

## A new species of *Dactyлонia* Fransen (Crustacea: Decapoda: Pontoniinae) from East Africa

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**Abstract:** A new species of pontoniine shrimp, *Dactyлонia franseni* sp. nov., (Crustacea: Decapoda: Palaemonidae) from Mombasa, Kenya, is described and illustrated on the basis of a single specimen found in association with a tunicate, *Ascidia* sp. The new species is closely related to *D. ascidicola* but separated by a suite of small characters. Attention is drawn to the strong association of *Dactyлонia* species with ascidians of the genus *Ascidia*.

**Resumé :** Une nouvelle espèce de *Dactyлонia* (Crustacea: Decapoda: Palaemonidae) de la côte Est de l'Afrique. Une nouvelle espèce de crevette de la sous-famille des Pontoniinae, *Dactyлонia franseni* sp. nov., récoltée à Mombasa, Kenya est décrite et illustrée. Cette description est basée sur un seul spécimen trouvé en association avec un tunicier, *Ascidia* sp. La nouvelle espèce est très proche de *D. ascidicola* mais peut être séparée de cette dernière par plusieurs caractères subtils. On constate chez les espèces du genre *Dactyлонia* une forte tendance à l'association avec des ascidies du genre *Ascidia*.

**Keywords:** *Dactyлонia franseni* sp. nov., Crustacea, Decapoda, Pontoniinae, Kenya, ascidian host.

### Introduction

In the revision of the pontoniine shrimp genus *Pontonia* Latreille sensu lato, Fransen (2002) assigned seven species to the genus *Dactyлонia* Fransen. Only two of these species, *D. anachoreta* (Kemp, 1922) and *D. okai* (Kemp, 1922) have been reported from East African waters (Bruce, 1976a). The discovery of a single specimen of a further species of *Dactyлонia* is therefore of interest, particularly as it is new to science. Like several of the other species of this genus, it was collected from the branchial cavity of an ascidian host of the genus *Ascidia*. The new species is here described and illustrated.

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Abbreviations used: QM, Queensland Museum, Brisbane; CL, post-orbital carapace length, in millimeters.

