

# Typtonoides nieli gen. nov., sp. nov., a new pontoniine shrimp (Crustacea: Decapoda: Palaemonidae) from the Chesterfield Islands

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## ABSTRACT

A small pontoniine shrimp, *Typtonoides nieli*, from the Chesterfield Islands, New Caledonia, is described and illustrated. Its systematic position is obscure as only a single second pereiopod is preserved. It is possibly related to the sponge-associated genus *Typton* Costa as the sephocerite is similarly strongly reduced, but its host remains unknown.

KEYWORDS: *Typtonoides nieli* gen. nov., sp. nov., Crustacea, Decapoda, Pontoniinae, Chesterfield Islands, Coral Sea.

## INTRODUCTION

The pontoniine shrimp fauna of the reefs of the Chesterfield Islands, New Caledonia, has received little attention. So far only four species have been reported, all from less than 100 m: *Isopontonia platycheles* Bruce, 1982 and *Periclimenaus stylirostris* Bruce, 1969 from 15 m and 21 m are the only ones from less than 50 m, with *Thaumastocaris streptopus* Kemp, 1922 from 68–70 m and *Odontonia simplicipes* (Bruce, 1996) from 71 m (see Bruce 1996). *Isopontonia platycheles* and *Odontonia simplicipes* are still known only from the holotype specimens.

The discovery of a single specimen of a pontoniine shrimp that can not be referred to any of the presently known pontoniine genera is therefore of interest. An illustrated description is now provided. The specimen is deposited in the collections of the Museum and Art Gallery of the Northern Territory, Darwin.

Abbreviations used: CL, postorbital carapace length; NTM, Museum and Art Gallery of the Northern Territory, Darwin (formerly Northern Territory Museum).

## SYSTEMATICS

### Palaemonidae Rafinesque, 1815

### Pontoniinae Kingsley, 1879

### *Typtonoides* gen. nov.

*Typtonoides* Bruce. Gender masculine. Type species, by present designation and monotypy, *Typtonoides nieli*. Recent, Chesterfield Islands, Pacific Ocean.

**Diagnosis.** Rostrum elongate, dentition 9/1, carapace compressed, with orbit obsolescent, paraorbital spine present, antennal, hepatic and supraorbital spines absent, inferior orbital angle obsolete; sephocerite strongly

reduced, much shorter than carapace; mandible without palp, incisor process uni-dentate; maxillipeds not filtratory baskets, third maxilliped with normal slender exopod; thoracic sternites narrow, unarmed; first pereiopod fingers spatulate; major second pereiopod chela with fingers simple, cutting edges sharp, dentate; ambulatory dactyls simply biunguiculate; telson with 2 pairs of dorsal spines, 3 pairs of posterior spines.

**Etymology.** Derived from the pontoniine generic name *Typton*, first used by Costa (1844) and -oides (Greek), resembling, with reference to the sephocerite.

**Systematic position.** Almost all pontoniine genera are characterised by the possession of a well-developed sephocerite. The sephocerite is greatly reduced in the genera *Typton* Costa, 1844, *Typtonichus* Bruce, 1996 and *Paratypton* Balss, 1914. *Paratypton* is readily distinguishable by the absence of an exopod on the third maxilliped and many other features suggesting that the genus is not at all closely related to the other genera. *Typtonichus* is distinguished from *Typton* and *Typtonoides* primarily by the presence of maxillipedal filtratory baskets, not present in the other genera. *Typtonoides* also differs from *Typton* in the following features: (1) Well-developed long rostrum with numerous dorsal teeth (vs short rostrum, with few or no dorsal teeth); (2) Second pereiopod fingers with sharp, non-shearing dentate cutting edges. *Typton* is characterised by the presence of shearing cutting edges on the minor second pereiopod but the state of this appendage is unknown in *Typtonoides*.

**Remarks.** As only a single second pereiopod has been preserved, a full diagnosis for the genus cannot be provided as it is not certain if this is the major or the minor pereiopod, or if the second pereiopods are subequal and similar or unequal or dissimilar. The single second pereiopod resembles neither the major nor the minor second pereiopods

found in *Typton* species. However, on account of its large size the single second pereiopod is assumed to be the major chela. The fingers of the major second pereiopod in *Typton* are robust with the cutting edges lacking teeth, while the fingers of the minor second pereiopod close with a shearing action and are also unarmed.

