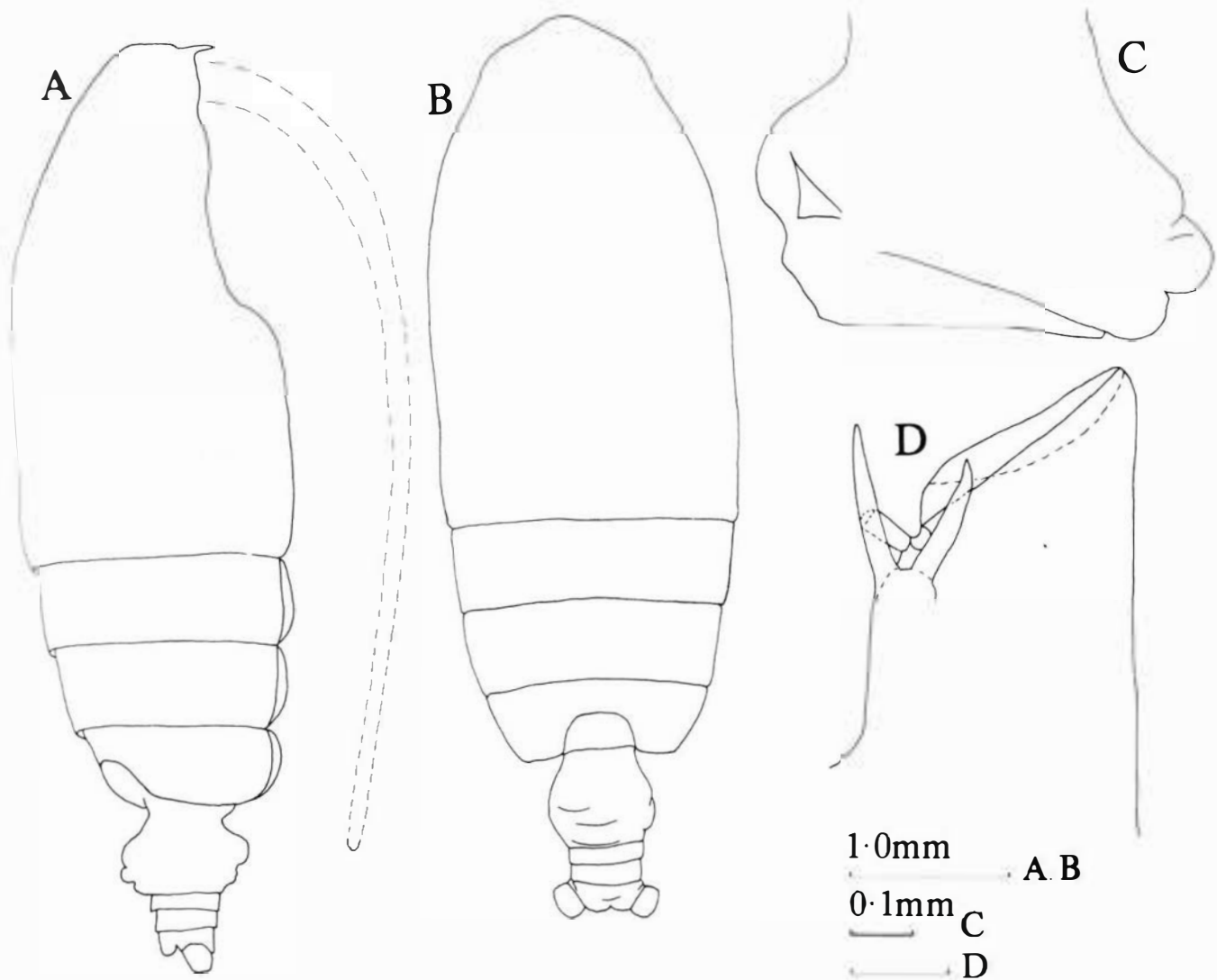


FIG. 22. *Euchirella formosa* female from NZOI Stn F945: A, lateral view; B, dorsal view; C, lateral view of genital segment; D, basipod 1 of leg 4.

***Euchirella indica* Vervoort, 1949 (Figs 23, 65)**

*E. messinensis*: ? Vervoort 1949 ♂; Tanaka 1957b; Tanaka and Omori 1969a (not Claus).

DESCRIPTION: Size: ♀ 3.85–5.30 mm, ♂ 4.0–4.2 mm.

**Female:** General body shape resembles *E. messinensis*. Head without crest. Genital segment in dorsal view asymmetrical, produced on left dorsal side to form distinct elevation which extends slightly over urosomal segment 2. Antenna 2 like that of *E. messinensis*. Leg 4 basipod 1 spines as in *E. messinensis*. (Vervoort 1949).

**Male:** Head with distinct low crest. Leg 5 like that of *E. messinensis* except left leg reaches beyond right leg endopod first thickening.

REMARKS: Tanaka and Omori (1969a) consider that *E. indica* is a subspecies of *E. messinensis*. As Vervoort

(1963) indicated that females of *E. messinensis* he examined showed no variability in the dorsal sac on the posterior left side of the genital segment and the male leg 5 is different from that limb in *E. messinensis* (personal observation) we are retaining the two forms as separate species.

In our opinion *E. messinensis* as used by Tanaka (1957b) and Tanaka and Omori (1969a) is synonymous with *E. indica* and the fifth legs of the males are the same as those of the male we have attributed to this genus in south-west Pacific waters. The male described by Vervoort (1949, figs 9a and e) as *E. messinensis* also seems to belong to *E. indica*. The fifth leg Vervoort (1949) figures as *E. indica* (figs 9b and f) seems to have proportions similar to that he identifies as *E. bella* (fig. 9c).

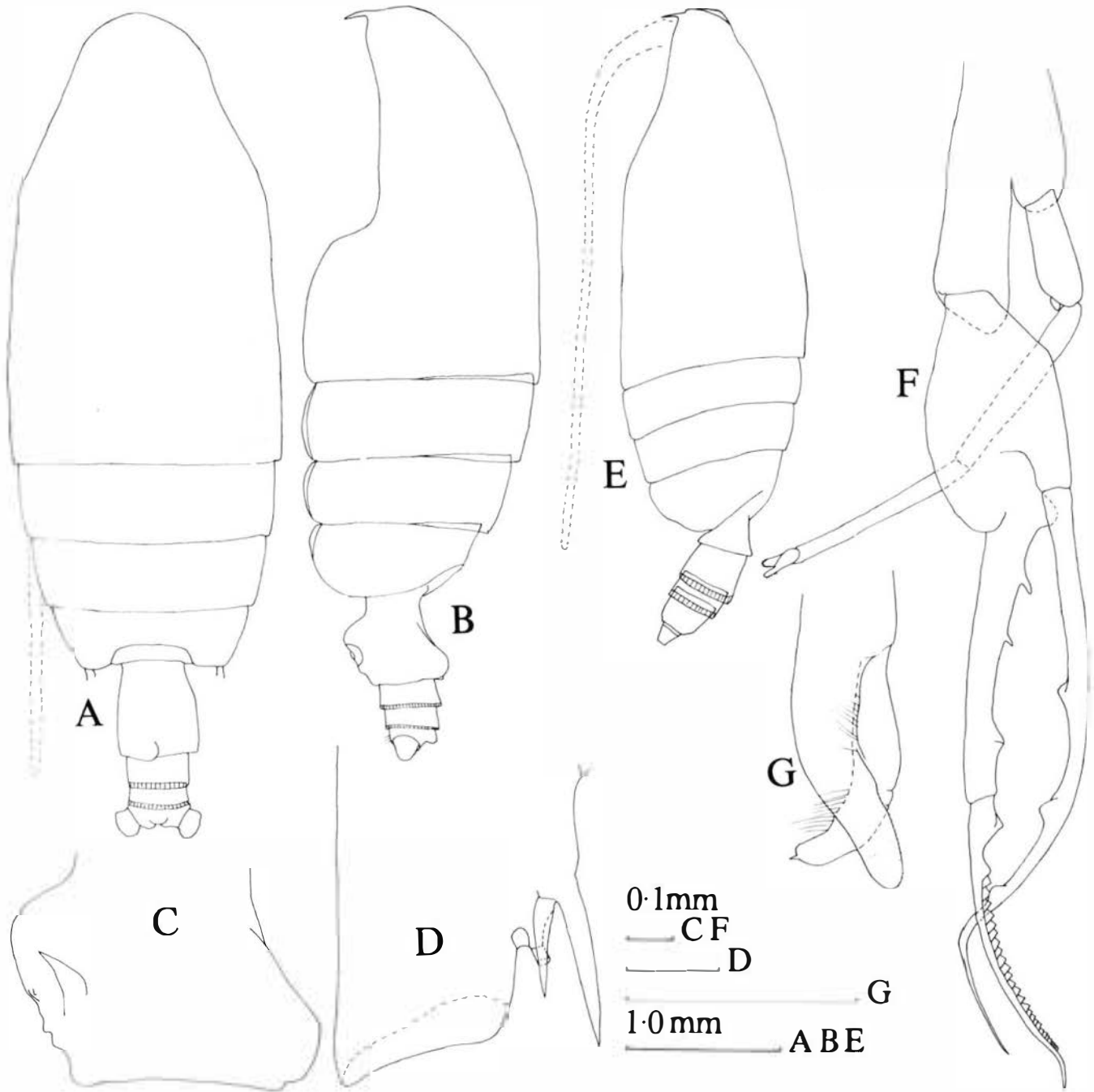


FIG. 23. *Euchirella indica* female from VU Stn VUZ112: A, dorsal view; B, lateral view; C, lateral view of genital segment; D, basipod 1 of leg 4. Male from NZOI Stn F879: E, lateral view; F, leg 5; G, terminal part of left exopod of leg 5.



PREVIOUS SOUTH-WEST PACIFIC RECORDS: Bradford (1972) as *E. venusta*.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
E882	0-1212	2 ♀♀, 4.5, 4.8 mm
E892	0-1224	1 ♀, 4.7 mm; 1 ♂, 4.2 mm
E901	0-1248	1 ♀
F879	0-1267	1 ♂, 4.0 mm
F881	0-1260	1 ♀
F897	0-1269	1 ♀, 4.7 mm
F910	0-1397	1 ♀, 4.9 mm
F911	0-1697	1 ♀, 4.9 mm
F945	0-500	1 ♀, 4.7 mm
F946	200-500	1 ♀, 4.8 mm
AUZ88	0-100	1 ♀, 3.85 mm
VUZ105	0-914	1 ♀, 4.9 mm
VUZ112	0-732	2 ♀♀, 5.3, 4.8 mm

DISTRIBUTION: Tropical and subtropical Indo-Pacific (Vervoort 1949, Tanaka 1957b, Tanaka and Omori 1969a).

***Euchirella latirostris*** Farran, 1929 (Figs 24, 66)

DESCRIPTION: *Size*: ♀♀ 5.3-5.8 mm, ♂ 4.2 mm.

*Female*: Body very like *E. rostrata*. Rostrum moderately long and stout with a broad base in lateral view. Leg 4 basipod 1 with six sharp triangular teeth in diminishing series plus two or three minute teeth. (Farran 1929).

*Male*: Head without crest. Maxilla 1 inner lobe 1 with six vestigial setae, inner lobe 3 with two bristles, endopod with four setae, exopod with 11 setae, terminal seta short, outer lobe 1 with seven setae. Leg 5 similar to that of *E. rostromagna* but left leg endopod as long as exopod joint 1 of same leg.

REMARKS: There is some possibility that *E. latirostris* and *E. rostromagna* represent the two extremes of variation in one species. As more specimens are found there seems to be convergence in size ranges and in the number of teeth on basipod 1 of leg 4 in the female.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Farran (1929), Vervoort (1957).

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
Mu67/147s	0-1000	2 ♀♀, 5.8, 5.8 mm 1 ♂, 4.2 mm

DISTRIBUTION: From the few records of this species it appears to live in warmer subantarctic waters.

***Euchirella messinensis*** (Claus, 1863) (Figs 25, 65)

DESCRIPTION: *Size*: ♀♀ 4.42-6.20 mm, ♂♂ 2.80-5.46 mm.

*Female*: Head and pedigerous segment 1 fused, head rounded, without crest. Genital segment left side with

sac-shaped protuberance on dorsal wall covering most of urosomal segment 2. Antenna 2 endopod one quarter length of exopod joint 2 with 5+4 setae. Posterior surface of leg 4 basipod 1 with two unequal spines, longest reaching articulation with basipod 2; one of these spines may be absent.

*Male*: Head with small, more or less triangular crest. Left leg 5 exopod joint 3 does not reach first thickening on right leg endopod. (Vervoort 1952e, Sars 1925).

REMARKS: The male that Vervoort (1949, 1952e) and Park (1976b) attribute to *E. messinensis* has leg 5 slightly different from that figured by Claus (1863), Giesbrecht (1892) and Sars (1925). They figure *E. messinensis* with the exopod of left leg 5 extending at least to the first thickening on the right leg endopod. Males similar to Vervoort's specimens have been taken in the south-west Pacific but have been attributed to *E. indica* in this paper. No females of *E. messinensis* have been found in the south-west Pacific.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Nil.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
F897	0-1269	1 ♂, 4.8 mm
F910	0-1397	1 ♂, 4.8 mm

DISTRIBUTION: Tropical, subtropical and temperate parts of the Atlantic, Indian and Pacific Oceans (Vervoort 1963).

***Euchirella rostrata*** (Claus, 1866) (Figs 3, 4, 66)

DESCRIPTION: *Size*: ♀♀ 2.95-3.80 mm, ♂♂ 2.50-3.10 mm.

*Female*: Head without crest. Posterolateral metasomal borders rounded. Urosome one quarter length of metasome. Genital segment symmetrical, genital swelling not greatly prominent. Endopod of antenna 2 one half length exopod, joint 2 with 8+6 setae. Leg 4 basipod 1 with row of 6-7 triangular leaf-like teeth, gradually diminishing in size towards centre of joint.

*Male*: Head without crest. Left leg 5 endopod well developed, extending three quarters the length of exopod joint 1. Terminal exopod joint of right leg two thirds length of previous joint. Right leg endopod almost reaches end of exopod joint 1. (Vervoort 1952e).

REMARKS: This common and well-known species is easily recognised by its size, female leg 4 and male leg 5.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Farran (1929), Vervoort (1957), Bradford (1970 a,b; 1972).

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
B116	0-125	4 ♀♀, 3.6, 3.4, 3.3, 3.25 mm
B117	0-500	2 ♀♀, 3.3, 3.3 mm
B119	0-500	1 ♀, 3.35 mm

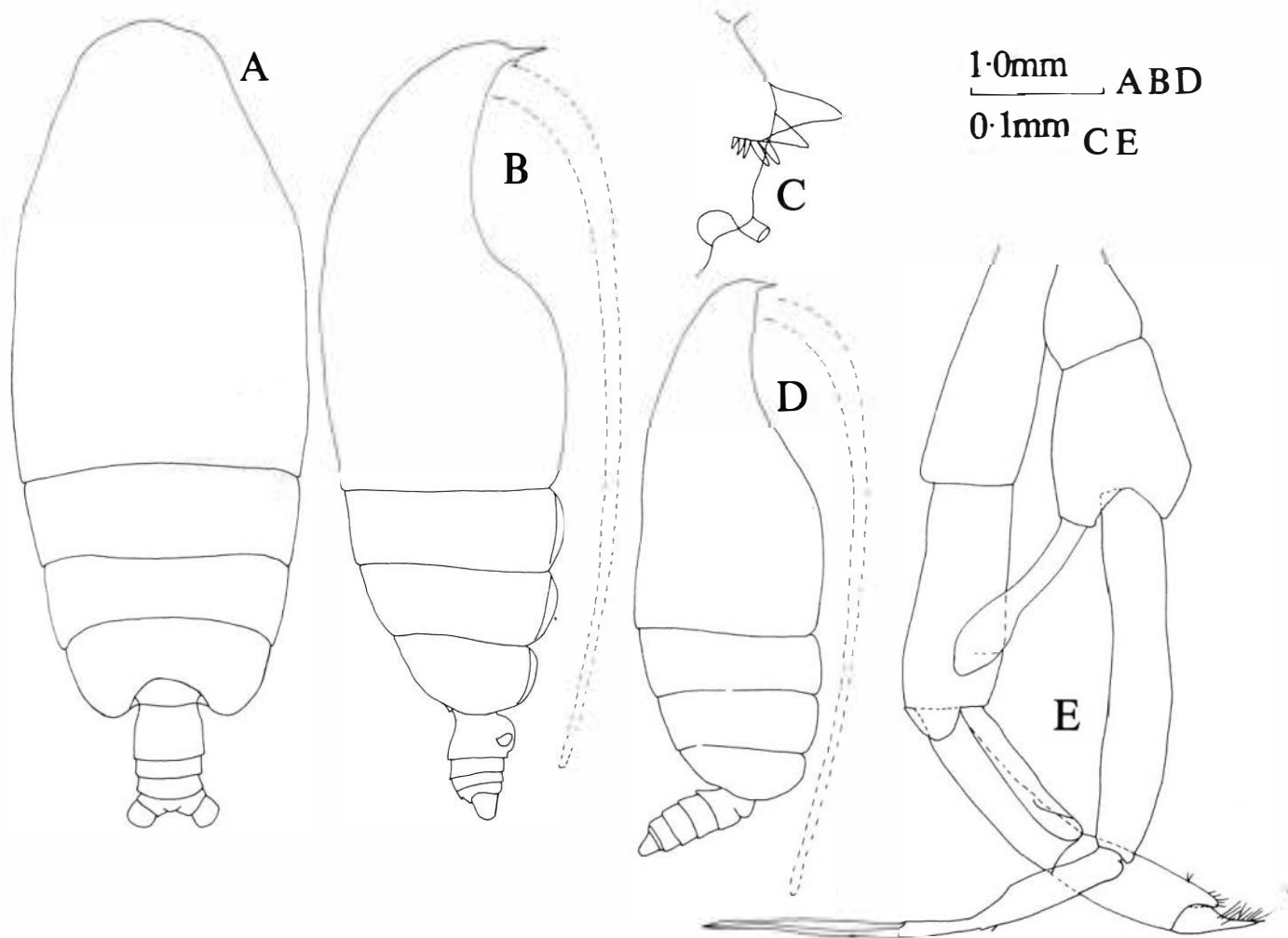


FIG. 24. *Euchiarella latirostris* from OU Stn Mu67/147s. Female: A, dorsal view; B, lateral view; C, inner edge of basipod 1 of leg 4. Male: D, lateral view; E, leg 5.

C525	surface	1♀, 3.34 mm
C526	0-250	1♀, 3.4 mm
E788	0-1193	4♀♀
F881	0-1260	1♀, 3.0 mm
F946	0-200	10♀♀, 3.1-3.5 mm
	0-1000	2♀♀, 3.3, 3.35 mm
F947	0-200	2♀♀, 3.3, 3.3 mm
VUZ105	0-914	1♀, 3.5 mm
Mu66/44	0-200	1♂
Mu66/46	0-200	1♀
Mu66/49	0-150	1♀
Mu66/56	0-150	1♀
Mu67/57s	0-1000	1♀
Mu67/116s	0-1000	5♀♀, 3.6-3.8 mm
		2♂♂, 3.1, 3.0 mm
Mu67/147s	0-1000	1♀, 3.5 mm

**DISTRIBUTION:** Tropical, subtropical and subantarctic parts of the Atlantic, Indian and Pacific Oceans (Vervoort 1957, Bjornberg 1973).

#### *Euchiarella rustromagna* Wolfenden, 1911

(Figs 26, 66)

**DESCRIPTION:** *Size:* ♀♀ 5.45-6.65 mm, ♂ 5.3 mm.

*Female:* Head without crest, long slightly depressed rostrum narrower at base than in *E. latirostris*. Leg 4 basipod 1 with row of 11 spines, outermost with very broad base and five innermost very slender.

*Male:* Urosome less than one quarter length of metasome. Right leg 5 with exopod joints approximately equal in length. Left leg 5 endopod extending just over three quarters length of exopod joint 1. (Farran 1929).

**REMARKS:** See "Remarks" for *E. latirostris*. The number of teeth on the female leg 4 basipod 1 varies: 12 and 10 on the specimen from Stn B113, 13 on the specimen from Stn B118.

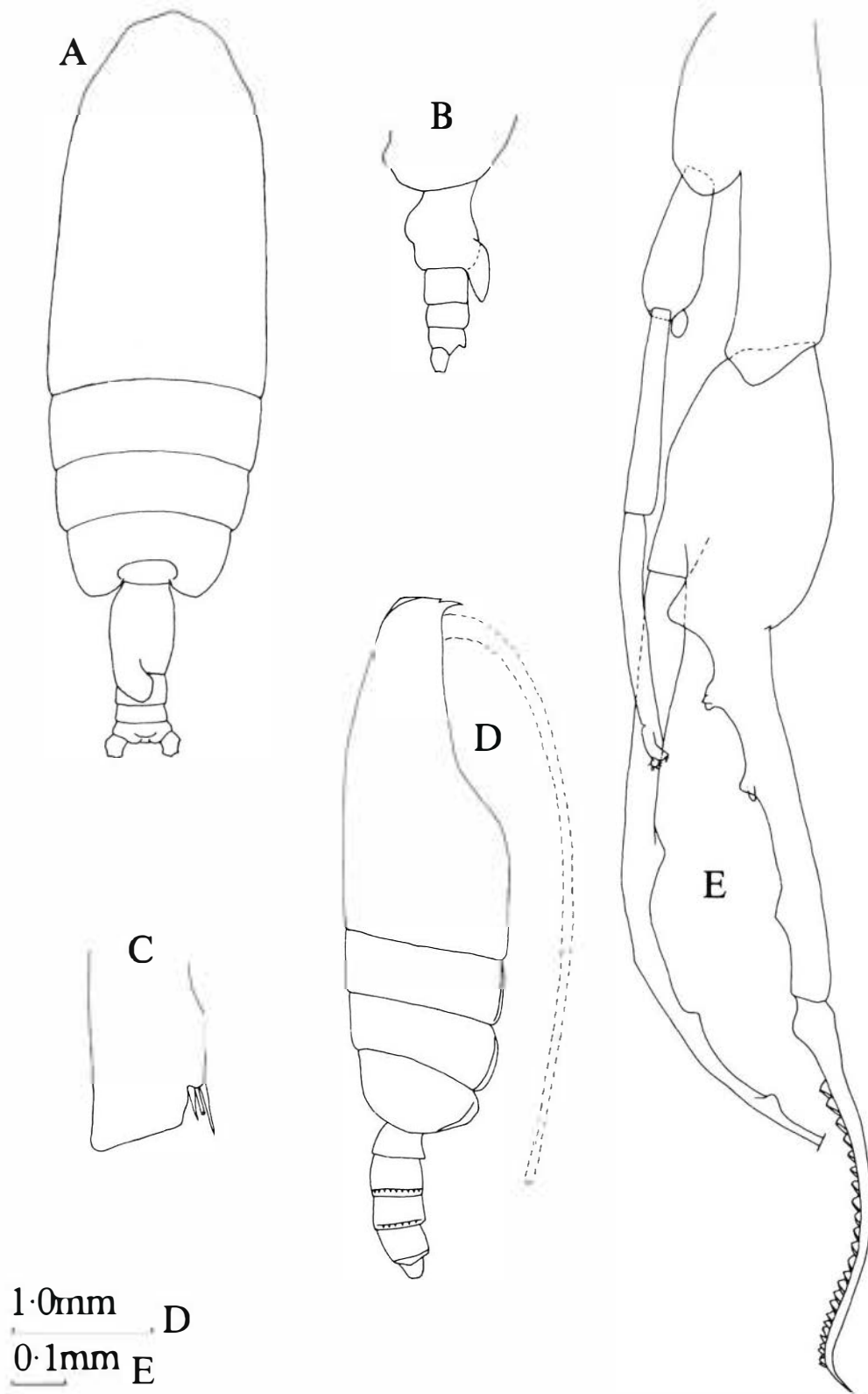


FIG. 25. *Euchirella messinensis* female, total length 5.40 mm (from Sars 1925): A, dorsal view; B, lateral view of urosome; C, basipod 1 of leg 4. Male from NZOI Stn F910: D, lateral view; E, leg 5.

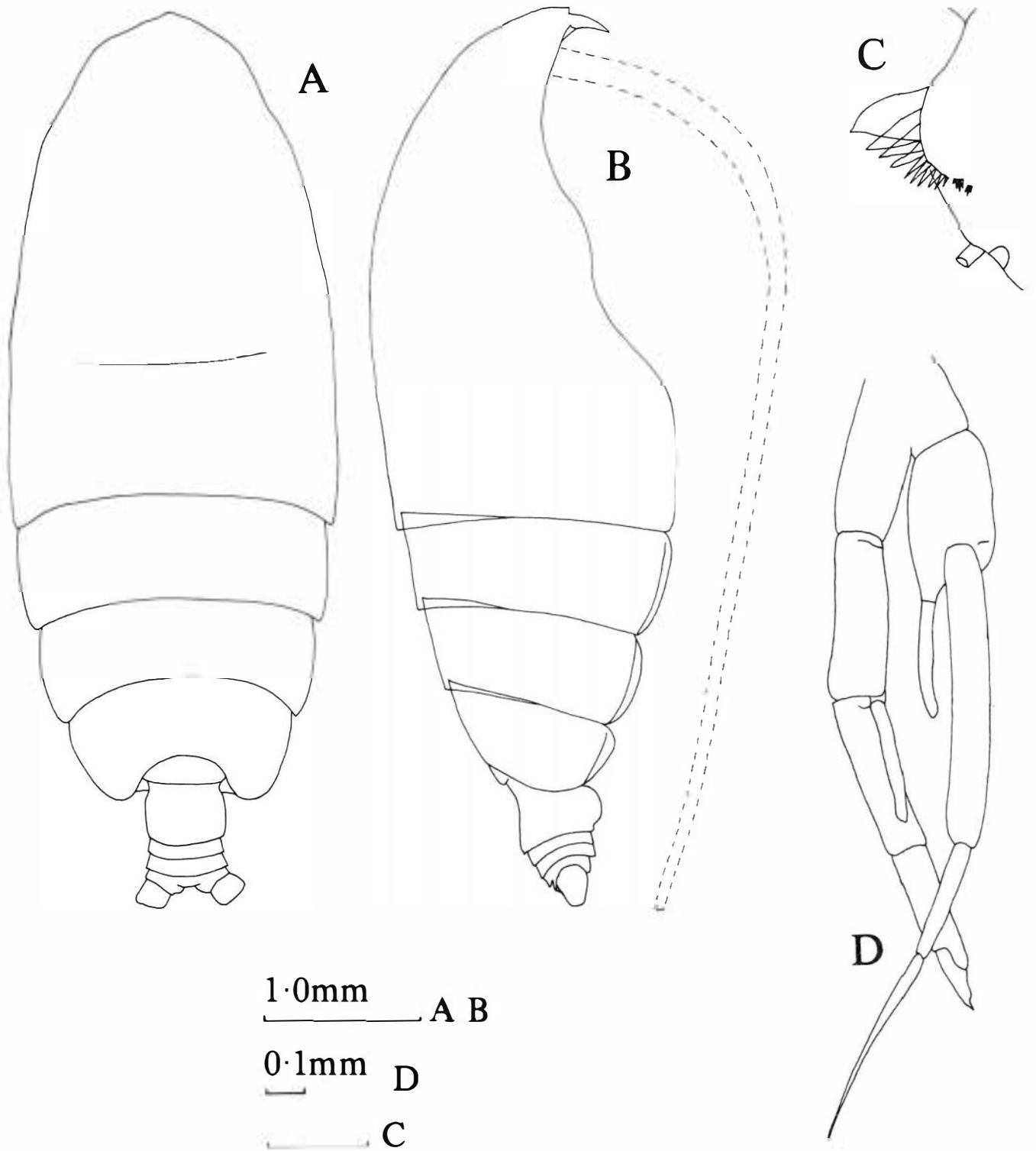


FIG. 26. *Euchirella rostromagna* female from NZOI Stn B118: A, dorsal view; B, lateral view; C, inner edge of basipod 1 of leg 4. Male (from Farran 1929): D, leg 5.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Vervoort (1957).

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
B113	0-500	1 ♀, 6.1 mm
B118	0-500	1 ♀, 5.45 mm

DISTRIBUTION: Mainly in Antarctic localities (Vervoort 1951, 1957; Bjornberg 1973), although it has occasionally been taken north of the Antarctic Convergence.

**Euchirella similis** Wolfenden, 1911 \* (Figs 27, 65)

DESCRIPTION: *Size*: ♀♀ 4.00-4.75 mm, ♂ unknown.

*Female*: Head without crest. Rostrum pointing slightly anteriorly. Genital segment with wing-like extension on right. Leg 4 basipod 1 with two or three strong spines.

REMARKS: This appears to be only the fourth record of this species.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Vervoort (1957).

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
A313	0-914	1 ♀, 4.75 mm

DISTRIBUTION: Taken in deep hauls from the Atlantic and Indian Oceans (Wolfenden 1911) and Pacific Ocean (Vervoort 1957, Bjornberg 1973).

**Euchirella speciosa** Grice and Hulsemann, 1968  
(Figs 28, 67)

DESCRIPTION: *Size*: ♀♀ 4.4-5.1 mm, ♂ unknown.

*Female*: Head without crest. Genital segment asymmetrical, in dorsal view right side smooth, left side with two small swellings. Endopod of antenna 2 one quarter length of exopod, joint 2 with 4 + 5 setae. Leg 4 basipod 1 with two strong subequal teeth.

REMARKS: This species is very like *E. venusta*. The present specimens agree more closely with *E. speciosa* Grice and Hulsemann, 1968 than with *E. venusta* (Grice 1962, Vervoort 1949). The right side of the genital segment in south-west Pacific specimens does have a small depression, but in most specimens it is so slight that the right border viewed dorsally appears straight. Omori's (1965) *E. tanseii* is also very similar but the antenna 2 endopod joint 2 has 6 + 6 setae.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Nil.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
F874	0-1357	1 ♀, 4.7 mm
F879	0-1267	1 ♀, 5.1 mm
F881	0-1260	1 ♀
F911	0-1697	1 ♀, 4.5 mm
F945	0-500	1 ♀, 4.7 mm

F946	0-1000	1 ♀, 4.8 mm
AUZ88	0-100	1 ♀, 4.4 mm
AUZ123	0-100	1 ♀, 4.65 mm

DISTRIBUTION: The only other record of this species is in the south-eastern Pacific at 30° 57'-31° 05' S, 89° 13'-89° 35' W, 0-500 m (Grice and Hulsemann 1968).

**Euchirella truncata** Esterly, 1911 (Figs 29, 65)

DESCRIPTION: *Size*: ♀♀ 5.2-6.4 mm, ♂♂ 4.5-5.1 mm.

*Female*: Head without crest, rostrum pointing ventrally. Posterior metasomal margin in dorsal view cut off at right angles to body axis. Urosome one quarter to one fifth length of metasome, genital segment asymmetrical, right side evenly rounded, left side with two elevated ridges, genital tubercle distinct. Antenna 2 endopod one third length of exopod, segment 2 with 7+7 setae. Leg 4 basipod 1 with one strong spine reaching articulation between basal joints.

*Male*: Body more slender than female. Head without crest. Left leg 5 exopod joint 3 with two distal spines, basipod 2 passes articulation of right leg basipods 1 and 2. Right leg 5 endopod and exopod of equal lengths.

REMARKS: This species is easily recognised by the shape of the female genital segment and the male leg 5.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Nil.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
E892	0-1224	1 ♀, 5.7 mm
F879	0-1267	1 ♂, 4.6 mm
F910	0-1397	1 ♂, 4.5 mm
F945	0-200	1 ♀, 5.4 mm
F946	0-200	1 ♀, 6.4 mm 1 ♂, 5.0 mm
	200-500	1 ♂
	0-1000	2 ♀♀, 6.25, 6.40 mm
F947	0-500	1 ♂, 4.9 mm

DISTRIBUTION: This species has a distribution similar to *E. amoena* but is more plentiful (Tanaka and Omori 1969a).

**Euchirella venusta** Giesbrecht, 1888 (Figs 30, 67)

DESCRIPTION: *Size*: ♀♀ 4.25-4.88 mm, ♂♂ 3.8-3.9 mm.

*Female*: Head without crest. Genital segment asymmetrical, knob-like protrusion on left posterior margin, right side indented. Antenna 2 endopod as in *E. speciosa*. Leg 4 basipod 1 with two long spines. (Grice 1962, Vervoort 1949).

*Male*: Head without crest. Maxilla 1 endopod and basal joint 2 with five setae. Left leg 5 exopod reaching right leg endopod first thickening, terminal exopod joint of right leg with 35 semicircular teeth. (Sewell 1947).

