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A Review of the Stenetriidae (Crustacea: Isopoda: Asellota)

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ABSTRACT. The current classification of the Stenetriidae includes five genera and 63 species, of which 57 species are contained in the genus *Stenetrium* Haswell, 1881. A history of the classification of the family Stenetriidae is reviewed and useful characters for defining stenetriid taxa and species are derived from the literature. A new diagnosis for the family is provided. *Stenetrium* is redefined and its composition reduced to 18 species. The type species of *Stenetrium*, *S. armatum* Haswell, 1881, is fully redescribed. A new species, *Stenetrium adrianae*, is described in this paper, highlighting morphological variation that can be useful for distinguishing stenetriid taxa. Three other named genera, *Stenobermuda* Schultz, 1979a (*Stenetrigus* Schultz, 1982 is a junior synonym), *Protallocoxa* Schultz, 1978, and *Tenupedunculus* Schultz, 1982, are redefined and their compositions adjusted. Four new genera, *Tristenium*, *Hansenium*, *Liocoryphe*, and *Mizothenar*, are erected to contain distinctive species groups not treated in the literature. Six species are poorly described and cannot be classified in this new arrangement for the family. Lists of species assigned to each group and a key to the genera are provided.

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The isopod family Stenetriidae Hansen, 1905 occupies a central role in the understanding of the suborder Asellota. The disagreement between Wägele (1982, 1989) and Wilson (1987) on stenetriid sister group relationships highlights this family's importance. Although the Stenetriidae shares apomorphies with more derived Asellota (Wilson, 1987), the Stenetriidae also contain important variation in the male pleopods, sometimes resembling members of two other asellote families, the Gnathostenetroididae Kussakin, 1967 and the Pseudojaniridae Wilson, 1986a. Unlike most non-janiroidean families of Asellota, the Stenetriidae range from tropical to polar shallow marine waters (Kussakin, 1973; Hessler *et al.*, 1979), thus occupying possible ancestral habitats for the Asellota. Despite being a potentially rich source of phylogenetic information on asellote relationships, the Stenetriidae has received little revisionary attention. Our paper redresses this situation.

After Hansen's (1905: 303) description of the family, Wolff (1962) provided the only comprehensive examination of stenetriid species, but encountered barriers to understanding their interrelationships. The overall similarity of most species made the division of stenetriid taxa difficult. Wolff (1962: 21) stated that "on the whole, *Stenetrium* is no doubt exceedingly homogenous." This apparent homogeneity, however, was often caused by "short, insufficiently detailed

descriptions and illustrations by some authors" (Wolff, 1962: 22). Owing to these problems, Wolff (1962: 22) stated "that several species are very close to each other and some others are probably identical" even though the species are widely separated geographically. He encountered the greatest difficulty in separating the following species: *Stenetrium armatum* Haswell, 1881 (south-eastern Australia) and *S. dalmeida* Barnard, 1920; *S. diazi* Barnard, 1920 (South Africa); *S. stebbingi* Richardson, 1902 (Bermudas) and *S. antillense* Hansen, 1905 (West Indies); *S. chiltoni* Stebbing, 1905 (Indian and Pacific Oceans) and *S. glauerti* Nicholls, 1929 (Western Australia); *S. medipacificum* Miller, 1941 (Pacific Ocean) and *S. dagama* Barnard, 1920 (South Africa).

The synonymies proposed for stenetriids (see Wolff, 1962) exemplify the lack of understanding of their high species diversity and parochial distributions. *Stenetrium armatum* Haswell, 1881, is a classic example of these misconceptions. *Stenetrium armatum* was first described only from Port Jackson, Sydney, eastern Australia. Since that time, all similar specimens from south-eastern Australia have been identified as this species. The most recent redescription of *S. armatum*, stated that the species "is distributed in south-eastern Australia from at least Port Stephens, central New South Wales..., to the Gulf of St Vincent, near Adelaide, South Australia" (Schultz, 1982). Our extensive examination of all specimens of *Stenetrium* held by the Australian Museum and the Museum of Victoria revealed that the above range encompasses as many as 20–30 species. Most previous synonomies, therefore, are in doubt.

An ongoing revision of the Asellota (e.g., Wilson, 1994; Wilson & Wägele, 1994 for the janiroidean family Janiridae) will assess the phylogenetic position of the Stenetriidae within the suborder. This paper begins this work with a review of stenetriid morphology and taxonomy. We provide a brief overview of the history of stenetriid classification, and then discuss the distinguishing features of the Stenetriidae and their character variation. In the taxonomic section, we provide diagnoses and synonymies for existing genera and describe four new genera: *Tristenium, Hansenium, Liocoryphe,* and *Mizothenar.* Descriptions of the type species of *Stenetrium, S. armatum* Haswell, 1881 and a new species, *S. adrianae*, demonstrate useful species-level character variation.

History of the Stenetriidae

Haswell (1881) placed two species in his new genus *Stenetrium, S. armatum* and *S. inerme*, both collected from Port Jackson at Sydney, Australia. *Stenetrium inerme* was later referred by Stebbing (1905) to the janiroidean genus *Notasellus* Pfeffer, 1881 (= *Iathrippa*: see Wilson & Wägele, 1994). The first stenetriid species was described by Lucas (1849) as *Jaera longicornis* from Algeria, later found at Lesina in the Adriatic by Heller (1866). Bovallius (1886) established the genus *Jamna* for this species, noting marked differences of the included species *Jaera longicornis* and *Jaera filicornis* Grube, 1861 with other species of *Jaera*. Beddard (1886) also suggested that *Jaera longicornis* had been incorrectly placed within *Jaera*, but did not give an alternative classification. The junior synonym for *Stenetrium*, *Jamna*, was used by Stebbing (1893) but later its species were referred by Richardson (1910) to *Stenetrium*.

Between 1881 and 1910, 13 stenetriid species were described. Hansen (1905) published a summary and revision of *Stenetrium* and proposed the family Stenetriidae. Wolff (1962) summarised the knowledge on stenetriids, including their taxonomy and distribution, and created the superfamily Stenetrioidea. In the period since 1962, 27 stenetriid species have been described, along with 4 new genera. *Protallocoxa* Schultz, 1978, was presented as an example of a new superfamily, but was later shown to be a taxon consisting of female *Stenetrium* specimens (Wilson, 1980). *Stenobermuda* Schultz, 1979a and *Stenetrigus* Schultz, 1982, were created for species from Bermuda and South Africa respectively, although we find below that these two genera are synonymous. *Tenupedunculus* Schultz, 1982 is a blind deep water form that is related to southern hemisphere, shallow water *Stenetrium* (sensu lato) species.

Informative Characters of the Stenetriidae

The structures used to distinguish taxa, especially the pereopod I and male pleopod II, have diagnostic potential and are possibly phylogenetically informative. Our findings concern within-stenetriid relations; more detailed research will be required to place these taxa in a broader context of other lower Asellota (Aselloidea, Gnathostenetroidoidea, Protojaniroidea, Pseudojaniridae, Vermectiadidae). In the following, we discuss our observations on characters of stenetriid species, based both on specimens in our collections and from those described in the literature. In many cases, we have inspected types described in the literature. Table 1 provides a list of genera and species mentioned in this paper. The taxonomic section provides explicit diagnoses of all genera, including the four new ones. Comparative illustrations for the genera can be found in Figures 1–3.

Pereopod I (Fig. 3). The subchelate, sexually dimorphic pereopod I is the most prominent feature of the Stenetriidae and the most commonly used character in defining species. The male pereopod I has a large, ovoid propodus opposed by an elongate dactylus. The propodal palm varies considerably by possessing either a row of denticulate setae and terminating spine-like seta defining the end of the palm, or various arrangements of blade-like spines or a combination of both. The female pereopod is

generally much smaller, unornamented and similar throughout the family, making identification of species from females on this basis difficult.

The length of the dactylus relative to the length of the propodal palm in males is useful: the dactylus is longer than the distal width of the propodus in *Stenetrium armatum, S. diazi, S. vemae* Kensley, 1980, *S. esquartum* Schultz, 1982, and *S. bartholomei* Barnard, 1940. The carpus, merus and ischium of the pereopod I are short and robust and vary considerably at the species level in the degree of setation and dorsal margin spination. *Stenobermuda acutirostrata* (Richardson, 1902) has the most unusual male pereopod I within the family owing to the following features: the small size of the propodus; the large terminal setae on the propodal palm; and elongate carpus, merus and ischium.

The female pereopod I (Figs 8A,B, 20A,B) may be distinguished at the species level by setal type, arrangement and number on the opposing edges of the propodus and dactylus, and the setation of the carpus, merus and ischium. The remaining pereopods II–VII do not differ significantly throughout the Stenetriidae, apart from setal patterns.

Sternal spines or keels (Figs 4A,B, 15C). Another strong sexually dimorphic character of the Stenetriidae is the simple spinose projections along the midline of the sternum of some males. Wolff (1962: 25) refers to them as "hyposphenians" but here they will be termed sternal keels owing to their laterally flattened shape. The presence of the keels as well as their absence (e.g., in *Stenetrium abyssale* Wolff, 1962) has been mentioned by authors as far back as Hansen (1905), although no taxonomic significance was given to this feature. The keels have been illustrated in only *Stenetrium maharepa* Müller, 1991a, and *Stenetrium macrochirum* Nicholls, 1929 (p. 362, his fig. 1). Size, shape, direction of individual keels may vary. The keels are usually directed anteriorly on pereonites 1–4 and posteriorly on pereonites 5–7. This arrangement is unique to Stenetriidae. Other Asellota have sternal keels on only one segment (*Rapaniscus, Nannoniscus, Ianiropsis* and *Storthyngura*) or on all pereonites such as *Macrostylis*. These spines differ, however, in direction and position on the pereonites from those seen in the Stenetriidae. The degree to which keels can be used diagnostically is yet to be determined, as they have not been illustrated extensively in the literature.

Eyes (Figs 1, 2). Eye morphology varies considerably in the stenetriids by shape, size, number of ocelli and position on the cephalon. The most common eye form of the Stenetriidae is the anterolateral reniform shape containing about 20 ocelli, as seen in *Stenetrium* sensu stricto, *Tenupedunculus* Schultz, 1982, and *Hansenium* n.gen. The remaining species possess either eyes of as few as 4 ocelli (e.g., *Liocoryphe* n.gen. and *Stenobermuda* Schultz, 1979a), or small groups of about 8–10 ocelli (e.g., *Stenetrium patulipalma* Kensley, 1984a and *S. acutirostrum* Müller, 1991b). We do not recognise *Tenupedunculus* as a genus using the absence of eyes alone as was done by Schultz (1982). Although genera cannot be distinguished by the presence or absence of eyes, the consistency of eye form within the proposed new genera suggests that eyes may be used to distinguish species and genera.

Caution is required when using eyes as a feature owing to ontogenetic variation. Early mancas of some species have a circle of few ocelli similar to *Stenetrium minocule*, which develop into the characteristic reniform shape eye by the subsequent addition of ocelli anteromedially. Heterochrony, therefore, may be important in the ontogeny and phylogeny of the stenetriids.

Cephalon Projections. The cephalic projections (spines) and the mouthparts may offer important diagnostic features of the cephalon. Cephalic projections include lateral and antennal spines and the rostrum. The antennal spine is defined as a spine-like extension of the anterior margin of the cephalon between the antennula and the antenna. The lateral spines, then, are the spine-like extensions lateral to the antennule. The Stenetriidae and related families (Gnathostenetroididae, Pseudojaniridae) differ in this regard in that they either lack one or the other of these spines. The lateral spines are large and robust while the antennal spines are missing in Pseudojaniridae. In the Gnathostenetroididae, the antennal spines are reduced and the lateral spines are absent.

The rostrum is defined as any anterior extension from the frons or vertex of the cephalon. Shape and armature varies between species, although rostral sizes do not. Schultz (1982) stated that the rostrum of *Stenetrium armatum* varies from broadly rounded to produced independently of sex, although our research shows he was comparing several species. The serrations on the rostrum in *S. armatum* and *S. adrianae* n.sp. are not sexually dimorphic and do not vary ontogenetically except the serrations (when present) are more pronounced in larger animals.

Antennula (Figs 5C, 16D,E) and antenna (Figs 19A–C). These limbs vary in size and shape of the peduncular articles, the number and size of flagellar articles, and number and position of aesthetascs and setae on the flagellar articles. The number of flagellar articles also varies ontogenetically making this feature less useful at the generic level. A large lateral spine on the antennular article 1 is a distinctive feature of the *Stenetrium* sensu stricto.

Mouthparts (Figs 6, 7, 18, 19D–F). The mouthparts are relatively constant throughout the family. The mandible shows principally species distinguishing setal numbers and arrangements on the second article of the palp, the number of spines in the spine row, the denticles and setae around the molar process. Observed differences in size, shape and number of denticles of the grinding surface of the molar process is of undetermined taxonomic significance.

Wolff (1962) stated that the maxillula and the maxilla do not vary greatly during the postmarsupial develop-

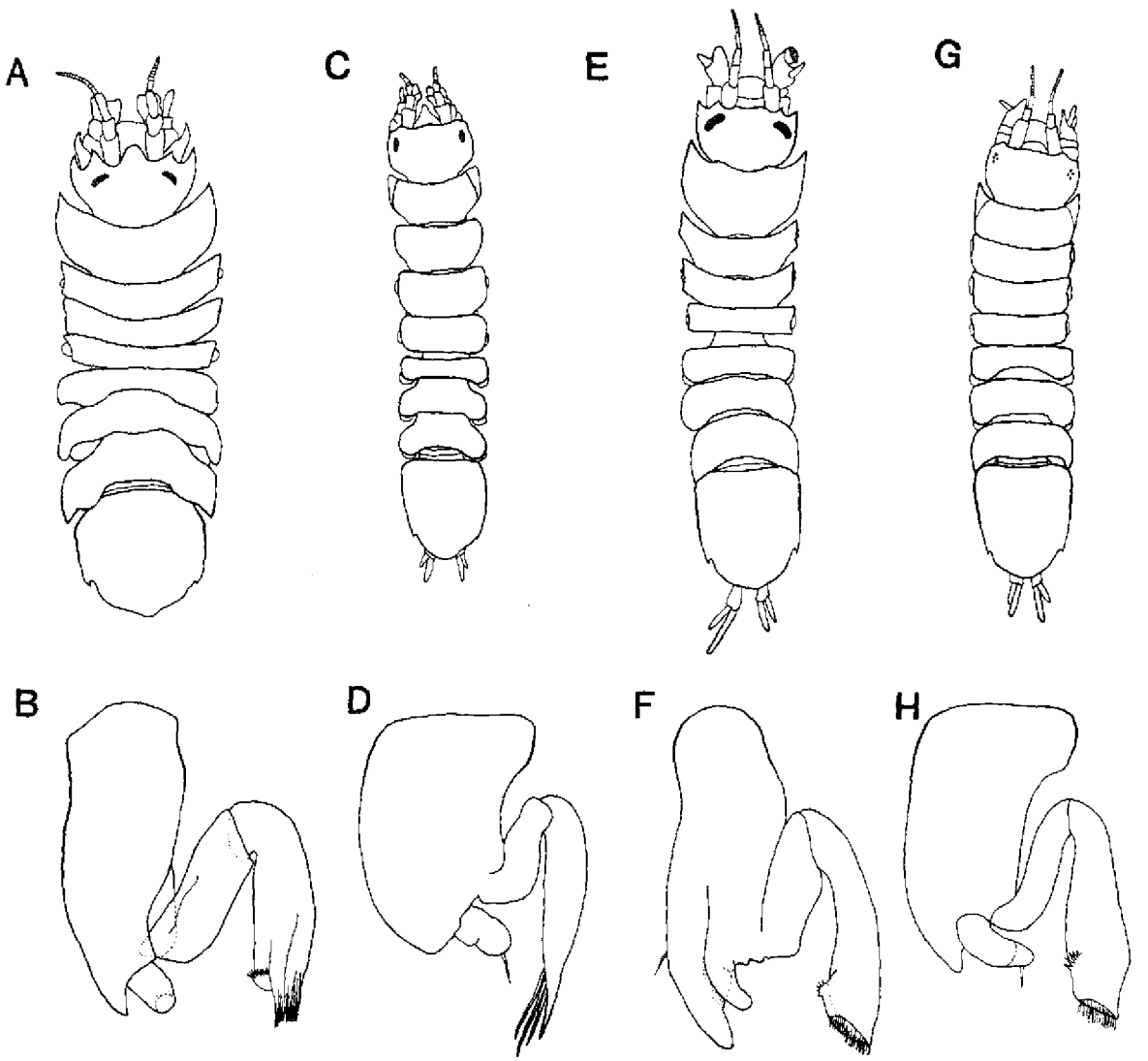

Fig. 1. Stenetriid genera showing body form and male pleopod II. **A,B**, *Stenetrium* Haswell sensu stricto. **C,D**, *Tristenium* n.gen. (after Müller, 1991c, figs 1, 13). **E,F**, *Hansenium* n.gen. (after Menzies & Glynn, 1968, fig. 34). **G,H**, *Liocoryphe* n.gen. (after Müller, 1990, figs 1, 14).

ment. Throughout the Stenetriidae, various setal types of both structures differ in number and size. Exact setal counts for each structure are difficult to determine owing to the poor illustrations of many species. These structures may yield useful information.

The most useful characters on the maxilliped are the epipod, the palp articles, and the fan setae on the distal margin of the endite. The distal tip of the stenetriid epipod typically extends to or beyond palp article 3 and varies principally in marginal setation and distal tip shape. The epipod shape ranges from a typically pointed, tapered tip with an angular corner on the lateral margin (e.g., *Stenetrium armatum*), to a rounded tip (e.g., *Stenetrium abyssale*), or to an epipod with smooth lateral margins (e.g., *Stenobermuda acutirostrata*).

The maxillipedal endite distal margin has a complex arrangement of 3 rows of differing setae, with the middle row consisting of principally broad, fan shaped setae that vary in number and size between species and may be important at higher taxonomic levels. Unfortunately, most illustrations in the literature do not show these setae in sufficient detail.

Pereopodal Coxae. Visible coxal projections, spines or lobes are visible dorsally on pereonites 1–4 and posteriorly on pereonites 5–7. The projections range from double lobes on pereonites 2–4 and large single posterolateral lobes on the remaining pereonites (as

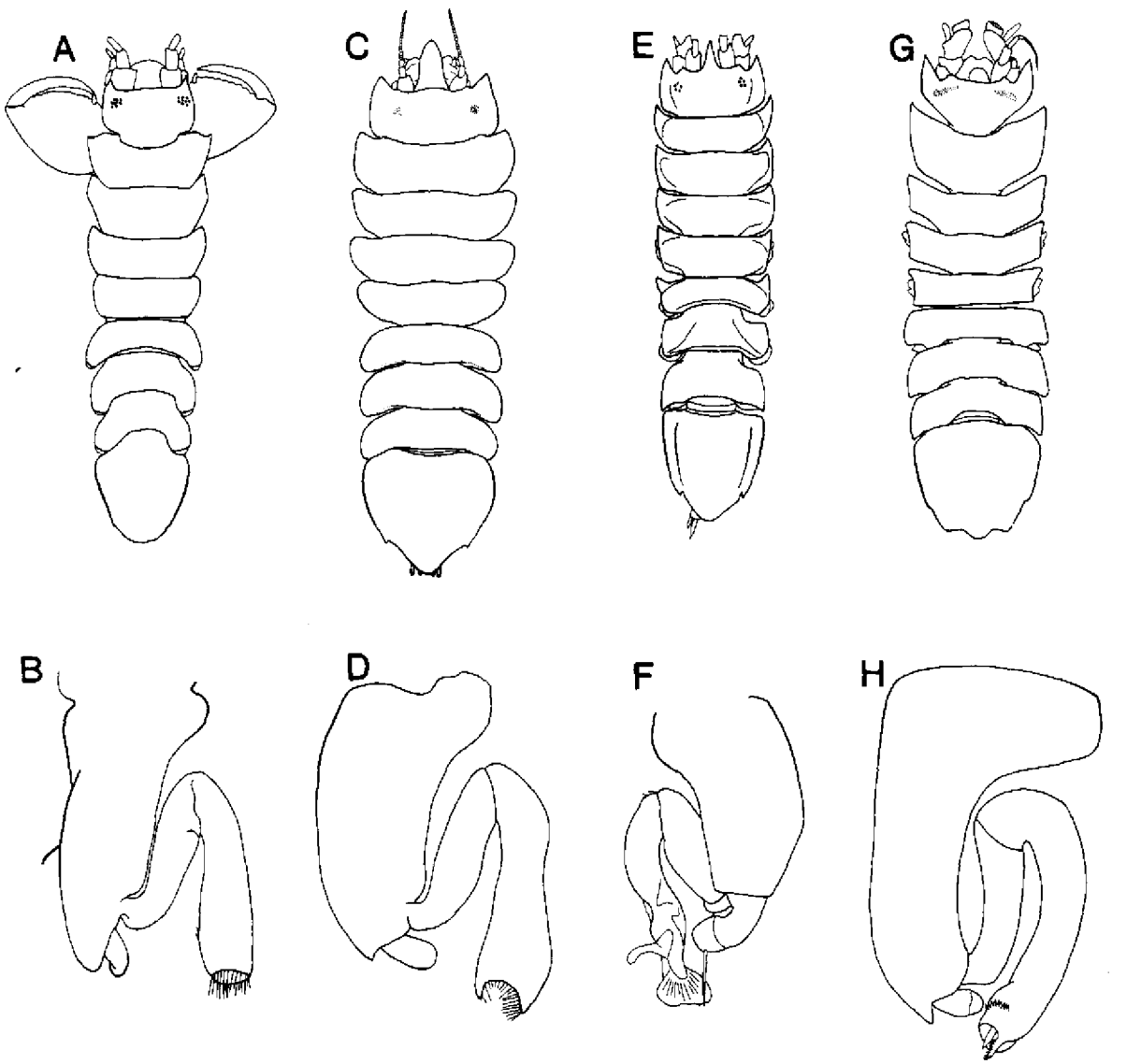

Fig. 2. Stenetriid genera showing body form and male pleopod II. **A,B**, *Mizothenar* n.gen. (after Kensley, 1984a, figs 33a, 34b). **C,D**, *Protallocoxa* Schultz (after Wolff, 1962, figs 1a, 5b). **E,F**, *Stenobermuda* Schultz (after Schultz, 1979b, figs 1, 3). **G,H**, *Tenupedunculus* Schultz (after Schultz, 1982, fig. 20a,c).

in *Stenetrium serraticaudum* Kussakin & Vasina, 1984) to no coxal projections (e.g., *Protallocoxa* and *Stenobermuda*).