*Typtonoides nieli* sp. nov.

(Figs 1–6)

**Material examined.** HOLOTYPE – ♂, dissected, RV *Lady Basten*, 19°53'S, 158°19'E, Long Island, Chesterfield Islands, New Caledonia, 15 m, rubble from seaward reef edge, 5 May 1979, coll. N.L. Brue, AJB #2999, NTM Cr.16899.

**Diagnosis.** With the characters of the genus.

**Description.** Male (Fig. 1). A small-sized, slender species of typical pontonine form.

Rostrum (Fig. 2A,B) about 0.68 of CL, slender, compressed, depressed, reaching to end of antennular peduncle, dorsal carina feebly developed, with 9 well-

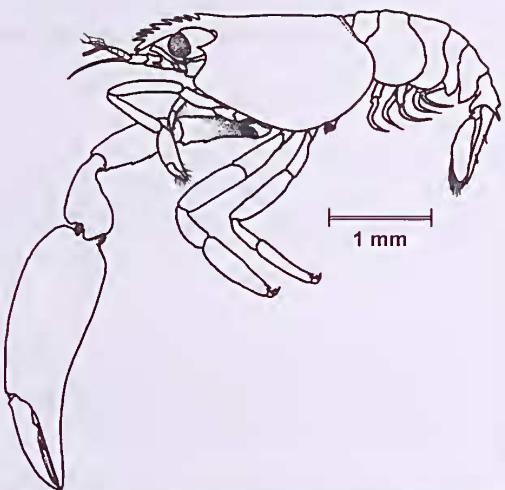


Fig. 1. *Typtonoides nieli* gen. nov., sp. nov., holotype, male (NTM Cr.16899), Long Island, Chesterfield Islands, 15 m.

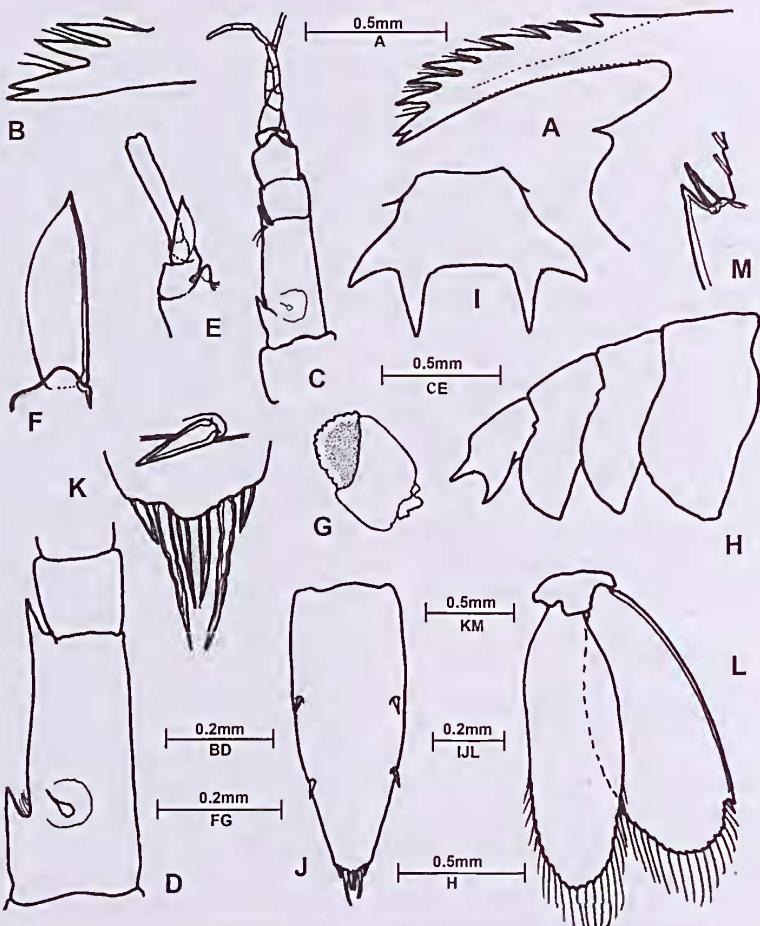


Fig. 2. *Typtonoides nieli* gen. nov., sp. nov., holotype, male (NTM Cr.16899): A, anterior carapace and rostrum; B, rostrum, tip; C, antenna; D, same, proximal peduncular segment; E, antenna; F, same, scaphocerite; G, eye, dorsal; H, abdomen, third to sixth segments, lateral; I, same, sixth segment, dorsal; J, telson; K, same, posterior spines, inset; L, uropod; M, same distolateral exopod.