REMARKS: The two males from the south-west Pacific are identical to those described by Sewell (1947) except

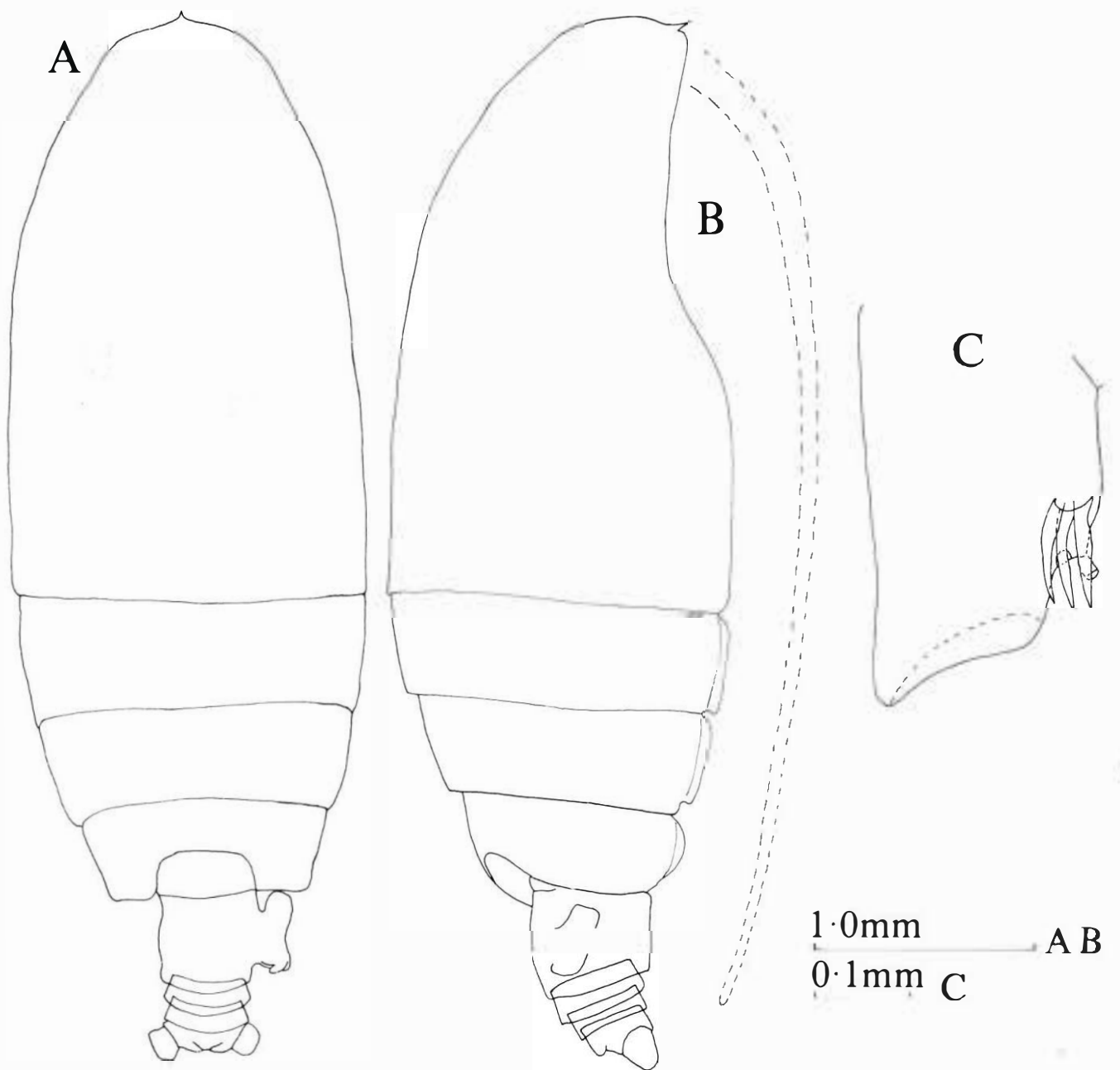


FIG. 27. *Euchirella similis* female from NZOI Stn A313: A, dorsal view; B, lateral view; C, basipod 1 of leg 4.

that the terminal exopod joint of the right leg 5 has 31 semicircular teeth. Since female *E. speciosa* are very similar to *E. venusta* it is possible that their males are also very alike, in which case the present two males may be attributed to *E. speciosa* if compared more closely with *E. venusta*.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Farran (1929), Bradford (1972).

**NEW RECORDS:**

Station Number	Depth of Haul (m)	Specimens
F947	0-500	1♂, 3.9 mm
AUZ88	0-100	1♂, 3.9 mm

**DISTRIBUTION:** This species is found in the Indo-Pacific region in tropical and subtropical localities (Sewell 1947, Grice and Hulsemann 1967).

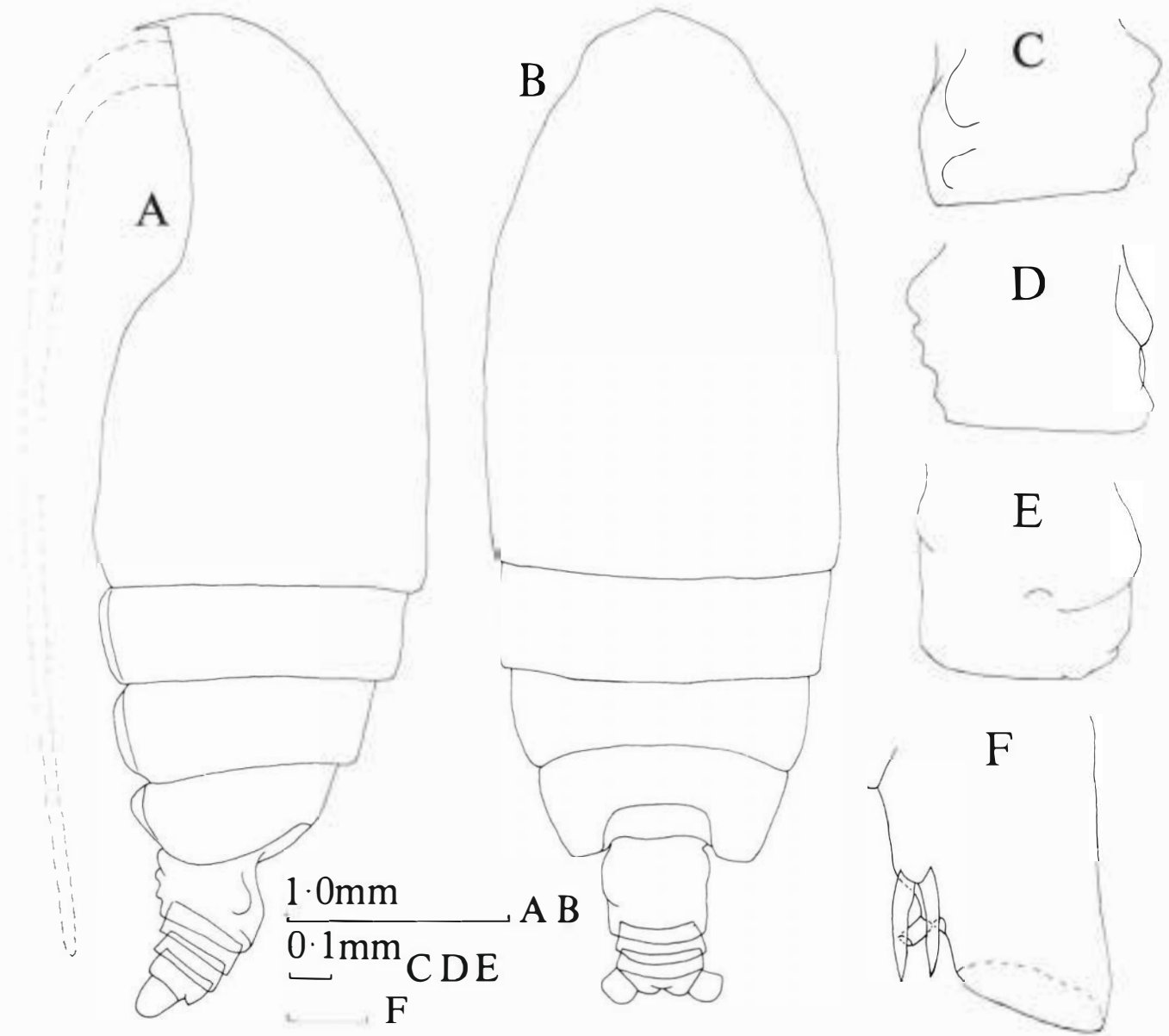


FIG. 28. *Euchiarella speciosa* female from AU Stn AUZ88: A, lateral view; B, dorsal view; C, left side of genital segment; D, right side of genital segment; E, dorsal view of genital segment; F, basipod 1 of leg 4.

**Gaetanus Giesbrecht, 1888**

**DEFINITION:** Head and pedigerous segment 1, also pedigerous segments 4 and 5 fused. Head of female with median spine directed dorsally and anteriorly. Rostrum small, one-pointed, occasionally absent, apex may be bifid. Posterolateral metasomal border produced into acute, posteriorly directed spines, only very occasionally rounded. Genital segment with distinct genital swelling. Antenna 1 24-jointed (joints 8 and 9 fused), basal portions usually directed anteriorly. Basipod 1 of maxillipeds with lamella on external

border. Exopod of leg 1 two- or three-jointed. Endopod of leg 2, one- or two-jointed. Posterolateral border of basipod 1 of leg 4 with a transverse row of stiff hair-like spinules.

Male cephalic spine reduced in length. Antenna 1 with reduced number of joints. Basipod 1 of leg 4 without posterolateral spinules. Leg 5 biramous on both sides, elongate; right leg more or less prehensile; endopods short, one-jointed; exopods elongate, two- or three-jointed. (Vervoort 1952d).

Sewell (1947) listed species in this genus. To his list

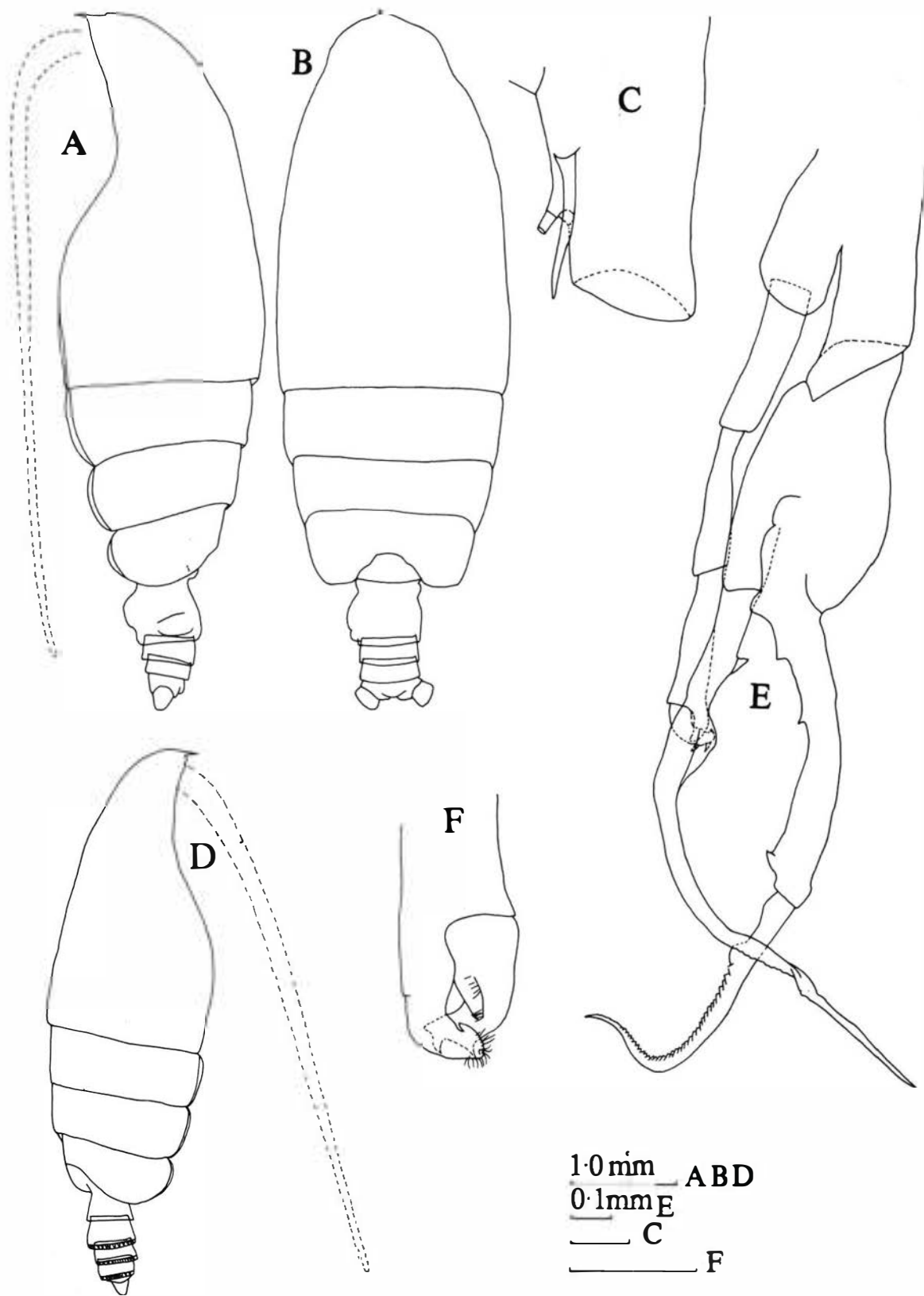


FIG. 29. *Euchiarella truncata* from NZOI Stn F946. Female: A, lateral view; B, dorsal view; C, basipod 1 of leg 4. Male: D, lateral view; E, leg 5; F, terminal part of left exopod of leg 5.



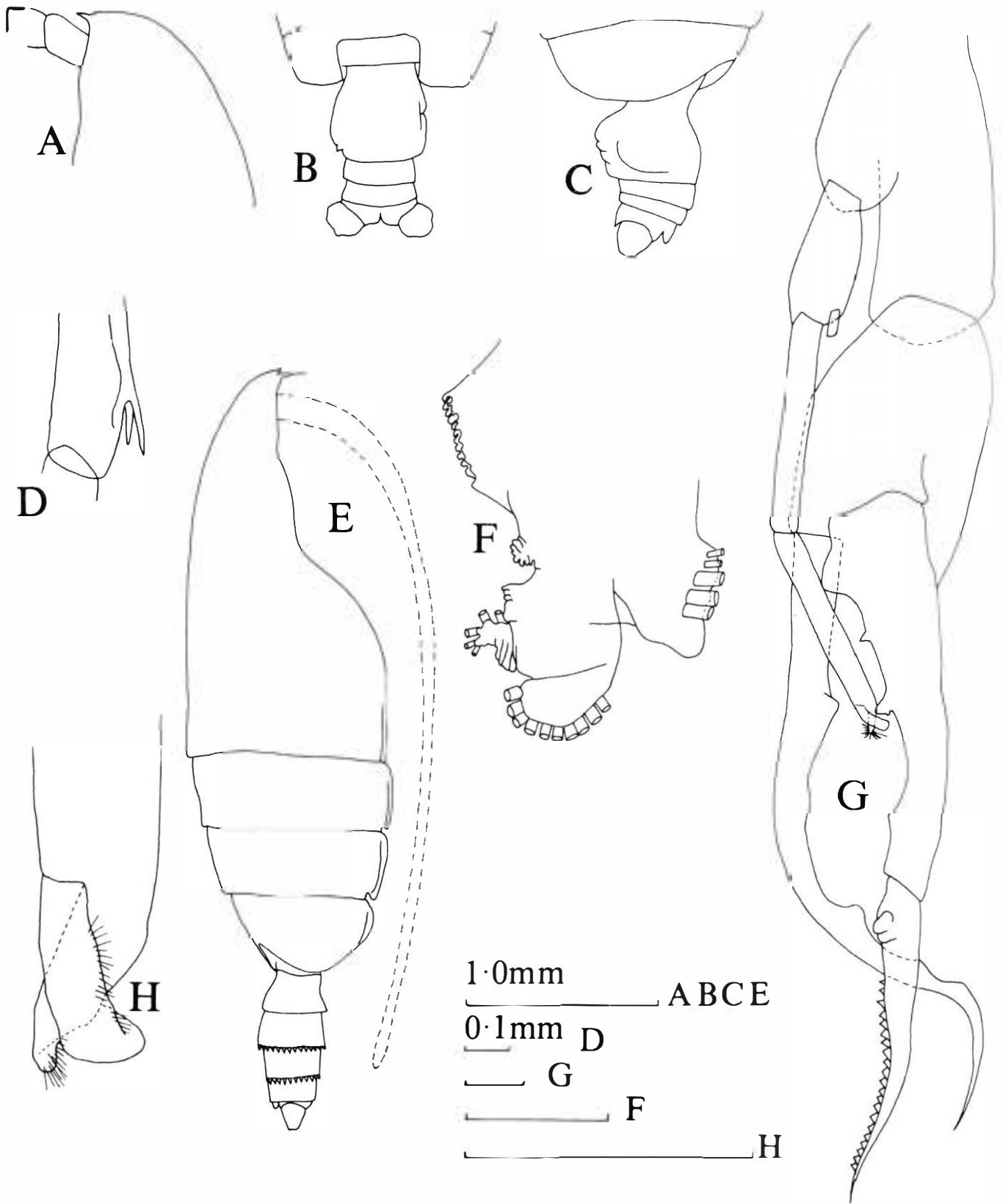


FIG. 30. *Euchirella venusta* female (from Vervoort 1949): A, lateral view of anterior head; B, dorsal view of posterior body; C, lateral view of posterior body; D, basipod 1 of leg 4. Male from AU Stn AUZ88: E, lateral view; F, maxilla 1; G, leg 5; H, terminal part of left exopod of leg 5.

several other species are added while two species have been removed to *Gaidius*: *G. inermis* (Sars, 1905), *G. robustus* (Sars, 1905).

The genus *Gaetanus* contains the following species: *G. antarcticus* Wolfenden, 1905b ( $\delta$  unknown); *G. armiger* Giesbrecht, 1888 ( $\delta$  see Tanaka 1969); *G. brachyurus* Sars, 1907 ( $\delta$  unknown); *G. brevicaudatus* Wolfenden, 1911 ( $\delta$  unknown); *G. brevicornis* Esterly, 1906 (= *G. rectus* Wolfenden, 1911; = *G. ascendens* Esterly, 1913; = *G. curvispinus* Wilson, 1950; = ? *G. hamatus* A. Scott, 1909); *G. curvispinus* Sars, 1905 ( $\delta$  unknown); *G. divergens* Wolfenden, 1911 ( $\delta$  unknown); *G. intermedius* Campbell, 1930 (= *G. simplex* Brodsky, 1950 (see Park 1973)); *G. kruppi* Giesbrecht, 1903 (= *G. clarus* Esterly, 1906; = *G. major* Wolfenden, 1904) ( $\delta$  see A. Scott 1909, Esterly 1906); *G. latifrons* Sars, 1905 (= *G. holti* Farran, 1905; = *G. longispinus* Wolfenden, 1905b); *G. microcanthus* Wilson, 1950 ( $\delta$  unknown); *G. miles* Giesbrecht, 1888 (= *G. secundus* Esterly, 1911; = *G. ferox* With, 1915); *G. minispinus* Tanaka, 1969 ( $\delta$  unknown); *G. minor* Farran, 1905 (= *G. minimus* Wolfenden, 1911:233); *G. paracurvicornis* Brodsky, 1950 (both sexes stage V); *G. pileatus* Farran, 1904 (= ? *G. caudani* Canu, 1896; = *G. unicornis* Esterly, 1906); *G. recticornis* Wolfenden, 1911 ( $\delta$  unknown).

The following species have been taken in the south-west Pacific:

***Gaetanus brevicornis* Esterly, 1906 (Figs 31, 64)**

*G. ascendens* Esterly, 1913.  
*G. rectus* Wolfenden, 1911.  
*G. curvispinus* Wilson, 1950.  
? *G. hamatus* A. Scott, 1909.

DESCRIPTION: Size: ♀♀ 3.50-4.98 mm, ♂♂ 4.25 mm.

**Female:** Cephalic spine short, directed ventrally. Rostrum prominent. Spines on posterior metasomal border heavy, pointing dorsally. Antenna 1 slightly longer than metasome. Basipod 1 of maxilliped with characteristic narrow-based lamella extending as a ribbon-like process beyond distal border of joint. Leg 1 exopod three-jointed with two external spines. Leg 4 basipod 1 has approximately 21 hair-like spines internally.

**Male:** Cephalic spine larger than in female, but posterior metasomal spines are smaller and scarcely curved. Right leg 5 slightly longer than left, basipod 2 of right leg considerably swollen, right leg endopod long, extending as far as distal border of left leg exopod joint 1. (Wilson 1950).

REMARKS: Sewell (1947) and Vervoort (1963) consider *G. rectus* and *G. ascendens* to be junior synonyms of *G. brevicornis*, although Esterly (1906) did not remark on the distinctive nature of the posterior metasomal points in *G. brevicornis*. Esterly compares *G. brevicornis* with *G. miles*, *G. armiger*, *G. major* and *G. caudani*, which makes one suspect that the posterior metasomal points were of a type that extended straight back. If *G. brevicornis* does not have upturned posterior metasomal points Wolfenden's (1911) name *G. rectus* would take precedence for the south-west Pacific specimen.

Wilson (1950) describes *G. curvispinus* which superficially agrees with the south-west Pacific specimen. Examination of Wilson's material (USNM 67147) showed that *G. curvispinus* is identical with the present specimen. There is also a possibility that *G. hamatus* A. Scott, 1909 is synonymous with *G. brevicornis*.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Nil.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
VUZ112	0-732	1 ♀, 4.75 mm

DISTRIBUTION: Sparingly recorded from low latitude deep-water in the Pacific, Indian and Atlantic Oceans (Vervoort 1963). The present record greatly extends the southern range of *G. brevicornis*.

***Gaetanus kruppi* Giesbrecht, 1903 (Figs 32, 64)**

DESCRIPTION: Size: ♀♀ 3.60-5.70 mm, ♂♂ 3.70-5.04 mm.

**Female:** Body robust; rostrum small, one-pointed. Cephalic spine short, directed ventrally. Posterolateral metasomal borders with small points of variable length. Urosome one third to one quarter length of metasome. Genital segment with large genital tubercle. Antenna 1 reaching anal segment or slightly shorter. Basipod 1 of maxilliped with distinct characteristically shaped lamella (Fig. 32C). Exopod of leg 1 three-jointed with two external spines. Basipod 1 of leg 4 with row of about 23 fine hair-like tubes.

**Male:** Cephalic spine more prominent than in female, rostrum strong, apex bifid. Spines on posterior metasomal border of reduced length. Urosome one third length of metasome, anal segment very small. Antenna 1 reaches middle of urosome. Leg 5 endopods one-jointed, short; left leg exopod three-jointed, joints short; right leg exopod two-jointed, apical portion spiniform. (Vervoort 1952d).

REMARKS: The present female specimens have long posterior metasomal points and a metasome with a length less than three times its width. The urosome, when contracted as in Fig. 32A, is a quarter the length of the metasome. Vervoort (1952d) states that *G. kruppi* has a urosome one third the length of the metasome.

Several forms of males have been attributed to *G. kruppi*: Form A: Right leg 5 endopod not reaching beyond left leg endopod, left leg endopod about two thirds length of left leg exopod joint 1 and may be two-jointed. Those males described by Sars (1925) 4.10 mm, Tanaka (1957b) 4.87 mm, With (1915) 5.04 mm and the specimens taken at Stn Mu67/94s fit this category. Form B: Right leg 5 endopod extends further than left leg endopod; left leg endopod about one third to one half length of left leg exopod joint 1. Those males described by A. Scott (1909) 5.6 mm, Esterly (1906 as *G. clarus*) 5.3 mm, and Sewell (1947) 3.17 mm fit this category. This form is more like the

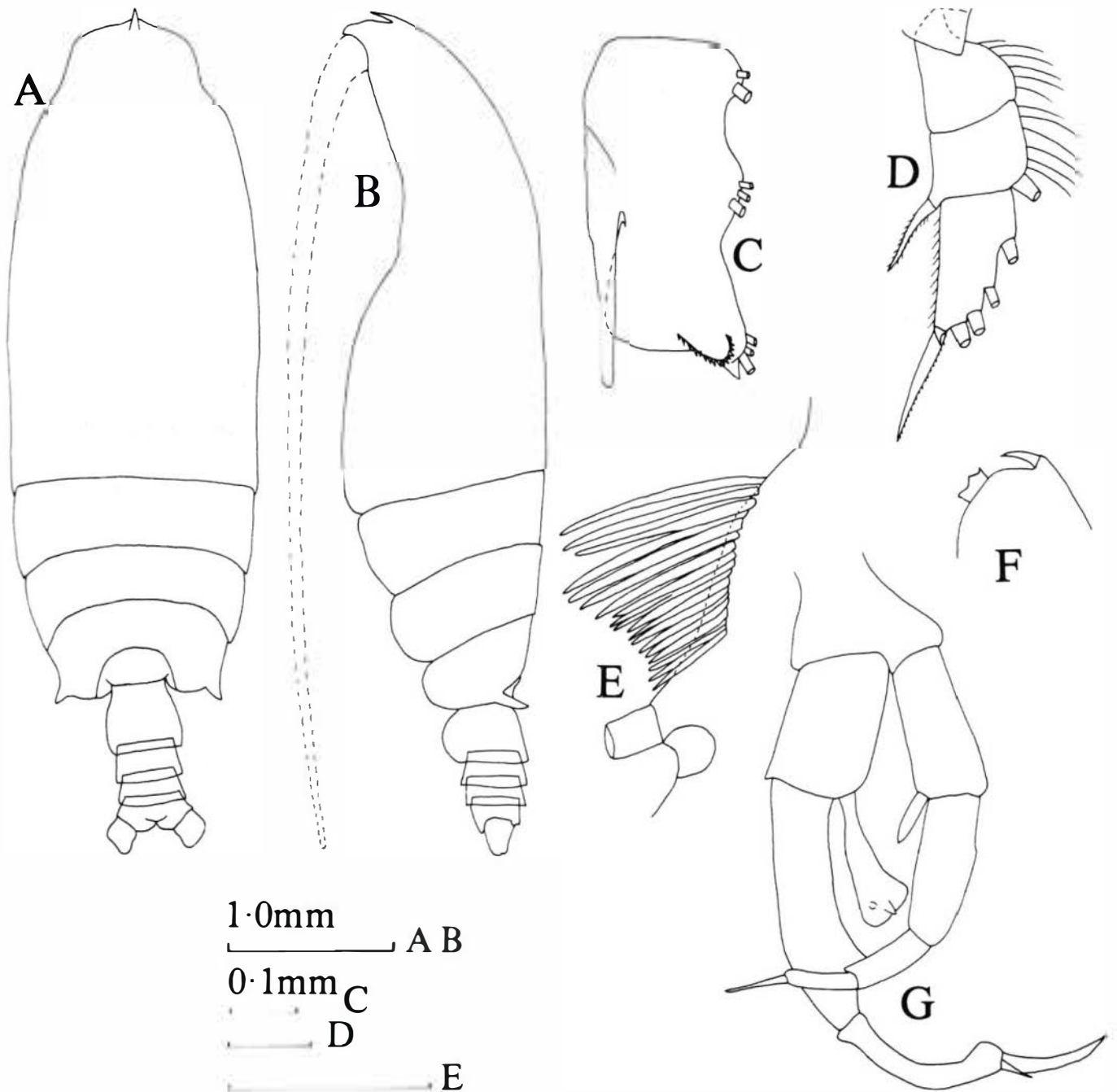


FIG. 31. *Gaetanus brevicornis* female from VU Stn VUZ112: A, dorsal view; B, lateral view; C, basipod 1 of maxilliped; D, exopod of leg 1; E, internal edge of basipod 1 of leg 4. Male (from Wilson 1950): F, lateral view of anterior of head; G, leg 5.

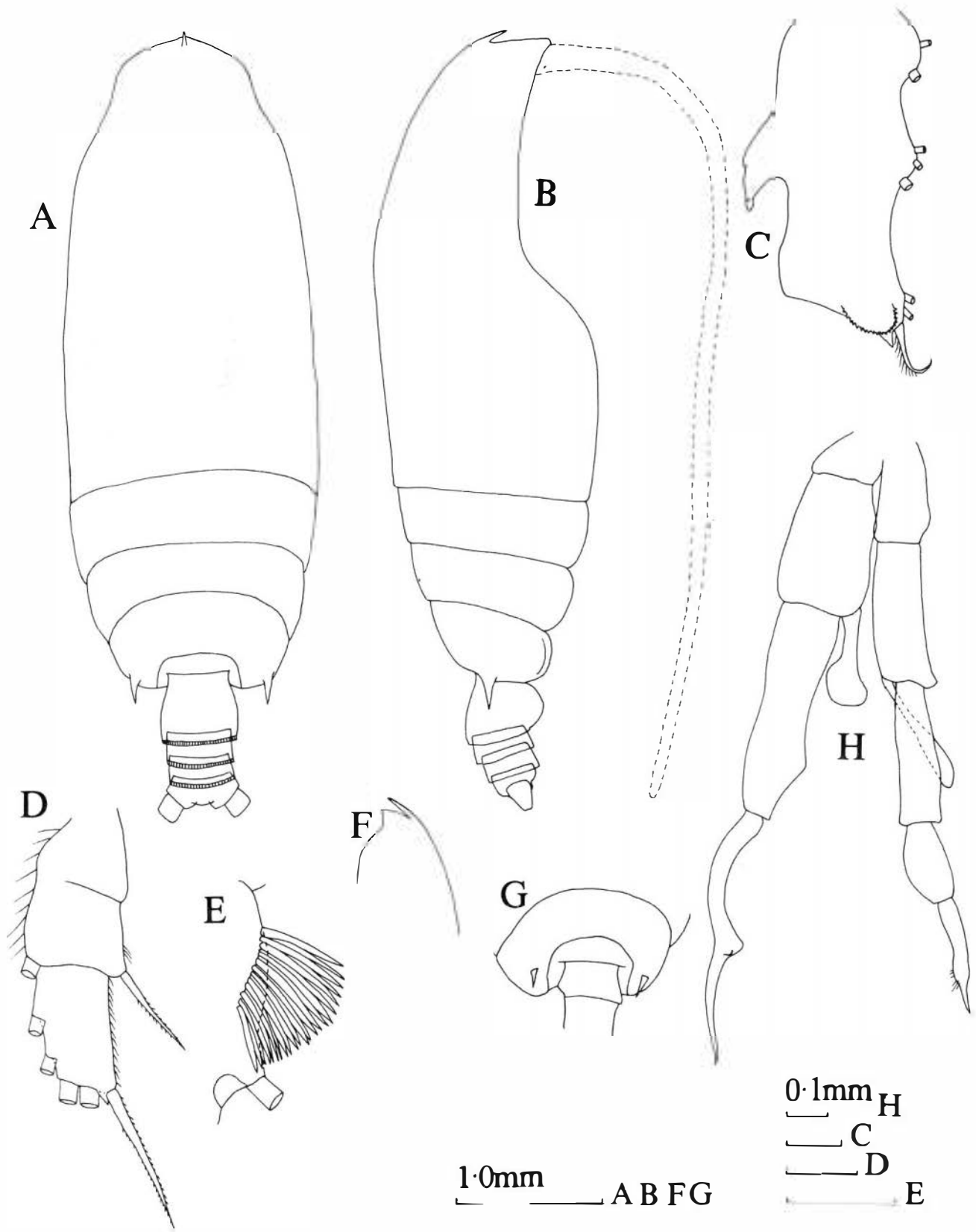


FIG. 32. *Gaetanus kruppi* female from VU Stn VUZ112: A, dorsal view; B, lateral view; C, basipod 1 of maxilliped; D, exopod of leg 1; E, inner border of basipod 1 of leg 4. Male from OU Stn Mu67/94s: F, lateral view of anterior of head; G, dorsal view of posterior of thorax; H, leg 5.

male described by Wilson as *G. curvispinus*, which is tentatively synonymised with *G. brevicornis*.

We attribute Form A to *G. knuppi*.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Nil.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
VUZ93	0-1097	1 ♀, 5.1 mm
VUZ105	0-914	5 ♀ ♀, 5.3, 5.0, 5.2, 5.0, 5.0 mm
VUZ112	0-732	2 ♀ ♀, 5.4, 5.3 mm
Mu67/94s	0-1000	1 ♂, 4.6 mm

DISTRIBUTION: A widely distributed deep-water species found in the Atlantic, Pacific and Indian Oceans (Vervoort 1963, Grice and Hulsemann 1967, Bjornberg 1973).

***Gaetanus latifrons* Sars, 1905** (Figs 33, 64)

DESCRIPTION: Size: ♀ ♀ 4.4-5.4 mm, ♂ ♂ 3.3-3.6 mm.

*Female*: Cephalic spine arising from dorsal surface, directed dorsally but curved anteriorly at tip. Rostrum small. Spine on lateral metasomal border slender, extending beyond middle of genital segment, slightly divergent. Genital segment swollen laterally and genital tubercle large. Urosome about one third length of metasome. Antenna 1 reaches about middle of urosome. Basipod 1 of maxilliped with widely based, apparently frilled lamella. Leg 1 exopod three-jointed with three external spines. Basipod 1 of leg 4 with about 15-19 flattened, tube-like hairs. (Vervoort 1952d).