Female Genitalia (Figs 13C,D, 26D,E). The external copulatory structure of *Stenetrium dagama* consists of an external cuticular pocket or broad groove on the anteromedial edge of pereonite 5. The groove possesses a short funnel-like depression and the posteromedial opening of the spermathecal duct ("cuticular organ"). The spermathecal duct extends posteriorly to the posterior edge of the spermatheca, which passes to the ovary via the lumen of the oviduct. This structure differs from *Asellus* by being attached to the ventral cuticle and the spermathecal duct. This stenetriid form is similar in many respects to that of the Pseudojaniridae (Wilson, 1986a; Poore & Just, 1990), with the exception that *Stenetrium dagama* and *Stenetrium armatum* (Fig. 13C,D) have only a shallow pocket, and the deep stylet receptacle of the Pseudojaniridae is lacking. The presence of a well-defined stylet receptacle in *Stenetrium adrianae* n.sp. (Fig. 26D,E) suggests a closer relationship between the stenetriids and the pseudojanirids. The presence or absence of a stylet-like appendix masculina and its accompanying stylet receptacle may be a useful defining character for stenetriid genera. Owing to the variability in shape and length of the male stylet (in those species that possess a needle-like tip), a cor-

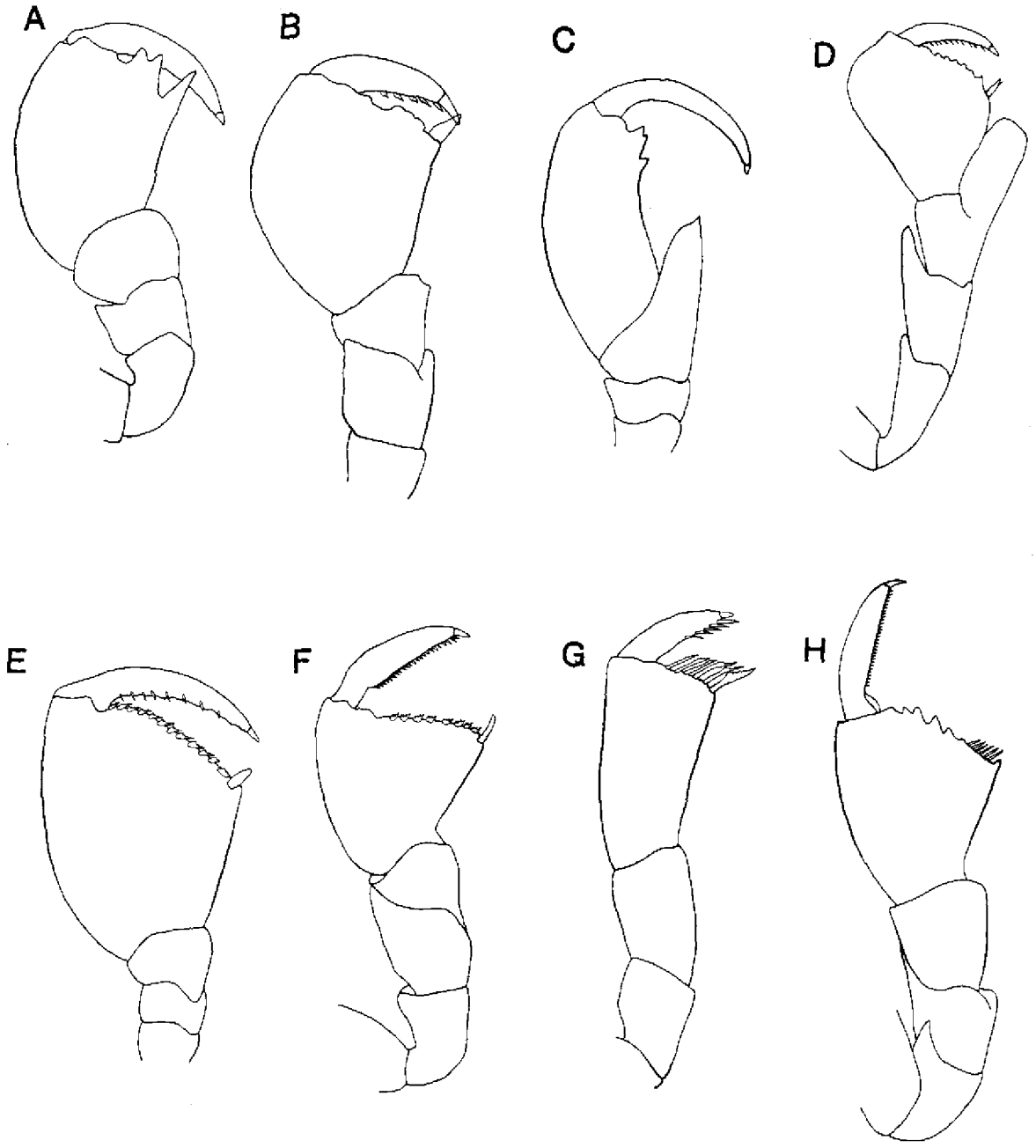

Fig. 3. Male pereopod 1 variation among stenetriid genera. **A**, *Stenetrium* Haswell. **B**, *Tristenium* n.gen. (after Müller, 1991c, fig. 10). **C**, *Hansenium* n.gen. (after Kensley, 1984a, fig. 37b). **D**, *Liocoryphe* n.gen. (after Kensley, 1984a, fig. 32). **E**, *Mizothenar* n.gen. (after Kensley, 1984a, fig. 33h). **F**, *Protallocoxa* Schultz (after Wolff, 1962, fig. 4a). **G**, *Stenobermuda* Schultz (after Kensley, 1994, fig. 9a). **H**, *Tenupedunculus* Schultz (after Schultz, 1982, fig. 22a).

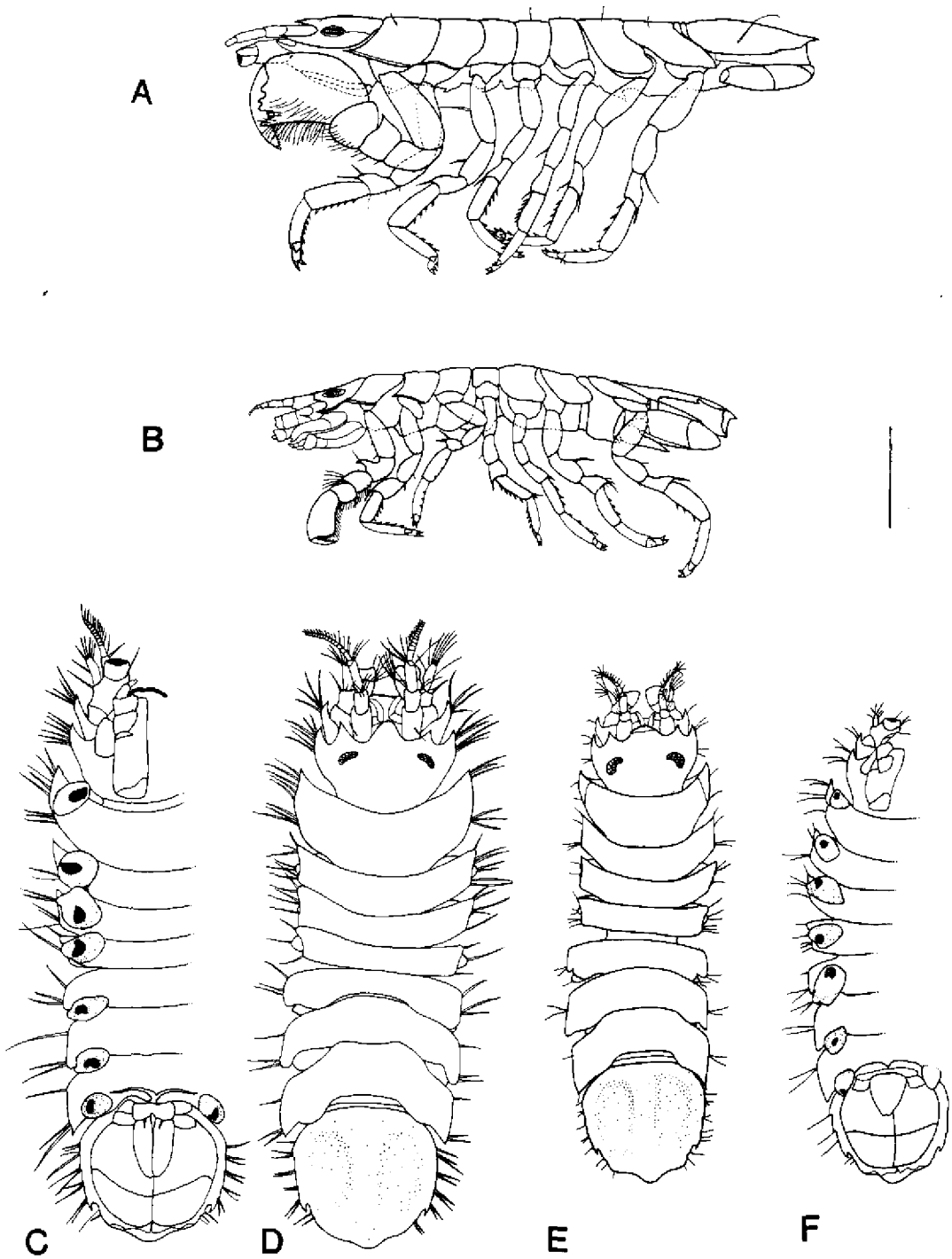

Fig. 4. *Stenetrium armatum* Haswell. **A,C,D**, neotype male (AM P.42112). **B,E,F**, female (AM P.3377). **A,B**, lateral view. **C,F**, ventral view. **D,E**, dorsal view. Scale bar = 1.0 mm.

responding species specific variability may be found in the female stylet receptacles. Generalisations concerning the stylet receptacle in the stenetriids must wait until many more species are inspected for this feature.

Pleotelson (Fig. 11, 24A). Three regions are diagnostic on the terminal segment of the body: the posterolateral spines, which are shared with the Gnathostenetroidoidea and the Pseudojaniroidea and some members of the Janiroidea; the telsonic region posterior to the spines may be evenly rounded or have various projections; and the lateral margins anterior to the spines that may be either smooth or serrate. These characters are reliable generic indicators.

Pleopods (Figs 11, 12, 13A,B, 25, 26A–C). The complex morphology of the pleopods, in particular, male pleopod II may be the most important, yet underused feature in the stenetriid classification. Hansen (1905) first proposed a division of the Asellota using the morphology of the pleopods and Wolff (1962) stated that the first and second male pleopods have offered excellent characters for distinguishing species.

The male pleopod I of the Stenetriidae is unique among the Asellota in having a large, rectangular sympod with two, unfused uniarticulated rami that are less than half the length of the pleotelson and are subequal in length to pleopod II. The rami are unornamented (i.e. do not have a stylet guide extension as is found in Pseudojaniroidea), but vary in shape and setation. This feature varies most at the species level.

The size of the fused sympod of the male first pleopod may be a useful dividing feature among some stenetriid taxa. In a majority of species, the sympod is large, rectangular and well illustrated, but in some species, such as those in *Tristenium* n.gen., in *Mizothenar* n.gen. and in *Stenobermuda*, the sympod is markedly reduced resulting in most authors neglecting to illustrate it. Schultz (1982) described the male pleopod I as without a fused sympod but questions whether it was absent or just not visible. In many of the above species, the sympod is present but reduced and is indicated in the illustrations by the proximal beginning of the sperm canal being above the connection of the pleopod to the sternum. This structure requires a detailed re-examination and may prove to be diagnostically significant.

The literature on asellotan relationships (Amar, 1957; Fresi *et al.*, 1980; Hessler *et al.*, 1979; Magniez, 1974; Wägele, 1983, 1989) suggests that the pleopods are homogeneous at the family level in the Stenetriidae. That this was not the case is apparent in our study of the male pleopod II, which was typically presented as having a blunt club-shaped appendix masculina. In fact, the stenetriid male pleopod II appendix masculina includes a broad variety of endopodal structures ranging from the blunt, club form to a stylet-like structure similar to that seen in the Janiroidea or some Aselloidea. Despite this great variety, a single theme emerges from our study. The characteristic features of the stenetriid appendix masculina include a ventrolateral sperm groove on the appendix masculina that is proximally broad, with a median bowl-shaped sperm pocket. The sperm groove narrows distally with an overlapping distolateral margin, and with small distally directed cuticular hairs inside the groove. The appendix masculina of most species also have a subapical, lateral arc or ridge of anteriorly directed cuticular hairs or spines. These features are well demonstrated by the type species, *Stenetrium armatum*. Variation to the above form includes a solid, narrow, laterally-directed stylet having a row of fine denticles or barbs near the tip, as in *Stenetrium adrianae* n.sp. *Stenobermuda acutirostrata* and *Stenobermuda syzygus* have complex and uniquely shaped male pleopod II, although these may be modifications of the features described above.

The female pleopod II is typically triangular with or without an apical notch and varies in the shape of the lateral margins, the depth of the apical notch (when present) and setal arrangements on the lateral margins.

The remaining three sets of pleopods have been ignored in many classifications. In many instances, pleopod IV and the uniramous pleopod V have been left out completely. The diagnostic features of pleopods III–V morphology should be based on the length/width dimensions, shape, relative size to the other rami (when present) and setal arrangements. The most marked variation of these pleopods occurs in *Stenetrium patulipalma* and *Stenetrium maharepa* where pleopod IV exopod is shorter than the endopod and is styliform in shape. This pleopod appears to be an intermediate form between the Stenetriidae and the Gnathostenetroididae. Pseudojanirid pleopods II–V are almost identical to some Stenetriidae, again indicating a close relationship between the two families.

Uropoda (Figs 12F, 24B,C). The uropods are typically short and do not vary significantly throughout the Stenetriidae. They are best used as species-specific features and vary only in setal types and arrangements.

Taxonomy

Family Stenetriidae Hansen, 1905

Asellidae Sars, 1897: 95–96 (pars).
Stenetriidae Hansen, 1905: 315.
Stenetriidae.–Richardson, 1905: 439; Barnard, 1914: 216; Vanhöffen, 1914: 546; Wolff, 1962: 17–18,21; Kensley, 1978: 144–149, fig. 65, 66; Schultz, 1982: 20; Kensley, 1989: 99.

Family diagnosis. Asellota with flattened body and subparallel lateral margins. Ventral surfaces of males with spine-like sternal keels (sometimes absent). Eyes

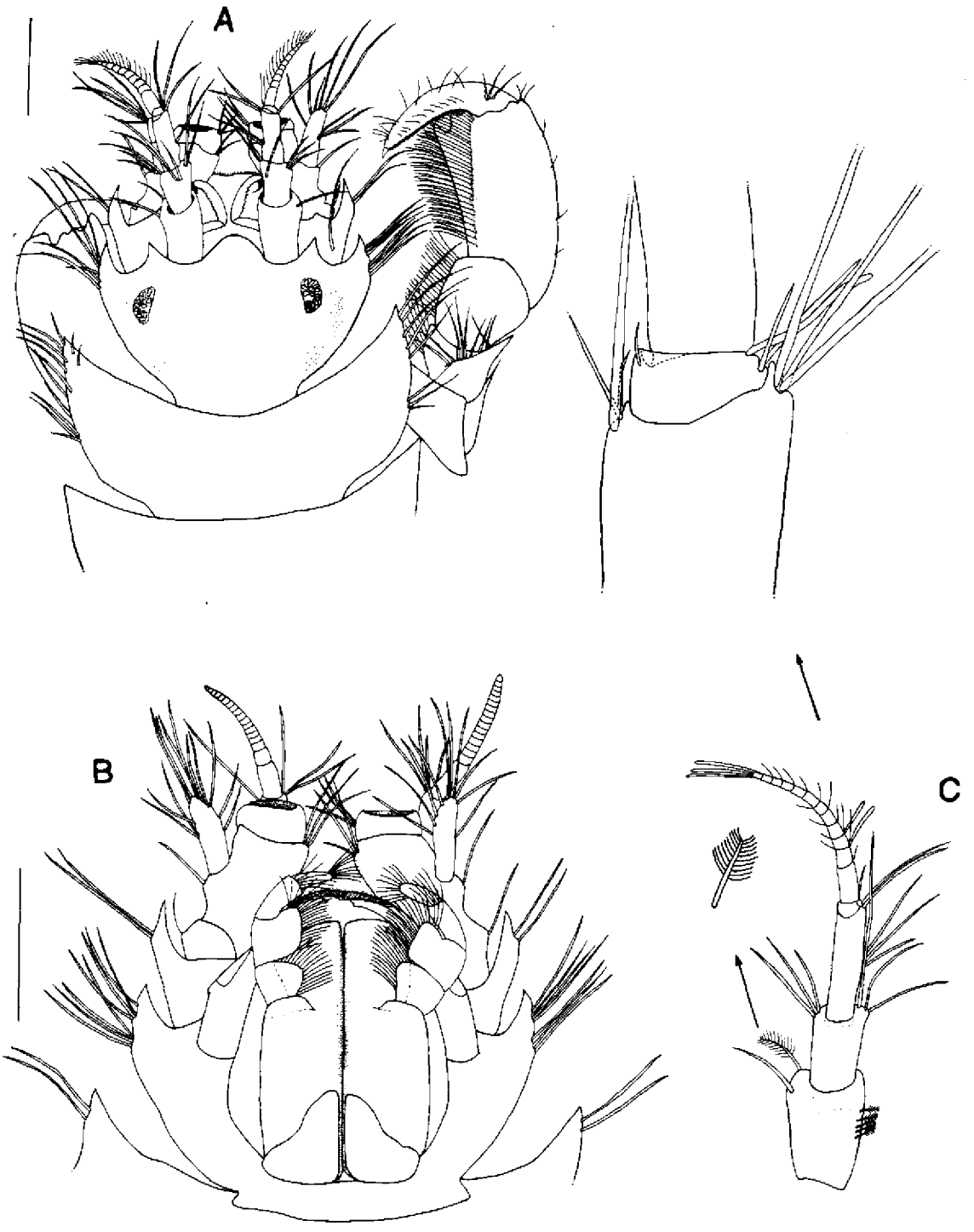

Fig. 5. *Stenetrium armatum* Haswell. Neotype male (AM P.42112). **A**, dorsal view of cephalon. **B**, ventral view of cephalon. **C**, antennula with enlargement of penicillate setae on article 1. **D**, antennular second flagellum remnant on article 3. Scale bar = 0.5 mm.

if present, dorsal. One or two free pleonites visible dorsally. Female spermathecal duct opens adjacent to oopore and posteriorly-directed pocket in ventral cuticle (stylet receptacle). Penes separate, emerging lateral to midline from posterior margin of pleonite 7 near medial side of coxa VII; penes tubular with non-overlapping rounded tips. Antennulae short, less than one-third body length. Antennal scale well developed, basally broad. Pereopod I sexually dimorphic, prehension between dactylus and propodus; propodus enlarged with strong comb setae (not bifid comb setae) on prehensile margin; carpus distinctly smaller than propodus, roughly trapezoidal. Pleopods I–II less than half length of pleotelson. Female pleopods II fused into single shield-like sympod, protopod absent. Male pleopod I with distinct protopod, fused medially; distal ramus clearly articulating with protopod; rami without distal stylet guides. Male pleopod II protopod with small apical, laterally-curving extension; exopod uniarticulate, short and broad, with oval transverse terminal hook; proximal endopodal segment tubular, elongate and narrow, shorter than distal segment; appendix masculina with distal groove or tube with many cuticular hairs terminating in laterally directed stylet or broad opening. Pleopod III endopod with 3 or more plumose setae. Uropods generally short but with protopod extending beyond posterior margin of pleotelson.

Remarks. Stylet-like appendices masculinae and "stylet receptacle-like" pockets near the female oopore are features seen also in the Pseudojaniridae, indicating a closer relationship between these two families than previously suspected (Wilson 1986a, 1987). Moreover, the blunt form of the appendix masculina is similar to that seen in the Gnathostenetroididae. Together, these three families may form an important clade within the Asellota.

Generic level taxa of the Stenetriidae

At present, the Stenetriidae contains 62 described species and 5 genera, many of which are poorly defined. Our review of stenetriid species has identified 8 distinctive groupings, which we define below as genera. Existing and new genera are diagnosed below, and all genera are delineated with new synonymies. A revised species list with these groups is presented in Table 1. A few species cannot be placed in these genera (see Table 1) owing to incomplete descriptions. Within the group *Stenetrium* sensu stricto, much variability remains, with Australian examples illustrated by redescriptions of the type species, *Stenetrium armatum* Haswell, 1881, and *Stenetrium adrianae* new species.

Key to the Genera of the Stenetriidae

1. Cephalon with sharply produced antennal and lateral spines and broad lateral lappets 2

—— Cephalon with lateral spines absent and antennal spines much reduced 6

2. Cephalon with antennal and lateral spines subequal in length 3

—— Cephalon with antennal spines reduced and lateral spines extended 4

3. Rostrum short, rounded to triangular; antennal and lateral spines subequal in length to the rostrum and each other; antennal article 1 with large lateral spine; male pereopod I propodus less than twice as long as propodal palm; carpus ventral margin not extended ..... *Stenetrium* Haswell, 1881.

—— Rostrum short, apically flattened; male pereopod I with elongate dactylus twice as long as propodal palm; carpus ventral margin extended and serrate ..... *Hansenium* n.gen.

4. Rostrum short, round or truncated; pereonites lateral margin angular; male pleopod II appendix masculina elongate, narrow, distal tip rounded laterally and weakly pointed on medial margin; uropods large ..... *Tenupedunculus* Schultz, 1982.