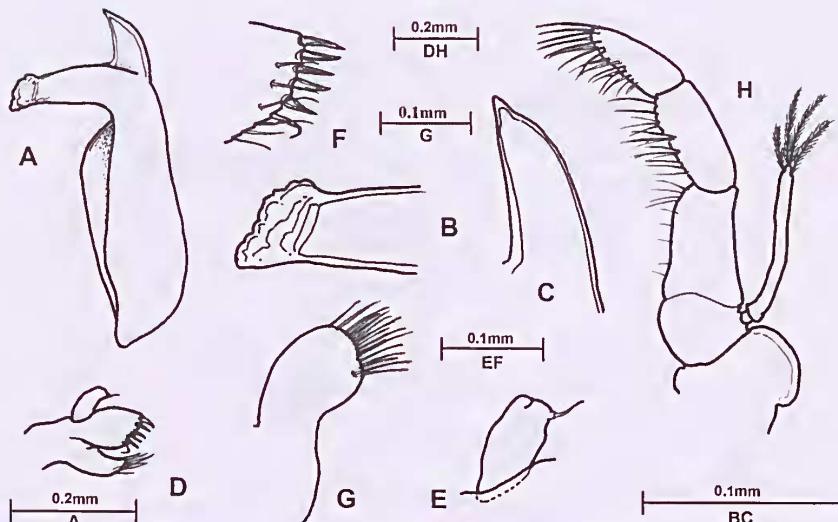


Fig. 3. *Typtonoides nieli* gen. nov., sp. nov., holotype, male (NTM Cr.16899): A, mandible; B, molar process; C, incisor process; D, maxillula; E, same, palp; F, same, distal upper lacinia; G, maxilla, basal endite; H, third maxilliped.

developed slender acute teeth, all pre-orbital, preterminal tooth smaller, presenting as a bifid tip, teeth separated by long slender simple median setae, ventral margin concave, unarmed, non-setose.

Carapace (Fig. 2A) smooth, glabrous, with acute marginal paraorbital spine, without supraorbital spines or tubercles, postorbital, antennal or hepatic spines, without orbital carinae, inferior orbital angle completely obsolete, pterygostomial angle slightly produced, obtusely rounded.

Abdominal segments (Fig. 2H) smooth, glabrous, first without median anterior dorsal lobe, third tergite not posteriorly produced, sixth segment (Fig. 2I) about 0.27 of CL, subequal to fifth segment length, 2.0 times longer than deep, posterolateral angle acute, strongly produced, posteroventral angle larger, acute, first to third pleura rounded, fourth and fifth ventrally produced, subacute.

Telson (Fig. 2J) 0.35 of CL, about 2.7 times as long as anterior width, lateral margins feebly convex, convergent, dorsal spines (Fig. 2K) subequal, about 0.07 of telson length, anterior pair submarginal, at 0.4, posterior pair marginal at 0.66 of telson length, posterior margin about 0.33 of anterior width, broadly rounded, without median point, lateral posterior spines (Fig. 2K) distinctly smaller than dorsal spines, intermediate spines well developed, robust, about 0.12 of telson length, submedian spines 0.6 of intermediate spine length, non-setulose.

Antennule (Fig. 2C) with proximal segment (Fig. 2D) of peduncle 2.4 times as long as central width, medial margin straight, non-setose, without ventromedial tooth, lateral margin almost straight, feebly convergent, not laterally produced proximally, distolateral angle with long slender tooth, without anterior medial lobe, stylocerite reduced, acute, reaching to 0.4 of segment length, statocyst obsolescent, without statolith; intermediate and distal segments subcylindrical, intermediate segment subequal

to distal segment length, combined length 0.66 of proximal segment length; upper flagellum biramous, upper ramus with 2 proximal segments fused, with 1 small free segment, 5 groups of aesthetascs, longer ramus slender, with 5 segments, lower flagellum incomplete.