*Male*: Cephalic spine small, pointing ventrally. Posterior metasomal spines needle-like, widely spaced as in female. Antenna 1 reaches half-way along urosome. Leg 5 on right much longer than left, basipod 2 very swollen. (Sars 1925).

REMARKS: The leg 5 agrees well with fig. 6 on plate 17 (Sars 1925) labelled *G. pileatus*. We suggest the diagram has been mislabelled.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Vervoort (1957), Bradford (1970a, b).

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
E774	0-1165	1 ♀, 4.6 mm
E800	0-700	1 ♀, 4.4 mm
E892	0-1224	3 ♀ ♀, 4.6, 4.5, 4.5 mm
E901	0-1248	1 ♀, 4.7 mm
F879	0-1267	1 ♀
F881	0-1260	1 ♀
F910	0-1397	1 ♀, 4.4 mm; 1 ♂, 3.3 mm
VUZ93	0-1097	3 ♀ ♀, 4.6 mm; 1 ♂, 3.6 mm
VUZ105	0-914	1 ♀, 4.7 mm
Mu67/94s	0-1000	1 ♀, 4.7 mm

DISTRIBUTION: Taken from the deep waters of the Pacific, Atlantic and Indian Oceans (Vervoort 1957, 1963; Grice and Hulsemann 1967; Bjornberg 1973).

***Gaetanus miles* Giesbrecht, 1888** (Figs 34, 63)

*G. ferox* With, 1915.

DESCRIPTION: Size: ♀ ♀ 3.2-4.7 mm, ♂ ♂ 3.40-3.55 mm.

*Female*: Head with characteristic anteriorly directed strong spine, rostrum small. Points on lateral metasomal border reaching about middle of genital segment. Urosome one quarter length of metasome. Antenna 1 twice as long as whole animal, extending beyond caudal rami by nine joints. Lamella of basipod 1 of maxillipeds distinct. Exopod of leg 1 with two joints and two external spines. Basipod 1 of leg 4 each with row of 5-10 strong spinules along internal border. (Vervoort 1952d).

*Male*: Head with prominent, obtusely rounded keel. Rostrum small with two terminal points. Head and pedigerous segment 1, also pedigerous segments 4 and 5, fused. Posterior margin of metasome rounded but with short slender posterodorsal spine which extends only slightly beyond posterior margin. Urosome less than one third length of metasome. Antenna 1 extends beyond urosome. Leg 1 exopod joints 1 and 2 partially fused, exopod with only one external spine. Leg 5 of characteristic proportions (Fig. 34I). (With 1915).

REMARKS: The present male specimen has a shorter antenna 1 than in With's (1915) description but is identical in all other respects. We agree with Park (1975c) that the male of *G. miles* has previously been described as *G. ferox*. The present male was taken at the same station (F945) as female *G. miles* although at a greater depth.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Heinrich (1968).

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
A303	450-1000	1 ♀, 3.8 mm
F910	0-1397	1 ♀, 4.1 mm
F945	0-500	1 ♀, 4.4 mm
	500-1000	1 ♂, 3.4 mm
Mu67/94s	0-1000	1 ♀, 4.7 mm

DISTRIBUTION: Whole tropical, subtropical and temperate Atlantic, Indian and Pacific Oceans (With 1915, Grice and Hulsemann 1967—as *G. ferox*) usually in hauls deeper than 500 m. However, this is one of the few *Gaetanus* species which has been regularly recorded from surface waters (Vervoort 1963, Bjornberg 1973).

***Gaetanus minispinus* Tanaka, 1969** (Figs 35, 64)

DESCRIPTION: Size: ♀ ♀ 5.15-5.56 mm, ♂ unknown.

*Female*: Cephalic spine very small. Last metasomal segment with small lateral spine on distal margin. Antenna 1 extends beyond caudal rami by two joints.

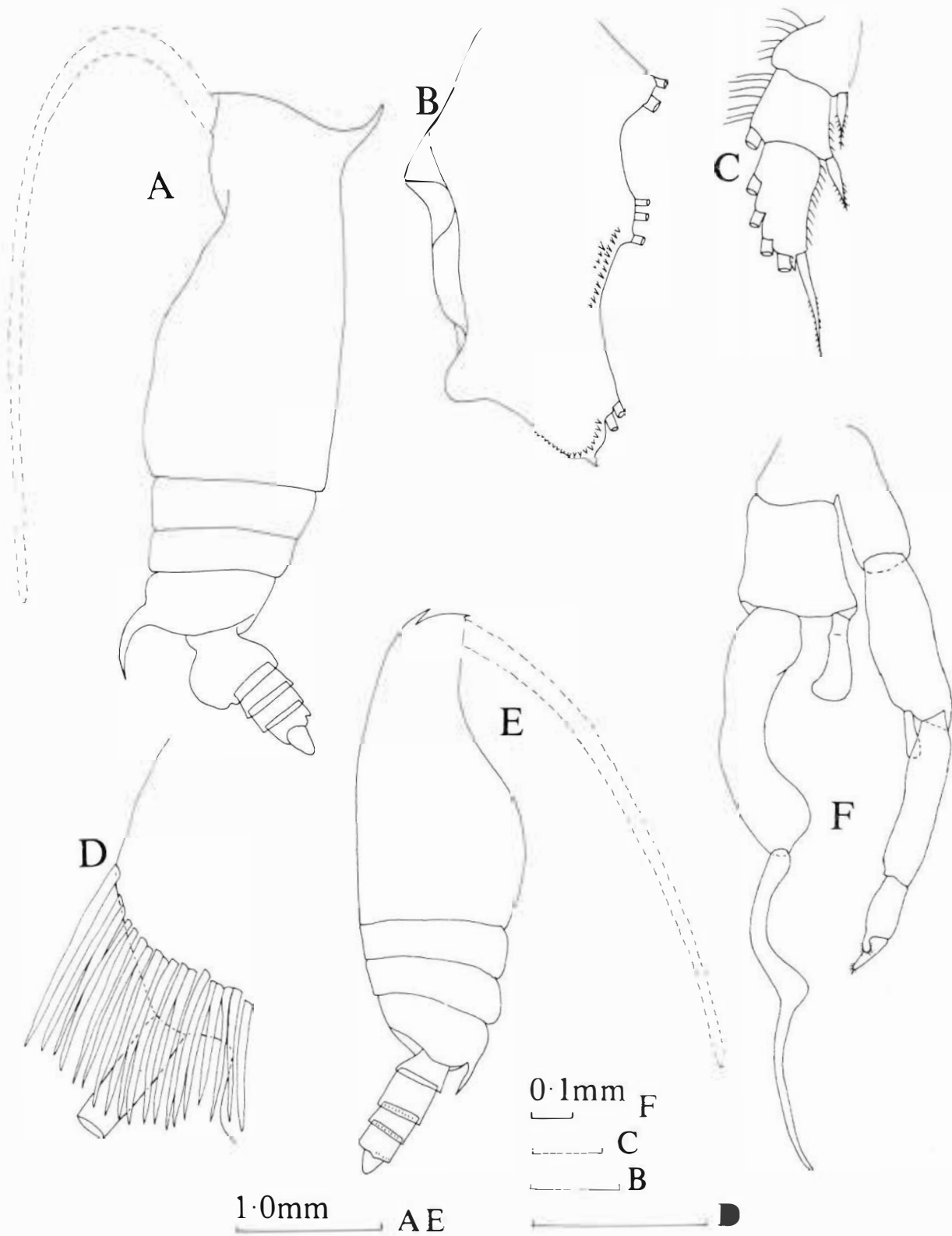


FIG. 33. *Gaetanus latifrons* from VU Stn VUZ93. Female: A, lateral view; B, basipod 1 of maxilliped; C, exopod of leg 1; D, inner edge of basipod 1 of leg 4. Male: E, lateral view; F, leg 5.

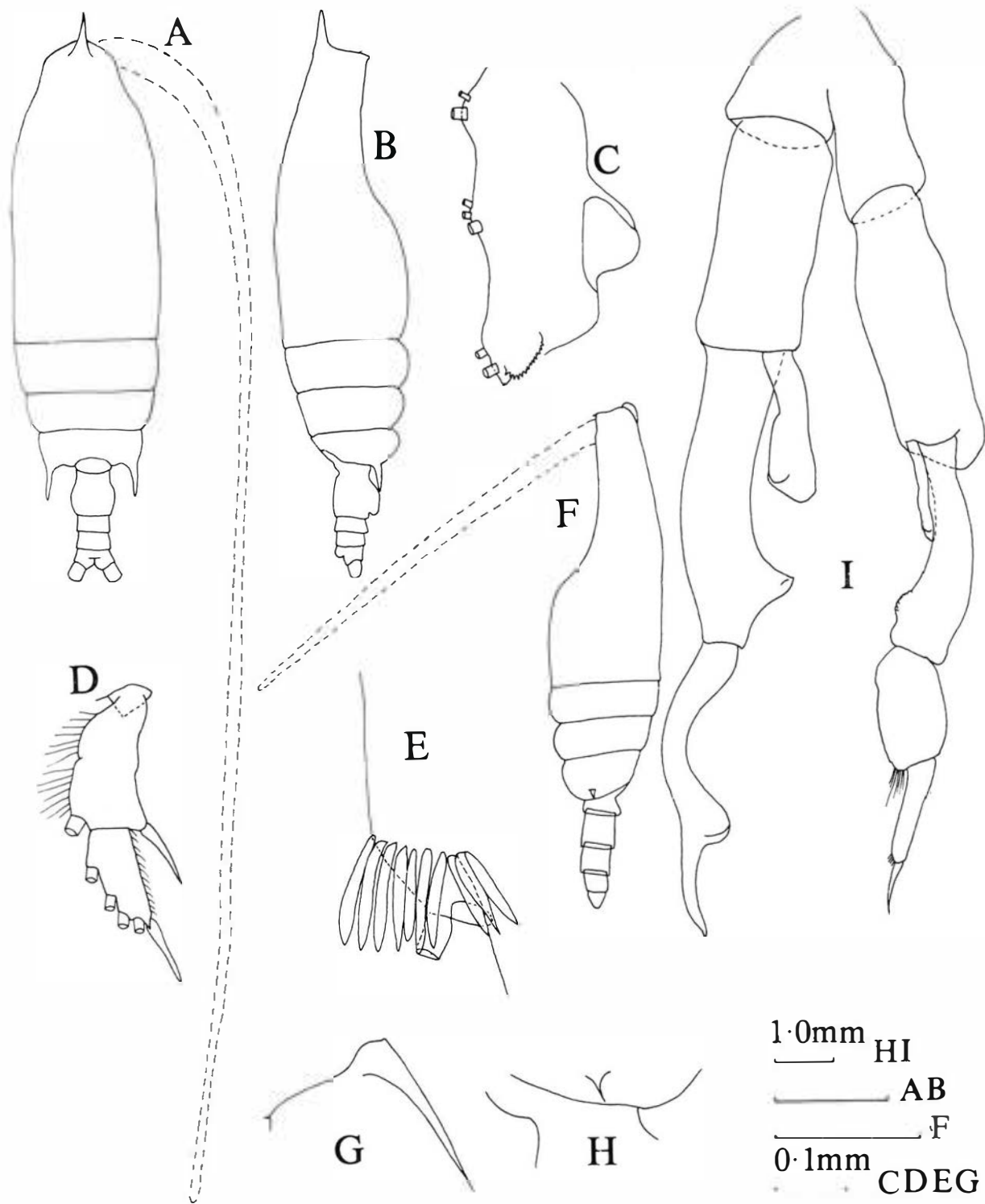


FIG. 34. *Gaetanus miles* female from OU Stn Mu67/94s: A, dorsal view; B, lateral view; C, basipod 1 of maxilliped; D, exopod of leg 1; E, inner border of basipod 1 of leg 4. Male from NZOI Stn F945: F, lateral view; G, lateral view of anterior of head; H, lateral view of posterior of metasome; I, leg 5.

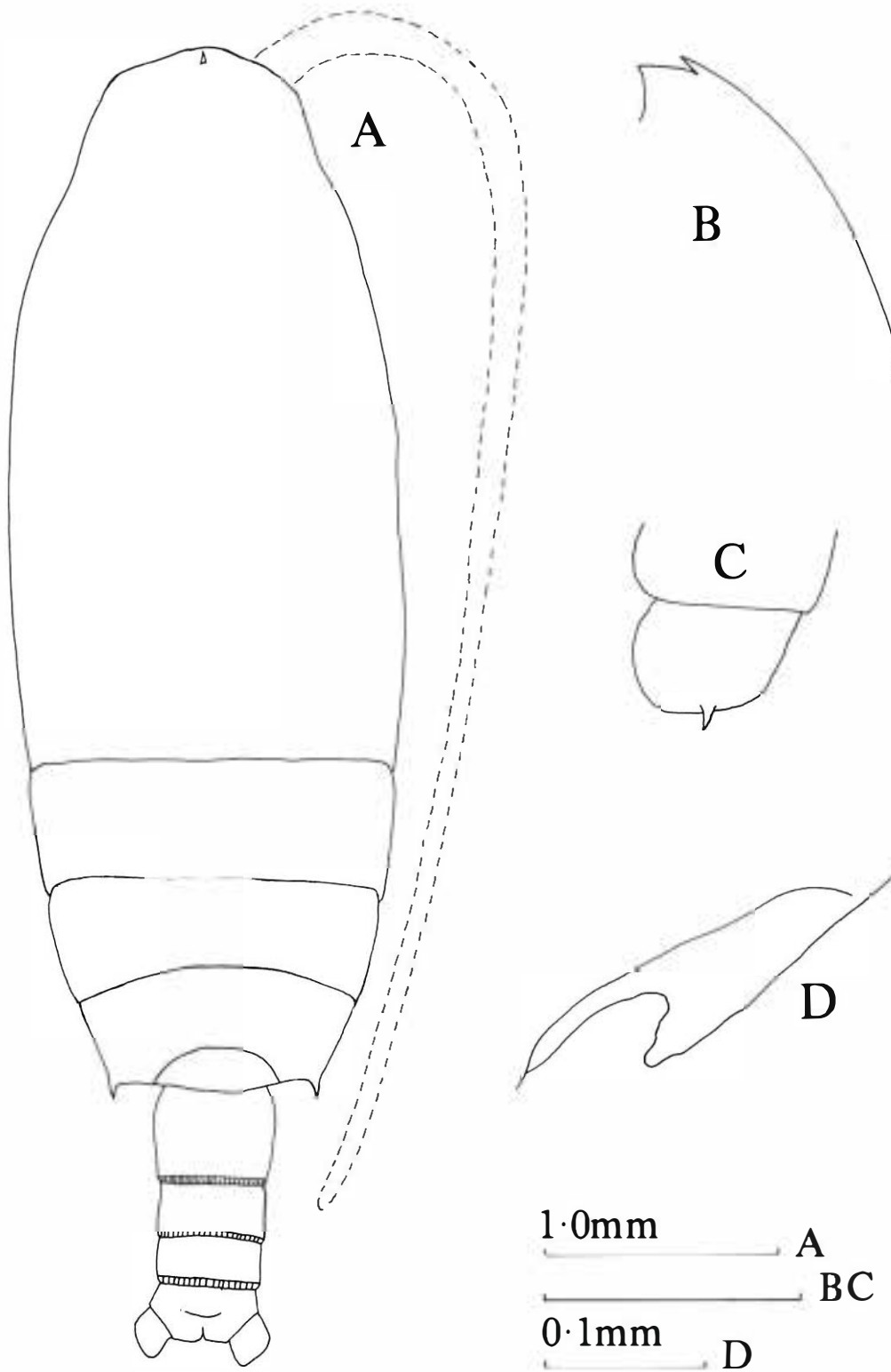


FIG. 35. *Gaetanus minispinus* female from NZOI Stn F945: A, dorsal view; B, lateral view of anterior of head; C, lateral view of posterior of thorax; D, lamella on basipod 1 of maxilliped.



Maxilliped basipod 1 with lamella which differs from that of *G. kruppi*. Leg 1 exopod two-jointed, outer marginal spine of exopod joint 2 reaching distal border of exopod joint 3. Leg 4 basipod 1 with about 23 hair-like tubes on inner margin. (Tanaka 1969).

REMARKS: Tanaka (1969) described this species as differing from *G. kruppi* not only by the smaller cephalic and posterior metasomal spines, but in the leg 1 exopod joint 2 spine and maxilliped basipod 1 lamella. The one specimen of *G. minispinus* taken in the south-west Pacific has the lamella of maxilliped basipod 1 and the external spine of leg 1 exopod joint 2 not noticeably different from that of *G. kruppi*, and antenna 1 did not appear to be as long as described by Tanaka. Tanaka does not mention how his species differs from *G. microcanthus* Wilson, 1950, but the main difference appears to be size because *G. microcanthus* female is 3.85 mm long.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Nil.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
F945	500-1000	1 ♀, 5.4 mm

DISTRIBUTION: Recorded from the north-west Pacific (Tanaka 1969).

**Gaetanus minor** Farran, 1905 (Figs 36, 63)

DESCRIPTION: Size: ♀♀ 1.7–2.4 mm, ♂ stage V (Grice 1962).

Female: Body small; cephalic spine small, curved ventrally. Spines on posterolateral metasomal borders fine, pointing straight posteriorly, reaching almost to posterior margin of genital segment. Urosome one quarter length of metasome. Antenna 1 slightly longer than metasome. Basipod 1 of maxilliped with distinct, broadly based lamella. Exopod of leg 1 two-jointed with two spines on outer edge. Basipod 1 of leg 4 with row of about 11 fine bristles. (Vervoort 1952d).

REMARKS: Generally the posterior metasomal points diverge slightly in south-west Pacific specimens, but in some specimens from Stn F945 these points were directed straight posteriorly. Legs 1 and 4 were always characteristic of *G. minor*.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Farran (1929), Vervoort (1957), Bradford (1970a).

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
A302	0-500	2 ♀♀, 2.15, 2.15 mm
A303	450-1000	2 ♀♀, 1.90, 2.00 mm
A313	0-914	5 ♀♀, 2.05-2.20 mm
F945	0-500	3 ♀♀, 2.0, 2.0, 2.1 mm
F946	0-1000	1 ♀, 2.2 mm
F947	0-500	1 ♀, 2.3 mm
Mu67/104s	0-1000	2 ♀♀, 2.2, 2.4 mm
Mu67/116s	0-1000	1 ♀, 2.3 mm

DISTRIBUTION: Subtropical and tropical Atlantic, Indian and Pacific Oceans (Vervoort 1957, Grice 1962, Grice and Hulsemann 1967, Bjornberg 1973). The normal vertical range of this species extends down at least to 1000 m and it has been taken at the surface. At Kaikoura (Bradford 1970a) *G. minor* was taken above 500 m only at 1800 and 2400 hours in hauls of 250-500 m depth.

**Gaetanus pileatus** Farran, 1904 (Figs 37, 63)

DESCRIPTION: Size: ♀♀ 5.30-6.65 mm, ♂♂ 4.70-4.85 mm.

Female: Cephalic spine large, pointing anteriorly; rostrum small. Spines on lateral metasomal borders strong, slightly divergent, reaching beyond middle of genital segment. Urosome short, one third length of metasome. Antenna 1 long, reaching beyond caudal rami by five or six joints, i.e., one and one half times length of metasome. Basipod 1 of maxilliped with conspicuous broadly based lamella. Exopod of leg 1 two-jointed, each joint with outer edge spine. Basipod 1 of leg 4 with row of about 20 lamelliform bristles.

Male: Body more slender than in female. Cephalic spine curved ventrally. Spines on posterolateral metasomal border small. Antenna 1 slightly longer than metasome. Leg 5 with slightly swollen basal joints, endopod narrow, two-jointed on left; club-shaped, one-jointed on right. Left leg 5 exopod three-jointed, joints of reduced length; right leg 5 exopod two-jointed. (Vervoort 1952d).

REMARKS: The leg 5 figured by Sars (1925, plate 17, fig. 6) is identical to that found on a specimen of *G. latifrons* and not like the leg 5 on the present male *G. pileatus*. We suggest there has been some confusion between the figures on Plate 17.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Nil.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
A292	500-1000	1 ♀, 5.5 mm
F946	0-1000	1 ♀, 6.4 mm; 1 ♂, 4.85 mm
VUZ105	0-914	1 ♀, 5.9 mm
VUZ112	0-732	4 ♀♀, 6.00-6.65 mm 1 ♂, 4.80 mm
Mu67/94s	0-1000	2 ♀♀, 6.0, 6.0 mm
Mu67/147s	0-1000	2 ♀♀, 6.2, 5.7 mm

DISTRIBUTION: Recorded from deep waters of the Atlantic, Indian and Pacific Oceans (Vervoort 1963; Grice and Hulsemann 1965, 1967; Bjornberg 1973).

**Gaidiopsis** A. Scott, 1909

DEFINITION: This genus resembles *Aetideopsis* in having pedigerous segments 4 and 5 separate, but has a uniramous rostrum in the form of a flat round plate.

There is one species in this genus: *G. crassirostris* A. Scott, 1909.

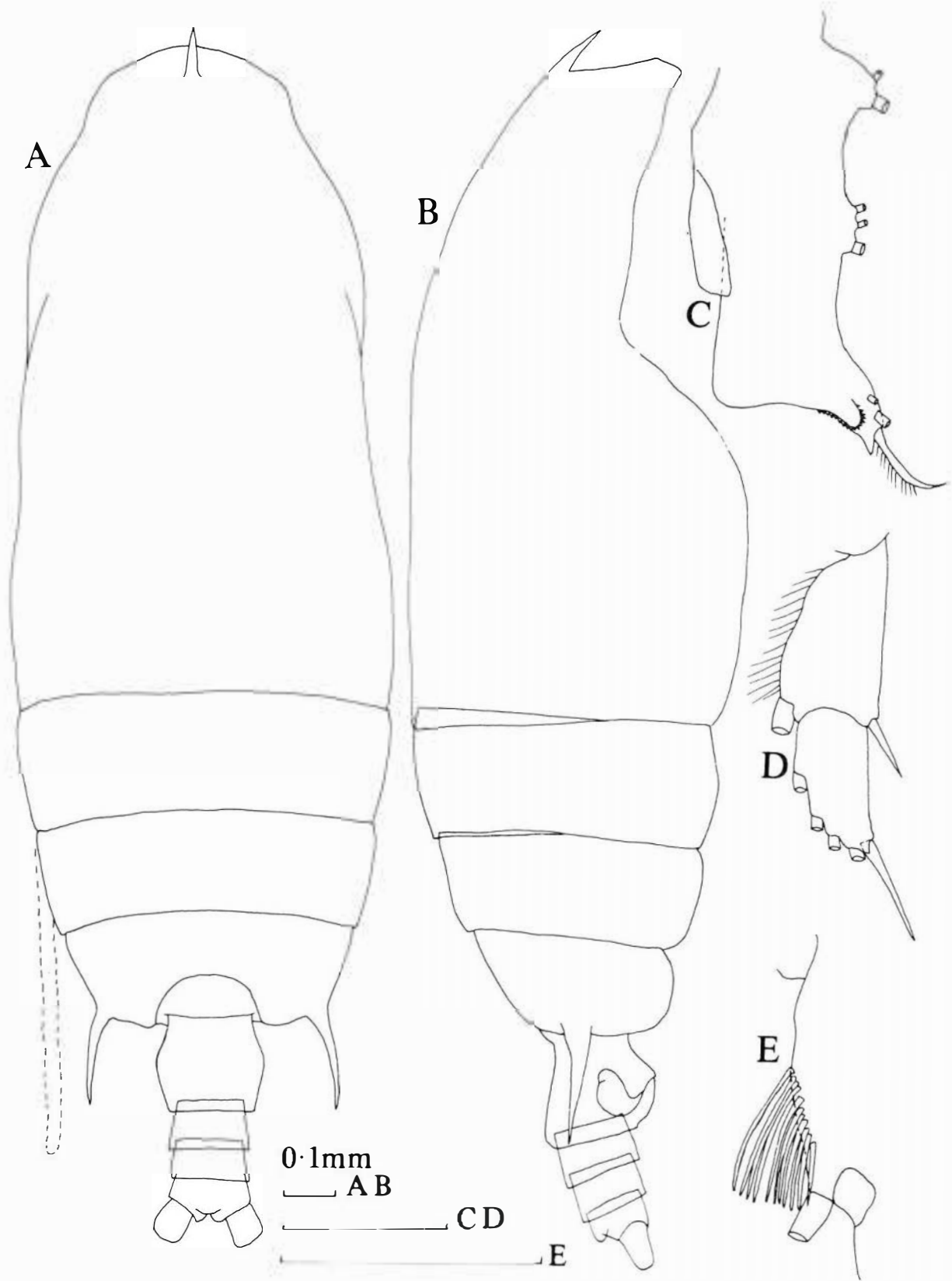


FIG. 36. *Gaetanus minor* female from OU Stn Mu67/104s: A, dorsal view; B, lateral view; C, basipod 1 of maxilliped; D, exopod of leg 1; E, inner edge of basipod 1 of leg 4.

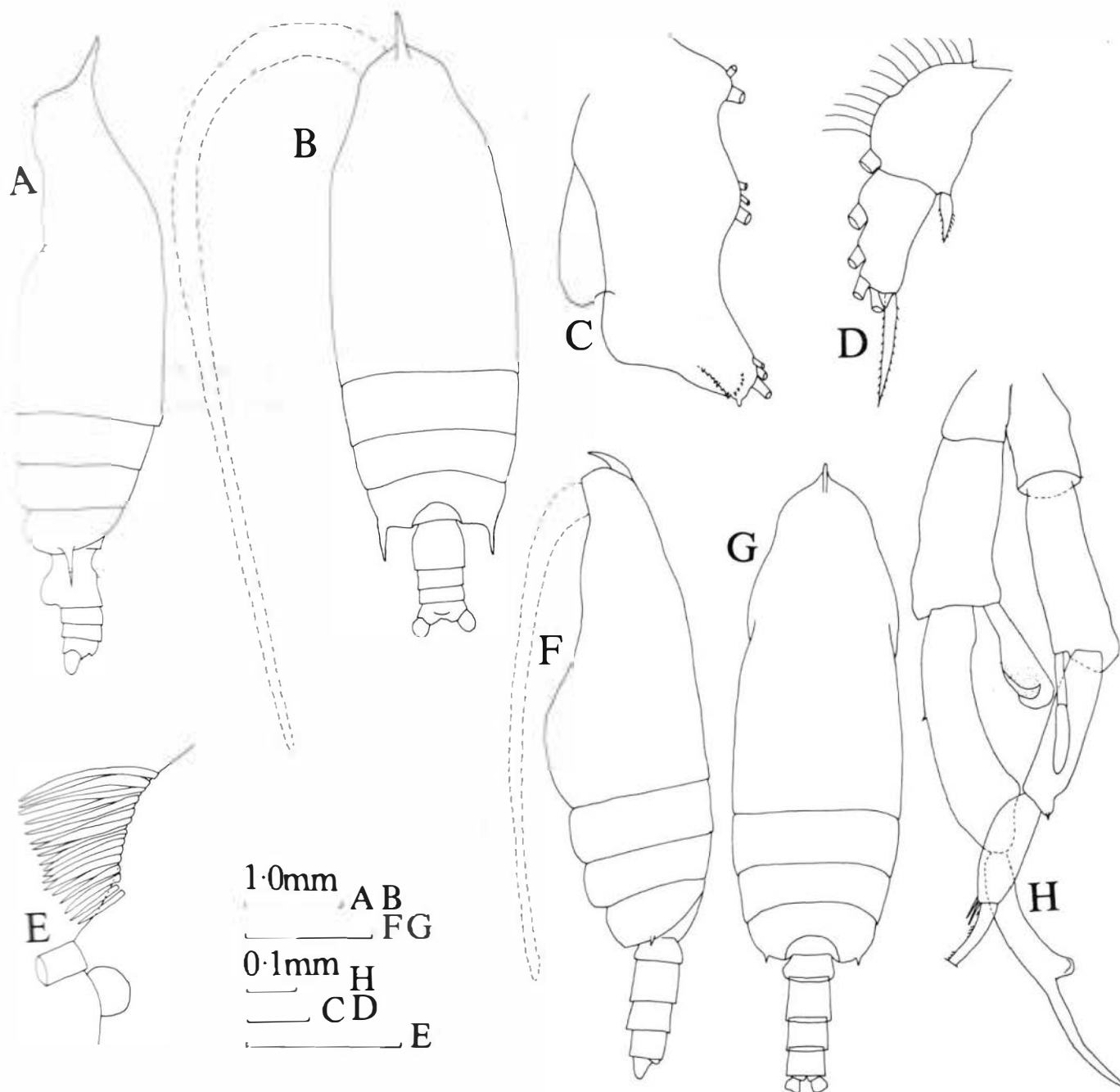


FIG. 37. *Gaetanus pileatus* female from OU Stn Mu67/94s: A, lateral view; B, dorsal view; C, basipod 1 of maxilliped; D, exopod 1 of leg 1; E, inner edge of basipod 1 of leg 4. Male from VU Stn VUZ112: F, lateral view; G, dorsal view; H, leg 5.

Vervoort (written communication, July 1969) thought that this species could possibly have been a deformed *Aetideopsis*, although this opinion cannot be verified as the *Siboga* copepods that were mounted on microscope slides have apparently been lost.

No example of this genus has been taken in the south-west Pacific.

**Gaidius** Giesbrecht, 1895

*Mesogaidius* Wolfenden, 1911

*Pseudogaetanus* Brodsky, 1950

DEFINITION: Head and pedigerous segment 1, also pedigerous segments 4 and 5, fused. Female head rounded into one-pointed, rather strong rostrum,

directed ventrally. Posterolateral metasomal borders rounded or provided with acute spines. Females with 24-jointed, slender antenna 1. Endopods of antenna 2 three fourths length of exopods. Basipod 2 of maxilliped much longer than basipod 1, which usually has rounded distinctly produced lappet along external edge. Two proximal exopod joints of both legs 1 and 2 may be partially fused. Posterior surfaces of basipod 1 of leg 4 with one or several rows of hair-like tubes internally. Terminal spines on exopods of legs 2-4 with acute, triangular teeth along external margin.

Males with posterolateral metasomal spines of reduced length. Antenna 1 of reduced length and number of joints compared to female. Leg 5 biramous on both sides; endopods short, club-shaped, one-jointed; left leg exopod three-jointed, more or less styliform; right leg exopod two- or three-jointed, apical joint forming feeble clasping apparatus with preceding joints. (Vervoort 1952c).

Grice and Hulsemann (1967) described a male of *G. robustus* which has a crest. This is the only *Gaidius* male with a cephalic crest and could possibly belong to *Gaetanus*.

The genus *Gaidius* contains the following species: *G. affinis* Sars, 1905; *G. brevicaudatus* (Sars, 1907) ( $\delta$  unknown); *G. brevirostris* Brodsky, 1950; *G. brevispinus* (Sars, 1900); *G. columbiae* Park, 1967; *G. inermis* (Sars, 1925); *G. intermedius* Wolfenden, 1905b (= *G. robustus* Vervoort, 1949); *G. minutus* Sars, 1907 ( $\delta$  unknown); *G. pungens* Giesbrecht, 1895 (= *G. tenuispinus* (Sars, 1900); = *G. boreale* Wolfenden, 1902; = *G. similis* A. Scott, 1909; = *G. gracilis* Brady, 1918); *G. robustus* (Sars, 1905) (= *G. validus* Farran, 1908; = *G. maximus* Wolfenden, 1906); *G. variabilis* Brodsky, 1950 (= *G. moderatus* Tanaka, 1957a, see Tanaka and Omori 1970a).

The following species have been taken in the south-west Pacific:

***Gaidius affinis* Sars, 1905** (Figs 38, 62)

DESCRIPTION: Size: ♀♀ 3.6-4.0 mm, ♂ 2.3 mm.

*Female*: Head in lateral view broadly rounded. Rostrum with triangular apex, minutely bifurcate. Urosome one third length of metasome. Posterolateral metasomal points small, one third length of genital segment, thick at base, pointing straight posteriorly in dorsal view, ventrally in lateral view. Antenna 1 reaches urosomal segment 2. Basipod 1 maxilliped with elongate lamella. Articulation between leg 1 exopod joints 1 and 2 incomplete, joint 1 without external spine.

*Male*: Body more slender than female. Antenna 1 almost as long as in female. Leg 5 biramous on both sides: left leg endopod one-jointed, elongate, exopod three-jointed; right leg endopod club-shaped, one-jointed, short, exopod three-jointed. (Vervoort 1952c, 1957).

REMARKS: Basipod 1 of leg 4 with approximately 20 hair-like tubes on the inner posterior surface of the present specimens.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Nil.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
VUZ93	0-1097	1 ♀, 3.9 mm
Mu67/94s	0-1000	1 ♀, 4.0 mm
Mu67/104s	0-1000	1 ♀, 4.0 mm

DISTRIBUTION: Atlantic and Pacific Oceans in small numbers at depths greater than 500 m (Vervoort 1957, Bjornberg 1973).

***Gaidius columbiae* Park, 1967** (Figs 39, 62)

*G. minutus*: Tanaka 1957a (not Sars)

DESCRIPTION: Size: ♀♀ 2.3-3.2 mm, ♂♂ 1.7-3.1 mm.