—— Rostrum elongate and pointed 5

5. Rostrum robust with rounded distal tip; antennal spines almost absent; body robust; pereonites with rounded lateral margins; male pleopod II with blunt distal tip; pleotelson strawberry shaped; uropods barely emerging from posterior margin ..... *Protallocoxa* Schultz, 1978.

—— Rostrum, narrow, sharply triangular with narrowly tapered point and longer than lateral spine; pereonites with sharply pointed anteralateral corners; male pleopod II appendix masculina elongate, with terminal cuticular fan; exopod positioned apically on protopod; female pleopod II rounded opercular shield ..... *Stenobermuda* Schultz, 1979a.

6. Rostrum triangular with broad base and narrow pointed tip; male pereopod I with broad robust propodus with denticulate setae and broad blunt teeth on palm; male pleopod II appendix masculina elongate, tapering to needlelike stylet with long setae on distolateral margin ..... *Tristenium* n.gen.

—— Rostrum short, broad or bilobed; eyes reduced to small rounded group of ocelli 7

7. Rostrum short, broad and rounded; cephalon smoothly rounded with antennal and lateral spines almost absent; Male pereopod I carpus lateral margin extended and blunt ..... *Liocoryphe* n.gen.

—— Rostrum short, bilobed; pereopod I enlarged, as long as broad, larger than cephalon; pleotelson strawberry shaped with weak posterolateral spines ..... *Mizothenar* n.gen.

Genera of the Stenetriidae

Stenetrium Haswell, 1881 sensu stricto

Figs 4–26, 1A,B, 3A

Stenetrium Haswell, 1881: 479.
Stenetrium.–Chilton, 1884: 251; Bovallius, 1886: 4, 19–20; Beddard, 1886: 8; Stebbing, 1893: 379; Hansen, 1905: 316; Stebbing, 1905: 53–57; Nobili, 1906: 266; Richardson, 1910: 110; Barnard, 1914: 217; Vanhöffen, 1914: 546; Barnard, 1920: 398; Barnard, 1940: 430; Kensley, 1978: 144–149; Schultz, 1982: 20–21; Kensley, 1989: 99–100.
Lamna Bovallius, 1886: 22–23.–Stebbing, 1893: 379; Richardson, 1910: 110.

Type species. *Stenetrium armatum* Haswell, 1881.

Species included. See Table 1.

Diagnosis. Head with large, reniform anterolateral eyes having about 18 ocelli; frontal margin with both prominent lateral and antennal spines; lateral spines generally extending past antennal spines; rostrum shape variable, length subequal to length of lateral spine. Antennular flagellum articles ranging from 10–20. Antennal article 1 with large, acutely pointed, lateral spine. Maxilliped endopodite distal margin with 6 fan setae. Body lateral margins angular with single-lobed coxal extensions visible in dorsal view; pereonite 1 longer than remaining pereonites. Pereopod I of males robust with blades or teeth on propodal palm and without denticulate setae or large terminal seta; dactylus equal or longer in length than propodal palm width. Pereopod II–VII merus with 2 large setae on anterior dorsal margin. Pleopod I evenly rounded on lateral margins. Pleopod II protopod distal tip subequal to length of exopod and sharply produced; endopod and exopod positioned on distomedial margin. Appendix masculina of pleopod II with needlelike stylet on distal tip. Pleotelson with 2 free pleonites. Pleotelson broad with prominent posterolateral spines, posterolateral and medial telsonic cuticular extensions.

Remarks. This revised description of *Stenetrium* reduces the composition of the genus. Owing to the substantial differences between the male pleopods II between *S. armatum* and *S. adrianae* n.sp., we suspect the genus may yet be further divided as the species are better illustrated. These two species, which are treated here, provide a baseline for further descriptions in the Stenetriidae.

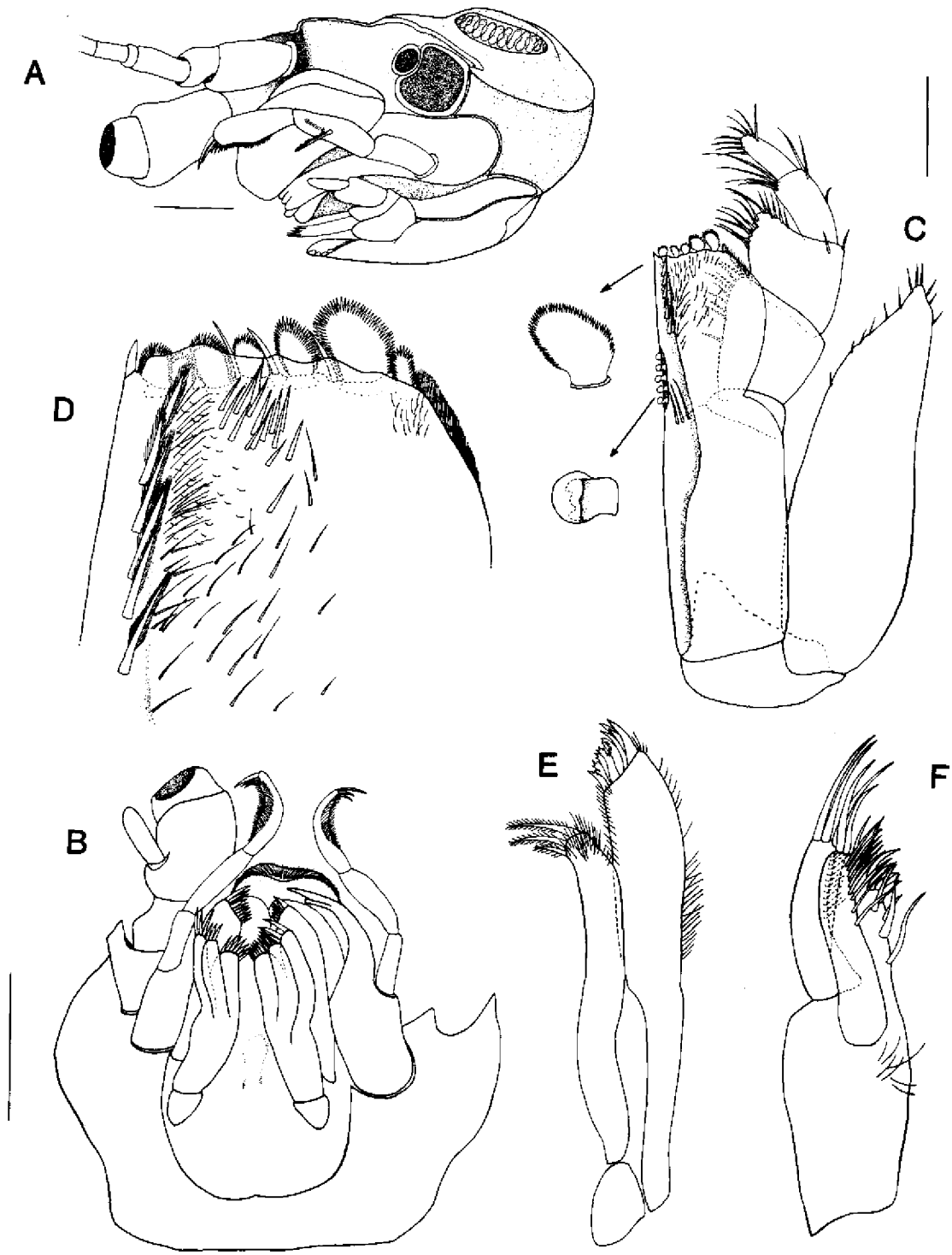

Fig. 6. *Stenetrium armatum* Haswell. Neotype male (AM P.42112). **A**, lateral-oblique view of cephalon with antenna removed. **B**, ventral view of cephalon with maxillipeds removed. **C**, maxilliped, dorsal view, with enlargements of distal fan setae and coupling hook. **D**, endite, dorsal view. **E**, maxillula. **F**, maxilla. Scale bar = 0.5 mm.

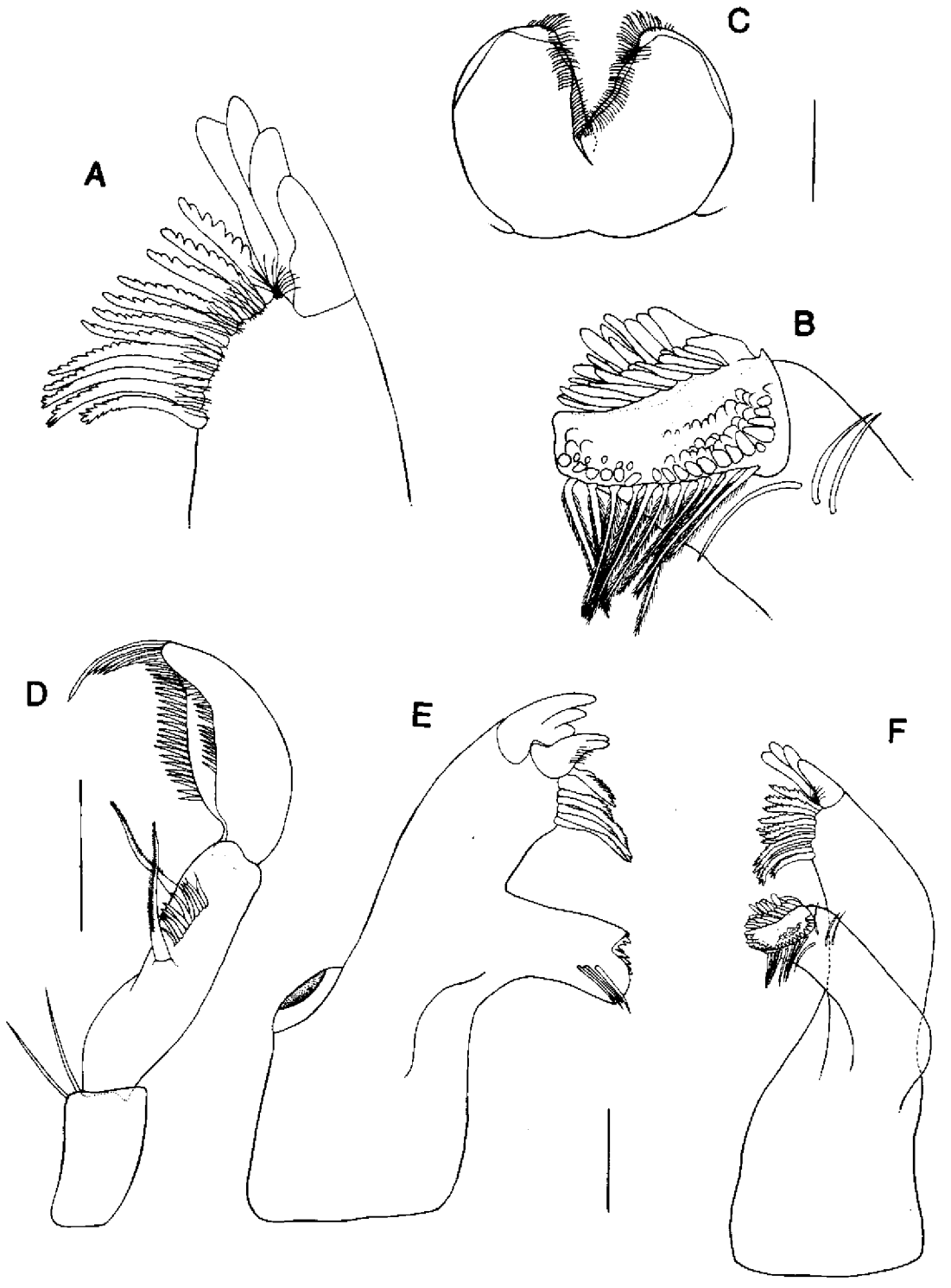

Fig. 7. *Stenetrium armatum* Haswell. Neotype male (AM P.42112). **A**, right incisor process, dorsal view. **B**, right molar process, dorsal view showing grinding surface. **C**, paragnath. **D**, mandibular palp. **E**, left mandible, dorsal view. **F**, right mandible, dorsal-oblique view. Scale bar = 0.1 mm.

Stenetrium armatum Haswell, 1881

Figs 4–13

Stenetrium armatum Haswell, 1881: 479, pl. 19, fig. 1.
Stenetrium armatum.–Haswell, 1883: 308; Haswell, 1884: 1009–1010; Bovallius, 1886: 20–21; Hansen, 1905: 318, pl. 19, figs 1a–1d; Stebbing, 1905: 54; Nordenstam, 1946: 19; Wolff, 1962: 23; Schultz, 1982: 21–25, figs 2a–2j, 3a–3m, 4a–4e.
Stenetrium armatum(?).–Hale, 1929: 324–325, 328.

Types species. *Stenetrium armatum* Haswell, 1881.

Material examined. Haswell (1881) did not designate a type series (Schultz, 1982; Springthorpe & Lowry, 1994). Therefore, we establish one specimen at the Australian Museum as neotype of this species and genus. NEOTYPE Australian Museum (AM) P42112, (one of 6 "possible syntypes", original number AM P3377; see Springthorpe & Lowry, 1994), male, body length 5.25 mm, New South Wales: Port Jackson, Sydney (33°51'S, 151°16'E) "among algae a few feet below the low water mark" (Haswell, 1881: 479). Other material from type locality: AM P3377, remaining "possible syntypes", 2 ovigerous females, 1 female, 2 males.

Diagnosis. Cephalon with anterolateral and frontal projection lengths subequal to rostrum length; antennal insertions closely spaced laterally with broad interantennular space. Pereon with sternal keels in males anteriorly directed on pereonites 1–4 and posteriorly on 6–7. Antennula as long as width of cephalon; male antennula with 16 articles. Coxal lobes visible in dorsal view on lateral margins of pereonites 2–5 in males and 3–5 in females. Pleotelson with weakly notched lateral margins. Mandibular incisor process with 4 distinct cusps; left spine row with 6 members. Male pereopod I with dactylus longer than width of propodal palm; propodal palm of males with 1 large terminating tooth, 2 connected medial teeth and 1 small, round proximal tooth; carpus length shorter than width in males. Female pereopod I dactylus ventral margin with up to 14 denticulate setae; ischium with prominent spine on anterodorsal corner. Male pleopod I protopod with 1 distal robust seta on each side of medial depression, rami of male narrow, evenly rounded on lateral margins; male pleopod II protopod distal tip sharply produced, appendix masculina with dorsal groove open posteriorly with spine-fringed dome on lateral side of groove. Female pleopod II with apical notch. Uropodal endopod with 3 transverse rings of sensillate setae, 2 distal penicillate setae and apical setal tufts shorter than endopod and exopod.

Description

Body (Fig. 4). Adult male body length 5.25 mm (5.25–5.71 mm) and width 1.78 mm (1.78–1.85 mm) across widest point. Preparatory female body length 4.18 mm (3.52–4.18 mm) and width 1.18 mm (1.15–1.18 mm). Brooding female body length 5.03 mm (4.85–5.21 mm) and width 1.48 mm (1.43–1.53 mm). Length to width ratios 0.33, 0.28, 0.3 for male, preparatory female and brooding female respectively.

Head (Figs 5A,B, 6A,B). Large lateral spines and smaller antennal spines subequal in length to rostrum, medial length 0.6 width, 1.15 height. Cephalon freely articulated with pereonite 1. Eyes anterolateral, reniform with up to 18 ocelli depending on stage of development. Rostrum broadly rounded, margin denticulate or smooth, not sexually dimorphic. Dorsal surface medially convex with anterolateral flattened projections. Antennal insertions closely spaced laterally. Frons concave. Labrum evenly rounded, as long as broad, with fine setae fringing the anterior edge. Labrum projects 0.05 body lengths past the rostrum. Clypeus rounded, length 0.125 width, as broad as space between antennal insertions.

Pereon (Fig. 4). Pereonite 1 laterally longer than pereonite 2–7. Pereonite 5 shortest laterally. Dorsal surface sparsely setose, most dense at lateral margins; coxae positions and pereopodal insertions positioned anteriorly on pereonites 1–2, medially on pereonites 3–4 and posteriorly on pereonites 5–7. Sternal keel present in males as anteriorly directed spines on pereonites 1–4 and posteriorly directed spines on pereonites 6–7, pereonite 5 lacking spines. Single coxae visible in dorsal view along lateral edges of pereonites 2–5 in males, 4–5 in females.

Pleon (Figs 4, 11). Two free somites. Pleotelson length 1.07 width; length 0.26 body length; lateral margins weakly notched, with 2 elongate simple setae projecting posteriorly from each notch; posterolateral posteriorly directed spine 0.66 along length of pleotelson; small denticle posterior to spine; broadly rounded telson with rounded posterolateral margin. Pleotelson dorsal surface sparsely setose, with rounded longitudinal medial ridge with broad mildly convex lateral fields to each side.

Antennula (Figs 5C,D). Slightly shorter than cephalon width, length 0.36 body length. Male antennula with 16 articles, 13 articles in flagellum with one aesthetasc per article distally; 2 aesthetascs on final article. Article 1 length 1.2 width. One large penicillate seta on lateral margin and a row of 5 small penicillate setae on medial margin. Article 2 length 1.43 width with 2 distal groups of three simple setae. Article 3 medial length 3.7 width, with 2 groups of 3 simple setae. Remnant of second flagellum poorly defined on mediodistal side of article 3, with 2 projecting simple setae and one aesthetasc anterior to scale.

Antenna (Figs 5A,B). In neotype, only peduncular articles present. Articles 1 with large lateral spine extending almost to the anterior edge of article 2; medial

Fig. 8. *Stenetrium armatum* Haswell. Female (AM P.3377). **A**, dactylus and propodal palm, female pereopod I, with enlargements of 2 denticulate setae from dactylus and 1 denticulate setae from propodal palm. **B**, pereopod I, female with enlargement of plumose setae from propodal lateral margin. **C**, neotype male (AM P.42112), pereopod I, dactylus and propodal palm. **D**, enlargement of dactylus distal tip with enlarged bilobed setae. **E**, male pereopod I. Scale bar = 0.1 mm.

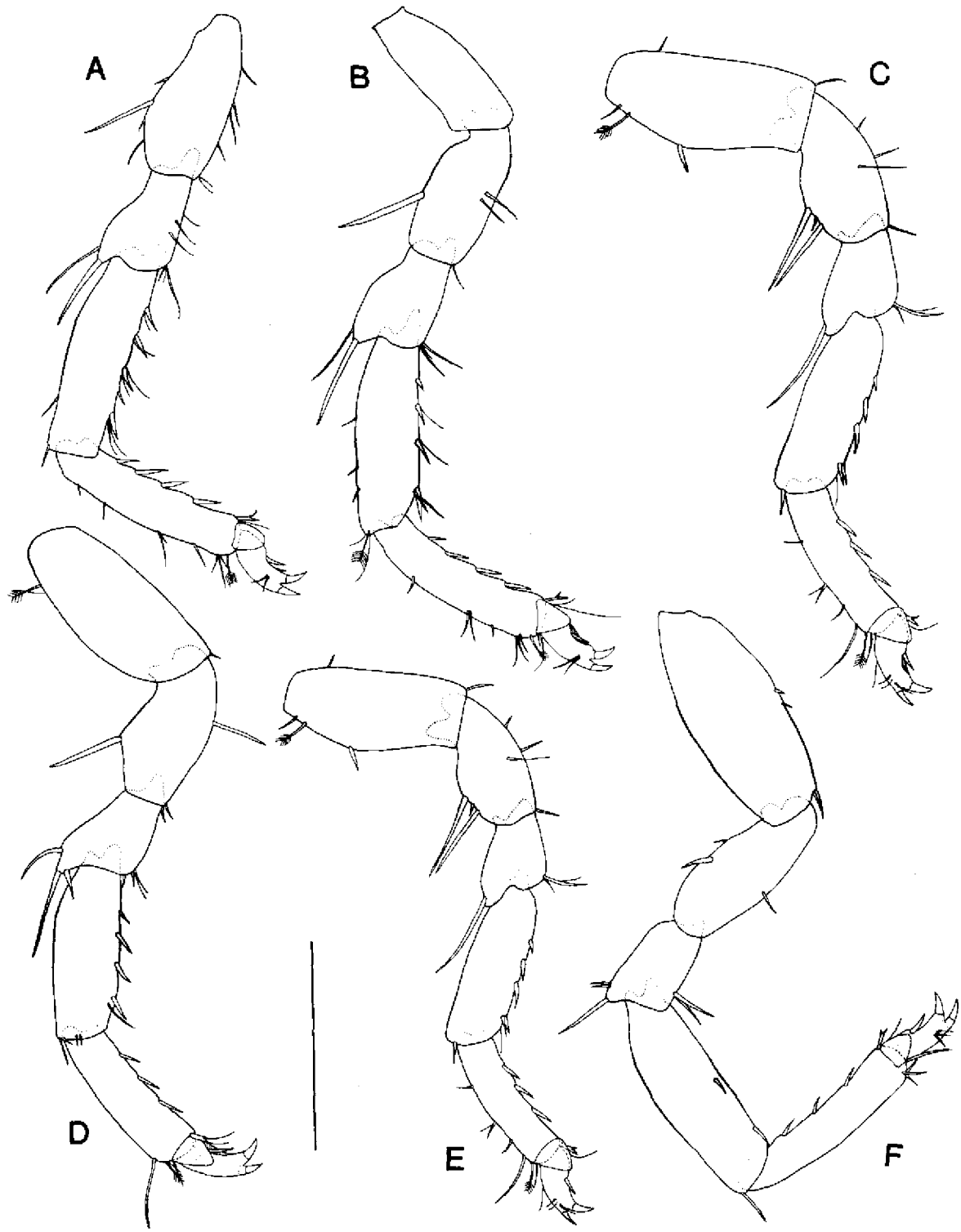

Fig. 9. *Stenetrium armatum* Haswell. Female (AM P.3377). **A–F**, pereopods II–VII. Scale bar = 0.5 mm.