Antenna (Fig. 2E) with basicerite laterally unarmed, carpocerite slender, subcylindrical, 5.0 times longer than width, extending far beyond sephocerite, to about distal end of intermediate segment of antennular peduncle; scaphocerite (Fig. 2F) reaching to about half carpocerite length, about 3.2 times longer than central width, lateral margin straight, acutely pointed distally, lamella obsolete, margin convex, non-setose, flagella missing.

Eye (Fig. 2G) with globular cornea, oblique, about 0.2 of CL, poorly pigmented, without accessory pigment spot, eyestalk about as wide as long.

Ophthalmic somite without median process or pigment spot; epistome unarmed.

Mandible (Fig. 3A) with corpus robust, without palp; incisor process (Fig. 3C) reduced, tapering to single acute distal tooth; molar process (Fig. 3B) well developed, subcylindrical, distally truncate, obscurely tuberculate, without obvious setae.

Maxillula (Fig. 3D) with palp (Fig. 3E) stout, very feebly bilobed, ventral lobe with short sinuous ventral spinule; upper lacinia (Fig. 3F) broad, transversely truncate distally, with single row of 5 simple articulated marginal spines, with 3 slender submarginal spiniform setae; lower lacinia bluntly rounded distally, with numerous slender simple spiniform setae.

Maxilla, first and second maxillipeds damaged in dissection. Maxilla with basal endite (Fig. 3G) broadly simple with about 16 slender simple marginal setae distally. First maxilliped with basal and coxal endites fully fused, medial margin straight, basal portion with sparse long feebly

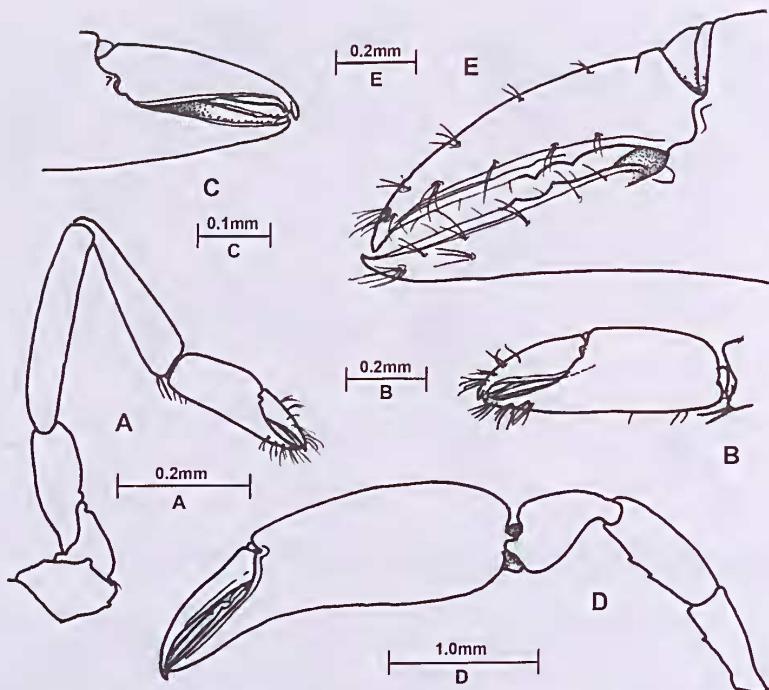


Fig. 4. *Typtonoides nieli* gen. nov., sp. nov., holotype, male (NTM Cr.16899): A, first pereiopod; B, same, chela; C, same, fingers; D, second pereiopod; E, same, fingers.

setulose setae, coxal region with sparse slender simple marginal setae; epipod large, cordiform, bilobed. Second maxilliped endopod of normal form, dactylar segment with numerous long stout finely denticulate spines along medial margin.