*Female*: Posterolateral borders of metasome rounded with conical process of varying size and shape. Antenna 1 extends to end of genital segment. Genital segment with distinct genital tubercle. Exopod of leg 1 two-jointed (two proximal joints fused), each with one spine on outer edge.

*Male*: Antenna 1 extends to distal margin of urosomal segment 1. Posterolateral metasomal projections small and blunt. Leg 5 like that of *G. tenuispinus* but left leg endopod much shorter. (Park 1967).

REMARKS: The present female agrees well with the specimens Tanaka (1957a) identified as *G. minutus* Sars, which Park (1967) has synonymised with *G. columbiae*. But four of the five male specimens from the south-west Pacific differ from Park's males in having longer, pointed posterior metasomal extensions, and in the left leg 5 endopod being shorter. Since *G. minutus* Sars, 1907, which has no posterior metasomal extensions, is not well known and the posterior metasomal extensions of *G. columbiae* are rather variable (Park 1967), these two species may not be distinct from one another.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Nil.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
A303	450-1000	1 ♂, 1.7 mm
F945	500-1000	1 ♀, 2.3 mm
		1 ♂, 2.0 mm
F946	200-500	1 ♂, 1.9 mm
	0-1000	2 ♂♂, 2.0 mm

DISTRIBUTION: North Pacific Ocean (Park 1967, Tanaka 1957 as *G. minutus*).

***Gaidius intermedius* Wolfenden, 1905b** (Figs 40, 62)

DESCRIPTION: Size: ♀♀ 3.90-4.59 mm, ♂ unknown.

*Female*: Very like *G. affinis* but larger and more robust. Rostrum moderately long and curved ventrally between antenna 1 so that it appears to be absent (in *G. affinis* rostrum short and thick at base, pointing slightly anteriorly). In dorsal view posterolateral metasomal

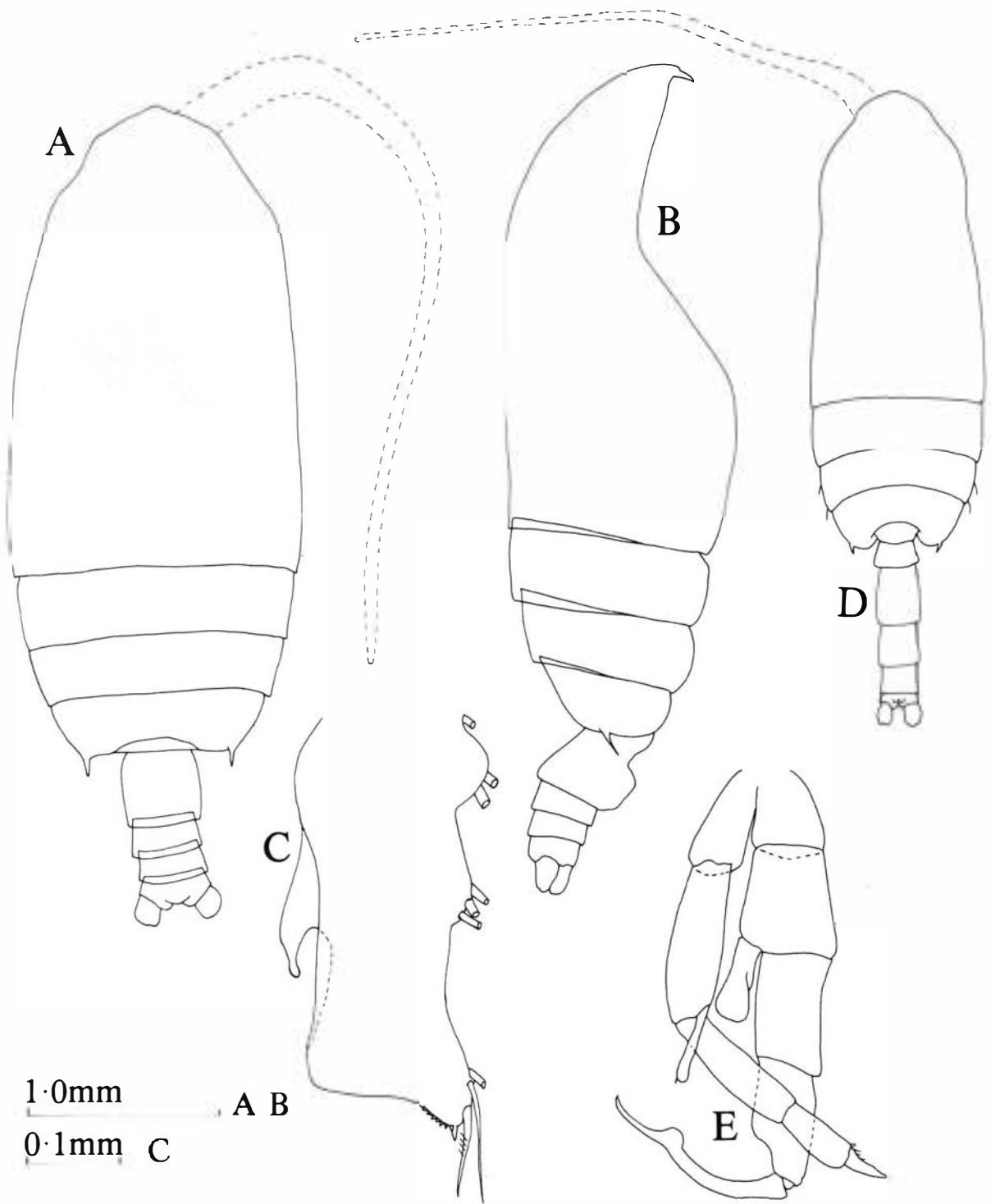


FIG. 38. *Gaidius affinis* female from OU Stn Mu67/104s: A, dorsal view; B, lateral view; C, basipod 1 of maxilliped. Male, total length 3.20 mm (from Sars 1925): D, dorsal view; E, leg 5.

points curved slightly inwards, in lateral view curved ventrally; generally more slender and longer than in *G. affinis*. (Vervoort 1957).

REMARKS: As no specimens of this species were seen by the authors the above differences from *G. affinis* were taken from Vervoort (1957).

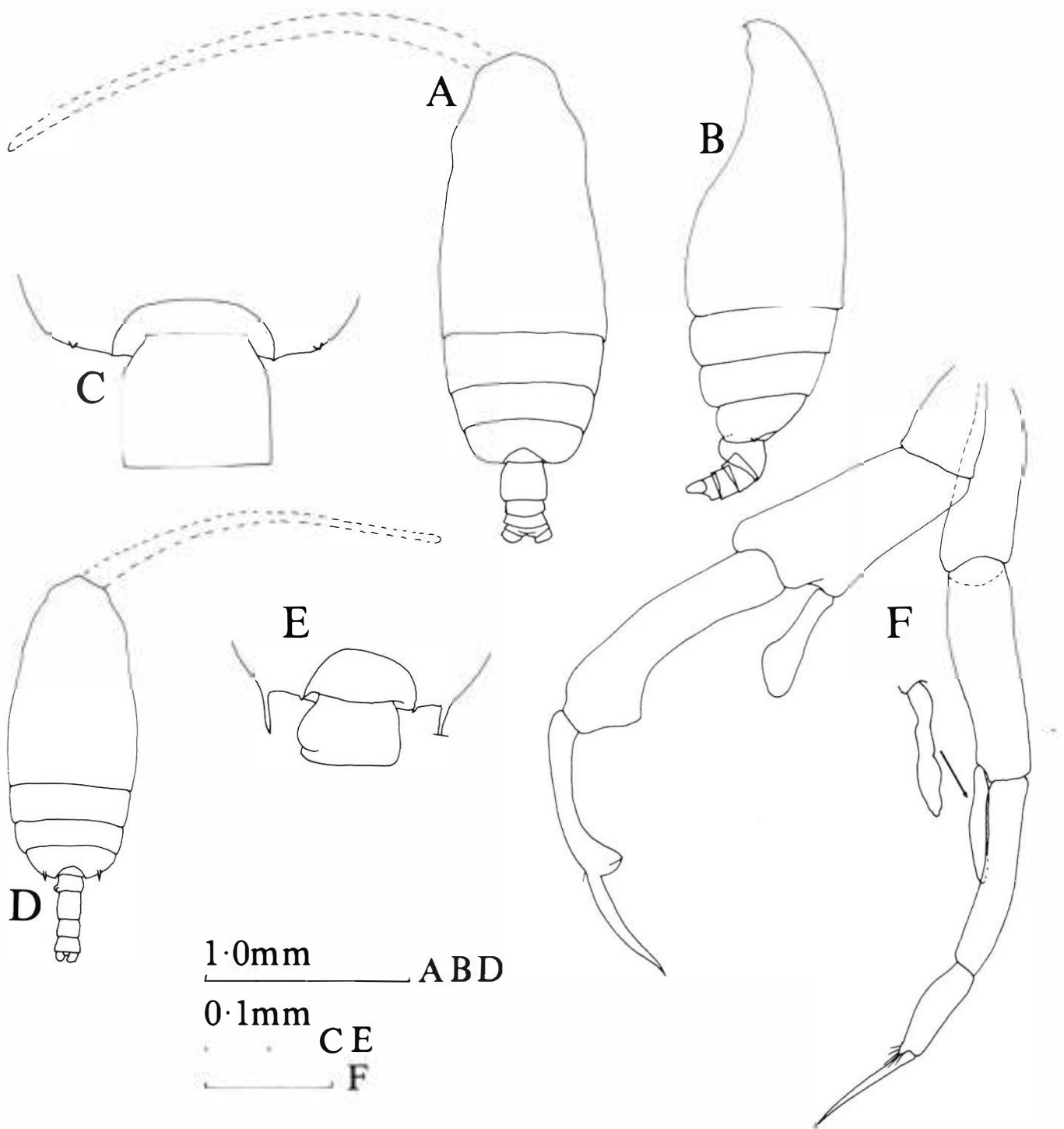


FIG. 39. *Gaidius columbiae* female from NZOI Stn F945: A, dorsal view; B, lateral view; C, dorsal view of posterior metasome and genital segment. Male from NZOI Stn F946; D, dorsal view; E, dorsal view of posterior of metasome and genital segment; F, leg 5.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Vervoort (1957).  
 NEW RECORDS: Nil.

DISTRIBUTION: Regularly found in small numbers in the Antarctic region in waters deeper than 500 m (Vervoort 1957, Bjornberg 1973).

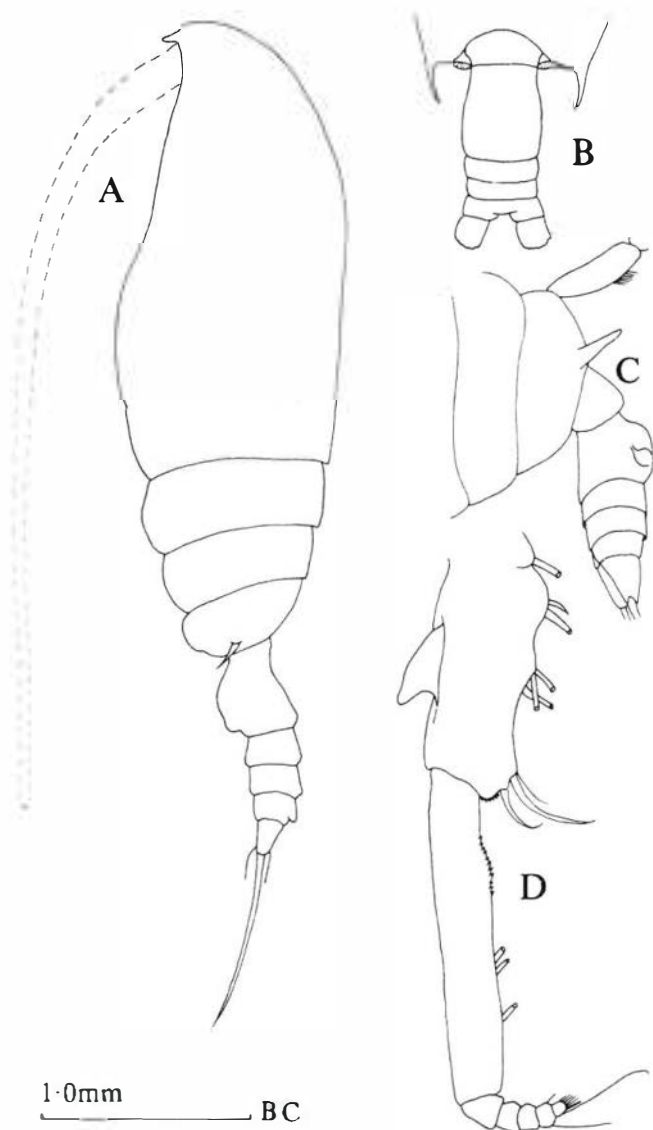


FIG. 40. *Gaidius intermedius* female: A, lateral view (from Wolfenden 1911); B, dorsal view of posterior of body; C, lateral view of posterior of body (from Vervoort 1949); D, maxilliped (from Wolfenden 1911).

***Gaidius pungens* Giesbrecht, 1895 (Figs 41, 62)**

*Chiridius tenuispinus* Sars, 1900.

**DESCRIPTION:** *Size:* ♀♀ 2.6–3.8 mm, ♂♂ 2.00–3.43 mm.

*Female:* Posterolateral metasomal margin with acute, needle-shaped points reaching posterior border of genital segment, slightly thickened at base, pointing straight posteriorly. Urosome less than one third length of metasome (in uncontracted specimens). Genital segment as long as wide, genital swelling distinct. Antenna 1 as long as or slightly longer than metasome. No lamella on basipod 1 of maxilliped. Exopods of leg 1 three-jointed, articulation between two proximal joints

incomplete, exopod joint 1 without external spine. Basipod 1 of leg 4 with one row of up to 20 hair-like tubes on inner posterior surface.

*Male:* Antenna 1 slightly longer than metasome. Spines on posterolateral metasomal borders extend beyond urosomal joint 1. Exopod of leg 1 distinctly three-jointed. Leg 5 biramous on both sides: left leg endopod one-jointed, elongate; exopod three-jointed. Right leg endopod club-shaped, one-jointed, short; exopod two-jointed, basal joints swollen, apical joint forming feeble clasping organ. (Vervoort 1952c).

**REMARKS:** Giesbrecht (1895) originally described *G. pungens* as having a one-jointed endopod on leg 2 and he drew the posterior metasomal points not extending beyond the genital segment. Sars (1900) described a similar species, *Chiridius tenuispinus*, which differed in having longer posterior metasomal points and a two-jointed leg 2 endopod. Wolfenden (1904: 114, in a discussion of *G. major*) said he examined Giesbrecht's (1895) species *G. pungens* at Naples and found it identical to Sars' *C. tenuispinus*. This opinion seems to have been subsequently ignored and very few specimens have since been attributed to *G. pungens*.

The present specimens varied in size and the needle-like posterior metasomal points were rarely intact. The delicate nature of the posterior metasomal points may account for the variation of this character in the literature. Also the leg 2 endopod is one-jointed although the fusion line is obvious, especially on the posterior surface. Thus we agree with Wolfenden (1904) that *G. tenuispinus* is a junior synonym of *G. pungens*.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Vervoort (1957 as *G. tenuispinus*), Bradford (1970a as *G. tenuispinus*).

**NEW RECORDS:**

Station Number	Depth of Haul (m)	Specimens
B110	0–500	1♀, 3.32 mm
B113	0–500	2♀♀, 3.2, 3.1 mm
B114	0–125	1♀, 3.25 mm
VUZ105	0–914	2♀♀, 2.8, 3.0 mm
VUZ112	0–732	10♀♀, 2.70–3.15 mm
Mu67/57s	0–1000	5♀♀, 3.0–3.2 mm
Mu67/94s	0–1000	9♀♀, 2.60–3.15 mm 1♂, 2.7 mm
Mu67/104s	0–1000	2♀♀, 2.8, 2.9 mm 2♂♂, 2.9 mm
Mu67/116s	0–1000	3♀♀, 3.1, 3.0, 3.1 mm
Mu67/147s	0–1000	8♀♀, 3.0–3.2 mm

**DISTRIBUTION:** All Oceans (Vervoort 1957, Grice and Hulsemann 1967, Bjornberg 1973). The main depth distribution of this species is 260–1000 m (Vervoort 1957). At Kaikoura, New Zealand (Bradford 1970a) this species was taken above 500 m only at 2100 and 2400 hours.

***Lutamator* Bradford, 1969c**

**DEFINITION:** Female head and pedigerous segment 1, also pedigerous segments 4 and 5, fused. Posterior

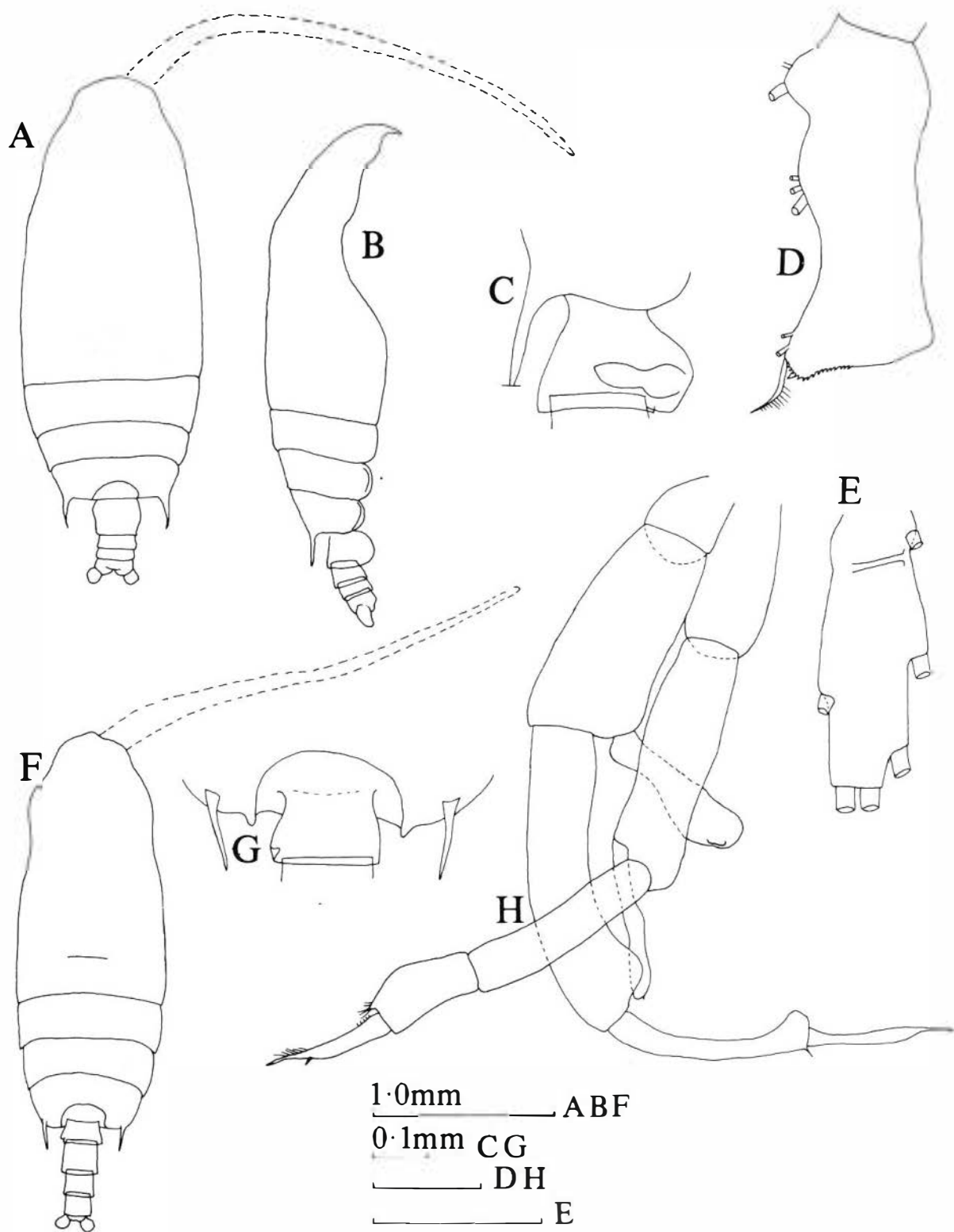


FIG. 41. *Gaidius pungens* from OU Stn Mu67/104s. Female: A, dorsal view; B, lateral view; C, lateral view of genital segment; D, basipod 1 of maxilliped; E, endopod of leg 2. Male: F, dorsal view; G, dorsal view of posterior of metasome and genital segment; H, leg 5.



metasomal borders extend into short points. Rostrum bluntly rounded. Posterior borders of urosomal segments edged with a weakly sclerotised fringe. Antenna 1 24-jointed with long annulate setae. Antenna 2 endopod and exopod equal; joint 1 of endopod wider proximally than distally; exopod tapers distally, joints 1 and 2 with one and two setae respectively. Mandibular palp large. Maxilla 1 inner lobe 1 with 11 spines and setae, posterior surface having one seta. Maxilliped basipod 1 twice as long as wide. External spines on exopods of legs large, teeth on terminal spines of exopods connected by lamella.

Male unknown. (Bradford 1969c).

The genus *Lutamator* is monotypic and its only species has been taken in the south-west Pacific:

***Lutamator hurleyi* Bradford, 1969c (Figs 42, 71)**

DESCRIPTION: *Size*: ♀♀ 5.05–5.15 mm, ♂ unknown.

*Female*: Fusion line between head and pedigerous segment 1, also between pedigerous segments 4 and 5, visible. Urosome more than one quarter total length. Genital segment with anterior protuberance in both dorsal and lateral view. Antenna 1 reaches pedigerous segment 3. Mandibular palp without setae on basipod 2 and endopod joint 1. Maxilla 1 inner lobe 2 with four setae, inner lobe 3 with three setae. Terminal spine on exopod of leg 2 with 44 sharp teeth.

REMARKS: Because of the reduction in number of setae on inner lobe 1 of maxilla 1 and the distinctive nature of the head appendages, this genus was erected to take this species.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Bradford (1969c).

NEW RECORDS: Nil.

DISTRIBUTION: This species was found off East Cape, north-eastern New Zealand. It was taken in a trawl at 1357 m.

### ***Palvella* Vervoort, 1965**

DEFINITION: Very like *Aetideus*, but female has two transverse rows of small spines on posterior surface of leg 4 basipod 1. Genital segment may bear protuberances ventrally. Antenna 1 with joints 8–10, 20 and 21, 24 and 25 fused. Uniramous leg 5 present on both sides: left leg five-jointed, elongate, apical joint terminated in an acute point which bears a patch of spiniform hairs; right leg four-jointed, short, apical joint gradually tapers to point.

Male with bifurcate rostrum and rounded posterolateral metasomal borders.

Vervoort's (1965) definition of this genus states that maxilla 1 endopod setation is reduced in comparison with *Aetideus*, yet Calef and Grice (1965) state that *Aetideus atlanticus*, a synonym for *P. inaciae*, has 14 setae on this part.

The genus *Paivella* contains the following species: *P. inaciae* Vervoort, 1965 (= *Aetideus atlanticus* Calef

and Grice, 1965); *P. naporai* Wheeler, 1970, neither of which have been taken in the south-west Pacific.

### ***Paracomantenna* Campaner, 1978**

DEFINITION: Female head and pedigerous segment 1 separate or fused, pedigerous segments 4 and 5 with posterior borders of last segment upturned. Rostrum absent. Antenna 1 short, 24-jointed, provided with numerous setae. Antenna 2 exopod joint 7 relatively long compared with *Comantenna*, with three long setae. Maxilla 2 with ventral surface of at least lobes 1 and 2 with large spines. Maxilliped with basipod 1 usually terminated by sensory appendage. Terminal spine of exopod of legs 2–4 usually bordered by spinules on outer margin. Leg 5 absent.

Male unknown. (Campaner 1978).

The following species have been assigned to this genus: *P. minor* (Farran, 1905) and *P. magalyae* Campaner, 1978. The genus *Paracomantenna* has been separated from *Comantenna* and includes those species with a long terminal exopod joint bearing three long setae on antenna 2 and large ventral surface spines on the lobes of maxilla 2. Nevertheless it is not completely clear that *P. minor* and *P. magalyae* are congeneric because of the apparent absence of a sensory appendage on basipod 1 of the maxilliped of *P. minor*.

Neither species has been taken in the south-west Pacific.

### ***Pseudeuchaeta* Sars, 1905**

*Autaneptisus* Wolfenden, 1911

DEFINITION: Robust copepods with blunt, rounded rostrum. Head and pedigerous segment 1, also pedigerous segments 4 and 5, partially fused. Posterior borders of metasome extended into points. Posterior borders of urosomal segments edged with weakly sclerotised fringe. Female antenna 1 24-jointed, extending at most length of metasome, bears few sensory filaments and numerous annulate setae, long distally as in *Bradyidius*. Antenna 2 exopod and endopod equal with two setae on exopod joints 1 and 2. Endopod of mandible small. Maxilla 1 inner lobe 1 with 11 or 13 spines and setae, posterior surface having 1 or 3 setae. Maxilliped large with sensory organ on basipod 1 as in *Comantenna*, endopod setae with crescent-shaped appendages along their length. Exopod joint 1 of leg 1 without outer edge spine. External exopod spines large. Posterior surface of endopods of legs 3 and 4 with fine spinules. Terminal spines of leg exopods with long widely-spaced teeth joined by a lamella. Leg 5 absent.

Male antenna 1 23-jointed. Mouthparts slightly reduced, basipod 1 of maxilliped with distal sensory appendage. Left leg 5 with three-jointed exopod, small lobe on joint 3 lined with spinules, endopod one-jointed, equals length of exopod joint 1; right leg exopod three-jointed, joints 1 and 3 with outer edge spine, joint 3 with long terminal spine extending as

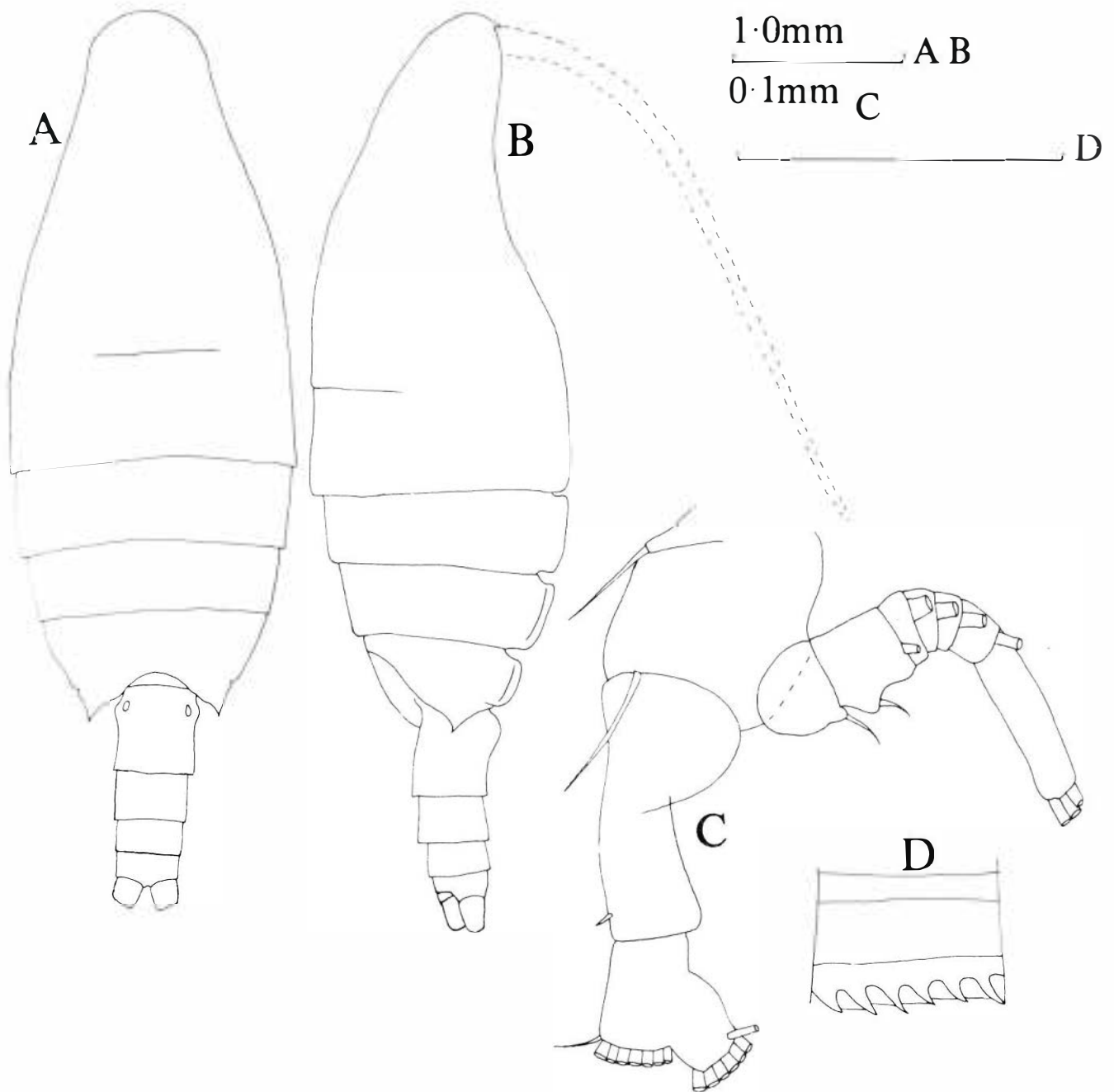


FIG. 42. *Lutamator hurleyi* female (from Bradford 1969c): A, dorsal view; B, lateral view; C, antenna 2; D part of terminal spine of exopod of leg 2.

sword-like expansion, endopod one-jointed, club-shaped. (Bradford 1969c, Tanaka and Omori 1970b).

The genus *Pseudeuchaeta* contains the following species: *P. brevicauda* Sars, 1905 (= *Autanepsius minor* Wolfenden, 1911) (♂ see Tanaka and Omori 1970b); *P. flexuosa* Bradford, 1969c; *P. magna* Bradford, 1969c; *P. major* (Wolfenden, 1911).

The following species have been taken in the southwest Pacific:

***Pseudeuchaeta brevicauda* Sars, 1905 (Figs 43, 70)**

DESCRIPTION: Size: ♀♀ 4.8–6.0 mm, ♂ 5.9 mm.

*Female*: Antenna 1 reaches end of metasome. Posterior metasomal margin produced posteriorly into very small flaps. Maxilla 1 inner lobes 1, 2 and 3 with 13, 4 and 3 setae respectively. Terminal spine of exopods of leg 2 with 34 teeth. (Sewell 1947).

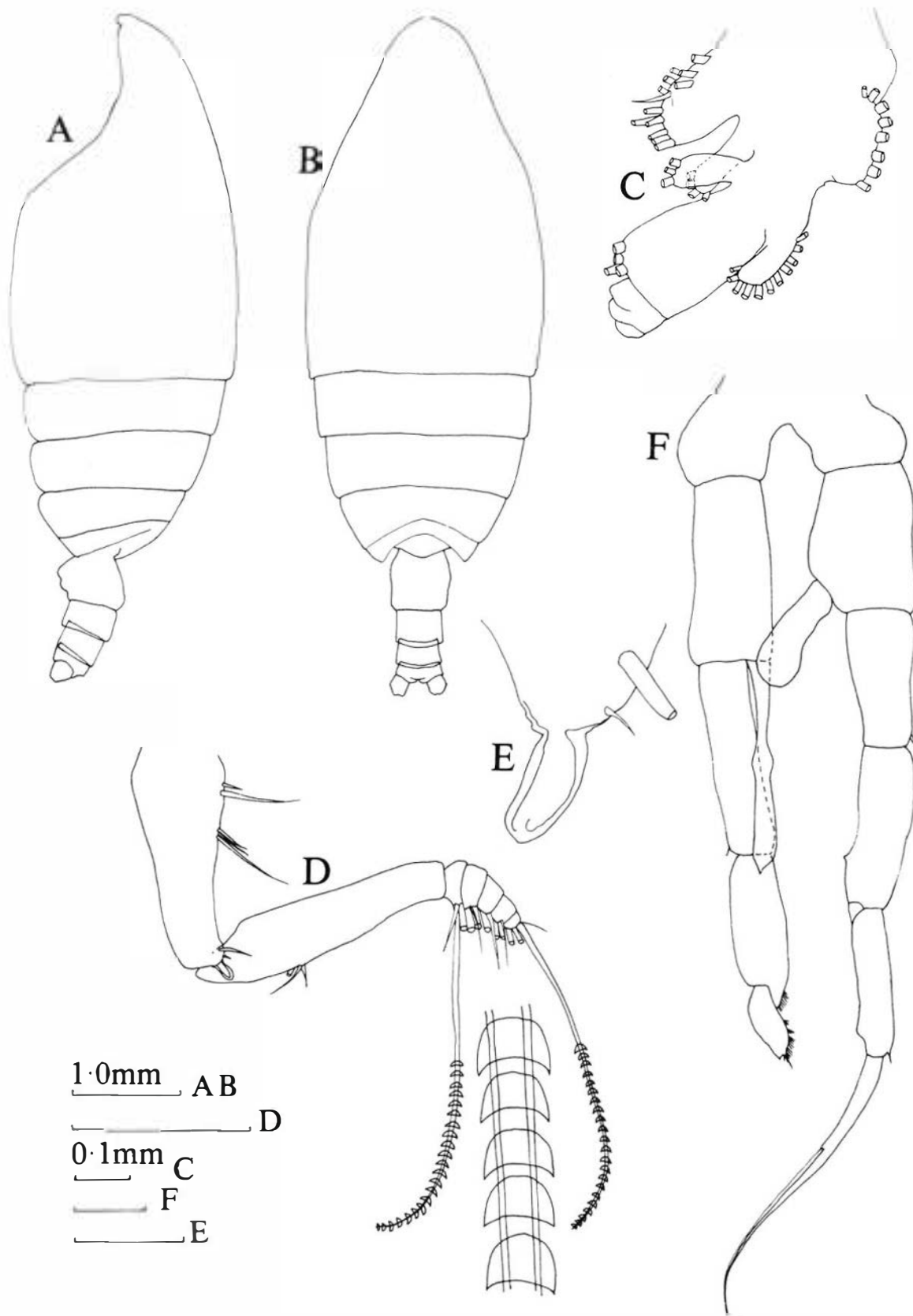


FIG. 43. *Pseudeuchaeta brevicauda* female from VU Stn VUZ105: A, lateral view; B, dorsal view; C, maxilla 1; D, maxilliped; E, distal part of basipod 1 of maxilliped. Male (from Tanaka and Omori 1970b): F, leg 5.