### SYSTEMATICS

Crustacea Decapoda

Family Palaemonidae Rafinesque, 1815

Subfamily Pontoniinae Kingsley, 1878

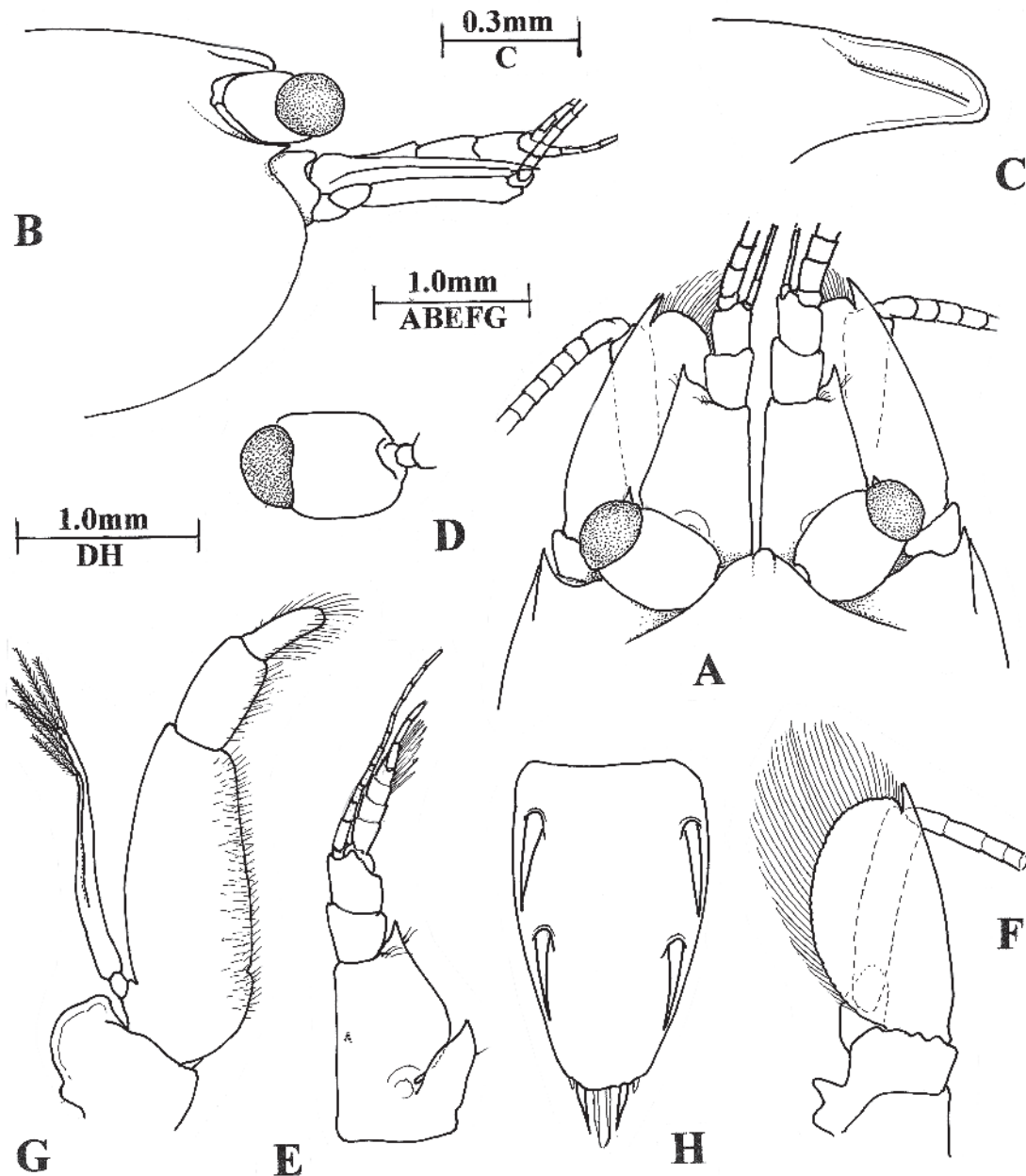
Genus *Dactyлонia* Fransen, 2002

*Dactyлонia franseni* sp. nov.

Figures 1-4

### Material

Holotype : 1 ov. female, AJB-2105, Nyali, Old Port, Mombasa, Kenya, 2 m depth, on chain of bridge pontoon, scuba, coll. B. Benbow, 2 February 1974, QM-W26799.