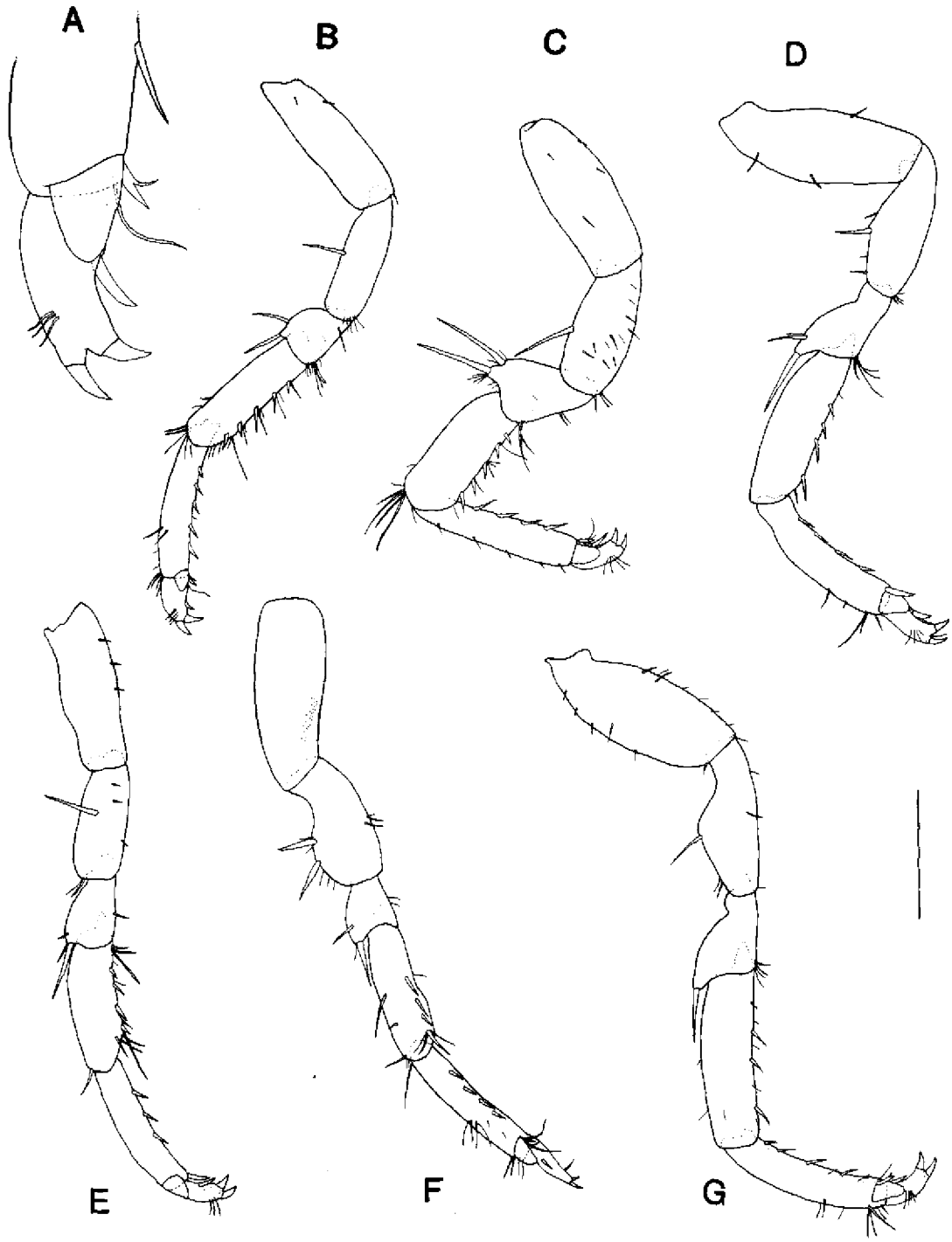

Fig. 10. *Stenetrium armatum* Haswell. Neotype male (AM P.42112). **A**, dactylus, pereopod II. **B–G**, pereopods II–VII. Scale bar = 0.5 mm.

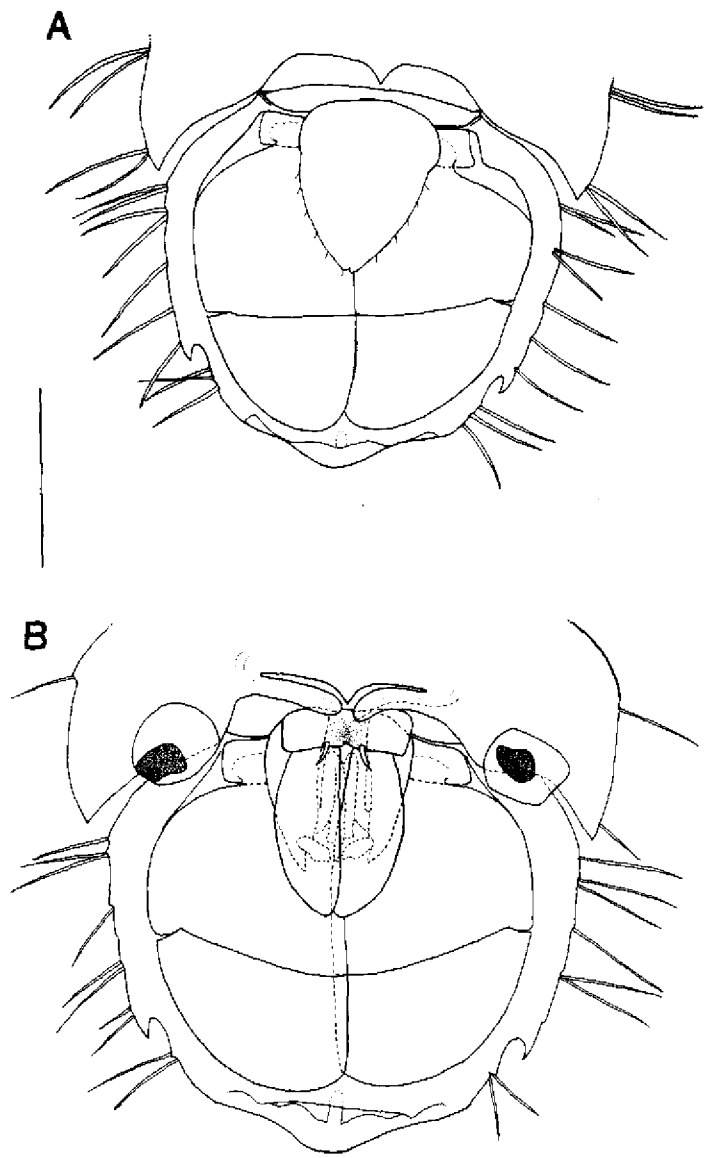

Fig. 11. *Stenetrium armatum* Haswell. **A**, female (AM P.3377), female pleotelson, ventral view. **B**, neotype (AM P.42112), male pleotelson, ventral view. Scale bar = 0.5 mm.

length 0.8 width. Article 2 with medial length 0.73 width, article 3 medial length 1.4 width.

Mandible (Figs 7A,B,D–F). Length 0.16 body length, with 4 distinct cusps on both incisor processes. Lacinia mobilis with 5 distinct cusps, 5 denticles on dorsal edge and several fine hair-like setae on basal ventral side. Left spine row with 6 members; first spine separate and attached to the base of the lacinia mobilis. Right spine row with 12 members having fine setae along the bases. Molar process length 0.23 length of mandibular body, stout with numerous pointed denticles around the posterior lateral margin, 11 large penicillate setae and 3 simple setae below posterior margin, and numerous overlapping lamellar scales above anterior margin; triturating surface grading from coarse to fine granular denticles. Dorsal condyle smoothly rounded, length 0.2 length of mandibular body. Palp positioned 0.37 mandibular body length from posterior margin, length 0.62 length of mandibular body. Palp second article length 0.27 mandibular body length, with 2 large setae dorsally separated by distinct gap, each with fine setules along distal 3/4 of their length. Row of 11 small spinulose

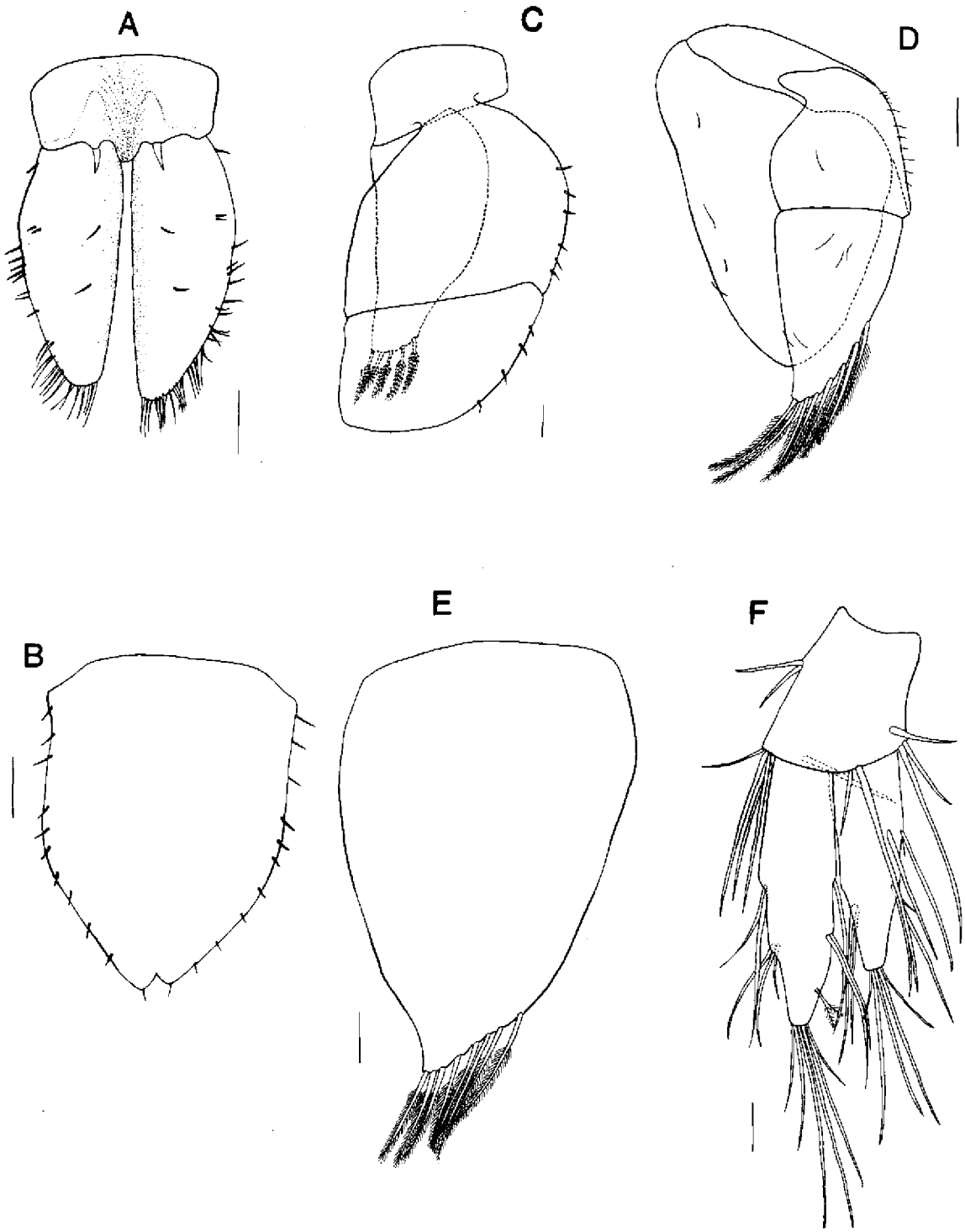

Fig. 12. *Stenetrium armatum* Haswell. **A**, neotype (AM P.42112), male pleopod I, ventral view. **B**, female (AM P.3377) female pleopod II, ventral view. Remaining pleopods of neotype (AM P.42112). **C**, pleopod III, ventral view. **D**, pleopod IV, ventral view. **E**, pleopod V, ventral view. **F**, uropod. Scale Bar = 0.1 mm.

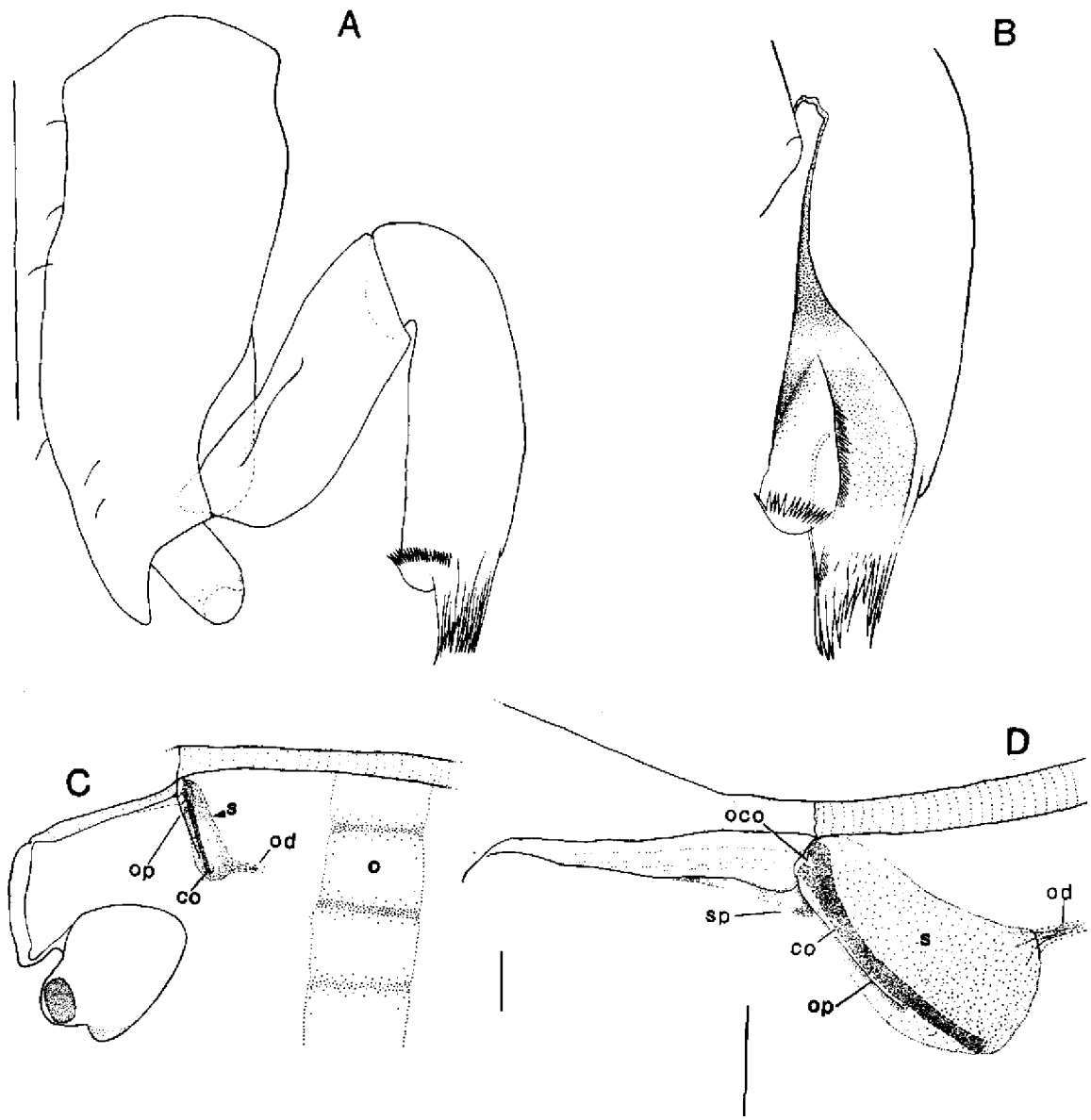

Fig. 13. *Stenetrium armatum* Haswell. **A,B**, Neotype (AM P.42112). **A**, male pleopod II, ventral view. **B**, second endopod segment, male pleopod II, ventral view. **C,D**, preparatory female (AM P.3376), ventral view of pereonite V. **D**, enlargement of oopore (op) region through ventral cuticle showing oopore (op) with stylet pocket (sp) and opening to cuticular organ (oco), cuticular organ (co) attached to the base of spermatheca (s) adjacent to oviduct (od). Scale bar = 0.1 mm.

setae extending anteriorly between large setae. Article 3 with 2 rows of setae extending along 0.7 article length.

Paragnath (Fig. 7C). Anteriorly directed broadly rounded paired lobes, fused posteromedially; length 0.81 width; 2 rows of fine hair-like setae on distal and medial margins, each side single (not bilobed).

Maxillula (Fig. 6E). Lateral lobe with 9 robust spinose setae, anterior medial setae with posteriorly directed teeth and posterior setae with anteriorly directed teeth. Lateral lobe length 0.15 body length, medial lobe width 0.54 lateral lobe width, medial lobe length 0.83 lateral lobe length. Medial lobe with 3 large, densely setulate setae. Lobe margins and medial lobe distal end with fine hair-like setae.

Maxilla (Fig. 6F). Lobes slender. Lateral lobe with 3 large, denticulate setae on distal tip and 13 small, short, setae on medial margin. Middle lobe with 2 large, denticulate setae distally and 9 long setae on medial margin. Medial lobe distal surface and medial margin densely covered with spinose setae.

Maxilliped (Figs 6C,D). Basis elongate and robust, basal width 1.15 endite width. Endite with 5 coupling hooks, length 0.46 total basis length; distal tip with 7 robust fan setae and 3 spinose setae. Distomedial corner with one large, spine-like setae. Dorsomedial ridge of endite with 6 setulate setae. Palp article 2 width subequal to endite. Epipod elongate with sharp distal tip, length 3.2 width. Distal margin with 12 small, equally spaced simple setae.

Pereopod I (Figs 8A–E). Subchelate, sexually dimorphic, males larger with bladed extensions of propodal palm; total length 0.8 body length in males and 0.45 in females.

Males: dactylus length 1.2 propodal width; ventral edge of dactylus with alternating long and short spinulose setae, short setae terminating in bifid denticles, single, broad unguis on distal tip with accessory seta; surface of dactylus sparsely covered in simple setae. Propodus robust, length 1.3 width, densely covered in long simple setae; palm with 1 large ventral tooth, 2 mediodistal teeth and single dorsal tooth. Carpus short, length 0.7 width, medial margin densely covered in simple setae. Merus, short, trapezoidal, with numerous setae, dorsal margin with rounded distal extensions. Ischium and basis length 1.3, 2.6 width, respectively. Basis length 0.23 total pereopod length.

Female: dactylus length 1.1 propodal palm width; ventral margin of dactylus with 10 denticulate setae; distal tip with single claw. Propodus elongate, length 1.7 width; palm with 9 comb setae and 5 long simple setae, terminating in 1 long, robust spinose seta; ventrolateral margin with numerous long, plumose and simple setae. Carpus length 1.2 width, with dense row of plumose setae on ventral margin. Merus as long as wide with prominent distal spine on dorsal margin; numerous simple setae along ventral margin. Ischium dorsal margin with large, robust spine. Basis length 3.4 width, length 0.3 total pereopod length.

Pereopods II–VII (Figs 9, 10). Female pereopods length 0.54, 0.49, 0.44, 0.46, 0.49, 0.53 body length, respectively, and male pereopods length 0.48, 0.42, 0.41, 0.43, 0.46, 0.46 body length, respectively. Propodus with 4–5, 3–4 short sensillate setae on ventral margin of pereopods II–III, IV–VII, respectively; 1 penicillate and several small sensillate setae on dorsodistal tip; robust bidenticulate sensillate setae on ventral surface. Carpus of both sexes with 4–5, 2–3 robust sensillate setae on ventral surface of pereopods II–VI, VII, respectively; penicillate setae on dorsodistal corner. Merus short with dorsodistal corner extended with large setae on tip. Ischium with 1–2 large seta on dorsal surface.

Female Genitalia (Figs 13C,D). The female specimen was not treated with KOH because only 1 brooding female was in the collection. Female oopore is a broad, posteriorly directed groove on anterior ventromedial margin of pereonite 5. Spermathecal duct (cuticular organ) of brooding female opens externally at anterior of oopore, and anteromedially adjacent to a cuticular fold that continues posteriorly into a shallow depression or stylet pocket. Opening of spermathecal duct is surrounded by thickened wall that narrows as organ extends posteriorly. A short tube connects orifice to posterior edge of the spermatheca. Spermatheca is an unexpanded, thin-walled sac that is attached to ventral cuticle and spermathecal duct. Spermatheca extending posteromedially into ovary via a thin-walled, expandable oviduct.

Penes (Figs 11B). Length 4.2 width; tubular, tip rounded, inserting 0.13 body width from midline.

Male Pleopod I (Figs 11B, 12A). Length 0.5 pleotelson length; width 0.1 pleotelson length; protopod length 0.6 width, fused medially producing a central depression between rami with 1 robust seta on each side. Rami lateral margin evenly rounded with simple setae on distal and lateral margin. Pleopod I covering pleopod II; length of pleopod I 1.3 length of pleopod II.

Male Pleopod II (Figs 13A,B). Protopod longer than wide, length 2.8 width, with distal tip sharply produced. Exopod length 1.4 width, positioned distolaterally on protopod. Endopod inserting 0.77 protopod length on medial margin. Endopod length 1.2 protopod length; appendix masculina length 1.6 length of proximal segment. Proximal segment with groove length 0.42 proximal segment length. Appendix masculina groove on dorsal surface, extending from mid length to distal tip, groove fringed by long fine cuticular spines and posteriorly directed fine cuticular hairs. Domed ridge dorsal to groove with fringe of anteriorly directed short spines.

Female Pleopod II (Fig. 11A, 12B). Shield shaped, length 1.3 width, length 0.5 pleotelson length, distal tip notched, length of notch 0.1 pleopod II length; lobes asymmetrical; fine simple setae evenly spaced around lateral margins.

Pleopod III (Fig. 12C). Exopod opercular, obliquely divided into 2 segments; not sexually dimorphic; length 1.6 width; length 0.9 pleotelson length. Endopod single segment, length 1.6 width; length 0.6 exopod length; posteriorly truncated with 5 plumose setae on apex.