Third maxilliped (Fig. 3H) short, robust, reaching to end of intermediate segment of antennular peduncle, ischiomerus and basis distinct, ischiomerus short, 1.7 times longer than central width, tapering slightly distally, medial margin sparsely setose, lateral margin glabrous; carpal segment subequal to meral length, 2.2 times longer than central width, with numerous simple setae along medial margin, lateral margin glabrous, with several groups of slender simple setae medially; terminal segment slightly shorter than carpus, 2.6 times longer than proximal width, tip blunt; with numerous slender simple spiniform setae medially and distally; basipodite well developed, about 0.6 of ischiomeral length, exopod with slender flagellum, slightly exceeding ischiomerus, with four plumose terminal setae; coxa medially convex, with well-developed low rounded lateral plate, without arthrobranch.

Thoracic sternites narrow; fourth without slender median process, posterior sternites unarmed.

First pereiopod (Fig. 4A) normal, chela (Fig. 4B) about 0.45 of CL, palm compressed, 1.6 times longer than deep centrally, with very sparse cleaning setae proximo-ventrally, fingers (Fig. 4C) broadened, narrowly spatulate, tapering distally with small tridentate tips, central tooth largest, dactyl about 3.0 times longer than proximal depth, medial

and lateral cutting edges feebly laminar distally, entire, fixed finger similar; carpus 1.1 times chela length, 4.2 times longer than distal width, tapering proximally, with few slender cleaning setae distoventrally; merus 1.4 times chela length, 1.2 times carpus length, 6.4 times longer than central width; ischium, 0.8 of chela length, 2.7 times longer than distal width, tapering proximally; basis about 5.0 of chela length; coxa robust, without distoventral process.

Major second pereiopod (left) (Fig. 4D) well developed, with large chela, 2.25 times CL, palm oval in section, moderately compressed, about 2.2 times longer than maximal depth, at about 0.33 of length, smooth, tapering slightly distally, glabrous, fingers (Fig. 4E) about 0.38 of palm length, not in-curved, dactyl robust, compressed, about 3.5 times as long as proximal depth with convex dorsal margin, tip feebly bluntly hooked, cutting edge with 2 small low teeth at about 0.45 of length, distal cutting edge, sharp, entire, fixed finger about 2.4 times longer than proximal depth, with blunt feebly hooked tip, cutting edge with 2 low teeth on central portion, distal cutting edge sharp, entire; carpus about 0.5 of palm length, 1.8 times longer than distal width, distally expanded, tapering strongly proximally, slightly excavate distally, unarmed; merus about 0.5 of palm length, 2.4 times as long as central width, slightly swollen centrally, ventral margin with 2 small acute denticles; ischium about 0.4 of palm length, 2.6 times longer than distal width, tapering strongly proximally, ventral margin with 1 small acute denticle; basis and coxa stout, without special features.

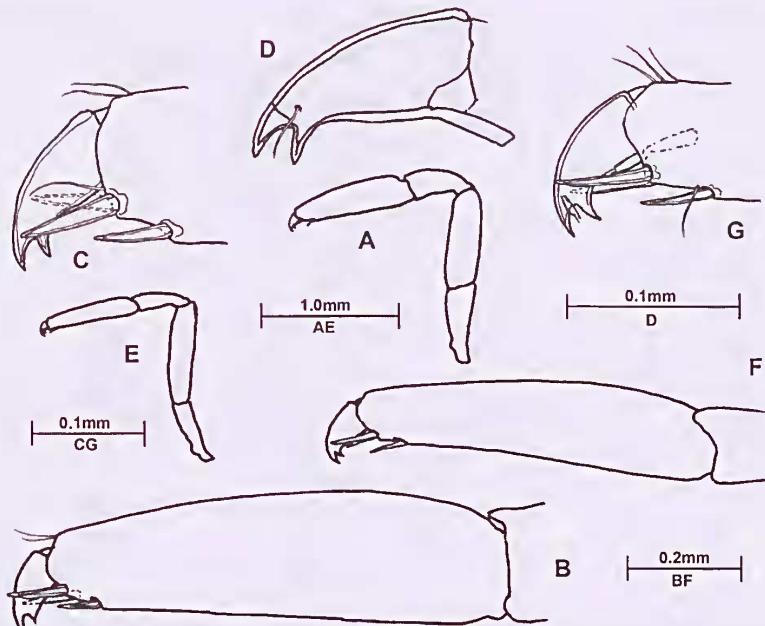


Fig. 5. *Typtonoides nieli* gen. nov., sp. nov., holotype, male (NTM Cr.16899): A, third pereiopod; B, same, propod and dactyl; C, same, distal propod and dactyl; D, same, dactyl; E, fourth pereiopod; F, same, propod and dactyl; G, same, distal propod and dactyl.