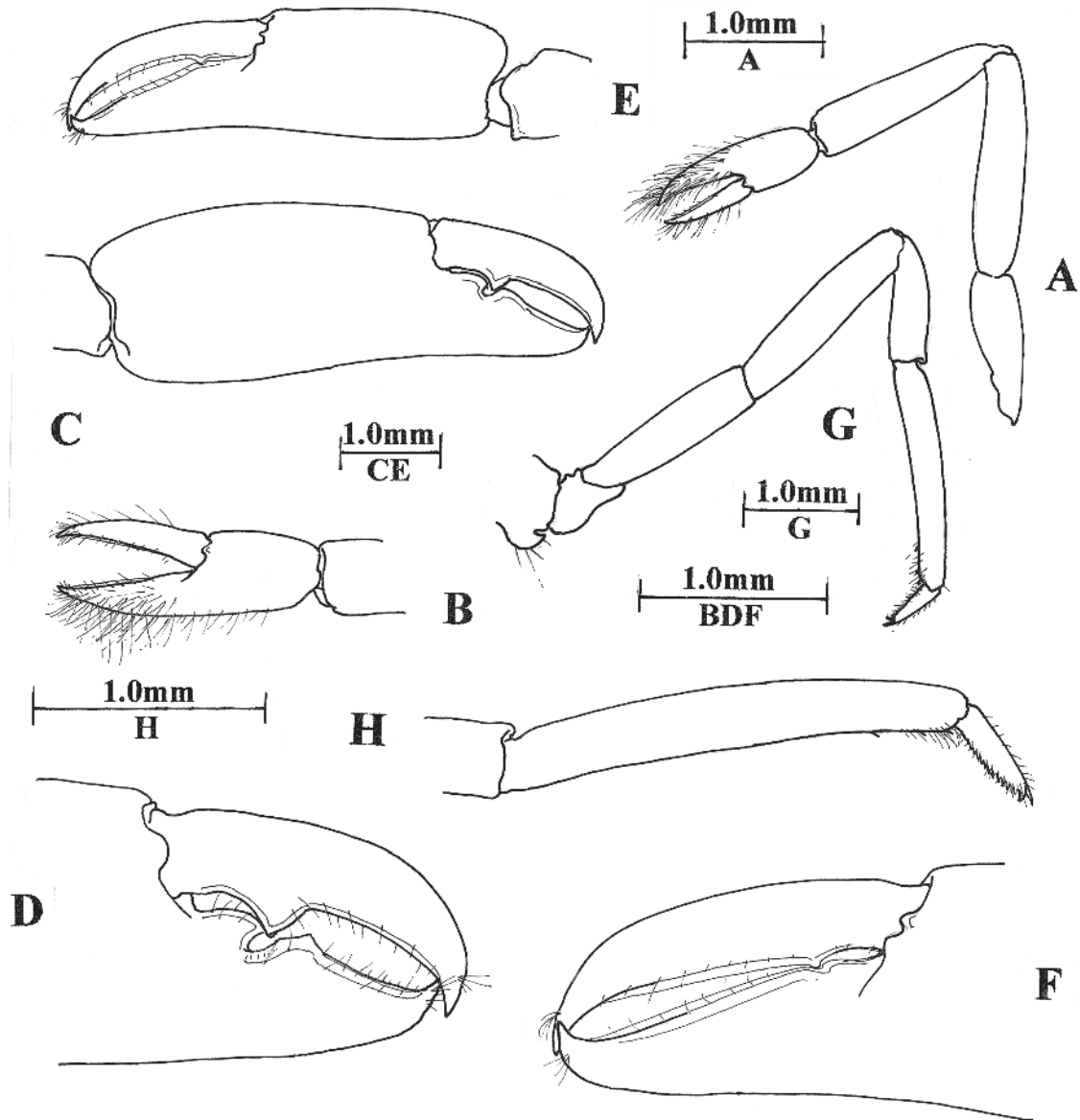
**Figure 1.** *Dactylonia franseni* sp. nov., ovigerous female, holotype, Nyali, Mombasa, Kenya. **A.** anterior carapace, eyes, and antennal peduncles, dorsal. **B.** same, lateral. **C.** rostrum, lateral. **D.** eyestalk, dorsal. **E.** antennule. **F.** antenna. **G.** third maxilliped. **H.** telson.

**Figure 1.** *Dactylonia franseni* sp. nov. Femelle ovigère, holotype, Nyali, Kenya. **A.** région antérieure de la carapace, yeux et pédoncules oculaires, vue dorsale. **B.** idem vue latérale. **C.** rostre, vue latérale. **D.** oeil, vue dorsale. **E.** antennule. **F.** antenne. **G.** troisième maxillipède. **H.** telson.

#### Diagnosis

A *Dactylonia* with rostrum short, broadly rounded in dorsal view, unarmed, distally rounded in lateral view, non-setose, exceeding base of antennular peduncle, not exceeding tip of stylocerite, with dorsal carina feebly developed, rounded, without sharply defined ridge; inferior orbital angle distinct; proximal segment of antennule with small ventromedial

tooth; paragnaths with simple median carina; maxilla with basal endite bilobed; third maxilliped reaching to half scaphocerite length, ischiomerus and basis fused; penultimate segment robust, about 1.75 times longer than wide, terminal segment stout; first pereiopod with carpus longer than chela; second pereiopods with chelae ventrally non-serrate, feebly carinate; major chela with fixed finger



**Figure 2.** *Dactylonia franseni* sp. nov., ovigerous female, holotype. **A.** first pereiopod. **B.** same, chela. **C.** major second pereiopod, chela. **D.** same, fingers. **E.** minor second pereiopod chela. **F.** same, fingers. **G.** third pereiopod. **H.** same, propod and dactyl.