**Male:** Head separate from pedigerous segment 1. Posterolateral margin of metasome obtusely rounded and slightly produced. Antenna 1 reaches end of pedigerous segment 3. Leg 5 endopod one-jointed, club-shaped and short on right, elongate on left; exopod three-jointed on left with small terminal joint, four-jointed on right, last joint sword-like spine. (Tanaka and Omori 1970b).

**REMARKS:** Although the present specimen is larger than those previously recorded it does not appear to differ from the specimen described by Sewell (1947).

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Nil.

**NEW RECORDS:**

Station Number	Depth of Haul (m)	Specimens
VUZ105	0-914	1 ♀, 6.0 mm

**DISTRIBUTION:** This species has been taken in the Atlantic, Pacific and Indian Oceans (Vervoort 1957, 1963; Grice and Hulsemann 1967; Tanaka and Omori 1970b) at depths usually greater than 1000 m.

***Pseudeuchaeta flexuosa* Bradford, 1969c**

(Figs 44, 70)

**DESCRIPTION:** *Size:* ♀ 6.8 mm, ♂ unknown.

**Female:** Posterior metasomal points turned slightly dorsally. Maxilla 1 inner lobes 1, 2 and 3 with 11, 4 and 3 setae respectively.

**REMARKS:** Only one specimen of this species is known and its legs were not intact.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Bradford (1969c).

**NEW RECORDS:** Nil.

**DISTRIBUTION:** Taken from east of North Cape, New Zealand. It was found in a trawl from about 1690 m and is assumed to be hyperbenthic.

***Pseudeuchaeta magna* Bradford, 1969c (Figs 45, 70)**

**DESCRIPTION:** *Size:* ♀ 9.4 mm, ♂ unknown.

**Female:** Posterior metasomal border extends straight posteriorly into small points. Maxilla 1 inner lobes 1, 2 and 3 with 11, 2 and 3 setae respectively. Terminal spine of legs 2-4 exopods with 42, 38 and 41 teeth respectively. (Bradford 1969c).

**REMARKS:** Only one specimen of this species is known.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Bradford (1969c).

**NEW RECORDS:** Nil.

**DISTRIBUTION:** Taken from east of North Cape, New Zealand. It was found in a trawl at about 1690 m and is assumed to be hyperbenthic.

***Pseudochirella* Sars, 1920**

**DEFINITION:** Strongly built copepods resembling *Euchirella* and *Chirundina*. Female head and pedigerous segment 1 fused, pedigerous segments 4 and 5 separate or fused. Head rounded in lateral view, without crest. Rostrum distinct, one-pointed. Posterolateral metasomal borders rounded or produced into spines. Genital segment asymmetrical in many forms. Antenna 1 as long as body or longer. Antenna 2 endopod strongly developed, usually one half length of exopod or slightly longer, exopod joints 1 and 2 separate. Maxilla 1 with larger number of setae than in *Euchirella*: 5 setae on basipod 2, 16 setae on endopod. Jointing of legs as in *Euchirella*. Exopod joint 1 of leg 1 with well developed outer edge spine. Basipod 1 of leg 4 with 6-14 strong spines on posterior surface. Setae on outer edge of caudal rami thin and usually elongate.

Male with slender body. Antenna 1 with reduced number of joints, some setae thickened. Antenna 2 endopod more than half length of exopod. Leg 5 with basipod 1 and 2 swollen; endopod elongate, one-jointed, truncate at apex; left leg exopod three-jointed, joints short, last joint rounded distally; right leg exopod with two elongate joints. (Vervoort 1952f).

*Chirundina magna* Wolfenden, 1911 and *Undeuchaeta incisa* Esterly, 1911 have both been placed in *Pseudochirella* (Sewell 1947, Grice 1964), but can now be shown to fit more logically into other genera. Tanaka (1957b) erected the genus *Chirundinella* (to which *C. magna* also belongs) because of the reduced number of setae on basipod 2 and endopod of maxilla 1 and *U. incisa* remains in *Undeuchaeta*. The removal of both these species from *Pseudochirella* means that all remaining species are without a crest and all have exopod joint 1 of leg 1 with a well-developed outer spine.

Sewell (1947) summarises the synonymies in *Pseudochirella* omitting *P. spectabilis* (Sars, 1900), but a number of new species have been subsequently added. The genus *Pseudochirella* contains the following species: *P. accepta* Zvereva, 1976a (♂ unknown); *P. batillipa* Park, 1978 (♂ unknown); *P. bilobata* Vervoort, 1949 (♂ unknown); *P. calarata* Sars, 1920 (♂ unknown); *P. cryptospina* (Sars, 1905) (= *Gaidius parvispinus* Farran, 1908) (♂ see With 1915); *P. dentata* (A. Scott, 1909) (♂ unknown); *P. divaricata* (Sars, 1905) (♂ unknown); *P. dubia* Sars, 1920 (♂ see Sars 1925); *P. elongata* (Wolfenden, 1911) (♂ see Park 1978); *P. fallax* Sars, 1920 (♂ unknown); *P. gibbera* Vervoort, 1949 (♂ unknown); *P. granulata* (A. Scott, 1909) (♂ unknown); *P. gurjanovae* Brodsky, 1955 (♀ unknown); *P. hirsuta* (Wolfenden, 1911) (♂ unknown); *P. limata* Grice and Hulsemann, 1968 (♂ unknown); *P. lobata* (Sars, 1907) (♂ unknown); *P. mawsoni* Vervoort, 1957 (= *P. tuberosa* Grice and Hulsemann, 1968) (♂ see Park 1978); *P. notacantha* (Sars, 1905) (♂ see also With 1915, Sars 1925, A. Scott 1909); *P. obesa* Sars, 1920 (= *P. tuberculata* Tanaka, 1957b) (♂ see Roe 1975); *P. obtusa* (Sars, 1905) (♂ see Vervoort 1949); *P. pacifica* Brodsky, 1950 (♀ see Zvereva 1976a); *P. palliata* (Sars, 1907) (♂ unknown); *P. polyspina* Brodsky, 1950 (= *P. spinifera* Brodsky, 1950; see Park

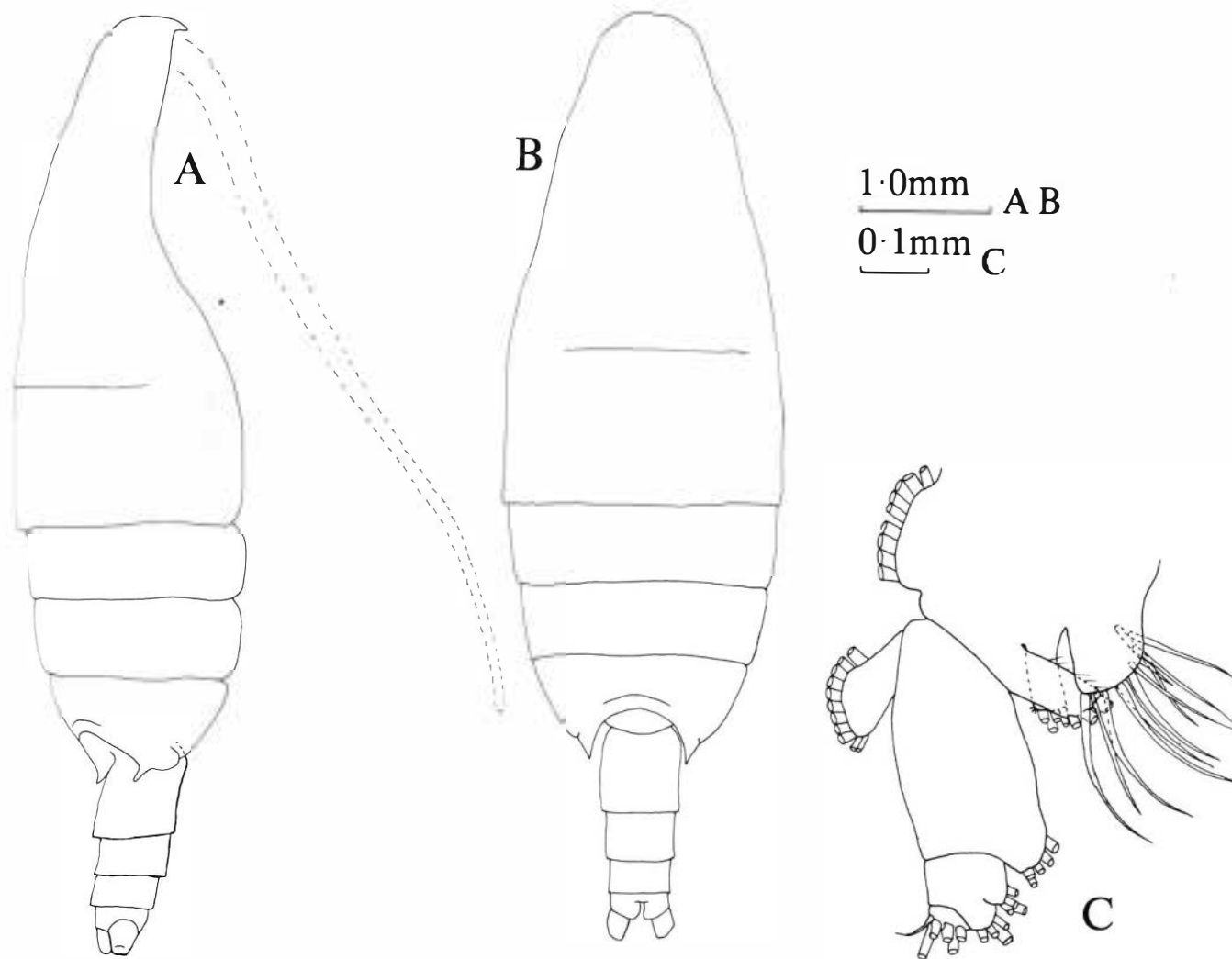


FIG. 44. *Pseudeuchaeta flexuosa* female (from Bradford 1969c): A, lateral view; B, dorsal view; C, maxilla 1.

1978); *P. pustilifera* (Sars, 1905) (= *Euchirella wolfendeni* Farran, 1908) ( $\delta$  see Tanaka and Omori 1969b); *P. scopularis* (Sars, 1905) ( $\delta$  unknown); *P. squalida* Grice and Hulsemann, 1968 ( $\delta$  unknown); *P. semispina* Vervoort, 1949 ( $\delta$  unknown); *P. spectabilis* (Sars, 1900) ( $\delta$  see Brodsky 1950); *P. spinosa* (Wolfenden, 1911) ( $\delta$  unknown); *P. squalida* Grice and Hulsemann, 1967 ( $\delta$  unknown); *P. tuberosa* Grice and Hulsemann, 1968 ( $\delta$  unknown); *P. vervoorti* Tanaka and Omori, 1969b ( $\delta$  unknown).

The following species have been taken in the south-west Pacific:

***Pseudochirella dentata*** (A. Scott, 1909) (Figs 46, 68)

**DESCRIPTION:** *Size:* ♀♀ 5.7–7.5 mm, ♂ unknown.

**Female:** Head and pedigerous segment 1, also pedigerous segments 4 and 5, separate. Last metasomal segment produced into small, dorsally pointing spines. Urosome less than one third length of metasome. Genital segment slightly asymmetrical, being more swollen on right side. Posterior margins of urosomal segments 1–3 fringed with fine spines, whole dorsolateral surface of urosomal segments and caudal rami covered with short hairs. Antenna 2 endopod three fifths length of exopod. Endopod of maxilla 1 with six setae (two of them small). Basipod 1 of leg 4 with 7–9 moderately long, strong internal spines. (A. Scott, 1909).

**REMARKS:** Although the present specimens are smaller than the type they undoubtedly belong to this species. One specimen had eight, the other nine, spines on the basipod 1 of leg 4.

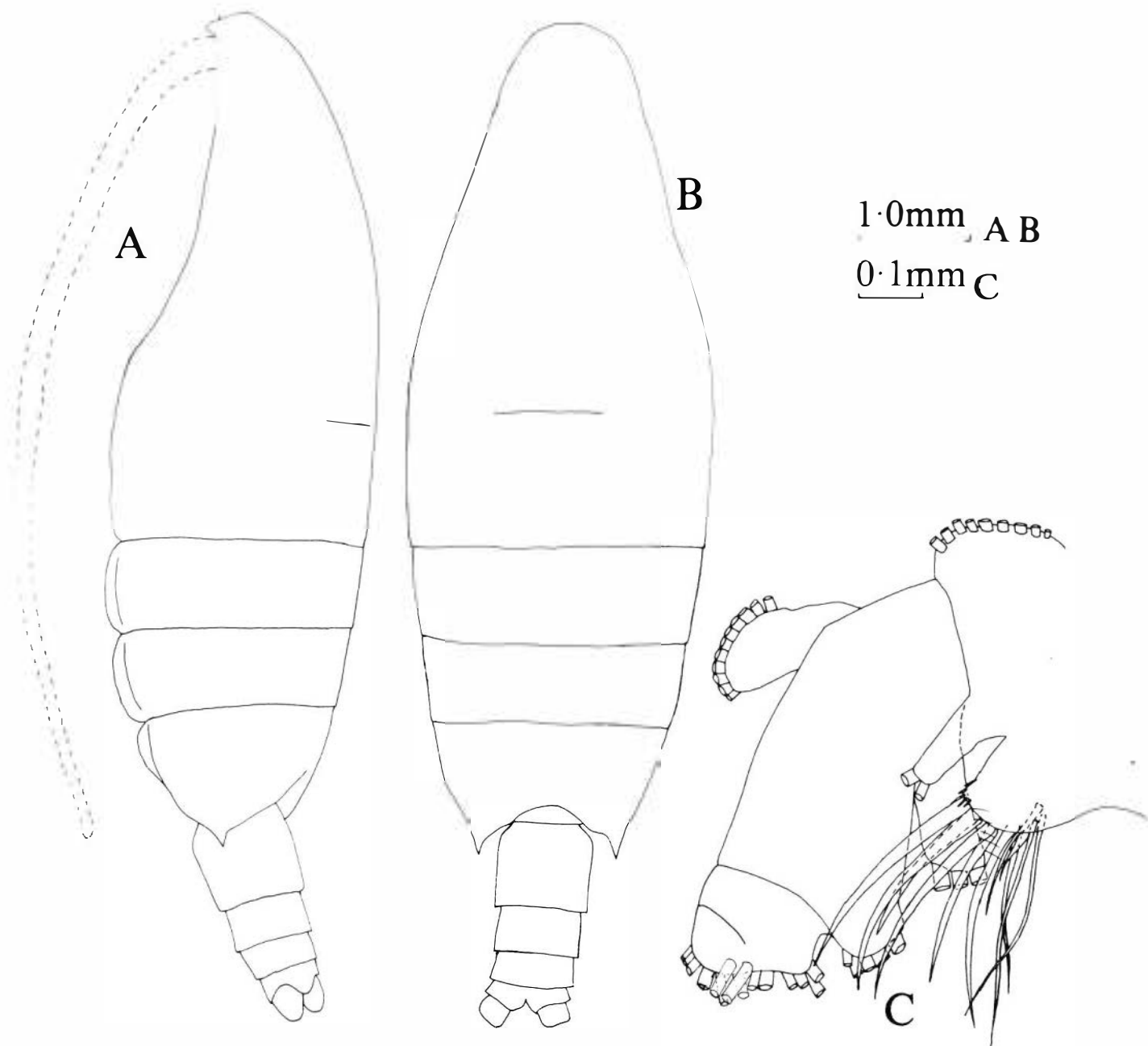


FIG. 45. *Pseudeuchaeta magna* female (from Bradford 1969c): A, lateral view; B, dorsal view; C, maxilla 1.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Nil.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
E904	0-1243	1 ♀, 5.7 mm
VUZ105	0-914	1 ♀, 6.1 mm

DISTRIBUTION: This species is known only from the deep waters of the Malay Archipelago in addition to the present two records.

*Pseudochirella mawsoni* Vervoort, 1957

(Figs 47, 68)

DESCRIPTION: Size: ♀♀ 5.42–6.75 mm, ♂♂ 5.25–5.66 mm.

*Female*: Head and pedigerous segment 1 partly fused, pedigerous segments 4 and 5 separate, posterior borders of metasome rounded. Genital segment asymmetrical with lateral swellings; left swelling least prominent, rounded and haired on dorsal surface; right

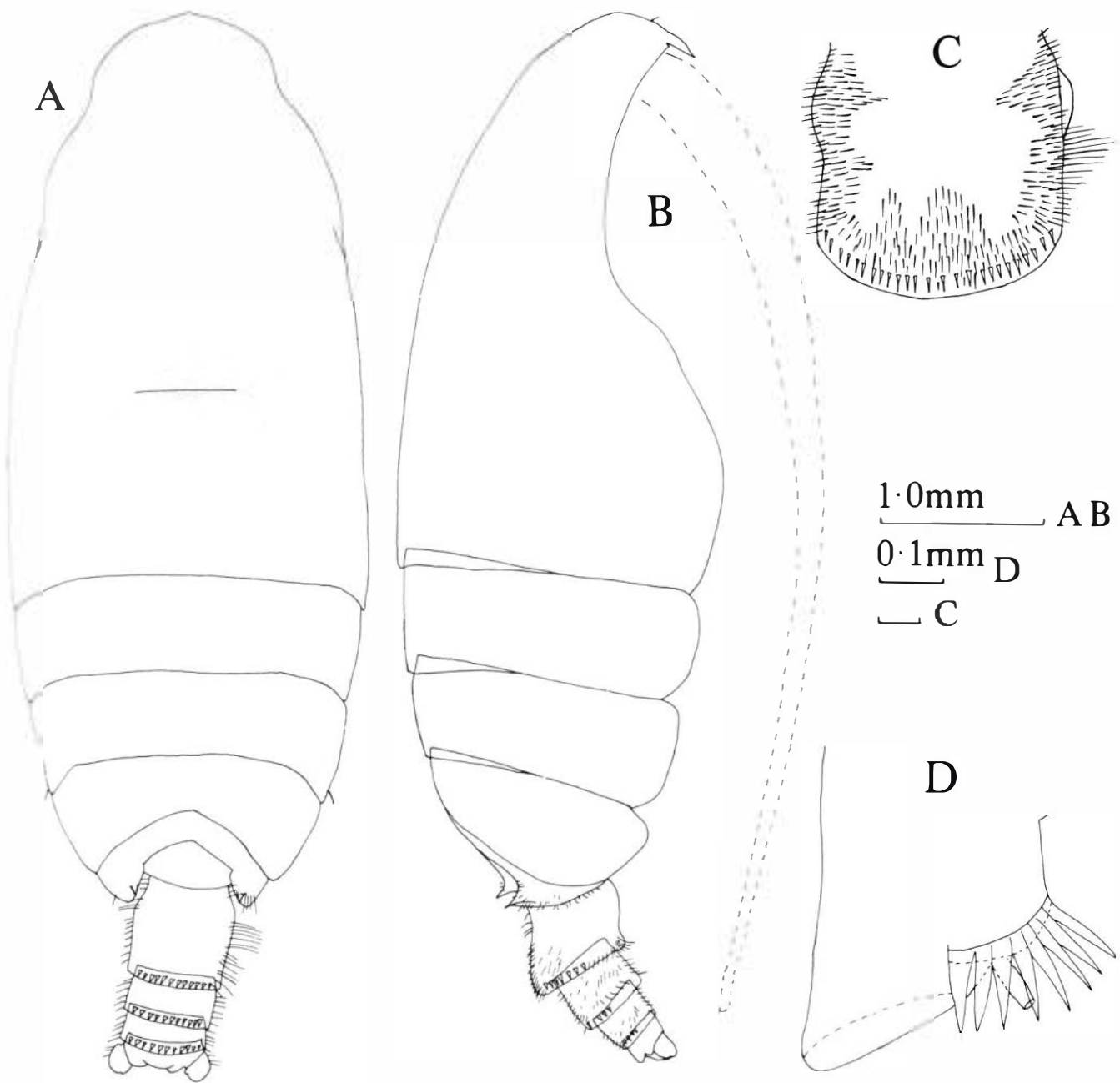


FIG. 46. *Pseudochirella dentata* female from VU Stn VUZ105: A, dorsal view; B, lateral view; C, dorsal view of genital segment; D, basipod 1 of leg 4.

swelling is huge, rounded protuberance carrying knob-shaped process at its apex and haired on dorsal surface. Basipod of leg 4 with 6-10 strong spines. (Vervoort 1957, Park 1978).

**Male:** Head and pedigerous segment 1 almost completely fused, pedigerous segments 4 and 5 completely fused; posterior borders of metasome rounded with spiniform process. Antenna 1 extends to distal end of urosome segment 2. Left leg 5 endopod

extends to distal end of exopod joint 1, exopod joint 2 slender with bifurcate distal projection, exopod joint 3 two thirds length of joint 2. (Park 1978).

**REMARKS:** The present female specimens undoubtedly belong to this species because of the genital segment shape. One specimen had five spines on each basipod 1 of leg 4 and the other had six spines, but they were more heavily developed on the right side. The male agrees with the description of Park (1978) who has

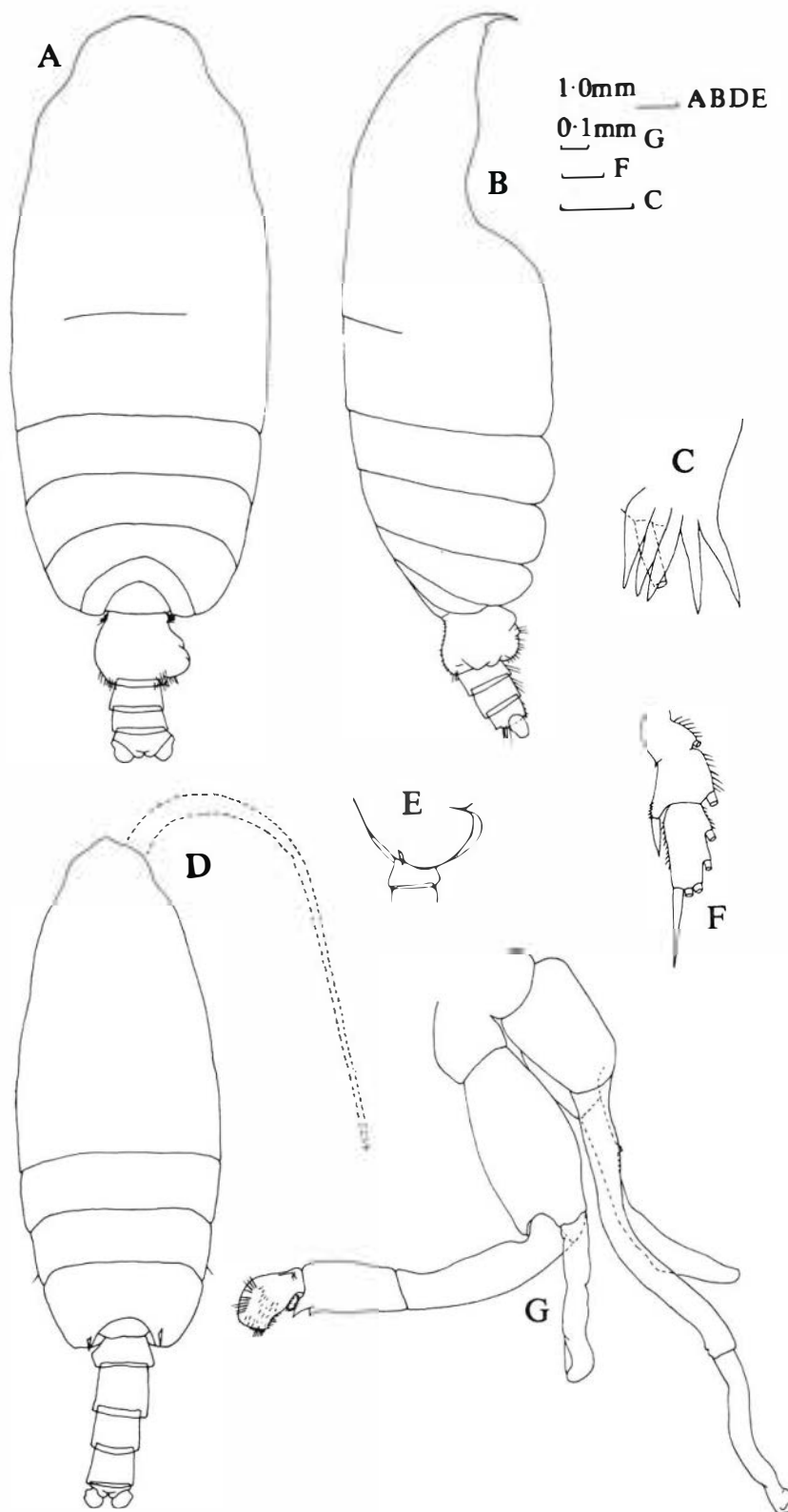


FIG. 47. *Pseudochirella mawsoni* from VU Stn VUZ105. Female: A, dorsal view; B, lateral view; C, inner edge of basipod 1 of leg 4. Male: D, dorsal view; E, lateral view of posterior of metasome; F, exopod of leg 1; G, leg 5.



indicated that *P. tuberosa* Grice and Hulsemann, 1968 and the male assigned to *P. notacantha* (Sars) by Vervoort (1957) are synonyms of *P. mawsoni*.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Nil.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
VUZ105	0-914	2 ♀♀, 5.8, 5.8 mm 1 ♂, 5.3 mm

DISTRIBUTION: Antarctic and subantarctic localities of the Indian and Pacific Ocean (Park 1978), usually not taken at depths shallower than 400 m (Grice and Hulsemann 1968).

***Pseudochirella obesa* Sars, 1920 (Figs 48, 68)**

DESCRIPTION: Size: ♀♀ 5.0-6.0 mm, ♂ 5.76 mm.

*Female*: Head and pedigerous segment 1, also pedigerous segments 4 and 5, incompletely separate. Posterolateral borders of metasome rounded although slightly asymmetrical with small projection on right. Urosome one quarter length of metasome. Genital segment symmetrical, remainder of urosome very hairy laterally and ventrally. Maxilla 1 endopod with 16 setae. Basipod 1 of leg 4 with 7-9 stout spines. (Owre and Foyo 1964).

*Male*: Head and pedigerous segment 1 fused, pedigerous segments 4 and 5 separate. Pedigerous segment 5 rounded, without spines. Antenna 1 extends to posterior border of urosome segment 3. Left leg 5 exopod joint 2 with two strong points; right leg exopod joint with two lamellae, one on central swelling and one terminating joint. (Roe 1975).

REMARKS: The redescription of Sars' species in which *P. tuberculata* Tanaka is synonymised with *P. obesa* (Owre and Foyo 1964) completely agrees with the present specimen. Sars (1925) does not figure the small rounded projection on the right posterior metasomal margin. The present specimen has eight spines on leg 4 basipod 1. The exopod of the male right leg 5 appears to separate this species from all others.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Nil.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
F910	1283-1397	1 ♀, 5.5 mm

DISTRIBUTION: This species is known from deep waters of the Atlantic Ocean (Owre and Foyo 1964, Sars 1925), Indian Ocean (Grice and Hulsemann 1967 as *P. tuberculata*) and Pacific Ocean (Tanaka 1957b as *P. tuberculata*).

***Pseudochirella obtusa* (Sars, 1905) (Figs 49, 68)**

DESCRIPTION: Size: ♀♀ 5.25-6.45 mm, ♂ 4.8 mm.

*Female*: Head and pedigerous segment 1 indistinctly separate, pedigerous segments 4 and 5 separate.

Posterolateral metasomal borders rounded. Urosome one third length of metasome. Urosomal segments very hairy, genital segment symmetrical. Antenna 2 endopod two thirds length of exopod. Maxilla 1 endopod with 16 setae. Basipod 1 of leg 4 with 8-13 strong teeth on posterior surface. (Vervoort 1952f).

*Male*: Posterior metasomal border rounded and without spines, pedigerous segments 4 and 5 separate. Leg 5 like that of *P. notacantha*, but differs in proportional lengths and shape of various joints, both basipod 2 distal borders level. (Vervoort 1949).

REMARKS: The present female has ten teeth on basipod 1 of leg 4.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Nil.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
VUZ93	0-1097	1 ♀, 5.9 mm

DISTRIBUTION: This species is known from deep waters of the Indian (Grice and Hulsemann 1967), Atlantic and Mediterranean (Sars 1925, Vervoort 1963), Malay Archipelago (Vervoort 1949) and Pacific Oceans (Davis 1949, Bjornberg 1973).

***Pseudochirella squalida* Grice and Hulsemann, 1967 (Figs 50, 68)**

DESCRIPTION: Size: ♀♀ 5.20-5.66 mm, ♂ unknown.

*Female*: Last metasomal segment rounded. Genital segment slightly asymmetrical and hairy with small rounded protuberances on each side. Antenna 1 reaches caudal rami. Antenna 2 endopod joint 2 with seven setae on inner lobe, nine setae on outer lobe. Basipod 1 of leg 4 with six coarse spines. (Grice and Hulsemann 1967).

REMARKS: The present specimen was badly damaged, but appears to belong to this species. Spines were unequally developed on each leg 4, six on one side, eight on the other.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Nil.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
F881	1260-1234	1 ♀, 5.2 mm

DISTRIBUTION: This species is recorded from deep water in the Indian Ocean (Grice and Hulsemann 1967), and south-east Pacific (Bjornberg 1973).

***Pseudotharybis* T. Scott, 1909a**

DEFINITION: All characteristics as in *Bradyidius* except that females have 5th legs which are three-jointed, terminal joint with two terminal and one external spine-like extensions.