Pleopod IV (Fig. 12D). Exopod with 2 segments,

length 2.5 width, tip tapering with 8 plumose setae. Endopod unsegmented, length 1.05 width; no setae on distal tip.

Pleopod V (Fig. 12E). Uniramous, length 1.5 width, length 0.6 pleotelson length; posteriorly pointed with 8 large plumose setae.

Uropods (Fig. 12F). Length 0.1 body length, length 0.2 pleotelson length. Protopod length 1.0 width; sensillate setae on medial and distal margins. Exopod shorter than endopod, length 0.8 endopod length; exopod 1.4 protopod length; shaft with 3–4 transverse rows of sensillate setae and distal tip with tuft of fine elongate simple setae, setal length 0.9 exopod length. Endopod length 1.7 protopod length; with 4–5 transverse rows of sensillate setae; 2 penicillate setae subdistally; distal tip with tuft of thin elongate simple setae, setal length 0.8 endopod length.

Remarks. The specimens marked as possible syntypes, held by the Australian Museum, had an uncertain origin. This material could not be shown to the same used by Haswell in his original descriptions. Haswell (1881) did not designate types in his description nor did he label specimens as types (Springthorpe & Lowry, 1994). The specimens of this species from Port Jackson may be the original specimens but they could also have been collected after the date of publication by others such as Whitelegge, McCulloch or Hedley. Consequently the term 'possible syntype' was used by Springthorpe & Lowry (1994). Schultz (1982), the last revisor of this species did not designate them as types. *Stenetrium armatum*, however, is the type of its genus, so stability in the generic concept would be improved by establishing a name-bearing specimen for the species. Therefore, one male (AM P42112) is assigned to be the neotype for *S. armatum* from the "possible syntype" specimens. This specimen matches, as well as can be determined, Haswell's (1881) original description of the species.

Stenetrium armatum may be distinguished from other species of the genus by the armature of the large subchelate pereopod I and unique pleopodal structures. Male pereopod I possesses a distinct dactylus that extends past the propodal palm; the propodal palm has a large, elongate, terminal tooth followed by 3 smaller teeth, 2 of which are broadly joined at their bases. Pleopod I rami has short, robust setae at the base of each ramus. A unique appendix masculina of pleopod II has a subapical fringe of proximally directed, short setae around a lateral dome and a broad apical opening surrounded by long cuticular hairs. Large sternal spines are found on pereonites 1–4 and 6–7. The female can be distinguished by a large spur-like spine on the medial margin of the pereopod I ischium. The distolateral margin of pereonite 5 has a notch above the coxal lappets and no proximal notch on the distolateral margin of pereonite 6.

Stenetrium adrianae n.sp.

Figs 14–26

Material examined. HOLOTYPE, AM P42283, male, 6.6 mm, Munganno Point, Two Fold Bay, New South Wales, (37°06'S, 149°56'E) on subtidal wharf pile among tunicates, collected by S.J. Keable, Australian Museum, 10 October 1984. PARATYPES: 2 males, 3 females, 5 ovigerous females, AM P35651, type locality, 10 October 1984; 5 males, 9 females, 7 ovigerous females, AM P35652, from type locality, 26 March 1985; 2 males, 1 female, 2 juveniles, AM P35652, type locality, 26 March 1985; 4 males, 4 females, 1 ovigerous female, AM P36161, type locality, collected by S.J. Keable and S. Perry, 19 December 1985.

Etymology. The species name 'adrianae' is dedicated to Adriana, the wife of the first author, for her continuous support and encouragement.

Diagnosis. Cephalon with anterolateral and antennal spines shorter than rostrum length, sternal keels in males anteriorly directed on pereonites 2–3 and posteriorly on pereonites 6–7; coxal spines visible in dorsal view on lateral margins of pereonites 4–5 in males and 3–6 in females. Pleotelson with weakly notched lateral margins. Antennula length half width of cephalon; male antennula with 9 articles. Mandibular incisor process with 4 distinct cusps and no denticles; left spine row of incisor process with 5 members. Maxilla lateral lobe with 7 short robust setae on medial margin. Maxilliped endite with 6 long spinulose setae on distal margin. Male pereopod I with dactylus same length as propodal palm width; propodal palm of pereopod I in males with small tooth on margin, 1 large sharply pointed tooth and 1 small rounded tooth adjacent to dactylus; carpus length equal to width in males; opposing margin of dactylus of female pereopod 1 with 16 denticulate setae. Pereopod II ischium with 3 large simple setae on dorsal margin. Male pleopod I broad rami subquadrangular with clipped corner on lateral distal margin. Male pleopod II protopod with broad base, truncated posteriorly with apex roundly produced; appendix masculina with posteromedial opening on lateral margin and long needle-like stylet, without setae or teeth. Female pleopod II without apical notch. Pleopod IV and V of both sexes with 7 and 9 plumose setae, respectively. Uropodal endopod with 2 rows of latitudinal sensillate setae and 6 distal penicillate setae, exopod and endopod with apical setal tufts almost twice as long as rami.

Description

Body (Figs 14, 15). Adult male body length 6.2 mm (5.6–6.6 mm) and width 1.9 mm (1.8–2.0 mm) across widest point. Preparatory female body length 5.2 mm (4.6–6.5 mm) and width 1.7 mm (1.3–2.1 mm). Brooding female body length 5.6 mm (5.1–6.1 mm) and width 1.9 mm (1.5–2.4 mm). Length to width ratios 0.31, 0.32,

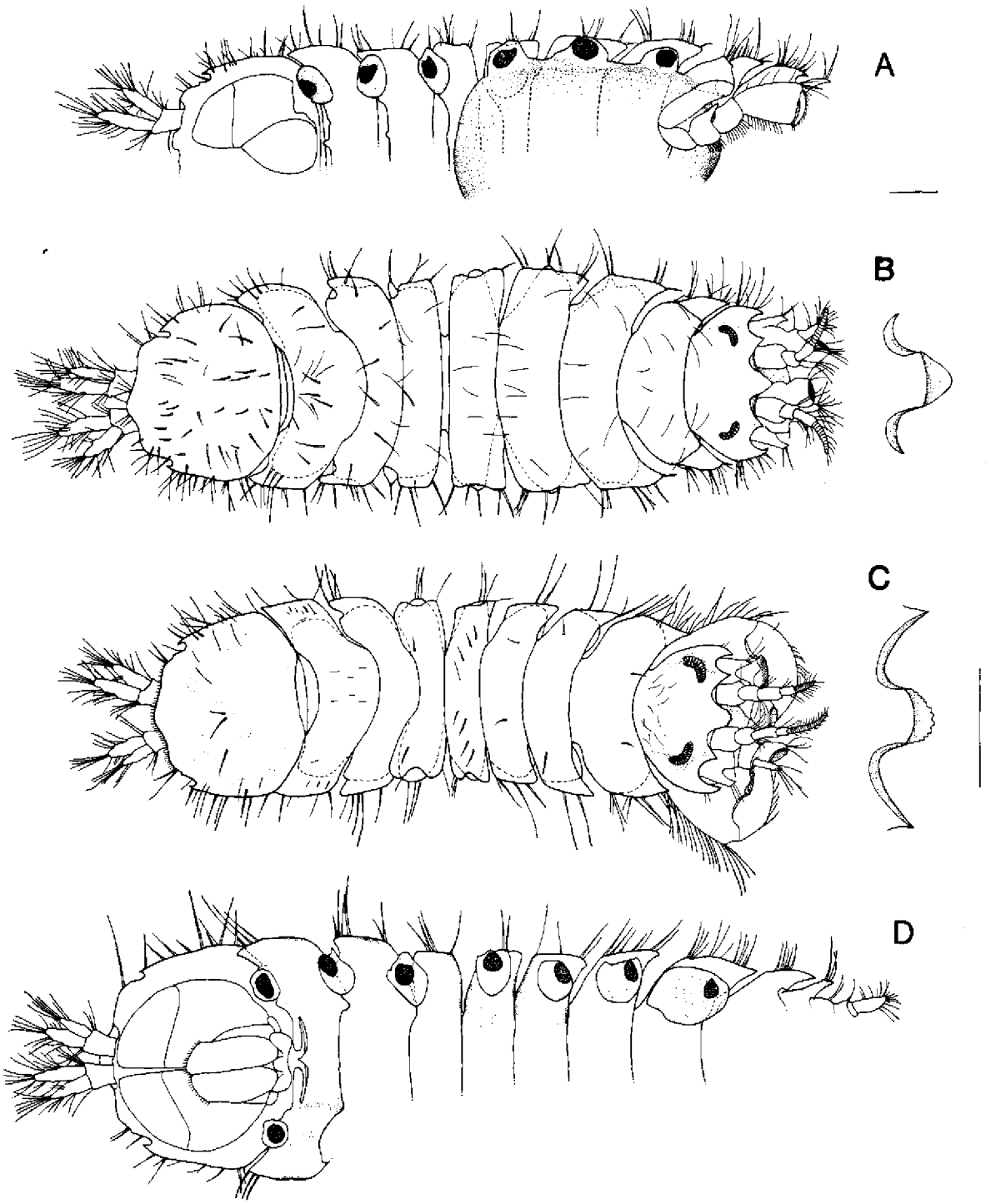

Fig. 14. *Stenetrium adrianae* n.sp. **A**, ventral view, paratype female (AM P.35651). **B**, body dorsal view with enlargement of rostrum, female (AM P.35651). **C**, body dorsal view, with enlargement of rostrum, holotype male (AM P.42283). **D**, body ventral view, male (AM P.42283). Scale bar = 0.5 mm.

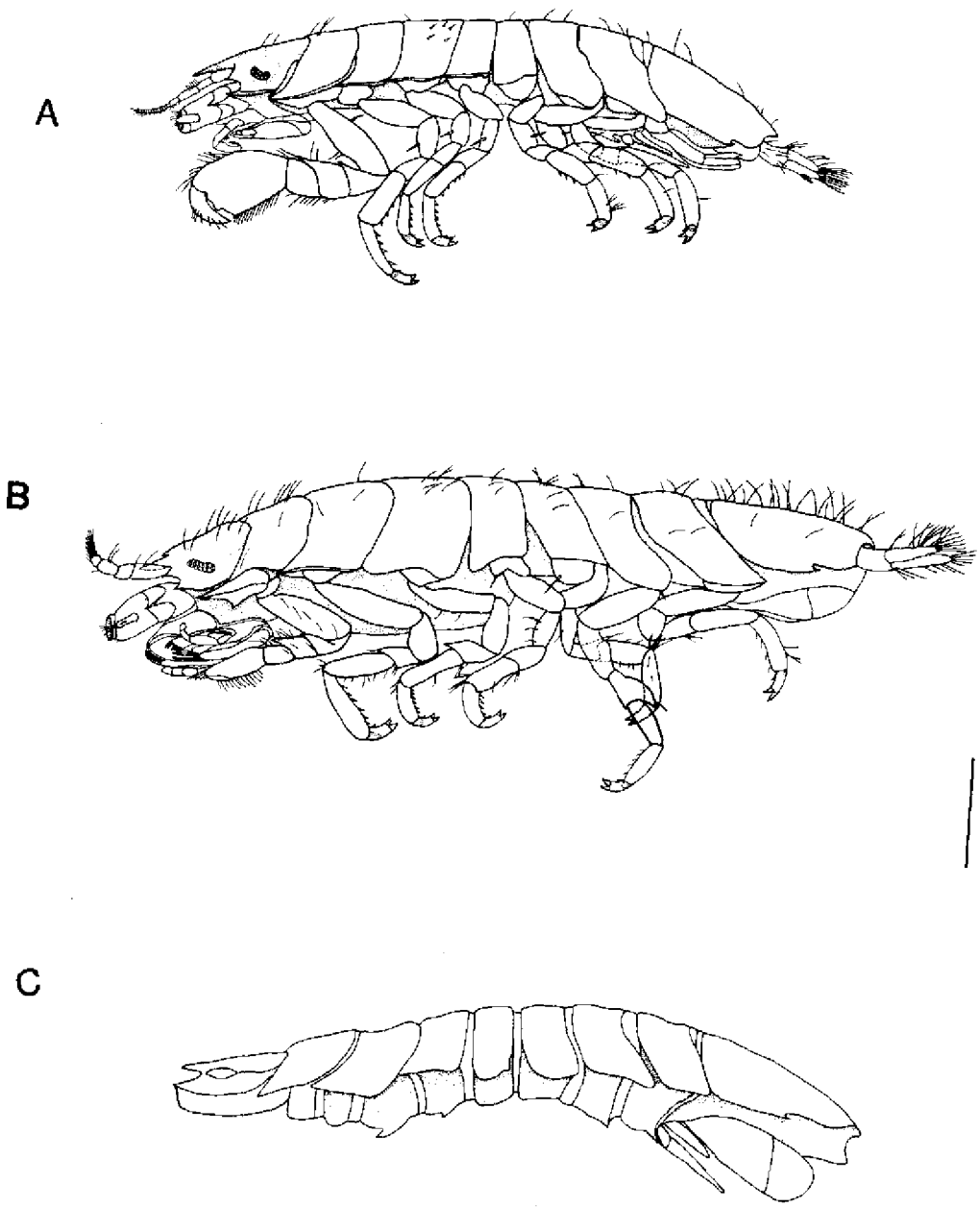

Fig. 15. *Stenetrium adrianae* n.sp. **A**, body lateral view, holotype male (AM P.42283). **B**, body lateral view, paratype female (AM P.35651). **C**, body lateral view, showing sternal keel, holotype male. Scale bar = 1.0 mm.

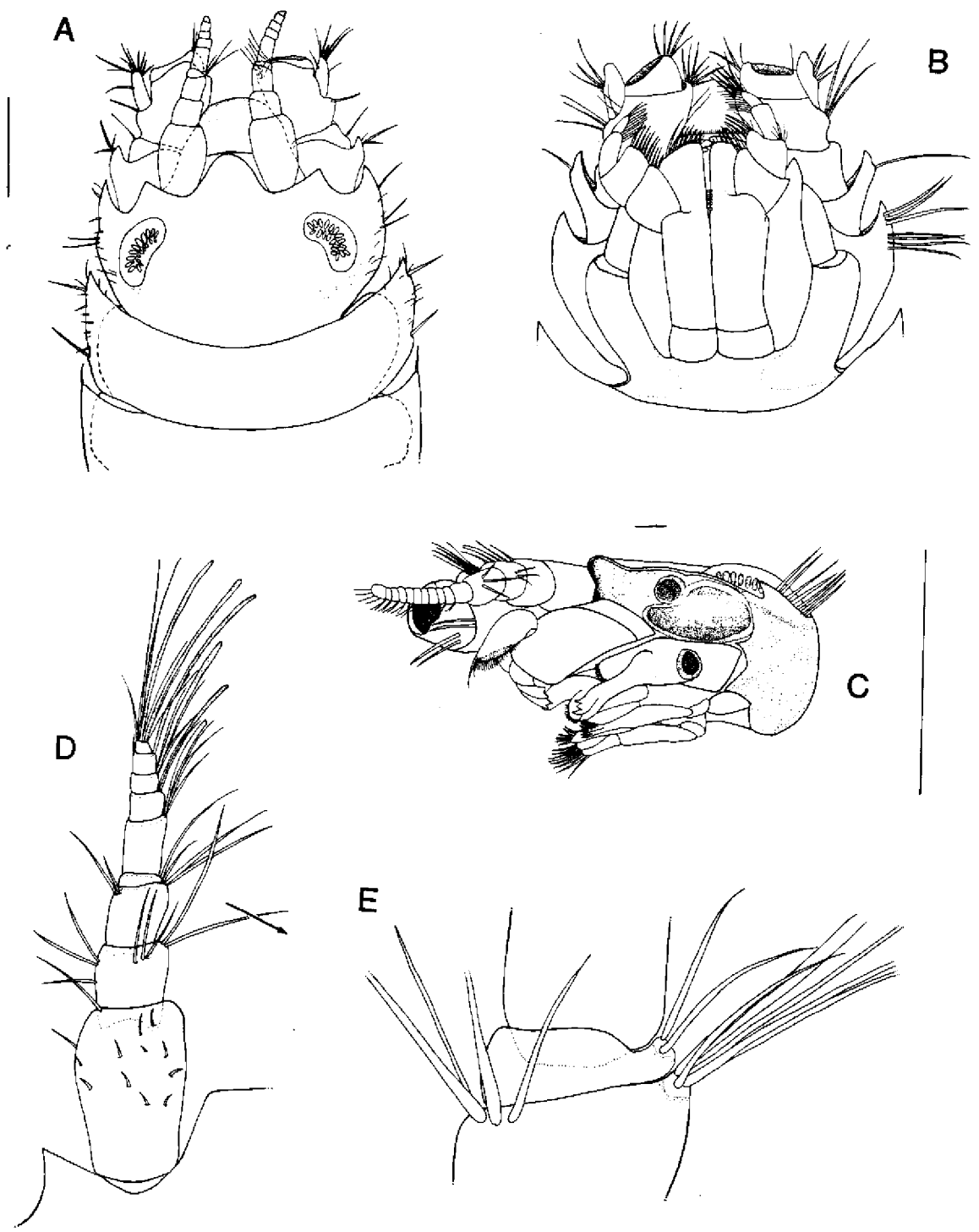

Fig. 16. *Stenetrium adrianae* n.sp. Holotype male (AM P.42283). **A**, cephalon, dorsal view. **B**, cephalon, ventral view. **C**, cephalon, lateral oblique view with maxillipeds removed. **D**, antennula. **E**, remnant flagellum on antennula article 3. Scale bar = 0.5 mm.

0.28 for males, preparatory females and brooding females respectively.

Head (Fig. 16A–C). Large anterolateral spines and smaller antennal spines shorter than length of rostrum. Cephalon dorsal length 0.6, 0.7 width females and males, respectively. Rostrum not sexually dimorphic, broadly rounded with either serrated or smooth tip. Eyes anterolateral, reniform with up to 20 ocelli. Labrum projects 0.15 cephalon lengths past the rostrum. Clypeus length 0.1 width, broader than space between antennule insertions.

Pereon (Figs 14, 15). Dorsal surface sparsely setose, most dense at lateral margins. Coxae and pereopodal insertions positioned anteriorly on pereonites 1–2, medially on pereonites 3–4 and posteriorly on pereonites 5–7. Single coxal spines visible in dorsal view on pereonites 4–5 in males and 3–6 in females. Pereonite 5 coxal spine medial in males and posterior in females. Sternal keel present in males as anteriorly directed spines on pereonites 2–3 and posteriorly directed spines on pereonites 6–7.

Pleotelson (Figs 14, 15, 24A). Length 1.0, 0.9 width, length 0.3, 0.3 body length in females and males respectively; lateral margins sparsely setose and smooth; prominent posterolateral spine. Pleotelson surface sparsely setose.

Antennula (Fig. 16D,E). Length 0.75 width of cephalon. Male antennula with 9 articles, 6 articles in flagellum with one aesthetasc per article; 2 aesthetascs on terminal article. Article 1 length 1.6 width, small spinose setae on distal half. Article 2 length 0.8 width with 3 groups of simple setae on both sides of distal margin. Article 3 medial length 1.05 width; 2 groups of 2 setae on medial and lateral distal margins. Second flagellum remnant poorly defined on medial side of article 3, with 2 projecting simple setae.

Antenna (Fig. 19A–C). Antenna length 0.83 body length. Article 1 medial length 1.2 width. Article 2 medial length 1.2 width; article 3 medial length 1.5 width. Prominent lateral spine on antennal article 1 extending anteriorly past articles 2 and 3 articulation.

Mandible (Figs 15A, 17B–F). Slender, length 0.66 cephalon length, with 4 distinct cusps on both incisor processes. Lacinia mobilis with 4 distinct cusps, no denticles on dorsal edge, several fine hair-like setae on proximomedial margin and six medially directed simple setae on dorsal base margin. Left spine row with 6 members; first spine separate and attached to base of lacinia mobilis. Right spine row with 12 members having fine setae along bases. Molar process length 0.27 mandibular body length; numerous pointed denticles around posterolateral margin; 9 large setose setae and simple setae below posterior margin; numerous overlapping lamellar setae on anterior margin. Triturating surface graded from coarse to fine granular denticles. Dorsal condyle smoothly rounded, length 0.2 mandibular body length. Palp equal in length to mandibular body length; palp second article length 0.4 mandibular body length, with 2 large setae positioned dorsodistally and mediodistally, with fine setation along upper 0.7 length. Row of 9 small spinose setae between large setae, extending anteriorly from mediodorsal setae. Article 3 with 2 rows of setae extending 0.7 along article length.

Paragnath (Fig. 18B). Length 0.8 width; each side not bilobed; 2 rows of fine hair-like setae on distal and medial margins. Ventral surface with numerous cuticular combs.

Maxillula (Fig. 18D). Lateral lobe with 9 spinose robust setae, anteromedial setae with posteriorally directed teeth, posterior setae with anteriorly directed teeth. Lateral lobe length 0.52 cephalon length, medial lobe width 0.6 lateral lobe width, medial lobe length 0.8 lateral lobe length. Medial lobe with 3 large, densely setulate, setae and two small, short spinose setae. Medial and lateral lobe margins and medial lobe distal end with fine hair-like setae.

Maxilla (Fig. 18C). Lobes slender. Lateral lobe with 5 large setae on distal tip and 7 small, short, robust setae on medial margin. Middle lobe with 4 large setulate setae on distal tip and 7 long robust setae on medial margin. Medial lobe distal surface and medial margin densely covered with 13 robust, setulate setae.

Maxilliped (Fig. 19D–F). Basis width 1.1 endite width. Endite with 5 coupling hooks, endite length 0.4 total basis length; distal tip with 6 robust fan setae on ventral margin, increasing in size laterally to seta 5, with seta 6 reduced to 0.9 length of setae 5. Extremely fine hair-like setae along distal lateral margin and posterodorsal margin to fan setae 6. Six large spinose setae between fan setae on ventral surface and undulating cuticular ridge on dorsal surface. Medial distal corner with one large robust, spine-like setae. Dorsal medial ridge of basal endite with 5 setulate setae, and with extremely fine hair-like setae along bases of large setae, grading into spinose setae covering distomedial part of dorsal surface. Palp article 2 same width as endite. Epipod length 3.1 width, length subequal to basis length, distal margins with 12 small simple setae, length 1.6 basis length.