Minor second pereiopod (left) missing.

Third pereiopod (Fig. 5A) exceeding the distal end of antennular peduncle by propod and dactyl; propod about 0.67 of CL; dactyl (Fig. 5D) compressed, biunguiculate, about 0.16 of propod length, unguis short, 0.21 of corpus length, clearly demarcated, 2.0 times longer than basal width, slender, simple, very acute, corpus twice as long as deep, dorsal margin feebly convex, ventral margin with stout, strongly curved terminally acute distal accessory tooth, slightly smaller than unguis, ventral margin feebly convex, unarmed, without ventral or basal armament, with long simple distal sensory setae medially and laterally; propod (Fig. 5B) 3.5 times longer than deep, sparsely setose, tapering distally, distal width about half of proximal, with 2 robust distoventral spines (Fig. 5C), lateral spine about 4.8 times longer than basal width, 0.8 of distal propod width, medial spine about 0.8 of lateral spine length, 1 preterminal distal ventral spine, slightly smaller than distal medial spine; carpus about 0.55 of propod length, 3.0 times longer than central width, unarmed; merus about 0.9 of propod length, 3.2 times longer than central width, unarmed; ischium 0.66 of propod length, 3.0 times longer than distal width, unarmed; basis and coxa robust, without special features.

Fourth pereiopod (Fig. 5E) similar to third, propod (Fig. 5F) shorter, slender, about 0.85 of third propod length, 4.6 times longer than width, tapering distally, spines (Fig. 5G) similar to third propod but more slender; proximal segments also similar but more slender.

Fifth pereiopods missing.

First pleopod (Fig. 6A) with basipodite (Fig. 6C) 2.4 times as long as broad; exopod subequal to basipodite

length, 5.5 times longer than broad; endopod (Fig. 6B) 0.4 of exopod length, 3.0 times longer than wide, tapering distally, without medial accessory lobe, with 5 marginal spiniform setae.

Second pleopod (Fig. 6D) basipodite 2.1 times longer than broad, slightly longer than first basipodite length; exopod subequal to basipodite length; endopod (Fig. 6E) 0.95 of exopod length, appendices at 0.3 of medial margin length, appendix masculina with corpus greatly reduced, obsolescent, with single long slender simple terminal spine, well exceeding tip of endopod, about 0.66 of endopod length; appendix interna about half length of terminal spine of appendix masculina, with few distal eiaeinnuli.

Uropod (Fig. 2L) with protopodite posterolaterally rounded; rami broad; exopod 2.3 times longer than broad, lateral margin convex, non-setose, with small distolateral tooth, slightly longer spine medially (Fig. 2M), diaeresis obsolete; endopod about subequal to exopod length, 3.0 times longer than broad.

**Measurements (mm).** Post-orbital carapace length, 1.25; carapace and rostrum, 2.1; total body length (approx.), 4.7; second pereiopod chela, 5.4.

**Colouration.** No data.

**Etymology.** Named after the collector, Dr Niel L. Bruee, a close relative of the author.

**Systematic position.** As discussed in the generic diagnosis.

**Host.** Unknown.

**Remarks.** If the second pereiopods of this species are asymmetrical, on account of its relative size, the only second pereiopod preserved can be safely assumed to be the major