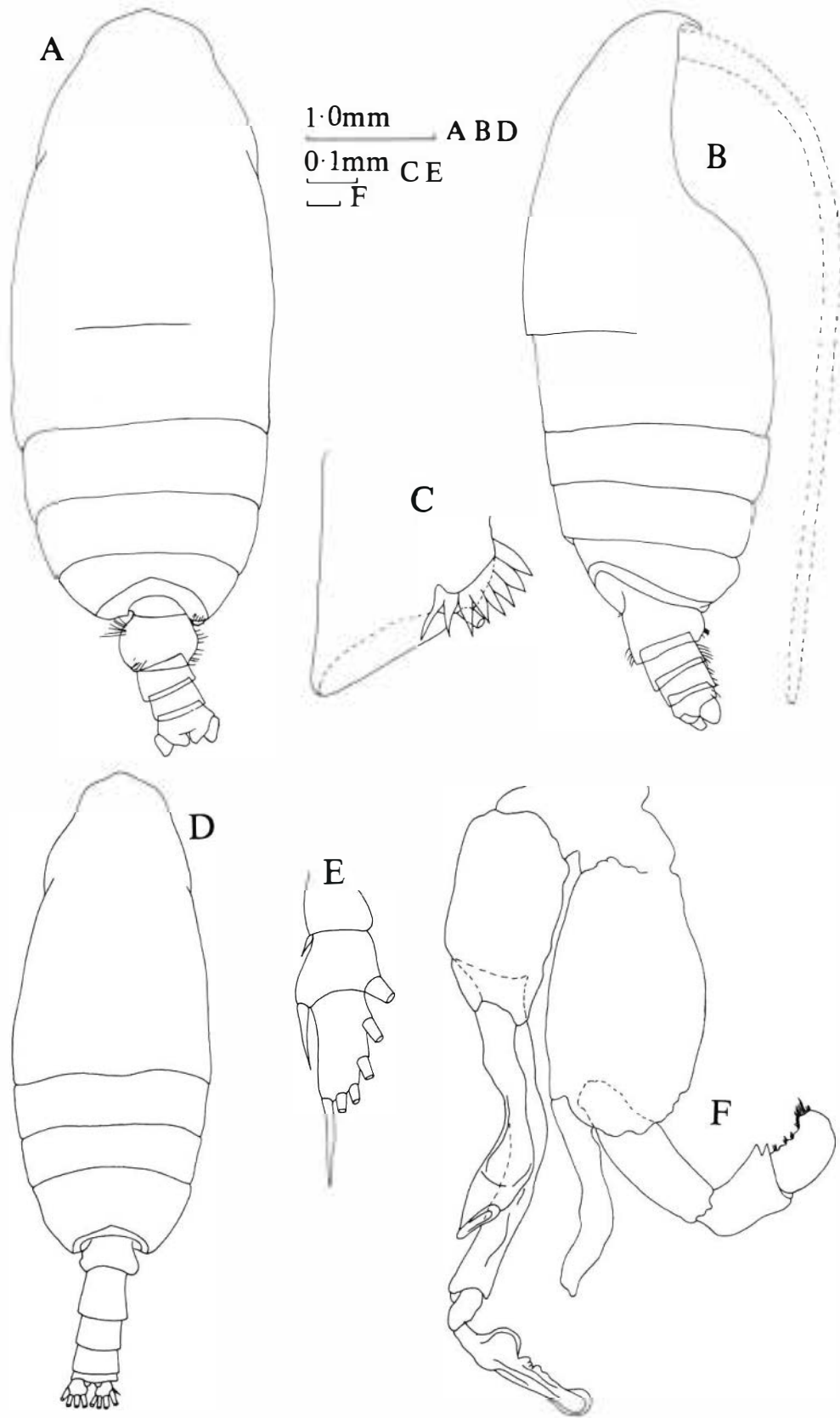


FIG. 48. *Pseudochirella obesa* female from NZOI Stn F910: A, dorsal view; B, lateral view; C, basipod 1 of leg 4. Male (from Roe 1975): D, dorsal view; E, exopod of leg 1; F, leg 5.

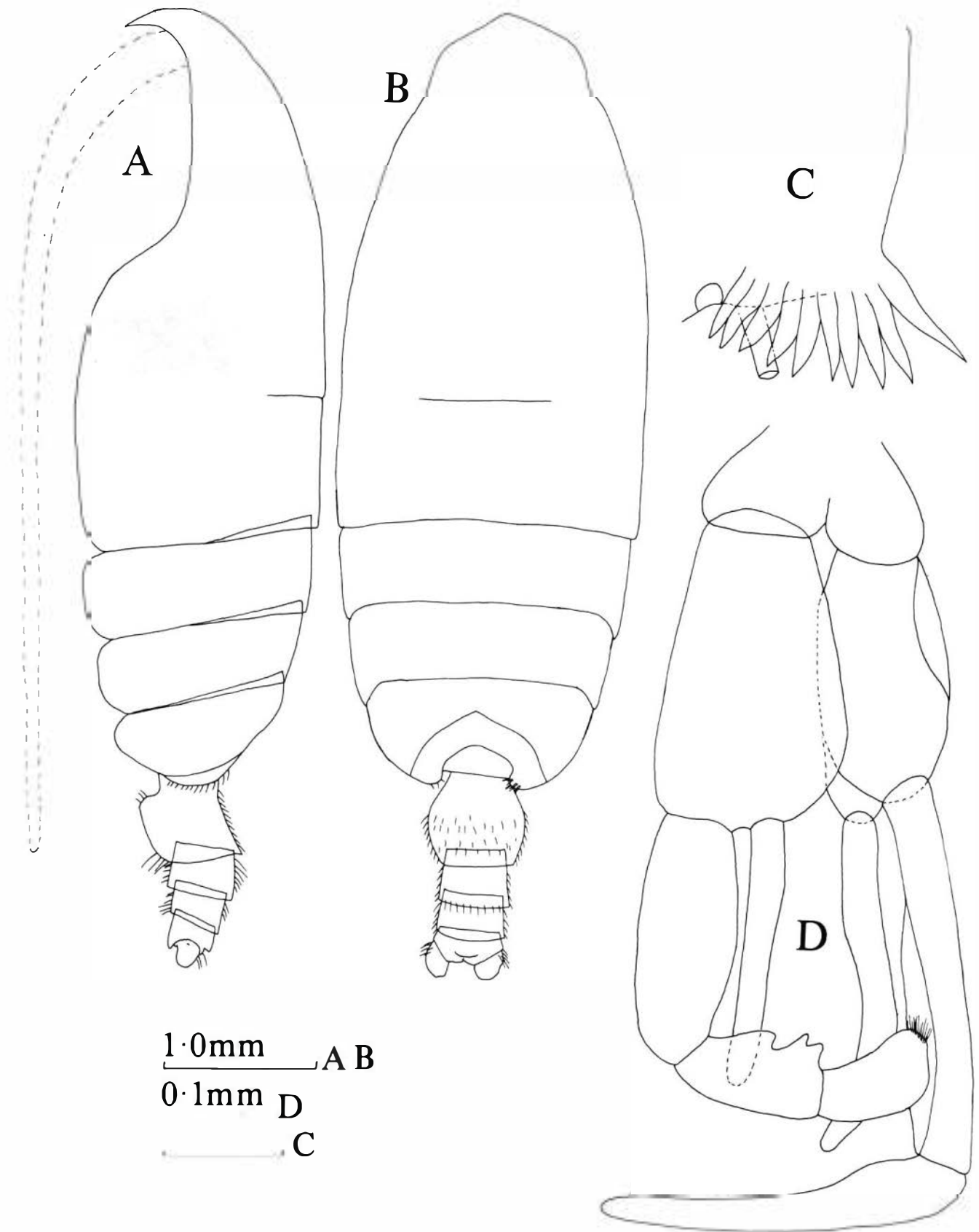


FIG. 49. *Pseudochirella obtusa* female from VU Stn VUZ93: A, lateral view; B, dorsal view; C, inner edge of basipod 1 of leg 4. Male (from Vervoort 1949): D, leg 5.

Males also almost identical with *Bradyidius* especially in having both biramous and uniramous leg 5, but instead of posteriorly directed spine arising from very posterior metasomal border, *Pseudotharybis* males have a small tooth which is placed more dorsally on last metasomal segment. (Bradford 1976c).

The genus *Pseudotharybis* contains the following species: *P. brevispinus* (Bradford, 1969c) (♂ unknown); *P. dentatus* (Bradford, 1969c) (♀ unknown); *P. robustus* (Bradford, 1969c); *P. spinibasis* (Bradford, 1969c) (stage V ♀ and ♂); *P. zelandicus* T. Scott, 1909 (♂ unknown).

There is some possibility that Grice and Hulsemann's 1970 *Aetideopsis magna*, described from the male, is also a *Pseudotharybis*.

The following species have been taken in the south-west Pacific:

***Pseudotharybis brevispinus*** (Bradford, 1969c)  
(Figs 51, 61)

DESCRIPTION: Size: ♀ 5.4 mm, ♂ unknown.

**Female:** Head and pedigerous segment 1 separate, pedigerous segments 4 and 5 fused with short posterior extensions directed slightly ventrally and not reaching centre of genital segment. Rostrum bifurcate, points neither divergent nor visible dorsally. Posterior surfaces of endopods of legs 2-4 covered with spinules. Terminal exopod spines of leg 2 with 12 teeth. Leg 5 present, three-jointed, terminal joint with two terminal and one external spine-like extensions. (Bradford 1969c).

REMARKS: This species is distinguished by its rostrum and its wide short legs.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Bradford (1969c).

NEW RECORDS: Nil.

DISTRIBUTION: Near the sea floor at 1278-1194 m off the north-east coast of New Zealand.

***Pseudotharybis dentatus*** (Bradford, 1969c)  
(Figs 52, 61)

DESCRIPTION: Size: ♀ unknown, ♂♂ 3.5-4.0 mm.

**Male:** Posterolateral borders of metasome with small ventrally directed tooth. Rostrum bifurcate with small non-divergent points. Antenna 1 reaches urosomal segment 2. Terminal exopod spines on legs with numerous (40) closely spaced teeth. Leg 5 uniramous, branches approximately equal in length, right leg styliform, left leg terminated by small joint; there appears to be vestigial endopod on left leg. (Bradford 1969c).

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Bradford (1969c).

NEW RECORDS: Nil.

DISTRIBUTION: Near the sea floor at 1357 m off the north-east coast of New Zealand.

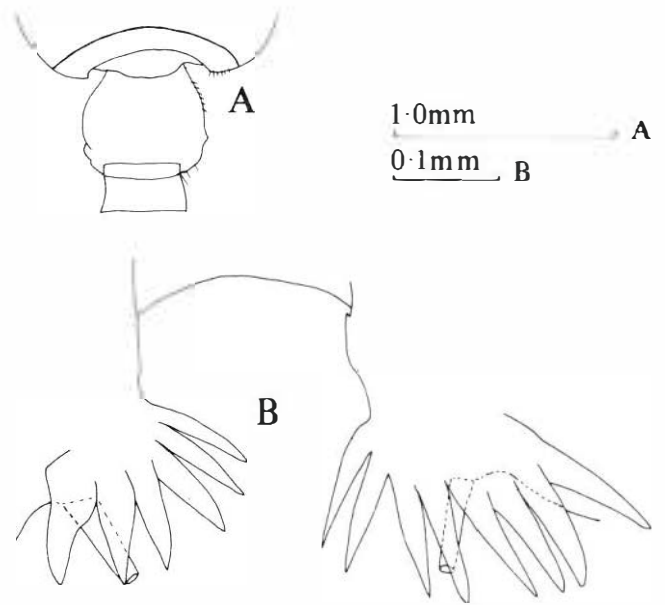


FIG. 50. *Pseudochirella squalida* female from NZOI Stn F881: A, dorsal view of genital segment; B, inner edge of basipod 1 of leg 4.

***Pseudotharybis robustus*** (Bradford, 1969c)  
(Figs 53, 61)

DESCRIPTION: Size: ♀♀ 3.6-3.9 mm, ♂ 3.6 mm.

**Female:** Line of fusion between head and pedigerous segment 1 visible, pedigerous segments 4 and 5 with posterolateral borders extended posteriorly into short points reaching mid-way along genital segment. Rostrum with 2 divergent points visible dorsally. Genital segment with slight swelling anteriorly. Antenna 1 reaches last metasomal segment. Legs as in *P. brevispinus*. Terminal exopod spine on legs 2-4 with about 15, 20, 25 teeth respectively. Leg 5 present as in *P. brevispinus*.

**Male:** Posterolateral metasomal borders with small ventrally directed tooth. Rostrum bifurcate with divergent points. Antenna 1 reaches urosomal segment 4. Leg 5 biramous, endopods one-jointed; left leg exopod three-jointed, terminal joint small and hirsute; right leg exopod with only one joint intact. (Bradford 1969c).

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Bradford (1969c).

NEW RECORDS: Nil.

DISTRIBUTION: Near the sea floor at 1193-1184 m off the south-west coast of New Zealand.

***Pseudotharybis spinibasis*** (Bradford, 1969c)  
(Figs 54, 61)

DESCRIPTION: Size: stage V ♀ 3.35 mm, stage V ♂ 3.90 mm; adults unknown.

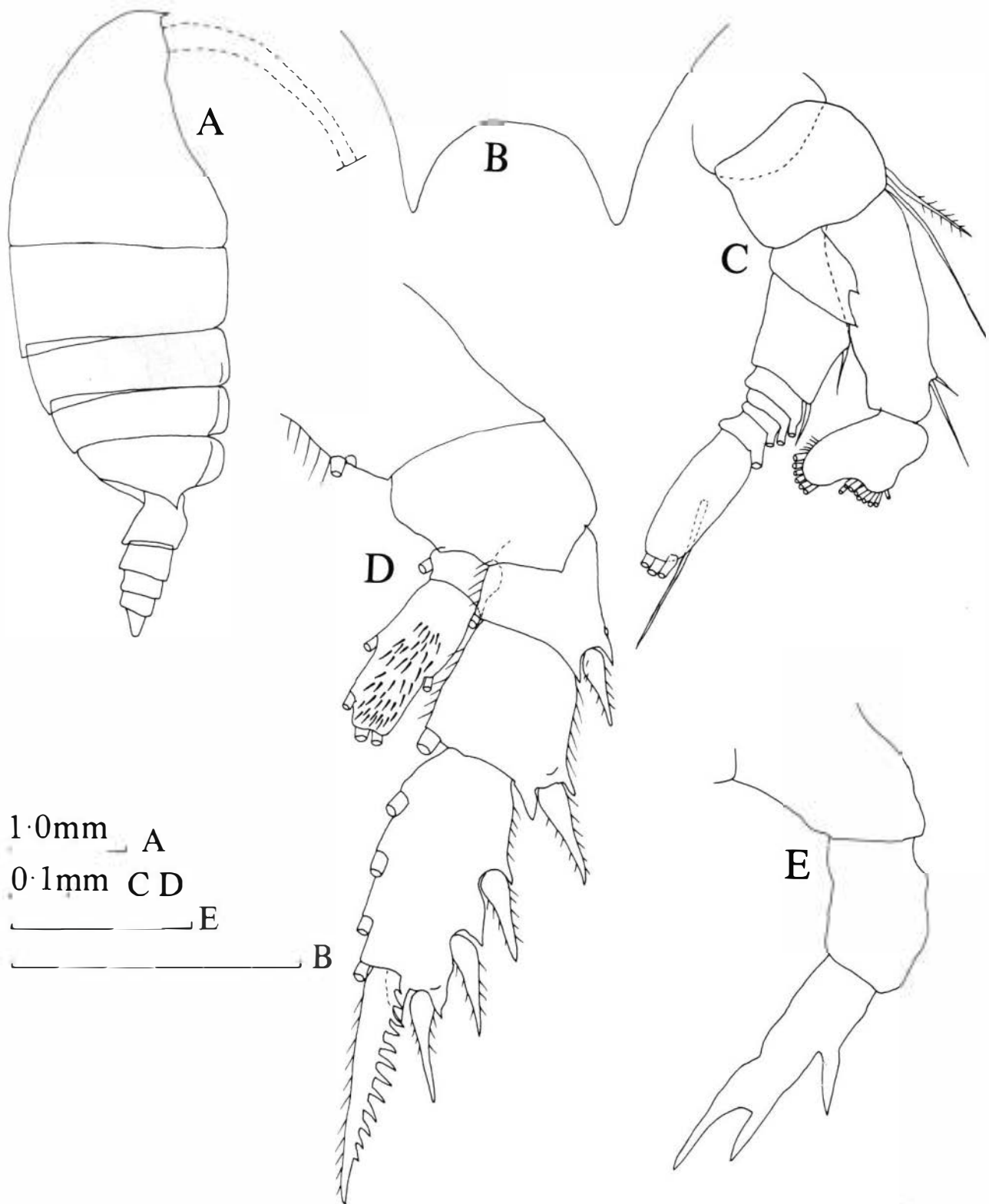


FIG. 51. *Pseudotharybis brevispinus* female (from Bradford 1969c): A, lateral view; B, rostrum; C, antenna 2; D, leg 2; E, leg 5.

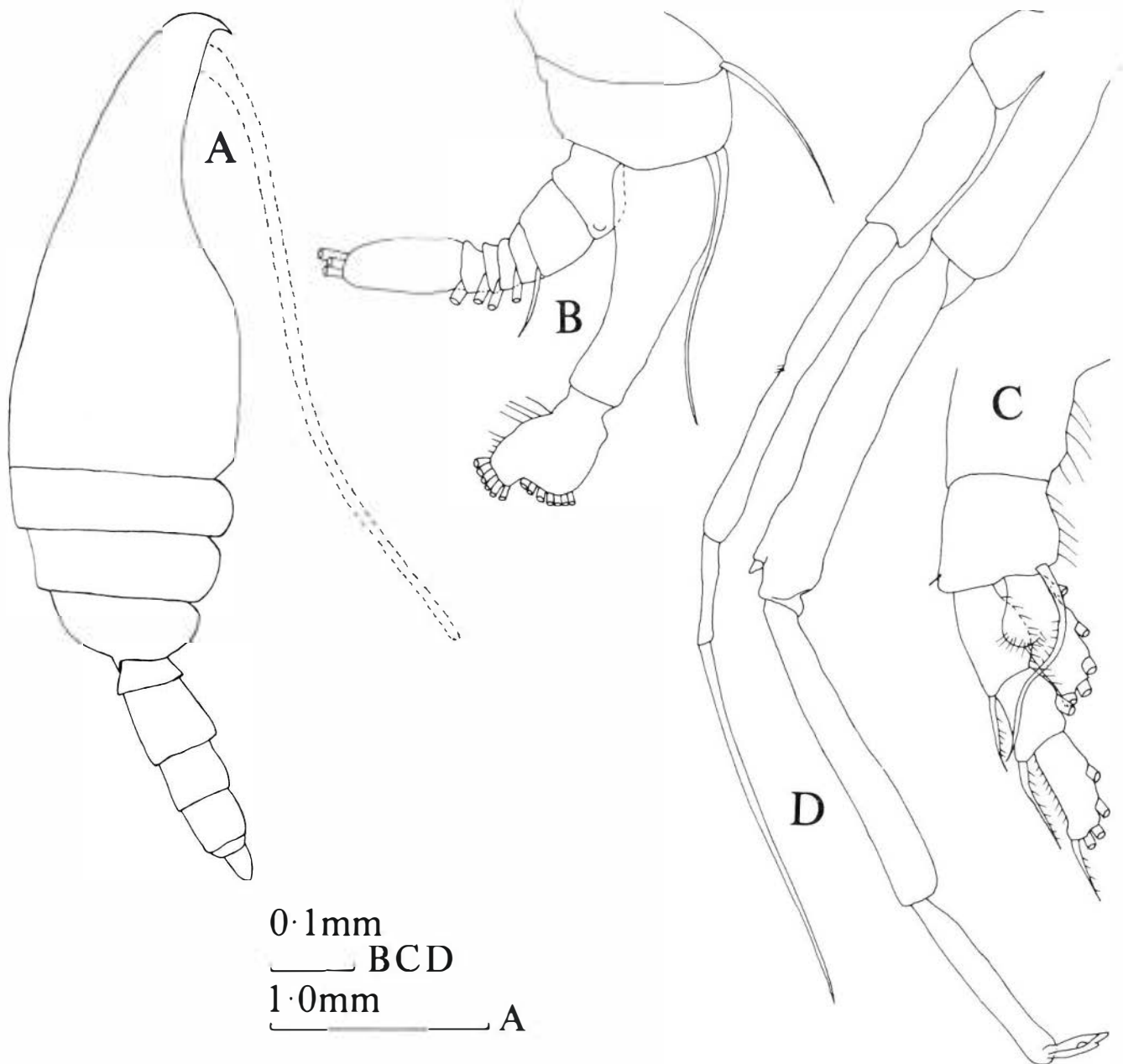


FIG. 52. *Pseudotharybis dentatus* male (from Bradford 1969c): A, lateral view; B, antenna 2; C, leg 1; D, leg 5.

**Stage V Female:** Head and pedigerous segment 1 partially fused, pedigerous segments 4 and 5 separate. Sharply pointed posterior extensions of metasome extend to end of urosomal segment 2. Rostrum bifurcate, points slightly divergent. Antenna 1 reaches pedigerous segment 4. Basipod joint 1 of legs 1-4 with external spinules. Terminal spines on leg exopods bear 34 closely placed teeth. Posterior endopod surfaces covered with fine spinules. Leg 5 present but damaged.

**Stage V Male:** Similar to female but posterior metasomal points slightly shorter and leg 5 biramous. (Bradford 1969c).

**REMARKS:** This species was described from an immature specimen because of the distinctive ornamentation on the first basipod joint on all legs. There is some possibility that *P. magnus* (Grice and Hulsemann 1970) (total length 4.20-4.56 mm) is the adult male of *P. spinibasis* because of the external spinules on basipod 1 of legs 1-3.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Bradford (1969c).

**NEW RECORDS:** Nil.

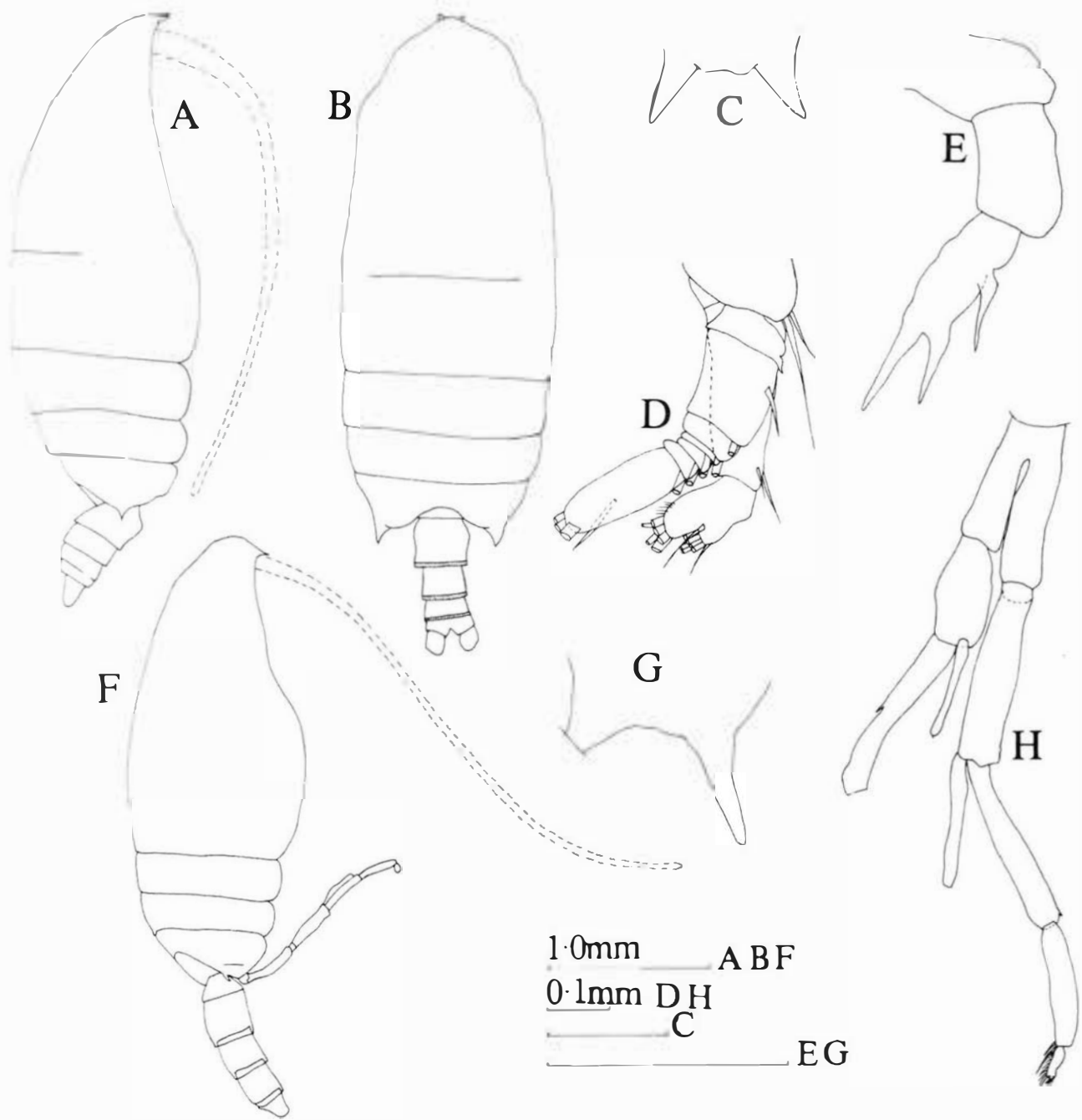


FIG. 53. *Pseudotharybis robustus* female (from Bradford 1969c): A, lateral view; B, dorsal view; C, rostrum; D, antenna 2; E, leg 5. Male: F, lateral view; G, rostrum; H, leg 5.

**DISTRIBUTION:** Near the sea floor at 1697–1690 m off the north-east coast of New Zealand.

**Sursamucro** Bradford, 1969c

**DEFINITION:** Female head and pedigerous segment 1 fused, pedigerous segments 4 and 5 separate. Posterior metasomal points turned dorsally. Rostrum bluntly

rounded. Posterior urosomal borders fringed with well defined teeth. Antenna 1 24-jointed, bearing long annulate setae with some sensory filaments. Antenna 2 exopod and endopod equal, exopod with two setae on joints 1 and 2. Mandibular palp large. Maxilla 1 inner lobe 1 with 14 spines and setae. Maxilliped basipod 1 with length twice width. Leg 1 exopod with three external spines. External spines on exopods large on all legs. Posterior surface of endopod of legs 2–4 bear fine

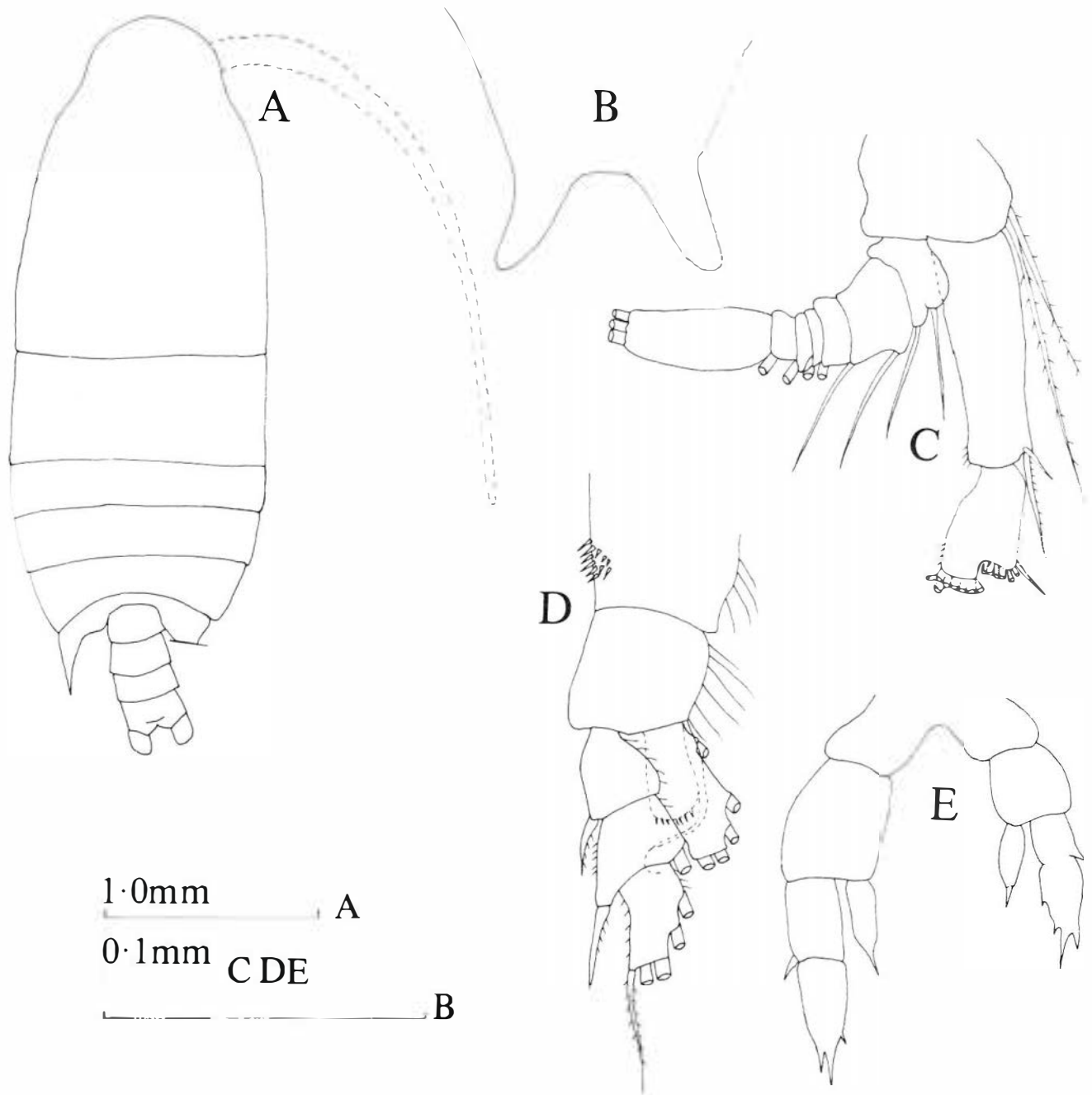


FIG. 54. *Pseudotharybis spinibasis* stage V female (from Bradford 1969c): A, dorsal view; B, rostrum; C, antenna 2; D, leg 1. Stage V Male: E, leg 5.

spinules. Terminal spines of legs 2–4 exopods with coarse teeth without connecting lamella. Leg 5 usually absent.

Male unknown. (Bradford 1969c).

The genus *Sursamucro* is monotypic and its only species has been taken in the south-west Pacific.

***Sursamucro spinatus* Bradford, 1969c (Figs 55, 71)**

DESCRIPTION: Size: ♀♀ 6.00–6.45 mm, ♂ unknown.

*Female*: Posterior metasomal points extend beyond middle of genital segment. Urosome less than one quarter total length. Genital segment viewed dorsally



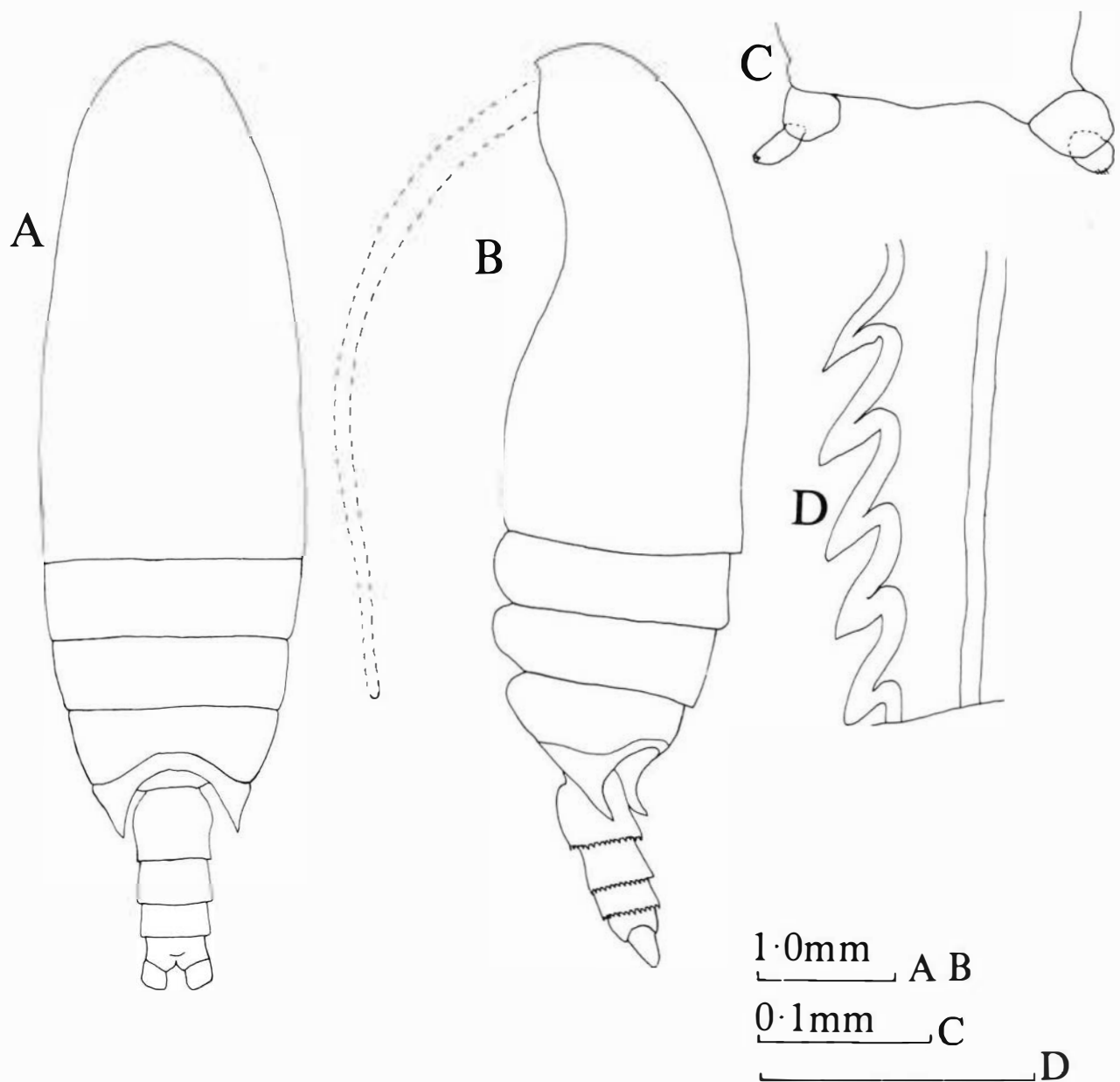


FIG. 55. *Sursamucro spinatus* female (from Bradford 1969c): A, dorsal view; B, lateral view; C, leg 5; D, part of terminal spine of exopod of leg 3.

has anterior swelling. Antenna 1 reaches pedigerous segment 4. Mandible basipod 2 with two setae, endopod joint 1 with one seta. Maxilla 1 inner lobes 2 and 3 with four setae each. Terminal spine on exopods of legs 2–4 bear 21, 20 and 30 teeth respectively. Leg 5 represented by sclerotised ridge although vestigial leg 5 was found on one specimen.