Pereopod I (Fig. 20). Subchelate, strongly sexually dimorphic, total length 0.7 body length in males and 0.4 in females. Strongly sexually dimorphic. Males: dactylus length subequal propodal width; opposing edge of dactylus with long and short simple setae; single claw on distal tip; surface of dactylus densely covered in long simple setae. Propodus robust, length 1.1 width, densely covered in long simple setae; palm with 1 small terminating tooth, one large, sharply pointed tooth and one smaller rounded tooth. Carpus length 0.9 width, ventral margin densely covered with simple setae. Merus length 1.4 width, trapezoidal, with numerous setae, dorsal margin sharply elongated distally. Ischium and basis length 1.4, 4.6 width, respectively. Basis length 0.32 total pereopod length. Female Pereopod I: dactylus length subequal to propodal palm width; opposing edge of dactylus with 16 denticulate setae, 4 long simple setae and single claw on distal tip. Propodus elongate, length 1.4 width; propodal palm with 11 comb setae, terminating in a long, robust seta; numerous long distally plumose setae and simple setae on ventral margin only. Carpus length 0.8 width, with dense row of distally plumose setae on distal part of ventral margin.

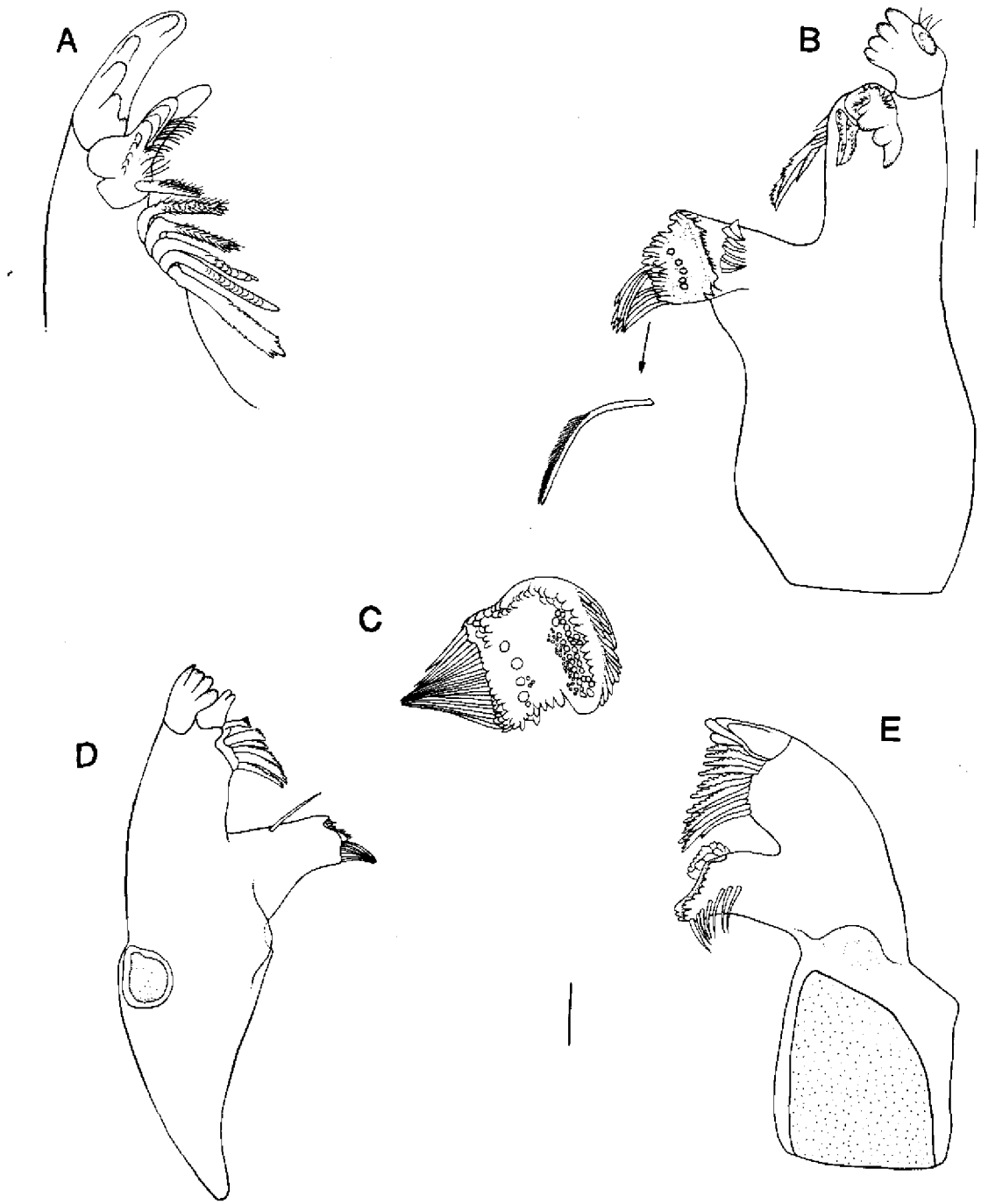

Fig. 17. *Stenetrium adrianae* n.sp. Holotype male (AM P.42283). **A**, left incisor process showing lacinia mobilis. **B**, left mandible with an enlargement of molar process setae. **C**, left mandible molar process grinding surface. **D**, left mandible showing condyle. **E**, right mandible showing condyle. Scale bar = 0.1 mm.

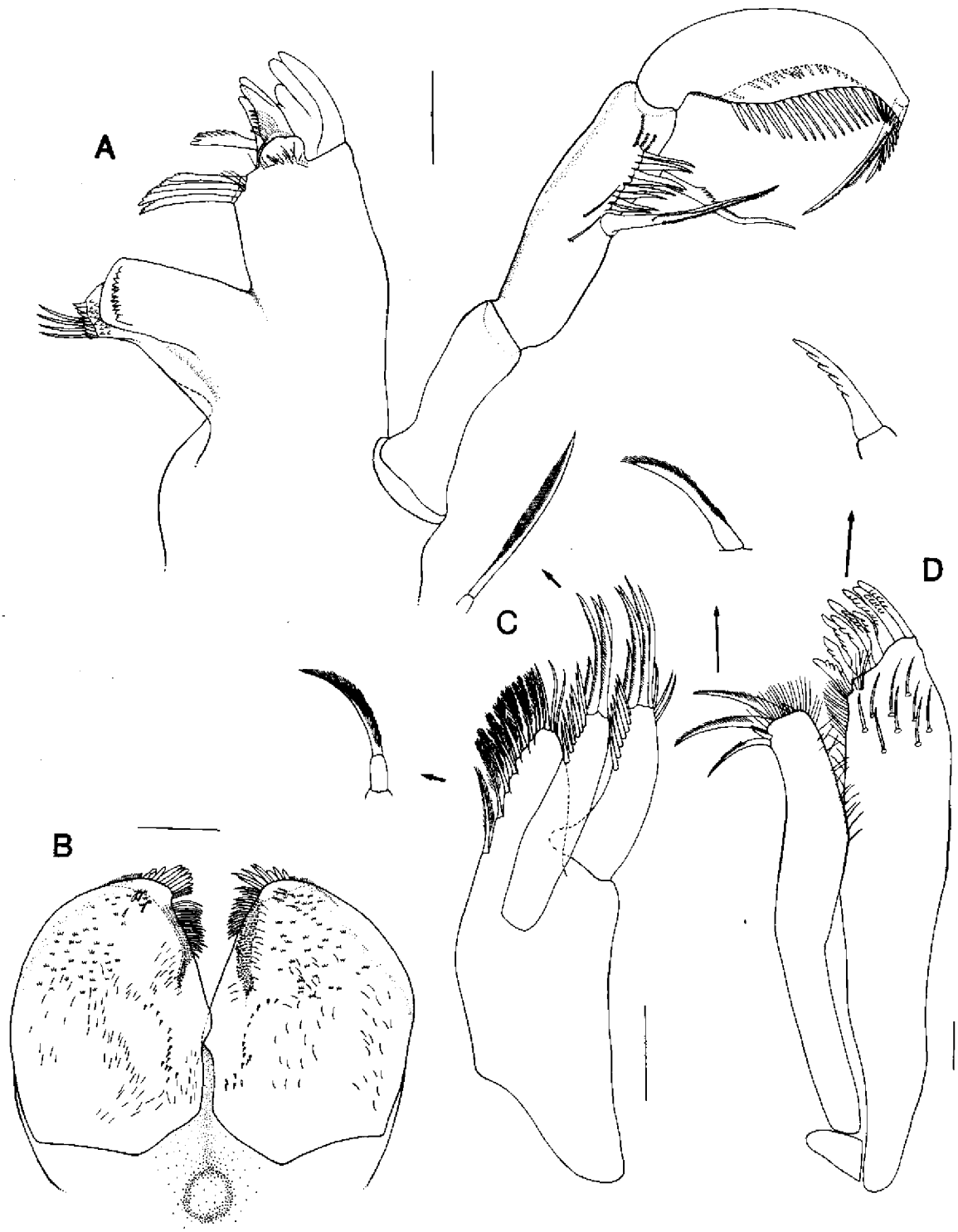

Fig. 18. *Stenetrium adrianae* n.sp. Holotype male (AM P.42283). **A**, left mandible with palp. **B**, paragnath. **C**, maxilla, with enlargement of 2 setal types. **D**, maxillula with enlargement of inner lobe setae and outer lobe denticulate setae. Scale bar = 0.1 mm.

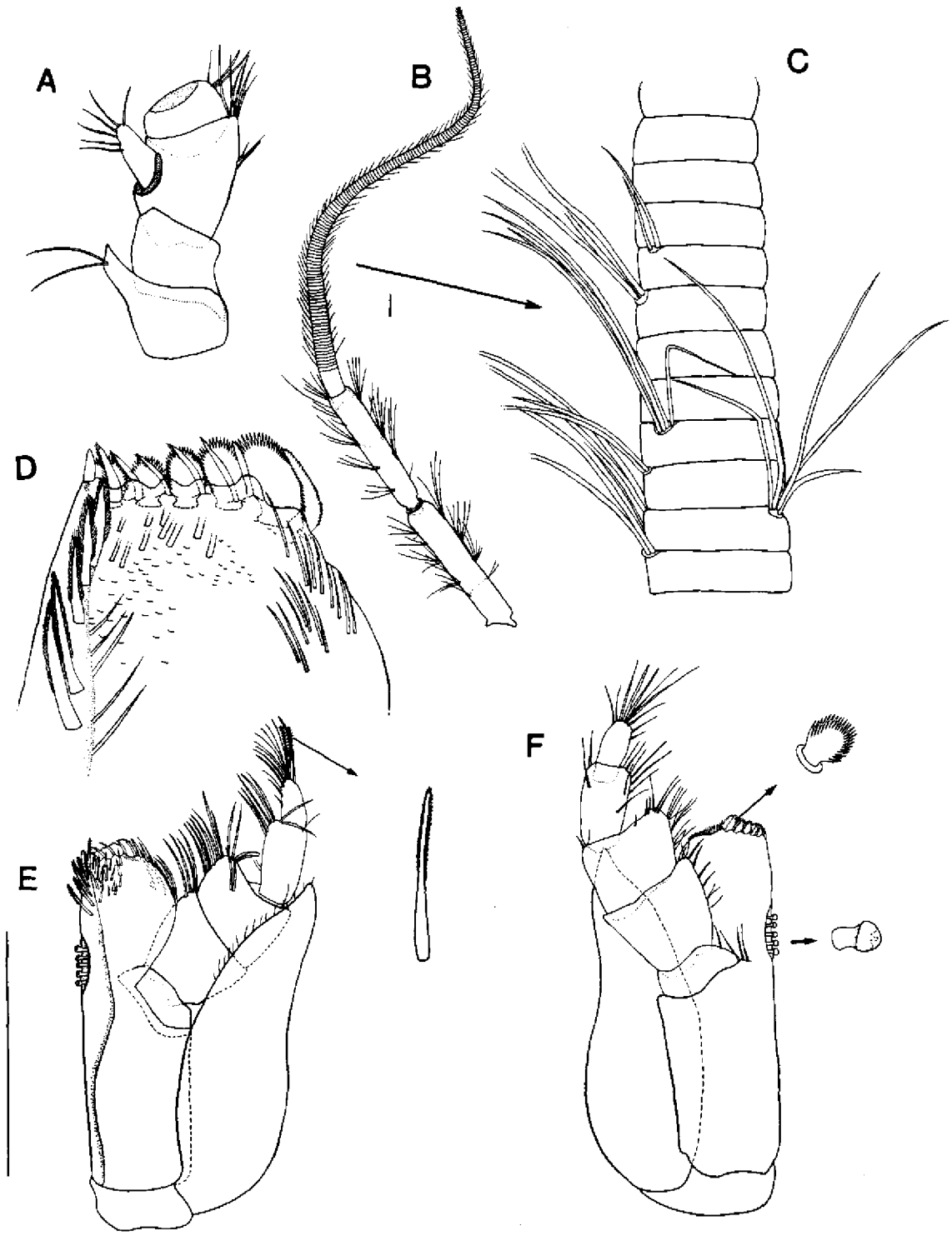

Fig. 19. *Stenetrium adrianae* n.sp. Holotype male (AM P.42283). **A**, antenna peduncular articles. **B**, antenna flagellum articles. **C**, antenna, close up of flagellum articles. **D**, maxilliped endite, dorsal view. **E**, maxilliped, dorsal view and enlargement of plumose setae on distal tip of palp. **F**, maxilliped, ventral view with enlargement of fan setae and coupling hook. Scale bar = 0.1 mm.

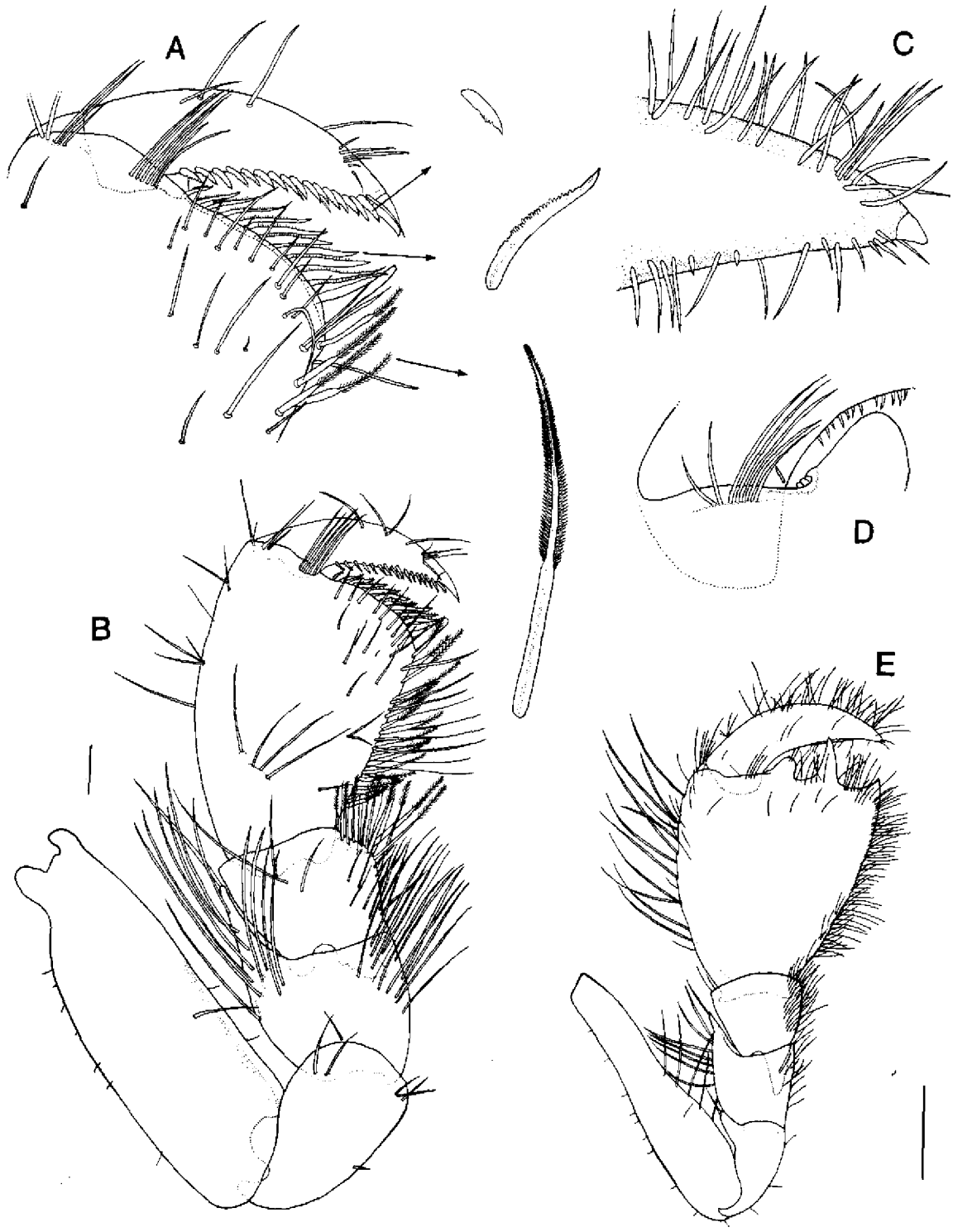

Fig. 20. *Stenetrium adrianae* n.sp. **A,B,** paratype female (AM P.35651). **A,** female pereopod I, dactylus and propodus with enlargement of denticulate setae and lateral plumose setae. **B,** female pereopod I. **C-E,** holotype male (AM P.42283). **C,** male dactylus, distal tip. **D,** male dactylus, proximal joint. **E,** male pereopod I. Scale bar = 0.1 mm.

Merus length 0.8 width, with prominent narrow distal extension of dorsal margin, almost parallel with lateral margin of carpus; medial and lateral margins with numerous long, simple setae. Ischium length 1.3 width. Basis length 2.9 width, length 0.31 total pereopod length.

Pereopods II–VII (Figs 21–23). Male similar to female but more setose. Female pereopods II–VII length 0.44, 0.37, 0.34, 0.36, 0.40, 0.43 body length, respectively, and male pereopods length 0.48, 0.44, 0.39, 0.41, 0.46, 0.47 body length, respectively. Dactylus anterodorsal surface has 3 sensillate setae; ventral surface has 2 sensillate setae between distal claws. Propodus of both sexes with 6, 5 short sensillate setae on ventral margin on pereopods II–III, IV–VII, respectively; 1 penicillate and several small sensillate setae on dorsodistal tip; robust bidenticulate sensillate setae and one long simple setae on ventral surface. Carpus with 5 (pereopod VII has 2) robust sensillate setae on ventral surface; penicillate setae on dorsodistal corner. Merus dorsodistal corner acutely extended with 2 large setae on tip of pereopods II–VII. Ischium with 1 long, robust seta on dorsal surface of pereopods II–VII. Male basis with 2, 3, 1, 0 simple setae on dorsal surface of pereopods II, III, IV–VI, VII, respectively.

Female Genitalia (Fig. 26D,E). The female specimen was treated with KOH in order to clear the cuticle and remove muscle tissue. Female oopore is a broad, posteriorly directed groove on anterior ventromedial margin of pereonite 5. Spermathecal duct (cuticular organ) of brooding female opens externally at anterior of oopore, and anteromedially adjacent to a cuticular fold that continues posteriorly into a blind sac or stylet receptacle. Opening of spermathecal duct surrounded by thickened wall that narrows as duct extends posteriorly. A short tube connects orifice to posterior edge of the spermatheca. Spermatheca is unexpanded, thin-walled sac that is attached to ventral cuticle and spermathecal duct. Spermatheca extends posteromedially into ovary via a thin-walled, expandable oviduct.

Penes (Fig. 24A). Length 4.25 width, tubular and posteromedial on pereonite 7.

Male Pleopod I (Fig. 25E). Length 0.51 pleotelson length; width 0.1 pleotelson length; protopod length 0.3 width. Rami subquadrangular with oblique corners on distolateral margin. Lateral margin with simple setae increasing in number posteriorly. Pleopod I extending over pleopod II completely, pleopod I length 1.1 length of pleopod II.

Male Pleopod II (Fig. 26A–C). Length 2.9 width. Protopod with broad base, pointed posteriorly with posterolateral corner rounded and produced with 5 simple setae on lateral margin. Exopod length 1.3 width. Endopod length 1.7 protopod length; appendix masculina length 2.3 proximal segment length. Proximal segment ventral groove length 0.5 proximal segment length; 5 sensillate setae on distoventral surface. Appendix masculina stylet-like with distal open groove on lateral side folding to closed tube distally; proximal groove with fine cuticular combs; distal tube thickened, rod-like, with internal striations and external denticles on medial margin.

Female Pleopod II (Fig. 25A). Shield shaped, length 1.2 width, length 0.4 pleotelson length, anterior half subparallel, posterior half pointed; evenly spaced fine simple setae around lateral margins.

Pleopod III (Fig. 25B,F). Exopod length 2.0 width; length 0.8 pleotelson length; endopod length 1.8 width; length 0.8 exopod length; narrowing distally with 5 plumose setae on apex in females, 4 in males.

Pleopod IV (Fig. 25C,G). Exopod length 2.1 width, pointed posteriorly with 7 plumose setae. Endopod length 0.7 width.

Pleopod V (Fig. 25D,H). Uniramous, length 1.9 width, length 0.1 body length; posteriorly truncated with 9 large plumose setae.

Uropods (Fig. 24B,C). Length 0.04 body length, length 0.5 pleotelson length. Protopod length 0.6, 0.9 width in males and females respectively; medial and distal margins with large simple setae. Exopod length 1.2, 1.3 protopod length, endopod length 1.4, 1.7 protopod length, exopod length 0.9, 0.7 endopod length, in males and females respectively. Endopod with 3 latitudinal sensillate setal rows and 2 groups of 3 rows of subdistal penicillate setae.