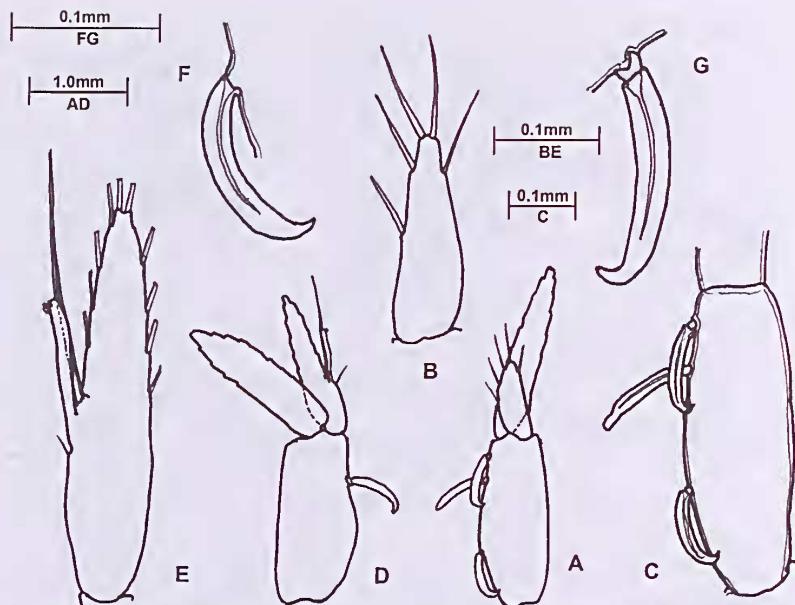


Fig. 6. *Typtonoides nieli* gen. nov., sp. nov., holotype, male (NTM Cr.16899): A, first pleopod; B, same, endopod; C, same, basipodite with attachments; D, second pleopod; E, same, endopod and appendices; F, G, attachments to basipodite.

second pereiopod. Regardless of whether the single second pereiopod is a major or minor appendage (if they are not subequal and similar) it does not resemble either the major or the minor second pereiopods in *Typton*, *Typtonychus* or *Periclimenaeus*. It resembles particularly closely the second pereiopod of *Onycocaridella stenolepis* (Holthuis, 1952). The holotype of this species is immediately distinguishable by its greatly reduced, toothless rostrum and a large scaphocerite with a very well-developed lamella and very large distolateral tooth. The holotype shows a second pereiopod without acute ventral denticles on the merus and ischium. The specimen reported from Sigatoka, Fijian Islands, is noted to have the ventral margins of the merus and ischium feebly tuberculate (Bruce 1972: 76, fig. 6A,B), thereby increasing the resemblance. This Fijian specimen was collected together with a *Periclimenaeus*, probably from a sponge host. It seems most likely that *Typtonoides nieli* is also a sponge associate.

The first and second pleopods have attached to both medial and lateral margins of the basipodites several curved cylindrical objects (Fig. 6F,G). These have thick walls and a narrow lumen, with a hooked distal extremity, with no evidence of internal structures. The more posterior pleopods have not been examined. The identity of these presumed parasites is uncertain. The possibility of empty rhizocephalan kentragons was considered, but this is thought unlikely (Jens Hoeg pers. comm.).

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#### REFERENCES

- Bruee, A.J. 1969. Preliminary descriptions of ten new species of the genus *Periclimenaeus* Borradale, 1915 (Crustacea, Decapoda Natantia, Pontoniinae). *Zoologische Mededelingen, Leiden* 44(12): 159–175.
- Bruee, A.J. 1972. A report on a small collection of pontoniid shrimps from Fiji, with the description of a new species of *Coralliocaris* Stimpson. *Pacific Science* 26(1): 63–86.
- Bruee, A.J. 1982. Notes on some Indo-Pacific Pontoniinae, XXXIX, *Isopontonia platycheles* gen. nov., sp. nov., from the Chesterfield Islands, New Caledonia (Decapoda, Caridea). *Crustaceana* 42(1): 54–64.
- Bruee, A.J. 1996. Crustacea Decapoda: Palaemonid shrimps from the Indo-West Pacific region, mainly from New Caledonia. In: A. Crosnier (ed.) *Résultats des Campagnes MUSORSTOM 15. Mémoires du Muséum National d'Histoire Naturelle*, 168: 197–267.
- Costa, O.G. 1844. Su due nuovi generi di Crostacei Decapodi Macrouri nota. *Annali della Accademia degli Aspiranti Naturalisti*, Napoli 2: 285.
- Holthuis, L.B. 1952. The Decapoda of the *Siboga* Expedition. Part XI. The Palaemonidae collected by the *Siboga* and *Snellius* Expeditions with remarks on other species. II. Subfamily Pontoniinae. *Siboga Expedition Monograph*, 39a 10: 1–252, figs 1–110, tab. 1.

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