**REMARKS:** This genus is quite close to *Aetideopsis* except that it has a bluntly rounded rostrum and elongate annulate setae on antenna 1.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Bradford (1969c).

**NEW RECORDS:** Nil.

**DISTRIBUTION:** Continental slope off the west and east coast of northern New Zealand. This species was taken in trawls at depths of 1210–1697 m.

## **Undeuchaeta** Giesbrecht, 1888

**DEFINITION:** Head and pedigerous segment 1 indistinctly separate, pedigerous segments 4 and 5 fused. Head rounded or crested. Posterolateral metasomal borders more or less asymmetrical, rounded or triangular with rounded apex. Female genital segment asymmetrical with ventral and/or dorsal spine. Rostrum small, one-pointed. Antenna 1 23-jointed. Antenna 2 endopod more than half length of exopod. Endopod of maxilla 1 with 15 setae, basipod 2 with five setae. Leg 1 exopod joints 1 and 2 partially separate, joint 1 without external spine. Endopod of leg 2 one-jointed; basipod 1 of leg 4 with or without internal edge spines; if present spines do not protrude posteriorly as in *Pseudochirella*.

Males with slender bodies. Leg 5 biramous on both sides; basal joints swollen, endopods one-jointed; left leg exopod three-jointed, apical joint with styliform distal portion with patch of hairs at midlength. (Vervoort 1952g).

The genus *Undeuchaeta* contains the following species: *U. bispinosa* Esterly, 1911 ( $\delta$  see Sewell 1929); *U. incisa* Esterly, 1911 (= *Mesundeuchaeta asymmetrica* Wolfenden, 1911; = *U. superba* With, 1915; = ?*U. magna* Tanaka, 1957b) ( $\delta$  see Vervoort 1952g, With 1915); *U. intermedia* A. Scott, 1909 ( $\delta$  unknown); *U. major* Giesbrecht, 1888 ( $\delta$  see With 1915); *U. plumosa* (Lubbock, 1856) (= *U. minor* Giesbrecht, 1888) ( $\delta$  see Vervoort 1952g).

The following species have been taken in the south-west Pacific:

### **Undeuchaeta incisa** Esterly, 1911 (Figs 56, 69)

**DESCRIPTION:** Size: ♀♀ 5.7–6.6 mm, ♂♂ 4.08–5.20 mm.

**Female:** Head crested, last metasomal segment rounded on right, produced on left into notched process. Urosome one quarter length of metasome. Genital segment with lamellar process to right of genital orifice and peg-like process on right dorsolateral surface. Basipod 1 of leg 4 with very variable number of inner edge teeth.

**Male:** Body generally like that of female. Right leg 5 endopod with proximal tooth, also more distal tooth placed at about two fifths length of endopod from base; exopod joint 1 with tooth opposite distal tooth of endopod. Right leg 5 exopod joint 2 more than one half length of exopod joint 1. (Esterly 1911, With 1915 as *U. superba*).

**REMARKS:** This species definitely belongs to *Undeuchaeta* rather than *Pseudochirella* (Sewell 1947, Grice 1964) because of the lack of an external spine on exopod joint 1 of leg 1 and the form of the female genital segment and male leg 5. We do not agree with Vervoort (1957) that this species is synonymous with *U. major*.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Bradford (1972 as *Pseudochirella* sp.)

### **NEW RECORDS:**

Station Number	Depth of Haul (m)	Specimens
VUZ105	0–914	1 ♀, 6.2 mm
VUZ112	0–732	1 ♀, 5.9 mm
Mu67/52s	0–1000	1 ♀, 6.0 mm
Mu67/57s	0–1000	2 ♀♀, 6.6 mm 1 ♂, 5.2 mm
Mu67/94s	0–1000	4 ♀♀, 5.7, 6.3, 6.3, 6.0 mm

**DISTRIBUTION:** This species is found in deep hauls in the north Atlantic (With 1915 as *Undeuchaeta superba*, Grice 1964), tropical and south Atlantic to 35° 39' S (Wolfenden 1911 as *Mesundeuchaeta asymmetrica*) and north Pacific (Esterly 1911, ?Tanaka 1957b as *U. magna*). Present records extend the known southern range of *U. incisa*.

### **Undeuchaeta major** Giesbrecht, 1888 (Figs 57, 69)

**DESCRIPTION:** Size: ♀♀ 4.2–5.5 mm, ♂♂ 3.90–4.92 mm.

**Female:** Head and pedigerous segment 1 incompletely fused, head with low crest. Posterolateral metasomal margins triangularly produced, terminating in blunt slightly asymmetrical points, pointing slightly outwards on right. Urosome one quarter length of metasome; genital segment with tubercle on right, genital protuberance large with posteriorly directed spine on right of genital opening. Basipod 1 of leg 4 with internal border not quite smooth, with 1–4 closely placed teeth at base of internal seta.

**Male:** Head crest as in female, body more slender with posterior metasome regularly rounded. Right leg 5 endopod has peg-like basal tooth and two more distal processes differently shaped from that in *U. plumosa*, right leg 5 exopod joint 2 one half length of exopod joint 1. (Vervoort 1952g, With 1915).

**REMARKS:** Most authors apart from With (1915), Tanaka (1957b) and Grice and Hulsemann (1968) appear to have missed the teeth on basipod 1 of leg 4, which are very similar to those found in *U. incisa*. These teeth may not always be present as in one specimen there were two teeth on one side and one on the other and the border was wrinkled.

**PREVIOUS SOUTH-WEST PACIFIC RECORDS:** Vervoort (1957), Farran (1929), Bradford (1970a,b).

### **NEW RECORDS:**

Station Number	Depth of Haul (m)	Specimens
A292	500–1000	1 ♀, 4.5 mm
C537	0–250	1 ♀, 4.6 mm
E892	0–1224	1 ♀, 4.9 mm
F874	0–1357	3 ♀♀, 4.8, 4.5 mm
F879	0–1267	2 ♀♀, 4.6, 5.0 mm
F881	0–1260	3 ♀♀, 4.7, 4.8, 4.9 mm 3 ♂♂, 4.0 mm

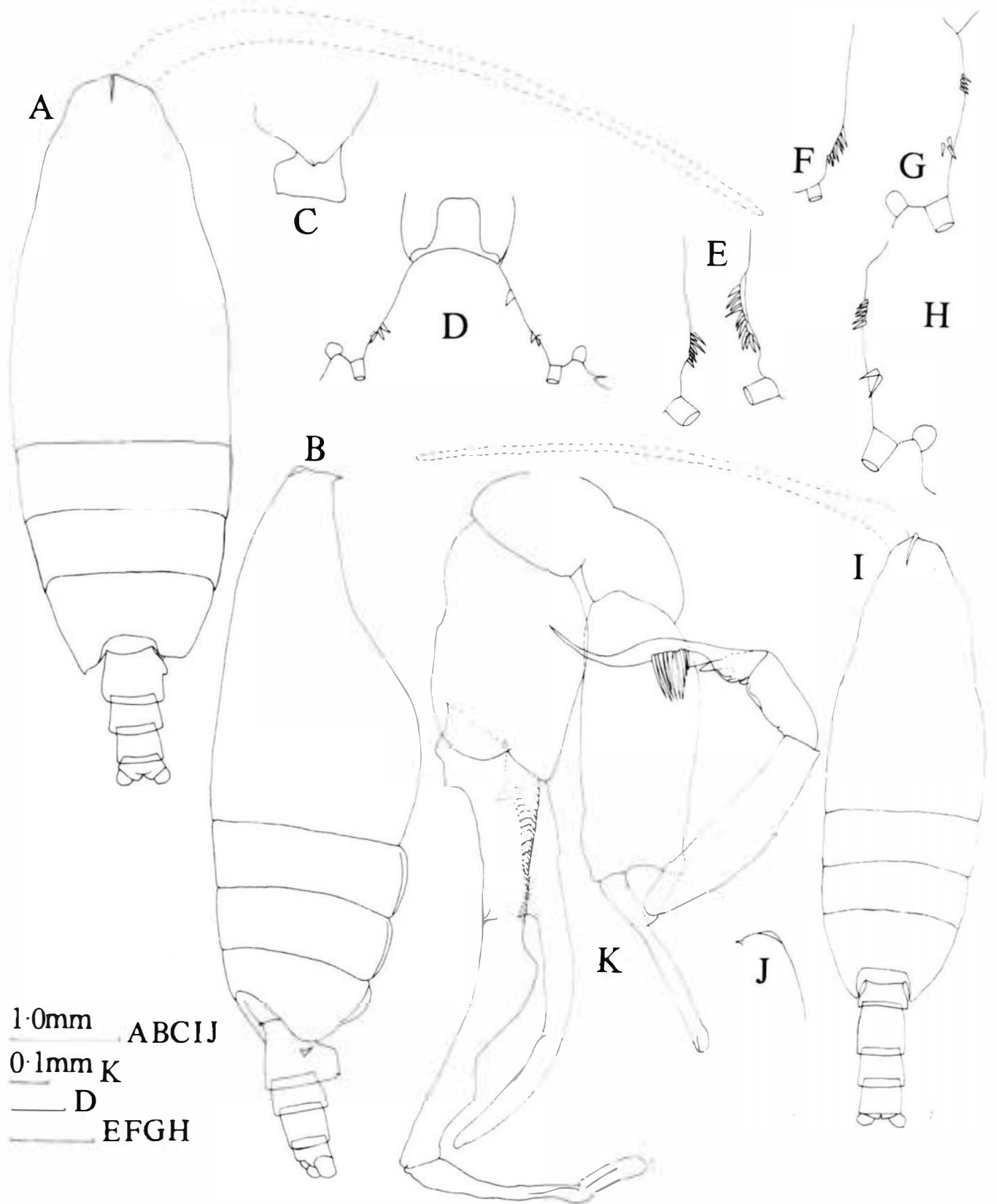


FIG. 56. *Undeuchaeta incisa* female from OU Stn Mu67/94s: A, dorsal view; B, lateral view; C, left side of posterior of metasome; inner edge of basipod 1 of leg 4—specimens from: D, Mu67/94s; E, Mu67/57s; F, Mu67/52s; G, H, Mu67/94s. Male from OU Stn Mu67/57s: I, dorsal view; J, lateral view of anterior of head; K, leg 5.

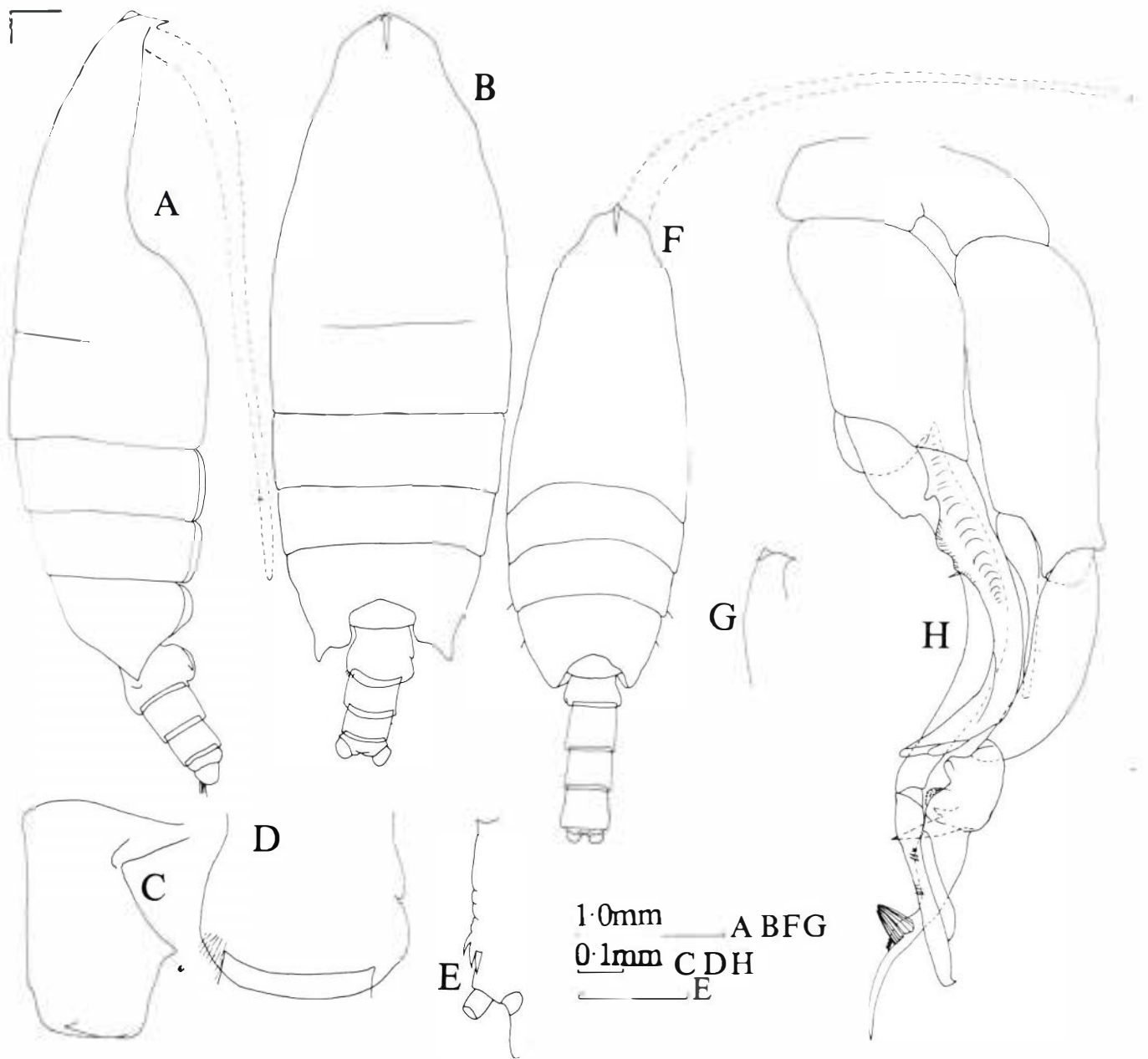


FIG. 57. *Undeuchaeta major* from NZOI Stn F946. Female: A, lateral view; B, dorsal view; C, right side of genital segment; D, dorsal view of genital segment; E, inner edge of basipod 1 of leg 4. Male: F, dorsal view; G, lateral view of anterior of head; H, leg 5.

F892	0-1278	2♀, 4.8, 5.0 mm 1♂, 3.9 mm	VUZ93	0-1097	2♂♂, 4.3, 4.3 mm
F897	0-1269	2♀	VUZ105	0-914	2♀, 5.0 mm
F910	0-1397	3♀, 4.2, 4.3, 4.3 mm	VUZ112	0-732	1♀, 5.25 mm 1♂, 4.4 mm
F911	0-1697	1♀, 4.8 mm	AUZ75	0-200	3♀, 4.7, 4.7, 4.8 mm
F945	500-1000	1♀, 4.6 mm	AUZ82	0-100	1♀, 4.6 mm
F946	0-200	3♀, 5.2, 5.2, 5.1 mm			
	200-500	2♀, 4.7 mm 1♂, 4.3 mm			

**DISTRIBUTION:** This species appears to have much the same distribution as *U. plumosa*, although at greater depths as it is not as common in shallow hauls as *U. plumosa*.

**Undeuchaeta plumosa** (Lubbock, 1856) (Figs 58, 69)

*U. intermedia*: Bradford 1970a, b, (not A. Scott).

DESCRIPTION: Size: ♀♀ 3.0–4.2 mm, ♂♂ 2.8–3.7 mm.

**Female:** Head rounded, without crest; rostrum small, ventrally directed. Head and pedigerous segment 1 fused. Posterolateral metasomal border rounded laterally, asymmetrical, right side shorter. Urosome one third length of metasome; genital segment with small curved spine on right side near dorsal surface, ventral surface without spine. Antenna 1 as long as metasome.

**Male:** Body as in female, slightly more slender. Leg 5 slightly longer than urosome, right leg endopod with two small proximal protrusions and larger swelling one third way along segment, right leg exopod joint 2 less than one half length of exopod joint 1. (Vervoort 1952g).

REMARKS: One female specimen of this species was misidentified (Bradford 1970b, fig. 18) as *U. intermedia* as the shape of the ventral genital segment had been altered by what turned out to be spermatophore material.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Farran (1929 as *U. minor*), Bary (1951), Vervoort (1957), Bradford (1970a, b as *U. intermedia*; 1972).

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
A292	500–1000	3 ♀♀, 1 ♂
A295	surface	4 ♀♀, 12 ♂♂, 2.8–3.2 mm
	400–1000	1 ♀
A302	surface	7 ♀♀, 5 ♂♂
	0–500	1 ♂
A303	450–1000	3 ♀♀
A307	surface	6 ♀♀
A313	0–500	1 ♀, 3.9 mm
A332	surface	2 ♀♀, 4.3, 4.0 mm
		1 ♂, 3.4 mm
C537	surface	9 ♀♀, 2 ♂♂
	0–250	1 ♀
D614	100–250	3 ♀♀, 2 ♂♂
E891	0–1245	1 ♀, 4.1 mm
E892	0–1224	4 ♀♀
E901	0–1248	6 ♀♀
E904	0–1243	1 ♀
F874	0–1357	4 ♀♀
F881	0–1260	5 ♀♀
F892	0–1278	2 ♀♀
F897	0–1269	3 ♀♀
F910	0–1397	9 ♀♀, some with spermatophores
F911	0–1697	1 ♀, 4.0 mm
F945	500–1000	1 ♂, 3.4 mm

F946	0–200	5 ♀♀, 3.8–4.1 mm
		3 ♂♂, 3.5, 3.2, 3.4 mm
	200–500	1 ♀, 3.6 mm;
		1 ♂, 3.7 mm
	0–1000	3 ♀♀, 4.0, 4.1, 3.6 mm
AUZ49	surface	22 ♀♀
AUZ75	0–200	8 ♀♀, 1 ♂
AUZ88	0–100	1 ♀
VUZ93	0–1097	5 ♀♀, 3.50–3.75 mm
VUZ105	0–914	7 ♀♀, 4.0–4.2 mm
VUZ107	0–914	3 ♀♀, 3.7, 3.9, 4.1 mm
VUZ112	0–732	3 ♀♀, 3.9, 4.0, 4.0 mm
Mu67/94s	0–1000	1 ♀
Mu67/106s	0–1000	1 ♀
Mu67/116s	0–1000	1 ♀
Mu67/147s	0–1000	1 ♀

DISTRIBUTION: This species is found in tropical and subtropical water in all oceans (Vervoort 1957, Bjornberg 1973) and is found at moderate depths. At night *U. plumosa* migrates towards the surface to above 250m (Bradford 1970a). Surface records for the species appear to come from either night hauls, or areas where upwelling occurs (Bradford 1969b).

**Valdiviella** Steuer, 1904

DEFINITION: General appearance as in *Euchaeta*. Female rostrum bifurcate. Head and pedigerous segment 1, also pedigerous segments 4 and 5, fused; posterior margins of last metasomal segment rounded. Antenna 1 23-jointed as in *Euchaeta*. Antenna 2 exopod and endopod equal in length. Maxilla 1 with reduced setation on inner lobe 1, endopod and basipod 2 (11, 3, 3 setae respectively); posterior surface of inner lobe 1 with only one seta. Maxilla 2 as in *Aetideus*, seta on lobe 5 strong. Maxilliped as in *Undeuchaeta* and *Euchaeta*, but row of spinules on anterior margin of basipod 2 is situated proximally not distally as in *Euchaeta*. Swimming legs with some degree of fusion between proximal joints. Leg 5 absent.

Male leg 5 resembles that of *Chirundina*. (Tanaka 1957b).

The genus *Valdiviella* contains the following species: *V. brevicornis* Sars, 1905 (♂ unknown, see Roe 1975); *V. brodskyi* Zvereva, 1975 (♂ unknown); *V. ignota* Sewell, 1929 (♀ unknown); *V. imperfecta* Brodsky, 1950 (♂ unknown); *V. insignis* Farran, 1908 (= *V. gigas* A. Scott, 1909); *V. minor* Wolfenden, 1911 (♂ see Roe 1975); *V. oligarthra* Steuer, 1904 (= *Euchaeta gigas* Brady, 1883) (♂ see Sewell 1929).

Zvereva (1975) discusses the relationships of this genus to the Euchaetidae and Aetideidae and suggests a new family should possibly be formed to take *Valdiviella*.

The following species has been taken in the south-west Pacific:

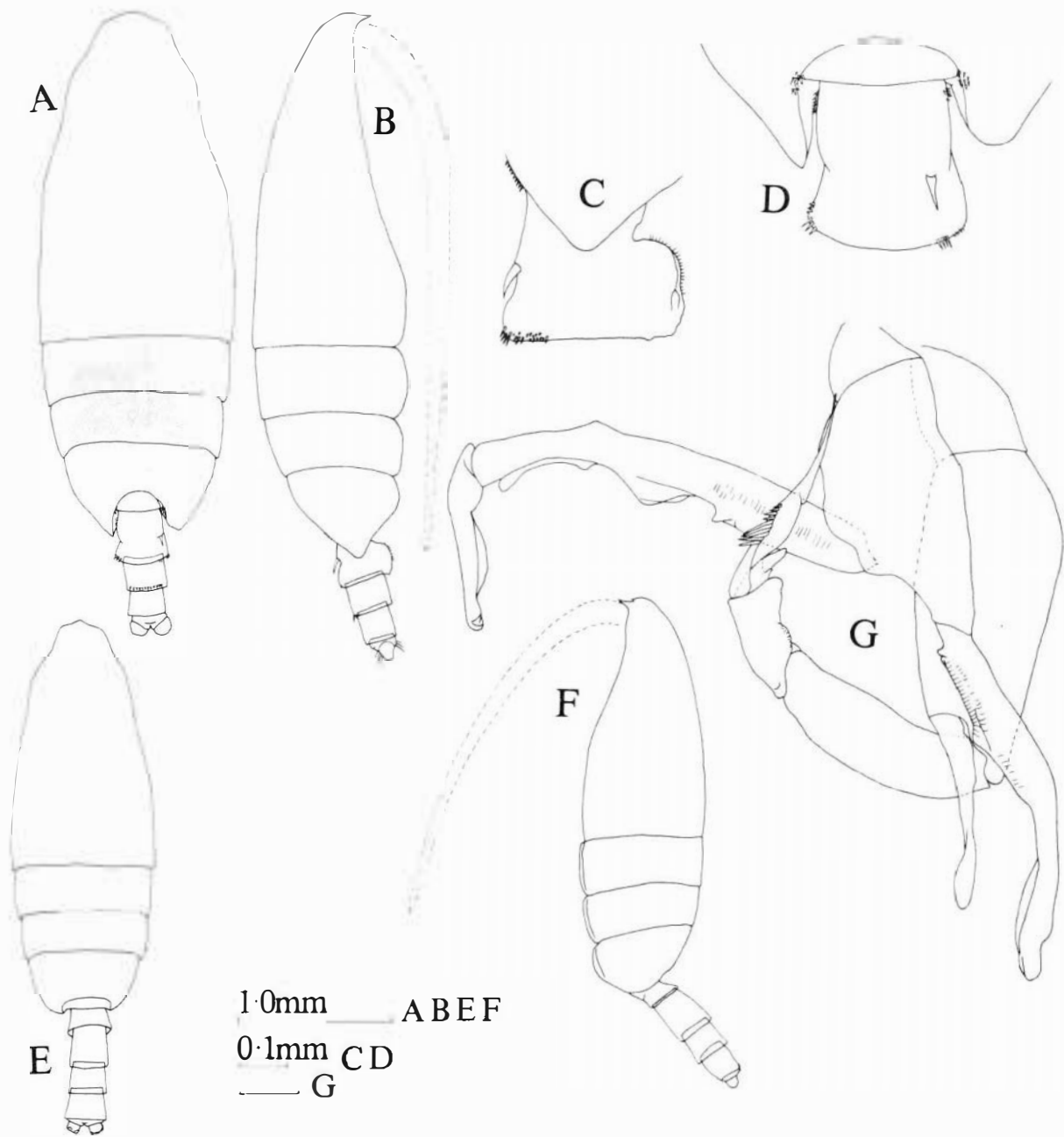


FIG. 58. *Undeuchaeta plumosa* from NZOI Stn F946. Female: A, dorsal view; B, lateral view; C, right side of genital segment; D, dorsal view of genital segment. Male: E, dorsal view; F, lateral view; G, leg 5.

**Valdiviella insignis** Farran, 1908 (Figs 59, 61)

**DESCRIPTION:** *Size:* ♀♀ 10.0–12.0 mm, ♂♂ 8.7–10.0 mm.

**Female:** Posterior metasomal flaps small and rounded with short spine terminally. Genital segment dilated in middle and genital swelling ventrally excavated in middle. Both following urosomal segments with groups of ventral hairs. Antenna 1 passes metasome. Exopods

of legs 1–4 two-jointed; endopod of leg 2 one jointed, of legs 3 and 4 two-jointed; limits of proximal joints indicated only by constrictions at border.

**Male:** Fusion line between pedigerous segments 4 and 5 visible dorsally. Posterior metasomal borders with small spine. Leg 1 differs from female limb in having three-jointed exopod. Leg 5 elongate; right leg with basal joint enlarged, exopod two-jointed, endopod extends not quite as far as triangular protrusions on

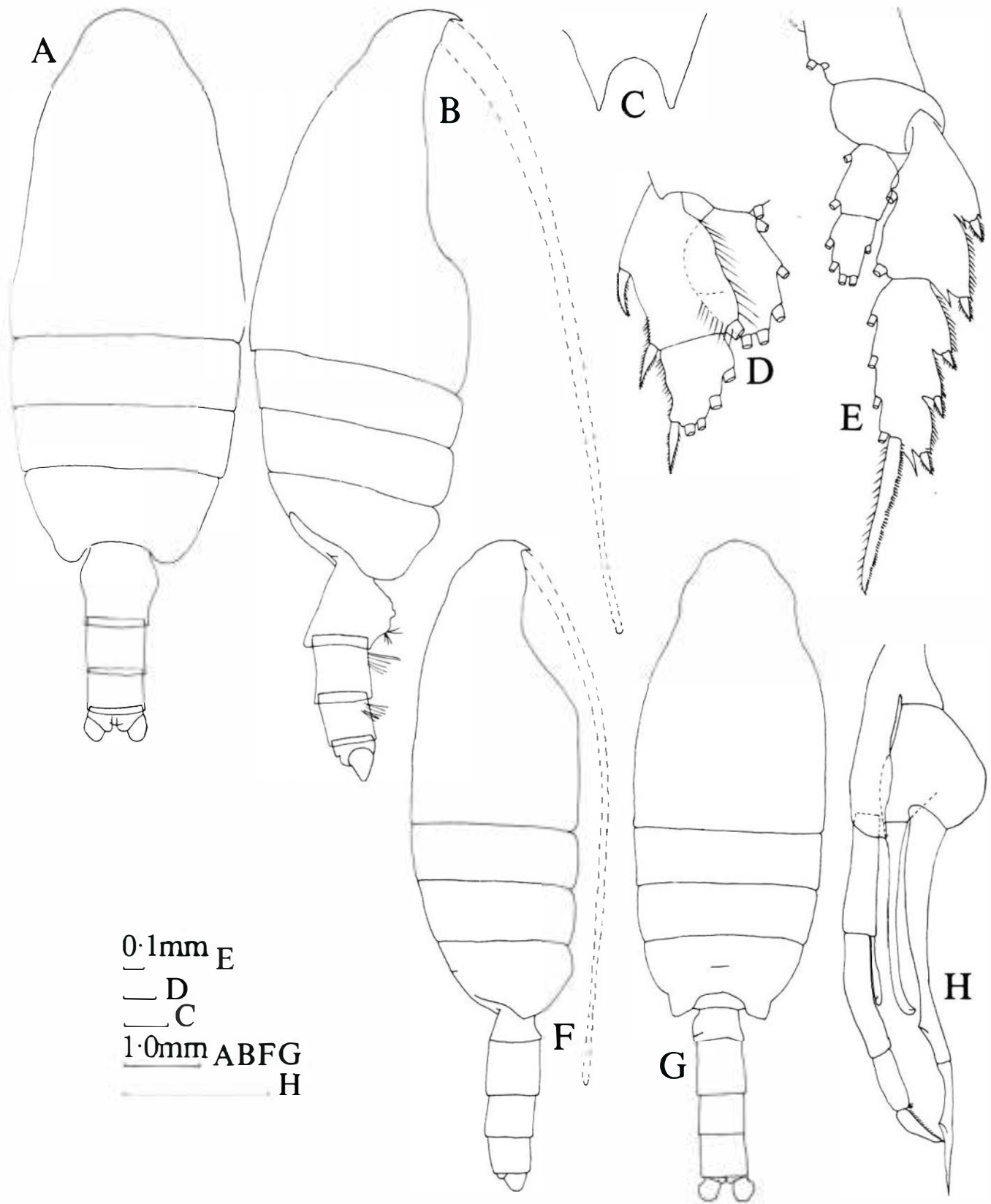


FIG. 59. *Valdiviella insignis* female from NZOI Stn F945: A, dorsal view; B, lateral view; C, rostrum; D, leg 1; E, leg 4. Male from VU Stn VUZ93: F, lateral view; G, dorsal view; H, leg 5.