Remarks. *Stenetrium adrianae* was originally identified as *S. armatum* in the collection of the Australian Museum. Although the two species are similar in body shape and dimensions, several morphological characters distinguish *S. adrianae* from the latter species: the male pereopod I dactylus is equal in length to the propodal palm width, not extended past the palm as in *S. armatum*; the propodal palm has a small terminal tooth followed by two large, distinctly separate teeth; large sternal spines are present only on pereonites 2–3 and 6–7; the appendix masculina of pleopods II in males terminates in a long needle-like stylet.

Females can also be distinguished among other species: pleopod II lacking an apical notch, the shape of distolateral corners of pereonites 5–6 (i.e. the shape, depth and position of the coxal spines and notches on the peronites); the absence of large spur-like spines on the carpus, merus and ischium of pereopod I; the presence of a deep stylet receptacle, matching the elongate stylet of the male.

Tristenium n.gen.

Figs 1C,D, 3B

Type species. *Tristenium acutirostrum* (Müller, 1991b).

Species included. See Table 1.

Etymology. *Tristenium* is a re-arrangement and modification of *Stenetrium*, and is similar to the name of the second author's son. The gender is neuter.

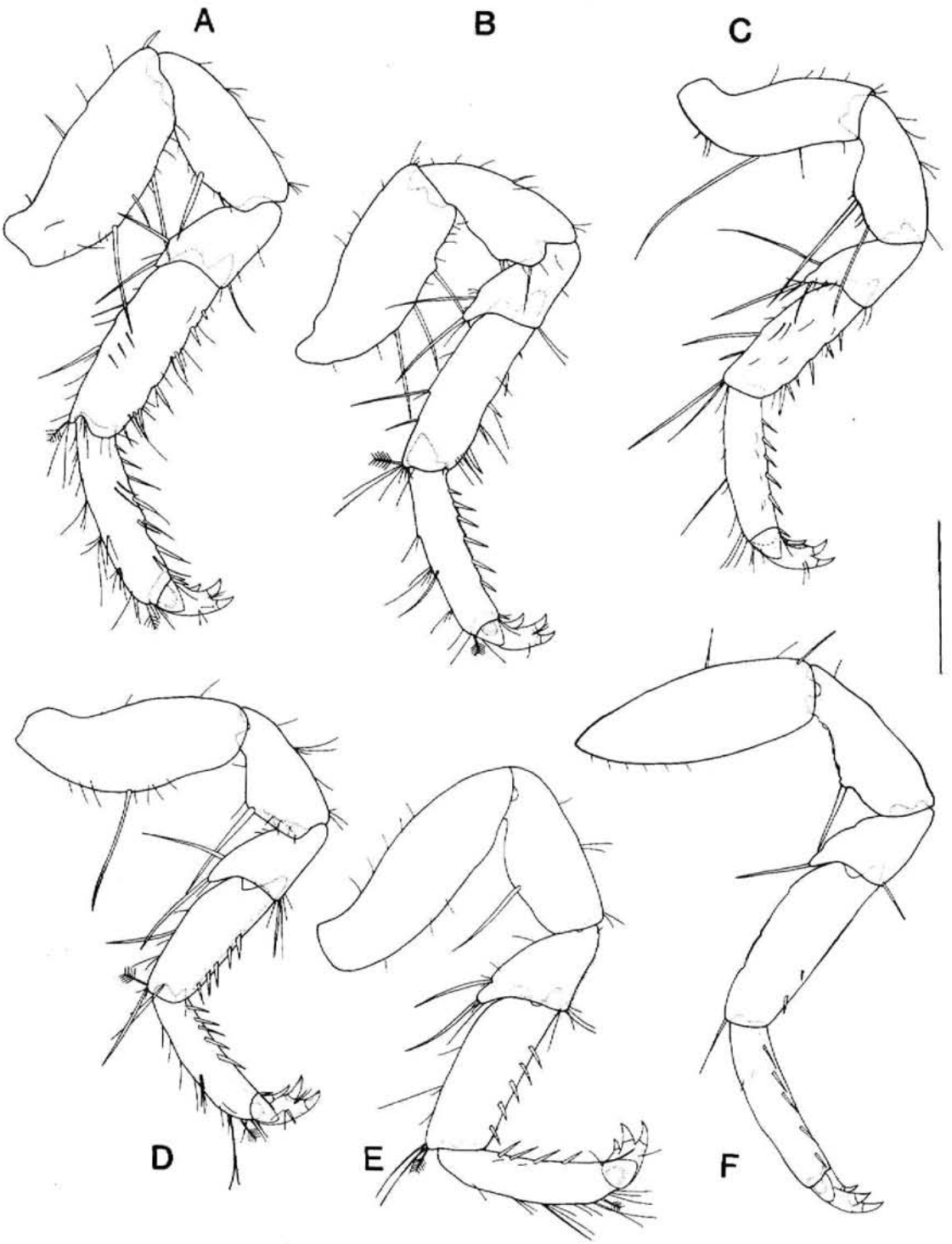

Fig. 21. *Stenetrium adrianae* n.sp. Holotype male (AM P.42283). **A–F**, pereopods II–VII. Scale bar = 0.5 mm.

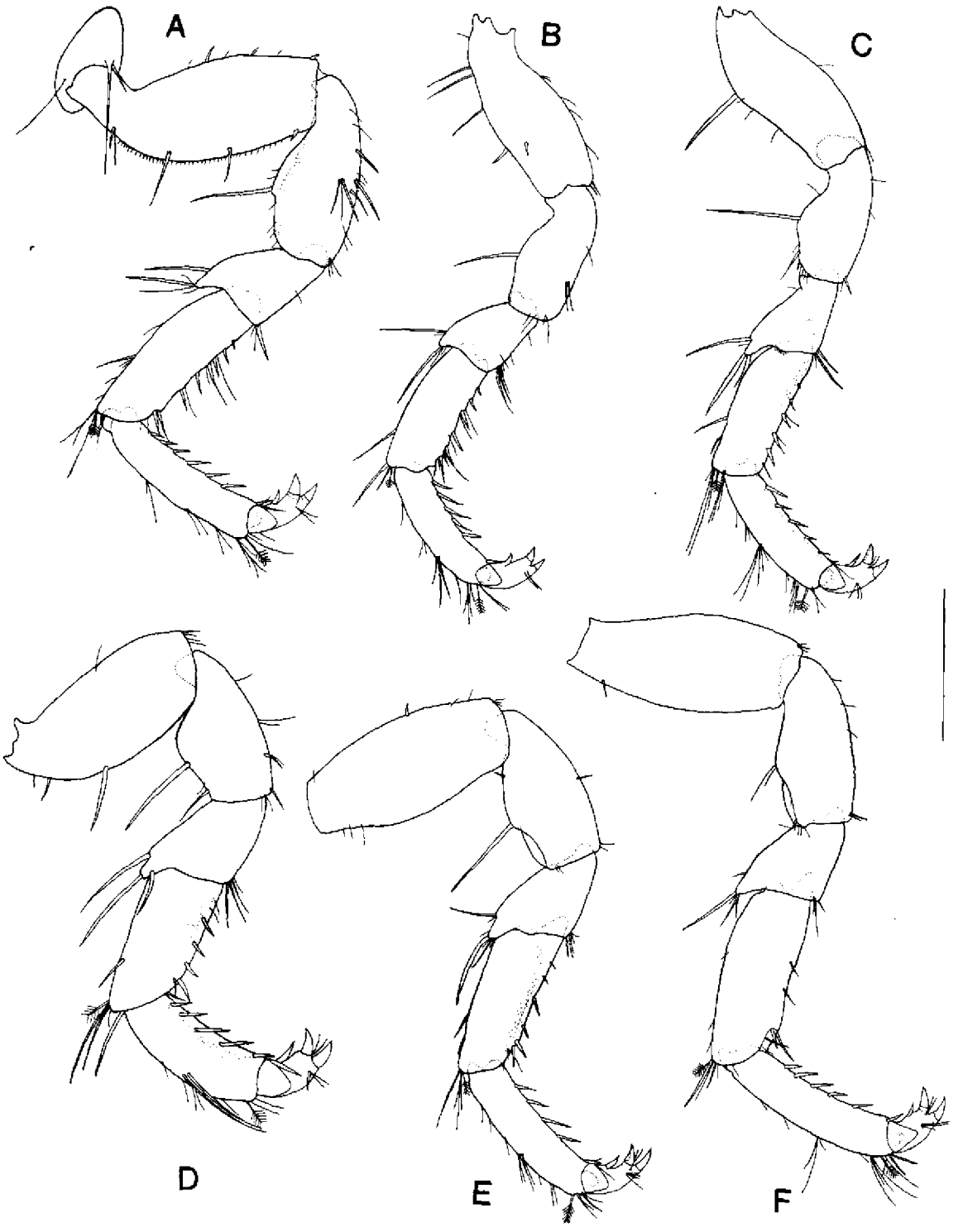

Fig. 22. *Stenetrium adrianae* n.sp. Paratype female (AM P.35651). **A–F**, pereopods II–VII. Scale bar = 0.5 mm.

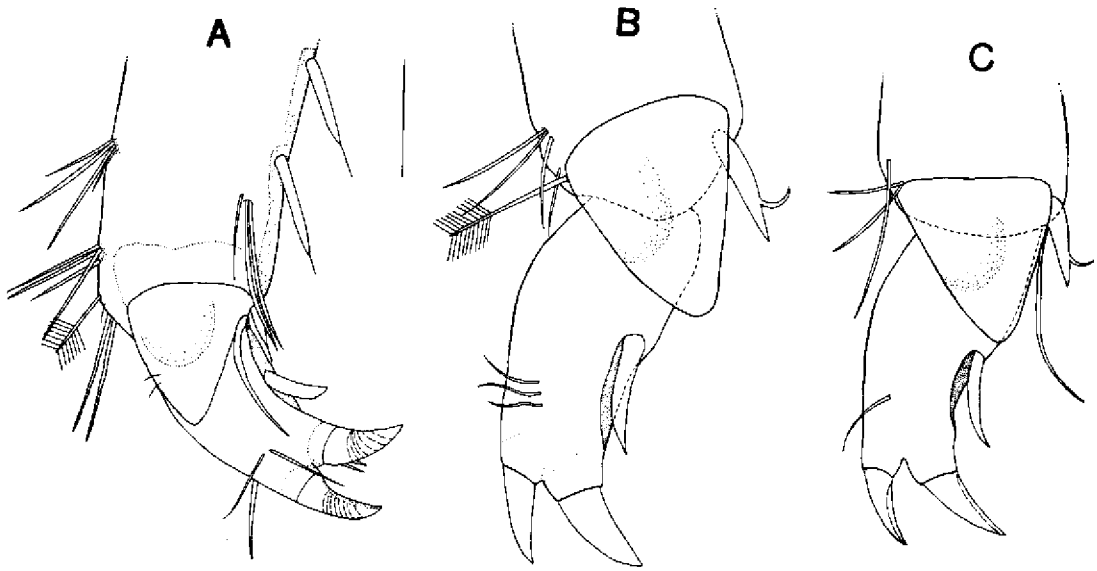

Fig. 23. *Stenetrium adrianae* n.sp. **A,B**, holotype male (AM P.42283). **A**, dactylus of pereopod II, male. **B**, dactylus of pereopod VII, paratype male (AM P.35651). **C**, paratype female (AM P.35651) dactylus of pereopod VII. Scale bar = 0.1 mm.

Diagnosis. Head frontal margin with weak lateral and antennal spines, antennal spines rounded and longer than blunt lateral spines. Eyes with circlet of few ocelli. Rostrum with broad base and narrow pointed tip. Antennular flagellum with 3 articles. Antennal article 1 without lateral spine. Maxilliped endopodite distal margin with 3 fan setae. Lateral margins of pereonites rounded; pereonites 1–4 subequal in length, longer than remaining pereonites; most pereonites with only 1 coxal lobe or spine visible in dorsal view. Male pereopod I with broad, robust propodus with denticulate setae and broad blunt teeth on propodal palm; dactylus equal in length to propodal palm; propodal palm terminal seta with small accessory seta and serrate ventral margin. Pleopod II protopod distal tip rounded without distal extension; exopod and endopod positioned subapically on medial margin. Appendix masculina elongate, tapering to needle-like stylet with long setae on lateral margin. Pleotelson elongate, with 3 free reduced pleonites; posterolateral spines reduced; postanal region roundly triangular, without posterolateral extensions.

Remarks. The species of this genus all possess heads with reduced lateral and antennal spines, eyes with few ocelli, narrow triangular rostrums, and appendices masculinae with long needle-like stylets. Although a stylet similar to *Stenetrium adrianae* occurs in this genus, the long setae on the stylet tip and the differences in the body shape, cephalon shape and the shape of the remaining pleopods clearly distinguish this genus as a separate unit.

Hansenium n.gen.

Figs 1E,F, 3C

Type species. *Hansenium hanseni* (Nobili, 1906).

Species included. See Table 1.

Etymology. *Hansenium* is named in honor of H.J. Hansen, who provided the first definitive work on the Stenetriidae early in this century. The gender is neuter.

Diagnosis. Head with reduced lateral and antennal spines; antennal spines rounded to pointed, longer than pointed lateral spines. Rostrum short, broad and apically flattened, slightly longer than antennal spines. Antennular flagellum with 8–14 articles. Antennal article 1 lateral spine much reduced or absent. Maxilliped endopodite distal margin with 6 fan setae. Pereonites with angular margins on pereonites 1–4; pereonite 1 longer than remaining pereonites; single and double coxal spines on anterior pereonites. Pereon elongate, anterolateral corners of pereonites 1 and 2 in females with large unfused coxal extensions. Pereopod I with large, robust dactylus twice as long as propodal width; propodus reduced, palm serrate in both sexes, and with large terminal spine in males. Male pereopod I carpus lateral margin extended and serrate. Pleopod II appendix masculina elongate with blunt distal tip; tip with ring of cuticular hairs; exopod subapical with large protopodal apical extension. Pleotelson with 2 free pleonites. Pleotelson elongate with prominent posterolateral spines; postanal region smoothly rounded.

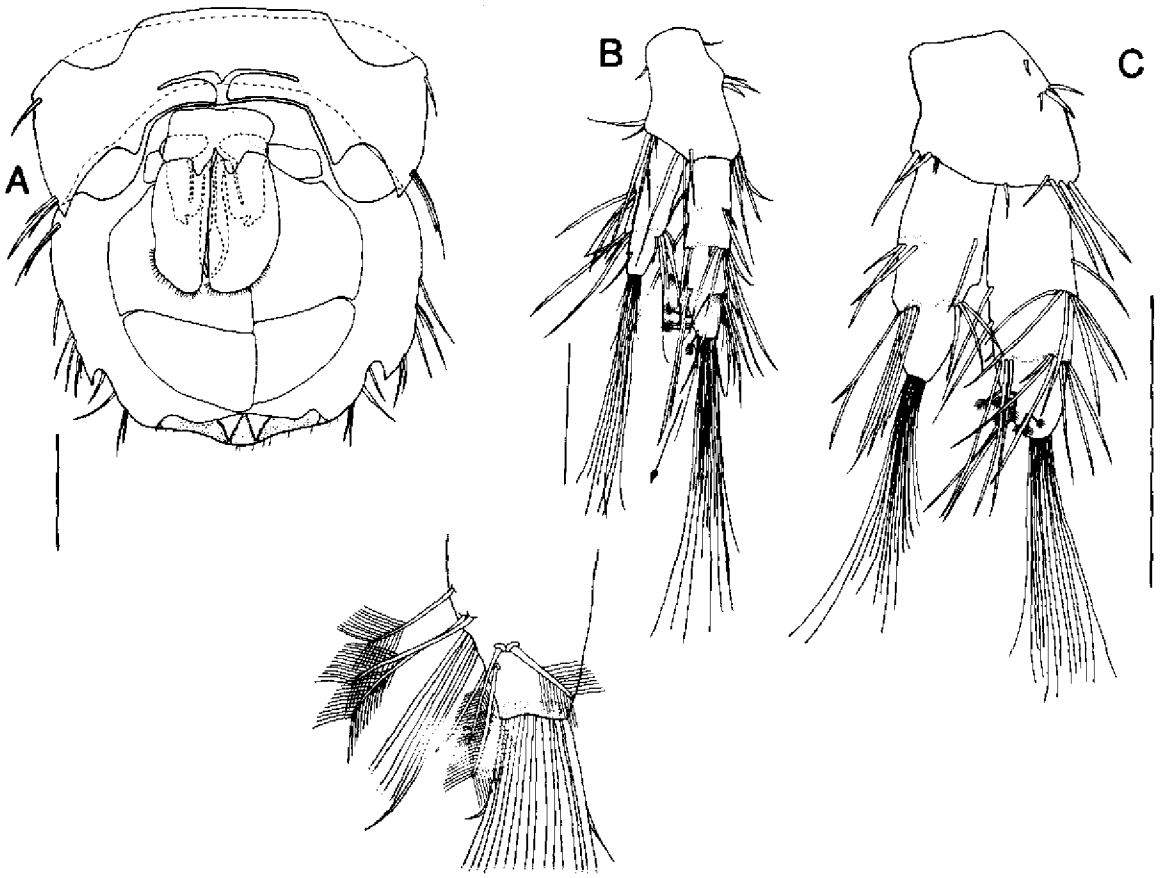

Fig. 24. *Stenetrium adrianae* n.sp. **A,B**, holotype male (AM P.42283). **A**, pleotelson, ventral view. **B**, male uropod with enlargement of endopod distal tip. **C**, paratype female (AM P.35651), female uropod. Scale bar = 0.5 mm.

Remarks. The genus *Hansenium* is most closely related to *Stenetrium* sensu stricto in overall morphology but can be distinguished most prominently by the large, pointed extended carpus that participates in grasping with an elongated dactylus. *Hansenium* also has large reniform eyes, reduced lateral spines and a broad short rostrum. A correction is made to the nomenclature of the species described as *S. caicosensis* Kensley & Heard, 1991 by changing it to *H. caicosense*, in order that the species name is consistent with the gender of the genus, i.e. neuter.

Liocoryphe n.gen.

Figs 1G,H, 3D

Type species. *Liocoryphe minocula* (Menzies & Glynn, 1968).

Species included. See Table 1.

Etymology. *Liocoryphe* is derived from the Greek words "lius" meaning smooth, and "coryphe" meaning crown of the head. The name refers to the smooth head of this genus which lacks spines or lateral fields. The gender is feminine.

Diagnosis. Head dorsal surface smoothly rounded and frontal margin with no lateral spines, antennal spines rounded and much reduced, shorter than rostrum. Rostrum short, broad, rounded; eyes reduced to small rounded, anterolateral group of ocelli. Antennular flagellum with 4–6 articles. Antennal article 1 without lateral spines. Maxilliped endopodite distal margin with 4 fan setae. Pereonite lateral margins blunt to rounded; double coxal extensions visible on pereonites 2–4, single extensions on pereonites 5–6. Male pereopod I dactylus shorter than propodal palm; propodal palm serrate; carpus ventral margin with large, broad, blunt extension; male pereopod covered in long, dense setae from ischium to propodus. Male pleopod II protopod with small pointed apical extension; exopod subapical; appendix

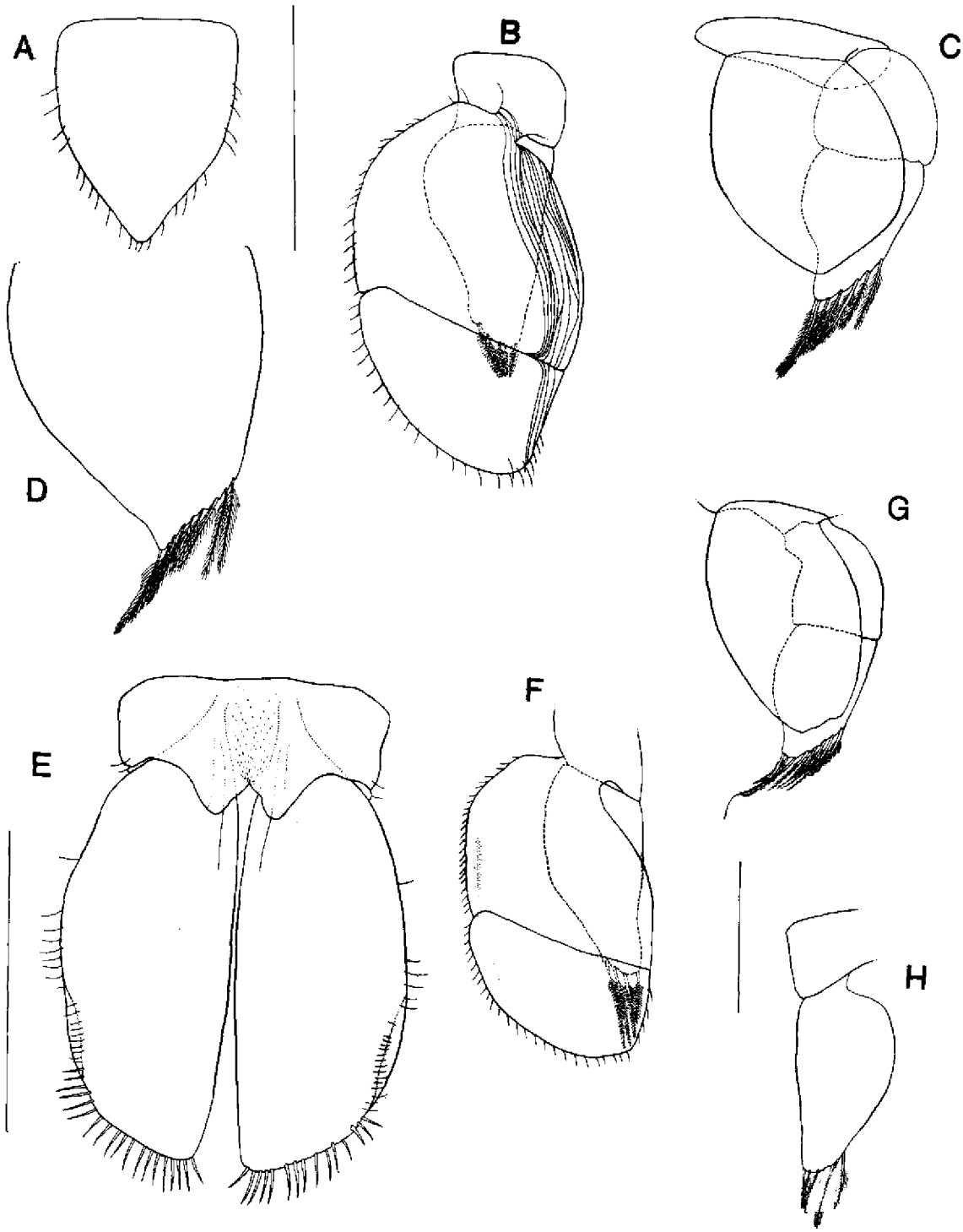

Fig. 25. *Stenetrium adrianae* n.sp. **A–D**, paratype female (AM P.35651), pleopods II–V. **E–H**, holotype male (AM P.42283) pleopods I, III–V,. Scale bar = 0.5 mm. Variation in plumose setae numbers between D and H due to damage during dissection.