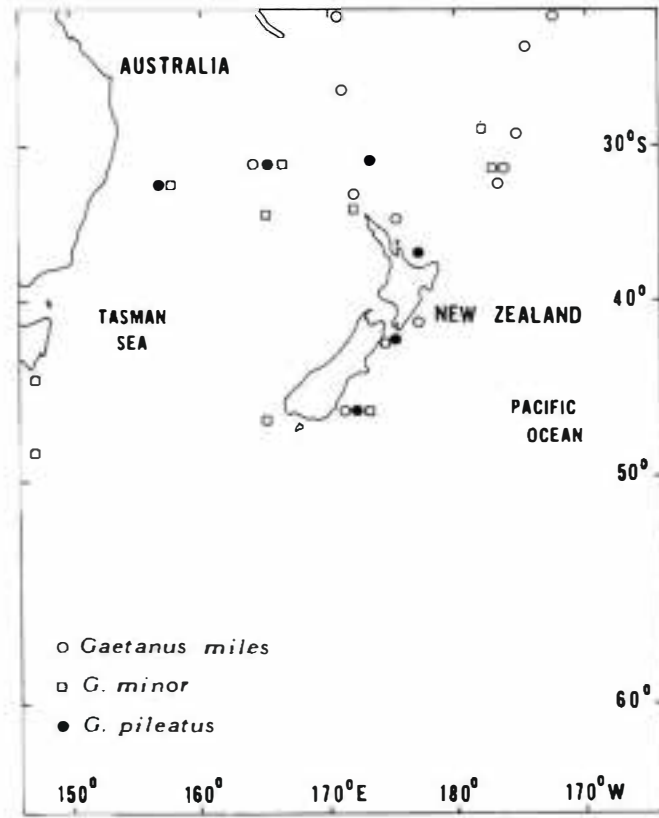
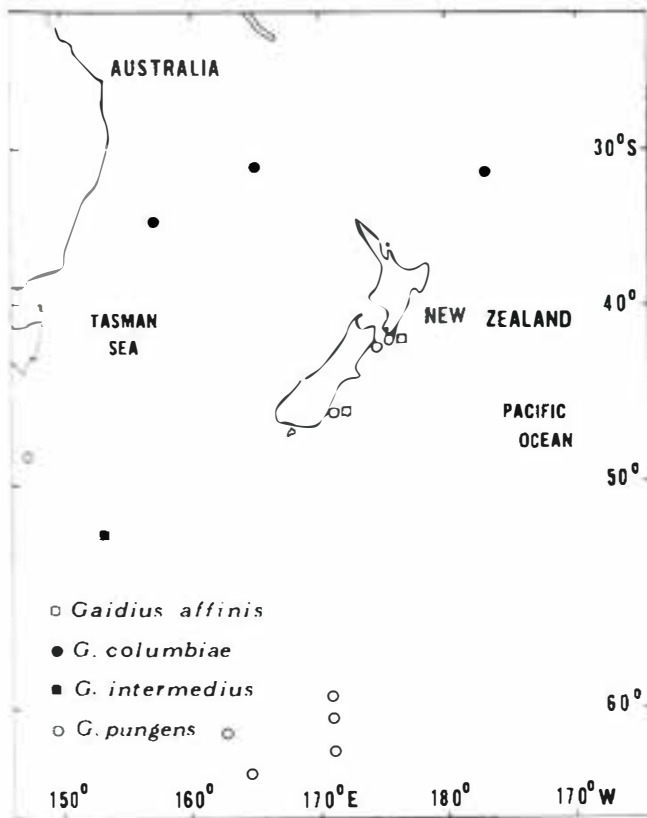
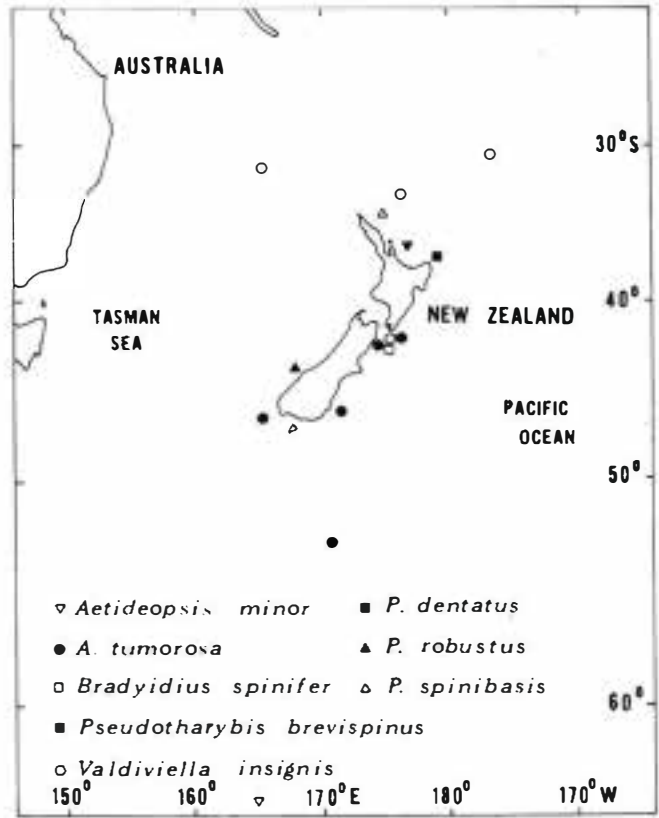
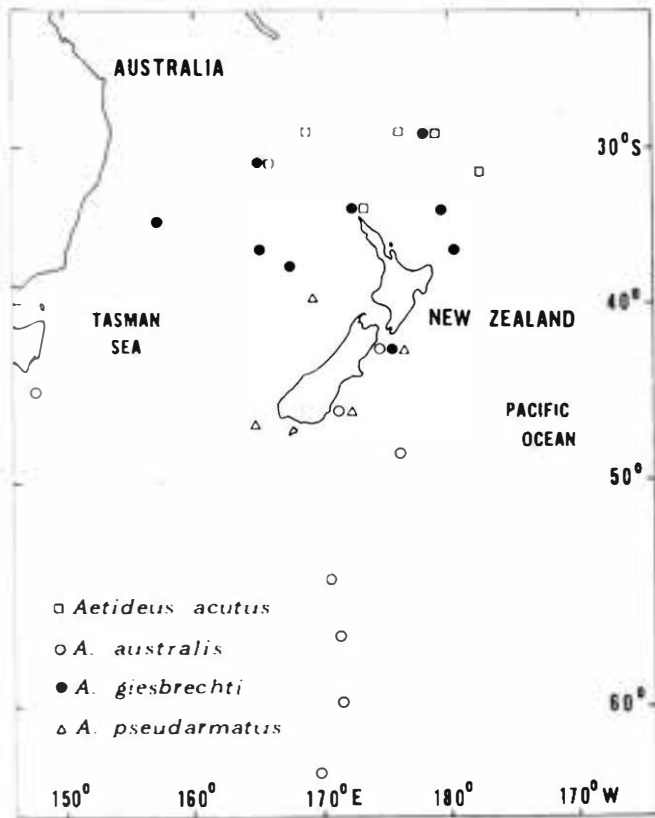
**Top left:** FIG. 60. Distribution of *Aetideus acutus*, *A. australis*, *A. giesbrechti*, and *A. pseudarmatus* in the south-west Pacific.

**Top right:** FIG. 61. Distribution of *Aetideopsis minor*, *A. numosa*, *Bradyidius spinifer*, *Pseudotharybis brevispinus*, *P. dentatus*, *P. robustus*, *P. spinibasis*, and *Valdiviella insignis* in the south-west Pacific.

**Bottom left:** FIG. 62. Distribution of *Gaidius affinis*, *G. columbiae*, *G. intermedius*, and *G. pungens* in the south-west Pacific.

**Bottom right:** FIG. 63. Distribution of *Gaetanus miles*, *G. minor*, and *G. pileatus* in the south-west Pacific.



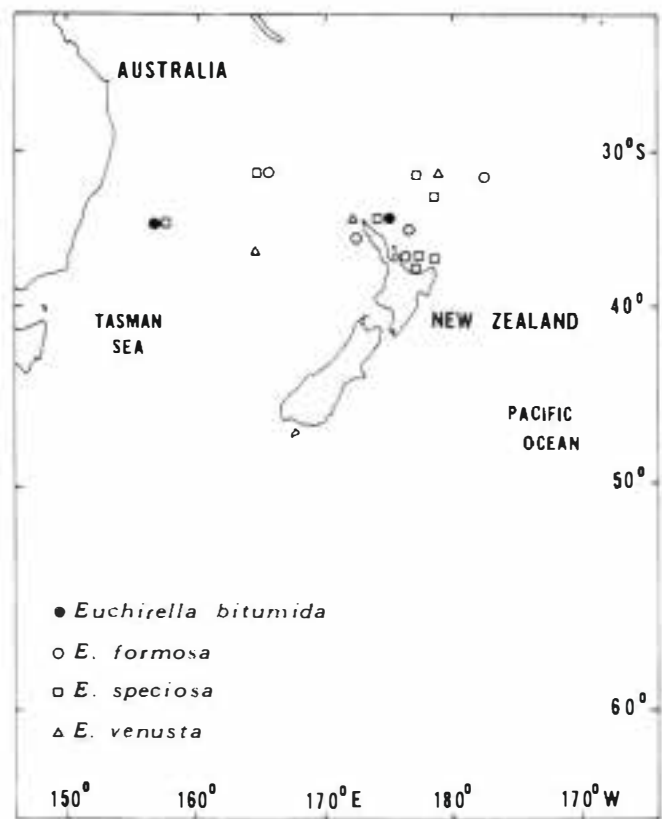
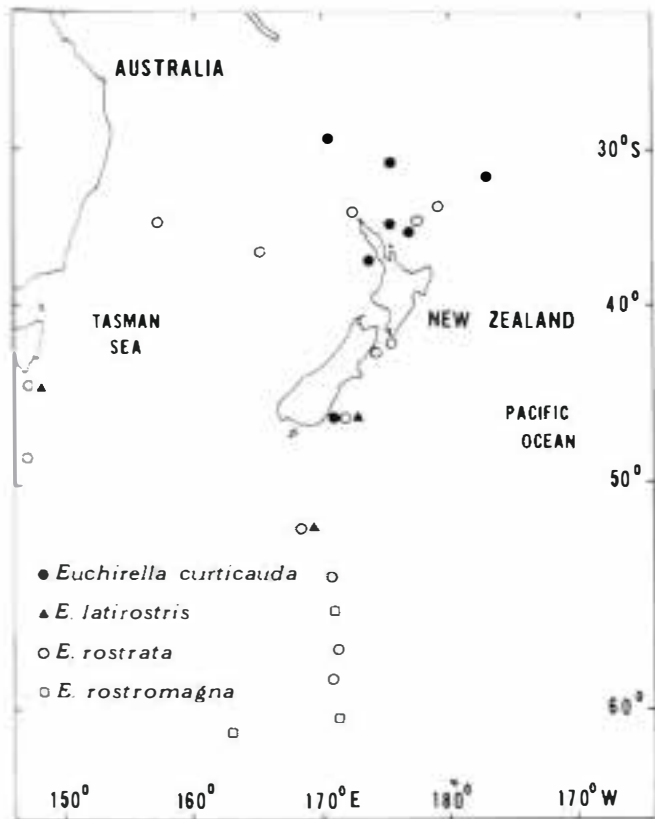
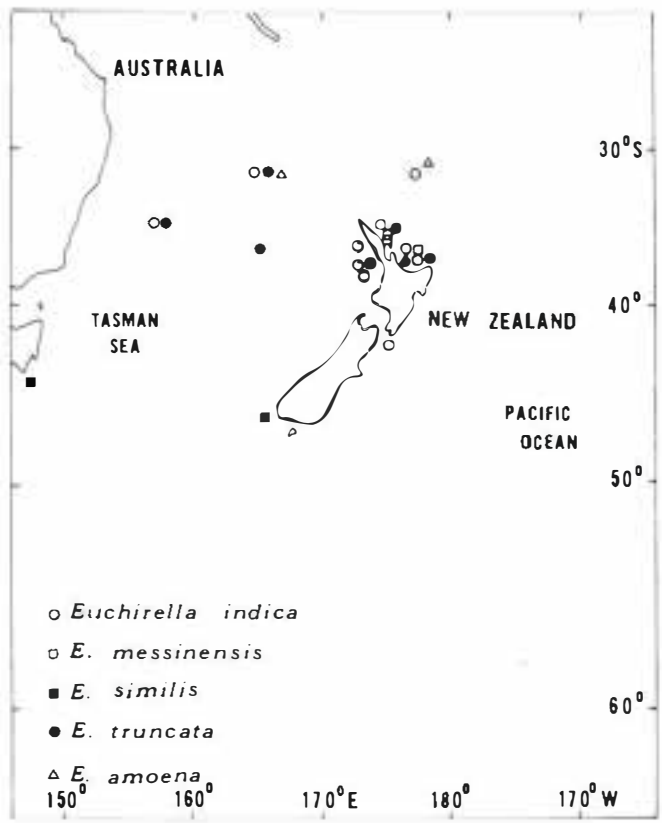
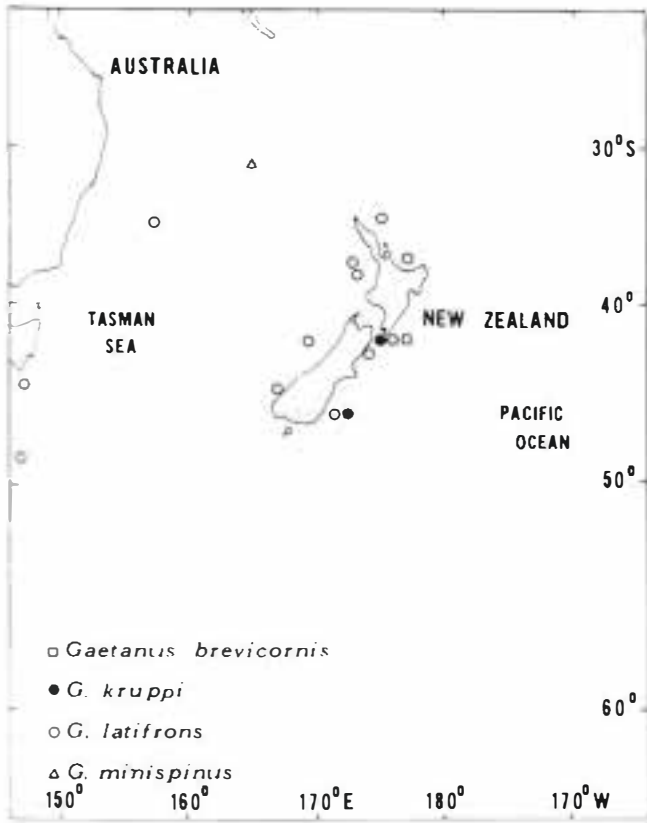


**Top left:** FIG. 64. Distribution of *Gaetanus brevicomis*, *G. kruppi*, *G. latifrons*, and *G. minispinus* in the south-west Pacific.

**Top right:** FIG. 65. Distribution of *Euchirella indica*, *E. messinensis*, *E. similis*, *E. truncata*, and *E. amoena* in the south-west Pacific.

**Bottom left:** FIG. 66. Distribution of *Euchirella curticauda*, *E. latirostris*, *E. rostrata*, and *E. rostromagna* in the south-west Pacific.

**Bottom right:** FIG. 67. Distribution of *Euchirella bitumida*, *E. formosa*, *E. speciosa*, and *E. venusta* in the south-west Pacific.

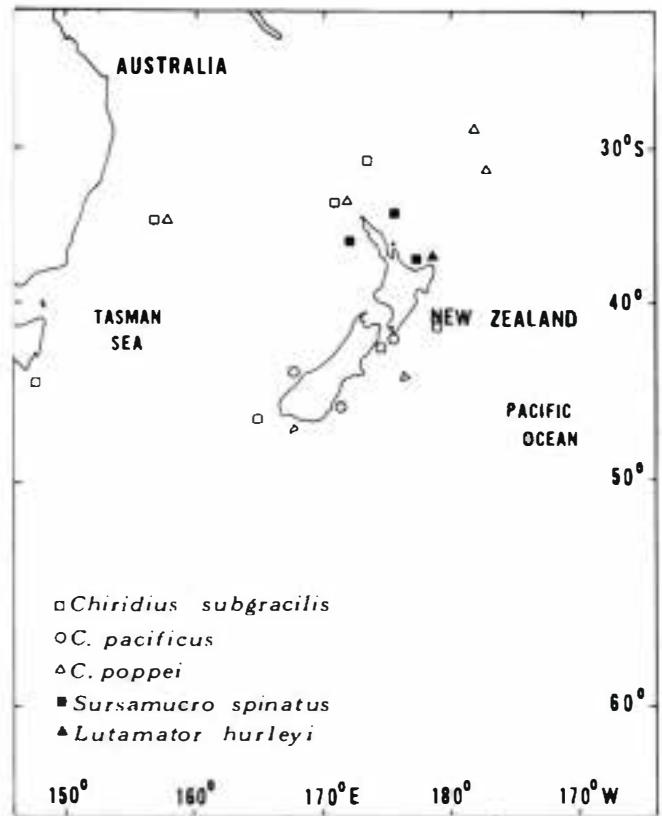
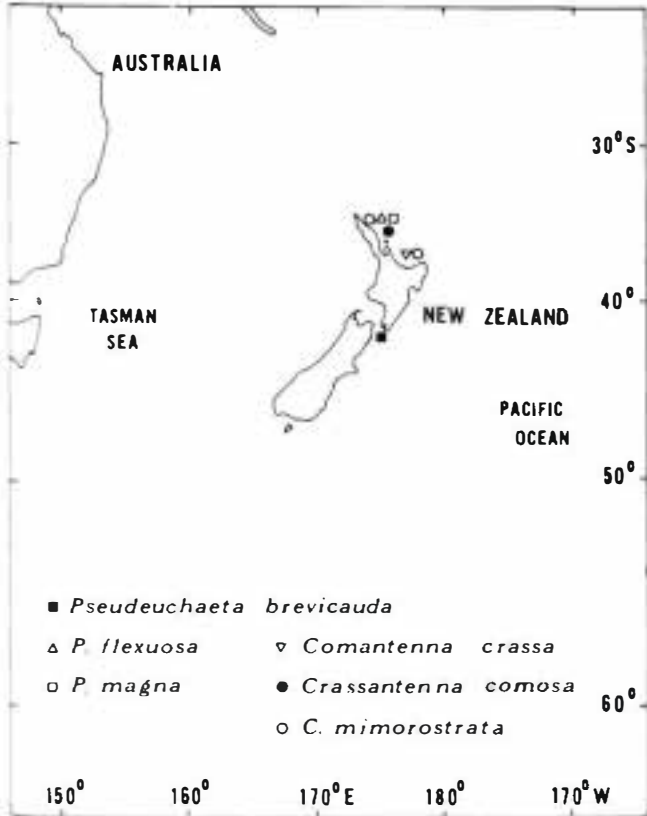
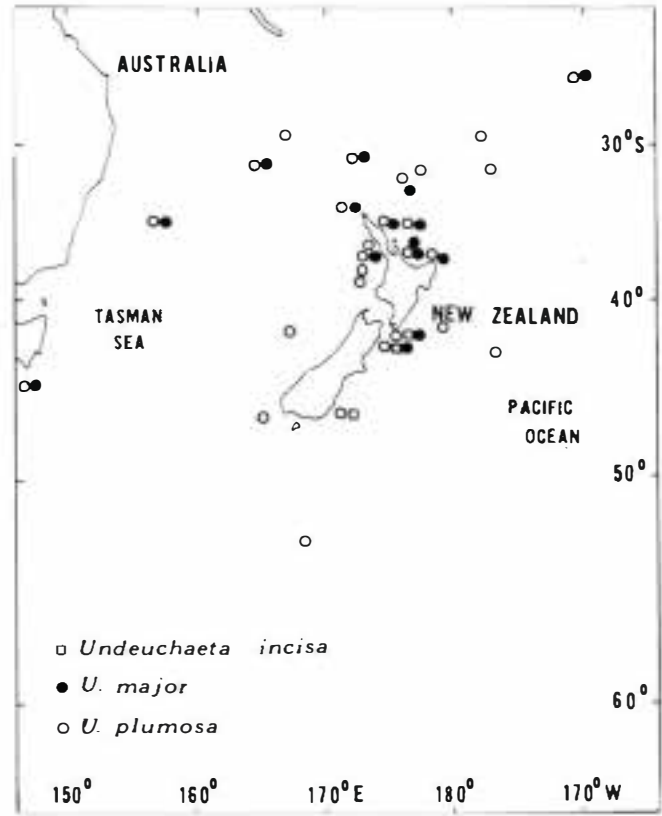
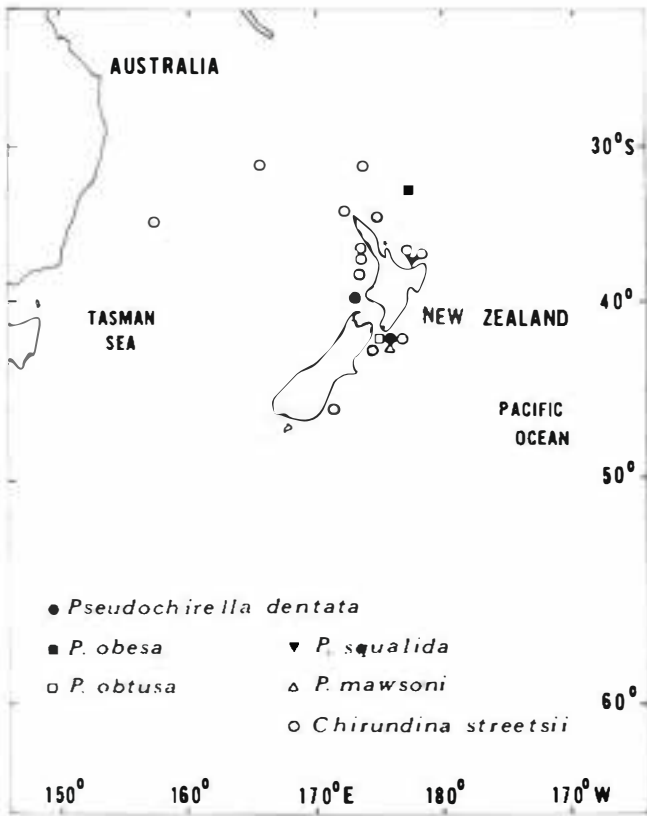


**Top left:** FIG. 68. Distribution of *Pseudochirella dentata*, *P. obesa*, *P. obtusa*, *P. mawsoni*, *P. squalida*, and *Chirundina strøetsii* in the south-west Pacific.

**Top right:** FIG. 69. Distribution of *Undeuchaeta incisa*, *U. major*, and *U. plumosa* in the south-west Pacific.

**Bottom left:** FIG. 70. Distribution of *Pseudeuchaeta brevicauda*, *P. flexuosa*, *P. magna*, *Comantenna crassa*, *Crassantenna comosa*, and *C. mimorostrata* in the south-west Pacific.

**Bottom right:** FIG. 71. Distribution of *Chiridius subgracilis*, *C. pacificus*, *C. poppei*, *Sursarucro spinatus*, and *Lutamator hurleyi* in the south-west Pacific.



distal part of exopod joint 1; left leg slightly shorter, exopod three-jointed, endopod very short, extending about one half length of exopod joint 1. (Sars 1925)

REMARKS: As noted by Sewell (1929) but not mentioned by Sars (1925), the posterior metasomal borders of this species terminate in a small spine.

PREVIOUS SOUTH-WEST PACIFIC RECORDS: Nil.

NEW RECORDS:

Station Number	Depth of Haul (m)	Specimens
F945	500-1000	2 ♀, 11.0, 10.6 mm
VUZ93	0-1097	1 ♂, 9.1 mm
VUZ105	0-914	1 ♀, 10.7 mm
		2 ♂, 9.0, 9.1 mm
AUZ78	0-870	1 ♀, 11.0 mm
AUZ108	0-823	1 ♀, 11.1 mm

DISTRIBUTION: Deep waters of the Atlantic, Indian and Pacific Oceans (Vervoort 1957; Grice and Hulsemann 1965, 1967; Bjornberg 1973).

**Wilsonidius** Tanaka, 1969

DEFINITION: Female head and pedigerous segment 1, also pedigerous segments 4 and 5, fused. Posterior margins of last metasomal segment narrowly rounded. Rostrum one-pointed. Antenna 1 24-jointed, joints 8 and 9 fused. Antenna 2 exopod seven-jointed, longer than endopod. Maxilla 1 endopod with 15 setae, basipod 2 with five setae. Maxilliped basipod 2 much longer than basipod 1. Exopod joint 1 of leg 1 without external spine. Leg 2 endopod one-jointed. Leg 4 without spines on inner margin of basal joint 1 at base of inner seta. Leg 5 absent in female.

Male unknown. (Tanaka 1969).

One species is known for this genus: *W. alaskensis* Tanaka 1969, which has not been taken in the south-west Pacific.

## DISTRIBUTION OF SOUTH-WEST PACIFIC AETIDEIDAE

The material studied was collected with a wide variety of gear between 23° S and 64° S. Near-surface layers down to 500 m were more comprehensively sampled (Fig. 72) than deeper waters but depths to 1000 m are also well represented in the collections, particularly by the series of Otago University stations. Bathypelagic depths were only sparsely sampled, often with inappropriate gear. These limitations accepted, the present collection together with previous records from the area (Fig. 72) are sufficiently comprehensive to demonstrate broad features of vertical and latitudinal distribution.

The characteristic depth zones of each species (Fig. 73) were determined by several criteria apart from their observed occurrence in the present records. Where a species occurred in hauls from deep water to the surface we have assumed that it was caught in deep water provided that the species was absent from the numerous shallow samples. Also, existing records of distribution in other parts of the world have been considered in the determination of each characteristic vertical and latitudinal distribution. Bathypelagic species are defined as those which usually occurred in present samples with a maximum depth around 1000 m or more and were seldom taken in samples from less than 500 m. Mesopelagic species commonly occurred in samples with maximum depths between 500 and 1000 m but may be found at epipelagic depths, usually in night samples. Epipelagic species had a high proportion of their occurrence in samples from less than 200 m maximum depth.

Species of the genus *Aetideus* are the only aetideids which tend to be epipelagic (Fig. 73). Even they are

rare in samples from the upper 100 m except from samples off northern New Zealand (Farran 1929) where upwelling accounts for the surface occurrence of many species more typical of deep waters (Bradford 1969b).

Mesopelagic aetideids were frequent and widespread in the samples. Four species were common: *Chirundina streetsii*, *Euchirella rostrata*, *Undeuchaeta major* and *U. plumosa*. These four species all occurred in a high proportion of hauls which reached depths greater than 500 m and were taken in very few surface samples. These species are known to perform daily vertical migrations and may even reach the surface at night (especially in the case of *E. rostrata* and *U. plumosa*) although at Kaikoura all four species were not taken in the surface 100 m (Bradford 1970a). Two hyperbenthic species may be included in this group (*Bradyidius spinifer* and *Aetideopsis tumorosa*) as the latter at least migrates above 250 m at night (Bradford 1970a).

Species of bathypelagic aetideids were about as numerous as the mesopelagic species but they occurred in a much smaller proportion of stations sampled and were sometimes represented by a single specimen. They were never found in the surface 250 m. A group of species, apparently hyperbenthic, may be included with the bathypelagic species as they live at bathyal depths: *Sursamucro spinosus*, *Pseudotharybis spinibasis*, *P. robustus*, *P. brevispinus*, *Pseudeuchaeta flexuosa*, *Lutamator hurleyi*, *Crassantenna mimorostrata*, *C. comosa* and *Comantenna crassa*.

Latitudinal positioning in distributions appears to be related to the extent to which each fauna is exposed to high and variable near-surface temperatures (Bruun

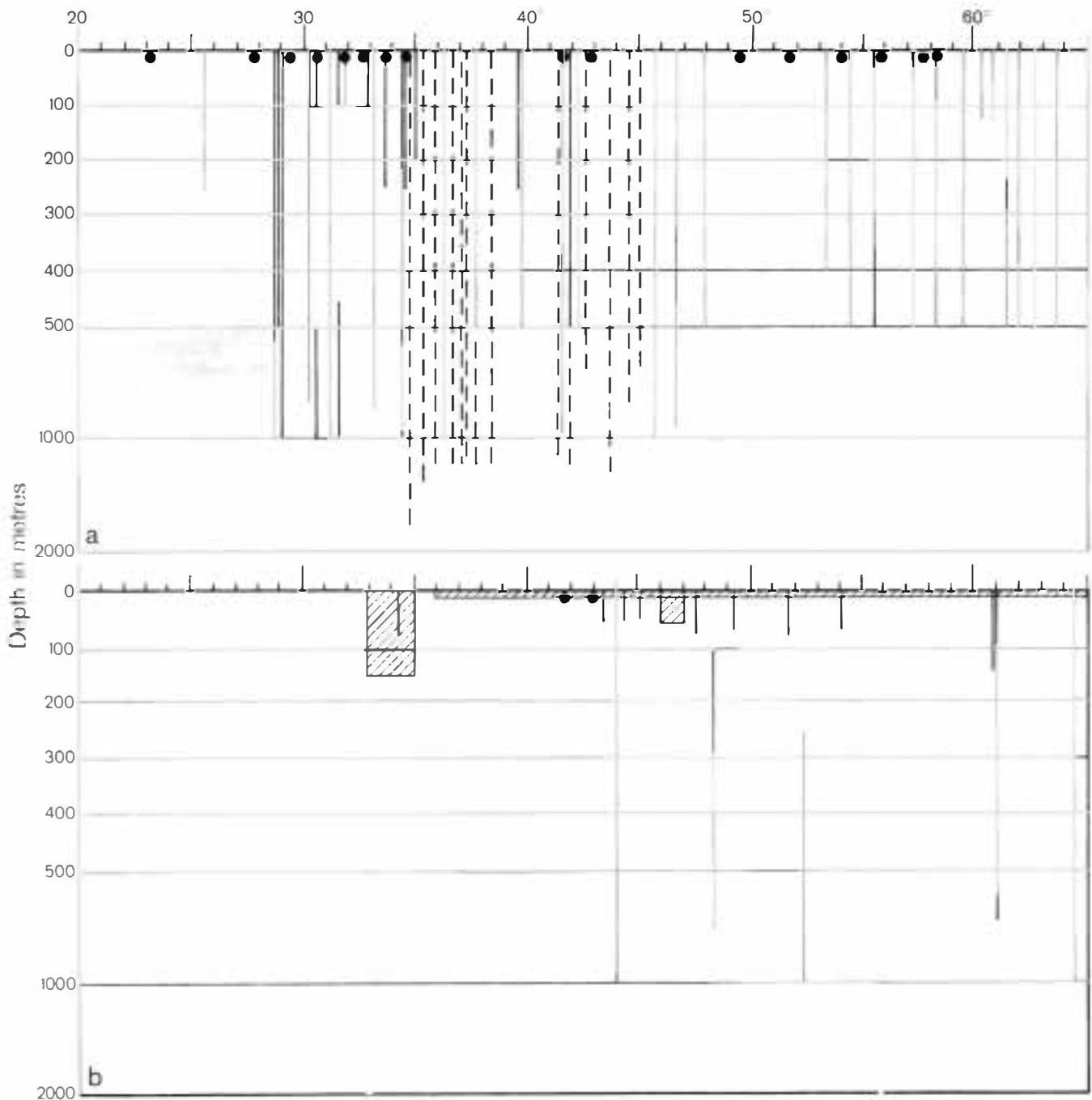


FIG. 72. Distribution of samples with latitude and depth from which present records derived: a, new records; b, previous records. - - - - Menzies trawl hauls, ——— vertical hauls, ● surface hauls, hatched areas represent a number of samples.

1957). For example, in *Aetideus* there is a subantarctic species *A. australis*, two tropical-subtropical species *A. acutus* and *A. giesbrechti*, and an apparently cool subtropical species *A. pseudarmatus*. Mesopelagic species appear to be similarly divided into Antarctic (*Aetideopsis minor*, *Euchirella rostromagna* and *Gaidius intermedius*), subantarctic (*Euchirella rostrata*) and tropical-subtropical to temperate species (Fig. 73)

with only one apparently cosmopolitan species, *Gaidius pungens*.

Records of the bathypelagic species are more sparse, but indicate most species have one kind of distribution in low to mid latitudes. One species, *Pseudochirella mawsoni*, appears to be confined to high and mid latitudes.

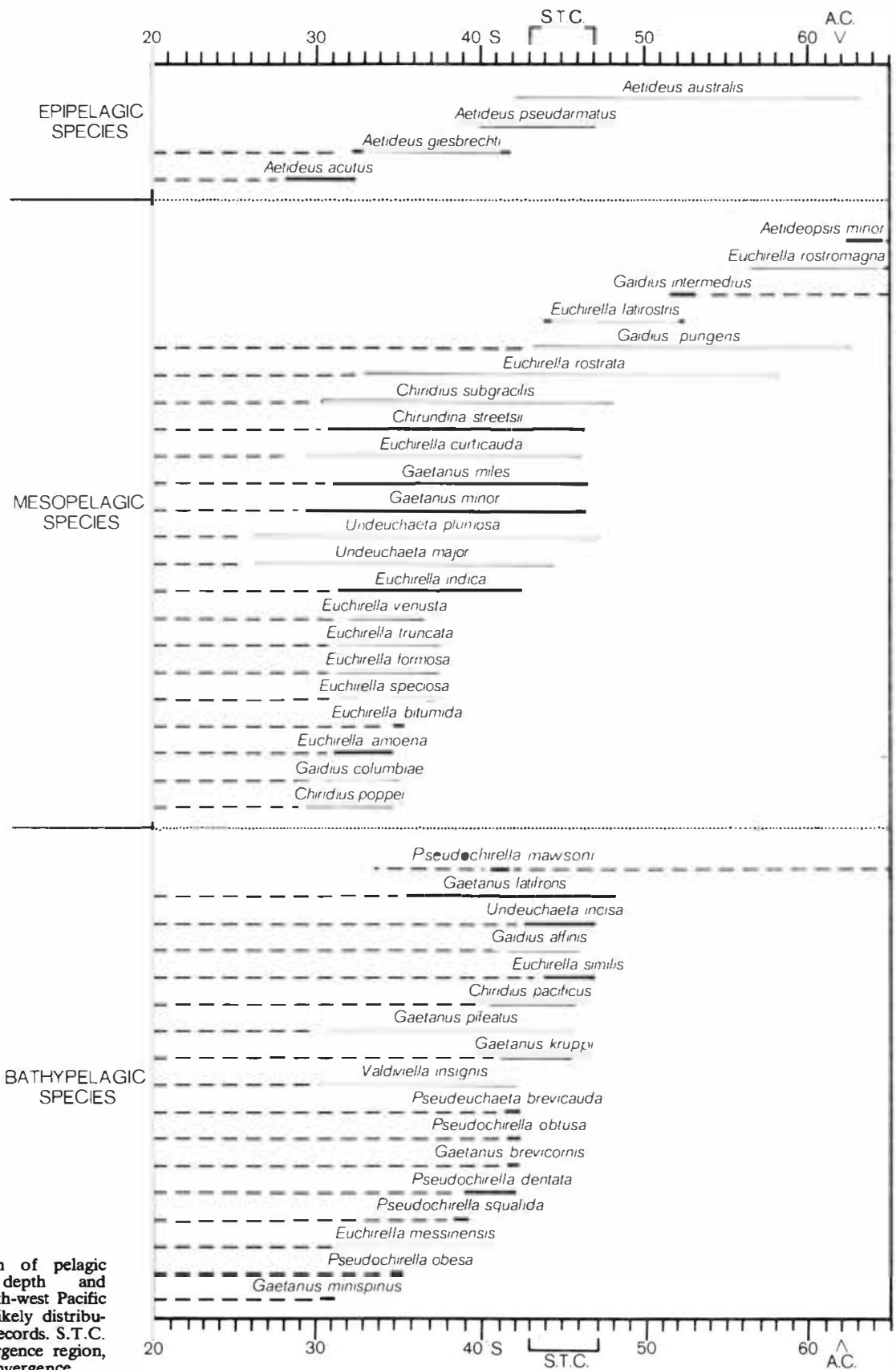


FIG. 73. Distribution of pelagic Aetideidae with depth and latitude: ——— south-west Pacific records, - - - - - likely distribution from all existing records. S.T.C. = Subtropical Convergence region, A.C. = Antarctic Convergence.



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