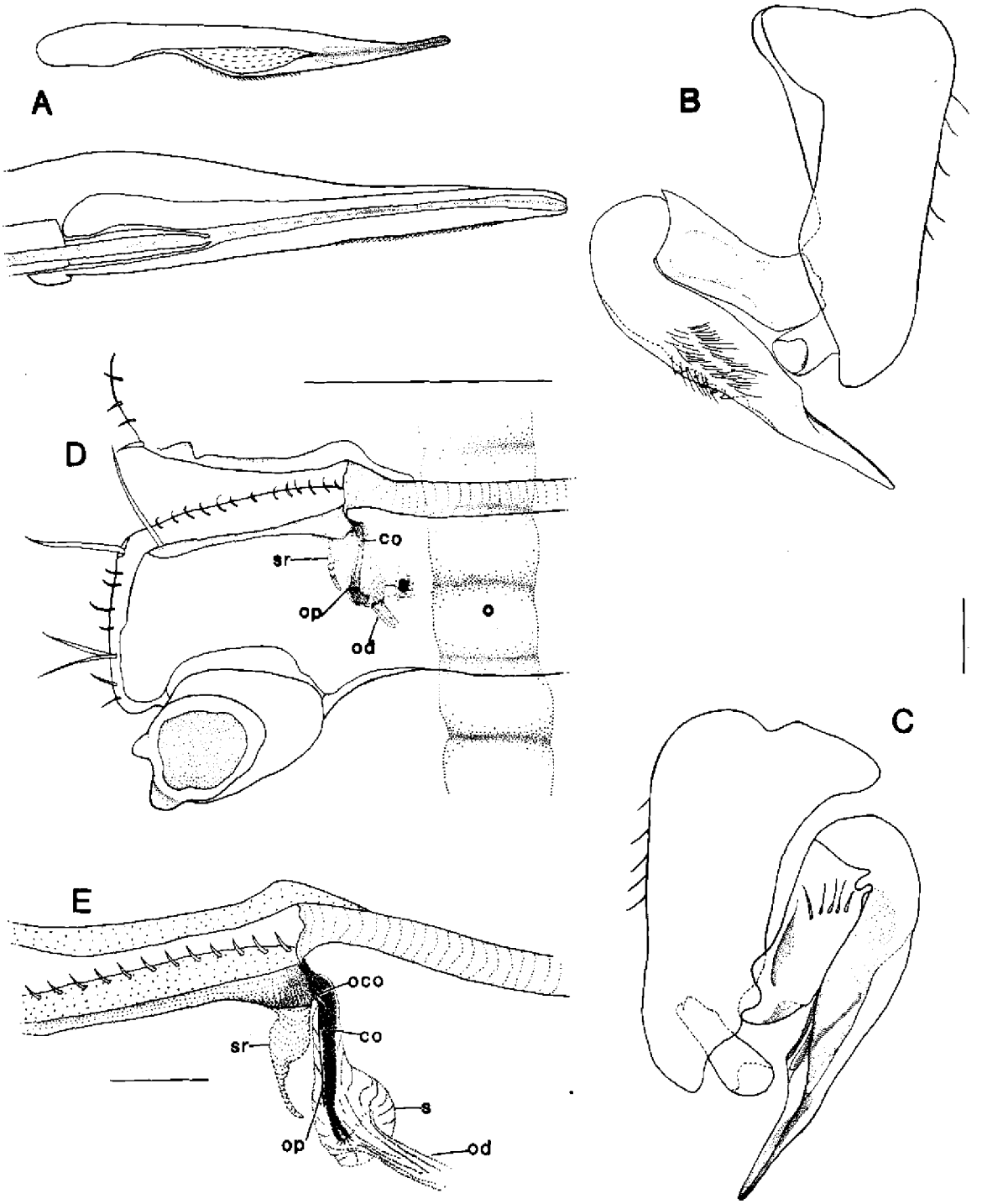

Fig. 26. *Stenetrium adrianae* n.sp. **A–C**, holotype male (AM P.42283). **A**, male pleopod II endopod, second segment medial view with enlargement of stylet tip. **B**, male pleopod II, dorsal view. **C**, male pleopod II, ventral view. **D,E**, preparatory female (AM P.35651), **D**, ventral view of pereonite 5, after clearing with KOH. **E**, enlargement of oopore region through ventral cuticle showing oopore (op) with stylet pocket (sp) and opening to cuticular organ (oco), cuticular organ (co) attached to the base of spermatheca (s) adjacent to oviduct (od). Scale bar = 0.5 mm.

masculina elongate with blunt distal tip and subapical row of short, proximally directed cuticular hairs, distal tip narrowed slightly. Pleotelson with 2 free pleonites. Pleotelson longer than wide, smoothly truncated to posterolateral spine then smoothly rounded with no telsonic projection between uropods.

Remarks. *Liocoryphe* is closely related to *Hansenium* and is distinguished by the males having an extended carpus. This genus gains separate generic status by lacking lateral spines on the head, having a small round group of ocelli, a short blunt rostrum, and a large blunt extension on the carpus that does not participate in grasping with the dactylus.

Mizothenar n.gen.

Figs 2A,B, 3E

Type species. *Mizothenar patulipalma* (Kensley, 1984a).

Species included. See Table 1.

Etymology. *Mizothenar* is derived from the Greek words "mizon" meaning larger, and "thenar" meaning flat of the hand or palm. The name refers to the propodal palm of first pereopod, which is larger than in most stenetriids. The gender is neuter.

Diagnosis. Small bodied (2–3 mm), elongate stenetriid. Head frontal margin with no lateral spines, antennal spines weak but longer than rostrum; rostrum much reduced and bilobed; eyes small, round, anterolateral groups of up to 10 ocelli set close to lateral margin. Antennular flagellum with 4 articles, second article longer than remaining articles. Antennal article 1 without lateral spine. Maxilliped endopodite distal margin with 3 fan setae. Pereonite lateral margins rounded; pereonite lengths subequal. Pereopod I not sexually dimorphic but extremely broad and rounded, larger than cephalon, as long as broad; dactylus as long as propodal palm. Female pleopod II shield shaped with deep, narrow apical notch. Male pleopod II appendix masculina elongate with blunt distal tip and subapical row of short, proximally directed cuticular hairs. Pleopod IV endopod styliform. Pleotelson strawberry shaped with weak posterolateral spines, with 3 reduced free pleonites.

Remarks. The two closely related species of *Mizothenar* are distinguished from the other genera by possessing a largely gnathostenetroidid habitus that includes the absence of lateral spines, reduced antennal spines, and bilobed, reduced rostrum on the cephalon; short appendix masculina, styliform exopod of pleopod 4; and small body size. The other pleopods, pereopod I and the presence of sternal keels along the ventral midline are, however, distinctly stenetrioid in form. A closer examination of these species may throw more light on the relationships between the two superfamilies, Stenetrioidea and Gnathostenetroidoidea.

Protallocoxa Schultz, 1978

Figs 2C,D, 3F

Protallocoxa Schultz, 1978: 246–250, figs 1A–K, 2A–J. *Protallocoxa*.–Schultz, 1979b: 78–79, figs 3–4. *Stenetrium*.–Wilson, 1980: 219–221.

Type species. *Protallocoxa weddellensis* Schultz, 1978.

Species included. See Table 1.

Diagnosis. Head wider than long with broad lateral spines and antennal spines almost absent. Rostrum robust, elongate, roundly pointed, as long as cephalon with smooth lateral margins. Eyes small, anterolateral reniform. Maxilliped endopodite distal margin with 7–8 fan setae; epipod with rounded distal tip. Antennal article 1 without lateral spines. Antennular flagellum with 10–20 articles. Pereon robust with smoothly rounded lateral margins; coxae not visible in dorsal view. Male pereopod I propodus as long as wide, with setose propodal palm lacking teeth; dactylus equal to length of propodal palm. Male pleopod II protopod with small distal extension; exopod and endopod subdistal on medial margin; appendix masculina elongate with blunt distal tip and small subapical row of short, proximally directed cuticular hairs. Female pleopod II apex acutely pointed. Pleotelson lateral margins smooth and posteriorly truncated, with weak posterolateral spines, telsonic region between uropods sharply truncated. Uropods short, barely emerging from pleotelson margin in dorsal view.

Remarks. The use of plesiomorphic and/or variable characters while ignoring other diagnostic features has clouded the definition of this genus. *Protallocoxa* Schultz, 1978 originally was based on a freely-articulating, protruding coxa of the first pereopod. Schultz (1978) considered this character to be a primitive asellote feature and used it as a justification for a new superfamily, the Protallocoxoidea. Wilson (1980) later showed that this feature was a plesiomorphic condition in brooding females of many asellote species, including *Stenetrium*, and synonymised Schultz's taxon back into the Stenetriidae as *S. weddellense*. In our proposed classification, *Protallocoxa* regains its generic status within the family because the member species, *P. weddellense* and *P. abyssale* have several unique features among the Stenetriidae, particularly a lack of coxal projections visible in dorsal view and reduced marginal spines on the body.

Stenobermuda Schultz, 1979a.

Figs 2E,F, 3G

Stenobermuda Schultz, 1979a: 905–907, figs 1–11.
Stenobermuda.–Kensley & Schotte, 1989: 106, fig. 48.
Stenetrigus.–Schultz, 1982: 58–59, figs 32, 33.

Type species. *Stenobermuda acutirostrata* Schultz, 1979a.

Species included. See Table 1.

Diagnosis. Head frontal margin with robust sharply triangular lateral spines, antennal spines reduced. Rostrum robust and long with narrowly tapered point; rostrum longer than lateral spines. Eyes consist of small circlet of 4–5 ocelli. Antennal article 1 without lateral spine. Antennular flagellum with 3–4 articles. Maxilliped endopodite distal margin with 3 fan setae. Pereonites subequal in length with angular lateral margins. Male pereopod I dactylus equal to width of propodal palm; pereopod I elongate with narrow propodus. Male pleopod II exopod situated apically; appendix masculina elongate, narrowing distally with terminal cuticular fan, setae-like cuticular hairs and laterally directed stylet. Female pleopod II basally narrow, broadening to a round opercular shield, lacking apical notch. Pleotelson with 3 free pleonites. Pleotelson as long as wide, smooth lateral margins, gently truncated to reduced posterolateral spines then roundly triangular with no posterolateral projections between uropods.

Remarks. Schultz (1979a) created a third genus, *Stenobermuda*, using features common to many, if not all Stenetriidae. The only apomorphic feature mentioned (only in the species description) was a unique and complex distal segment of male pleopod II of *Stenobermuda acutirostrata* (Richardson, 1902). Important characters (not included in the original generic concept) include the female pleopod II shape, the shape and dimensions of pleopods III–IV, and the narrow pereopod I.

Stenetrigus was created by Schultz (1982) for *Stenetrium syzygus* Barnard, 1940 using the following features: eyes of few ocelli; male pleopod II without fused sympod; possible hermaphroditism; no posterolateral notch on the pleotelson; long anterolateral and "antennal spines" and a long, acutely pointed rostrum; manus simple, toothed with plumose setae on ventral margin of propodus. This combination of features, although rare, is not unique among the stenetriids. *Stenobermuda acutirostrata* (Richardson, 1902) is similar to *S. syzygus* in many respects, particularly the ones used here to define *Stenobermuda*. The absence of the posterolateral notches on the pleotelson is the only difference between the two species, which is not a genus-level feature. As with the description of *Stenobermuda*, the structure of pleopods III–V and the male pleopod II of *S. syzygus*, which closely resembles that of *Stenobermuda*, were not mentioned in the original description of Schultz, 1982. Owing to the similarities of the two species mentioned above, both genera are synonymised, with the name *Stenobermuda* having priority. The possible hermaphroditism or similarity of the pleopods between the male and female alluded to by Schultz (1982: 58–59) cannot be evaluated further because Barnard's (1940) "female" specimen was not available to Schultz for inspection.

Tenupedunculus Schultz, 1982

Figs 2G,H, 3H

Tenupedunculus Schultz, 1982: 54–58, figs 30–31.

Type species. *Tenupedunculus elongatus* Schultz, 1982

Species included. See Table 1.

Diagnosis. Head angular, broader than long with elongate, acutely pointed lateral spines extending past rostrum. Rostrum small rounded, extending slightly past antennal spine. Eyes reniform of about 20 ocelli. Antennal article 1 without lateral spine. Antennular flagellum with 12–24 articles. Pereonites 1–4 with sharply produced anterolateral corners, double coxal lobes visible in dorsal view. Male pleopod II protopod with small, pointed apical extension; appendix masculina elongate, narrow, distal tip rounded laterally but weakly pointed on medial margin with subdistal lateral setal ridge; exopod and endopod subapical on medial margin. Female pleopod II with distal half narrowing sharply to rounded point. Pleotelson with 2 free pleonites. Pleotelson with weak posterolateral spines, prominent posterolateral and medial cuticular extensions. Uropods large.

Remarks. The unifying features of *Tenupedunculus* include the shape of the male pleopod I, the appendix masculina of pleopod II, the number of dorsally visible coxal lobes, and a head with large, robust lateral spines and reduced antennal spines. The degree of enlargement of the lateral spine and reduction of the antennal spine varies throughout the genus from the extreme cases as seen in *Stenetrium acutum* and *Stenetrium inflectifrons* to the more subdued forms of *Stenetrium pulchrum* and *Stenetrium drakensis* (nee *Protallocoxa*) *S. drakensis* was placed in this genus, even though no males were collected, because of its close resemblance with *Stenetrium beddardi* in the cephalon armature, the pleotelson shape and the presence of 2 coxal lobes on pereonite I. Schultz (1982) also noted a close resemblance between these two species.

The concept of *Tenupedunculus* Schultz, 1982 was based on lack of eyes in *T. elongatus*, a dubious diagnostic feature (cf. Wolff, 1962; Hessler & Wilson, 1983). All other features used in Schultz's (1982) description do not unequivocally define the new genus among all stenetriids. Schultz (1982) even states that the "male pleopod 2 and others [are] *Stenetrium* like".

The similarities to *Stenetrium pulchrum* and *Stenetrium haswelli* in the male pleopods, the pleotelson and the dorsally visible coxal lobes of *T. elongatus*, however, place this species within this genus. Although *T. elongatus* does not represent the typical form of this genus as seen in *S. acutum* and *S. inflectifrons*, the genus name is valid and has priority. Therefore *Tenupedunculus* is used as the name for this genus. *Tenupedunculus* may be further separated into two groups after closer examination of the types.

Biogeographical Distributions

The proposed generic groupings have resulted in three distinct geographical regions for the distribution of the Stenetriidae. *Stenetrium* sensu stricto is a shallow water group distributed from a region including New Zealand to the western side of South Africa, taking in all of southern Australia. The deep ocean component of this region contains members of *Protallocoxa*. *Tenupedunculus* is a deep ocean assemblage encompassing the second region, around the southern tip of South America to Antarctica.

The remaining five genera are circumtropical with considerable overlap between the genera. They inhabit the littoral and sublittoral zones, principally in coral reef biomes. In all stenetriid genera, body spinosity increases with increasing latitude in the southern hemisphere, although the reasons for this geographic pattern are not apparent.

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Table 1. Genera and species of the Stenetriidae Hansen, 1905. Original generic designations and species spelling retained.

Species	Locality	Depth
Superfamily Stenetrioidea Hansen, 1905		
Family Stenetriidae Hansen, 1905		
Stenetrium Haswell, 1881 sensu stricto		
Stenetrium adrianae n.sp.	Eden, Australia	littoral
Stenetrium armatum Haswell, 1881	Sydney, Australia	littoral
Stenetrium bartholomei Barnard, 1940	Still Bay, South Africa	littoral
Stenetrium crassimanus Barnard, 1914	False Bay, South Africa	littoral
Stenetrium dagama Barnard, 1920	Cape Point, South Africa	420 m
Stenetrium dalmeida Barnard, 1920	Cape Point, South Africa	270–460 m
Stenetrium diazi Barnard, 1920	Buffels Bay, South Africa	littoral
Stenetrium esquartum Schultz, 1982	False Bay, South Africa	littoral
Stenetrium glauerti Nicholls, 1929	Rottnest Island, Western Australia	littoral
Stenetrium macrochirum Nicholls, 1929	Rottnest Island, Western Australia	littoral
Stenetrium magnimanum Schultz, 1982	False Bay, South Africa	littoral
Stenetrium mediterraneum Hansen, 1905	Siracusa, Sicily	littoral
Stenetrium perestrelloi Kensley, 1984b	East London, South Africa	90 m
Stenetrium saldanha Barnard, 1920	Saint Blaize, South Africa	0–246 m
Stenetrium serratum Hansen, 1905	Virgin Islands	littoral
Stenetrium spinorostrum Nicholls, 1929	Rottnest Island, Western Australia	littoral
Stenetrium truncatum Nicholls, 1929	Rottnest Island, Western Australia	littoral
Stenetrium vemae Kensley, 1980	Vema Seamount, South Africa	40 m
Tristenium **n.gen.**		
Stenetrium acutirostrum Müller, 1991a	Straits of Bab el Mandeb	235 m
Stenetrium bourboni Müller, 1991c	Reunion Island	littoral
Stenetrium temae Müller, 1991b	Moorea	littoral
Hansenium **n.gen.**		
Stenetrium antillense Hansen, 1905	West Indies	littoral
Stenetrium bowmani Kensley, 1984a	Belize	littoral
Stenetrium caicosense Kensley & Heard, 1991	Belize	littoral
Stenetrium chiltoni Stebbing, 1905	Gulf of Manaar, Ceylon	littoral
Stenetrium dodo Müller, 1991c	Reunion Island	littoral
Stenetrium entale Nordenstam, 1946	Gilbert Island	littoral
Stenetrium gilbertense Nordenstam, 1946	Gilbert Island	littoral
Stenetrium hanseni Nobili, 1906	Tuamotu Island	littoral
Stenetrium medipacificum Miller, 1941	Hawaii	littoral
Stenetrium occidentale Hansen, 1905	Saint Thomas Island, West Indies	littoral
Stenetrium spathulicarpus Kensley, 1984a	Belize	littoral
Stenetrium stebbingi Richardson, 1902	Bailey Bay, Bermuda	littoral
Stenetrium wilsoni Müller, 1991b	Moorea	littoral
Liocoryphe **n.gen.**		
Stenetrium algretti Müller, 1991b	Bora Bora	littoral
Stenetrium gertrudae Müller, 1991c	Reunion Island	littoral
Stenetrium minocule Menzies & Glynn, 1968	Puerto Rico	littoral
Stenetrium siamense Hansen, 1905	Gulf of Thailand	littoral
Stenetrium sp. Carpenter & Magniez, 1982	Curaçao	marine cave

Table 1. Continued.

Species	Locality	Depth
Mizothenar **n.gen.**		
Stenetrium maharepa Müller, 1991b	Moorea	littoral
Stenetrium patulipalma Kensley, 1984a	Belize	littoral
Protallocoxa Schultz, 1978		
Protallocoxa weddellensis Schultz, 1978	Weddell Sea, Antarctica	2818 m
Stenetrium abyssale Wolff, 1962	Kermadec Trench, New Zealand	4540 m
Stenobermuda Schultz, 1979a		
Stenetrium acutirostrata Richardson, 1902	Bermuda	5 m
Stenetrium syzygus Barnard, 1940	Still Bay, South Africa	littoral
Stenobermuda iliffei Kensley, 1994	Bermuda	cave
Tenupedunculus Schultz, 1982		
Stenetrium acutum Vanhöffen, 1914	Gauss Station, Davis Sea	3397 m
Stenetrium beddardi Kussakin, 1967	Southern Argentina	680 m
Stenetrium dentimanum Kussakin, 1967	Southern Argentina	680 m
Stenetrium haswelli Beddard, 1886	Rio del la Plata	1097 m
Stenetrium inflectofrons Schultz, 1982	Scotia Sea, Antarctica	588 m
Stenetrium pulchrum Schultz, 1982	Southern Argentina	1911 m
Stenetrium serraticaudum Kussakin & Vasina, 1984	South Atlantic	500 m
Stenetrium smirnovi Vasina, 1982	Patagonian Shelf	500 m
Stenetrium virginale Schultz, 1982	Scotia Sea, Antarctica	567 m
Tenupedunculus drakensis Schultz, 1982	Terra Del Fuego, Argentina	548 m
Tenupedunculus elongatus Schultz, 1982	Vema, SE Argentine Basin	4696 m
Incertae sedis (insufficient data)		
Jaera filicornis Grube, 1886 (suggested to be synonymous with *J. longicornis* by Richardson, 1910)	Adriatic Sea	littoral
Jaera longicornis Lucas, 1849 (type species of *Jamna* Bovallius, 1886)	Algeria	littoral
Stenetrium euchirum Nobili, 1906	Tuamotu Island	littoral
Stenetrium fractum Chilton, 1884	Lyttelton Harbour, New Zealand	littoral
Stenetrium monodi Nordenstam, 1946	Gulf of Suez	littoral
Stenetrium proximum Nobili, 1907	Tuamotu Island	littoral
Stenetrium rotundatum Vanhöffen, 1914	Gauss Station	385 m