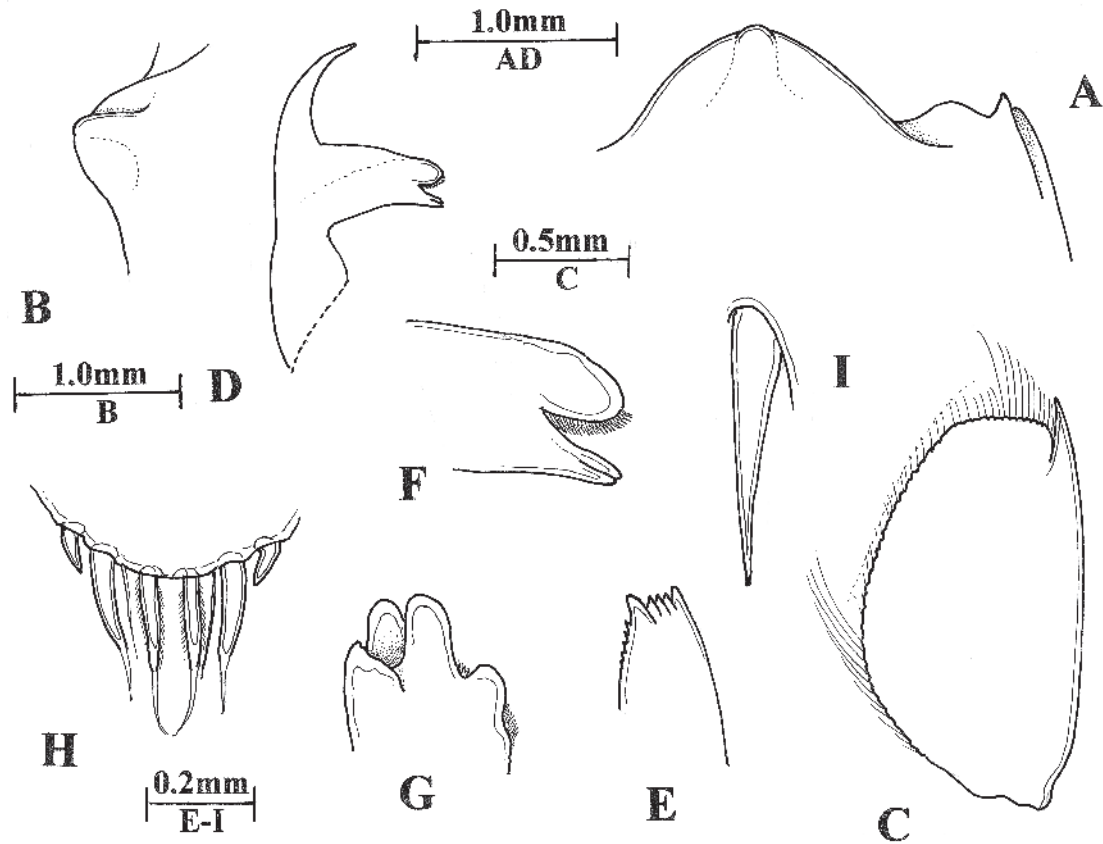
**Figure 2.** *Dactylonia franseni* sp. nov. Femelle ovigère, holotype. **A.** premier péréiopode. **B.** idem, pince. **C.** grosse pince du second péréiopode. **D.** idem, détail de la pince. **E.** petite pince du second péréiopode. **F.** idem, détail de la pince. **G.** troisième péréiopode. **H.** idem, propodite et dactylopedite.

bearing characteristic cutting edge (see fig. 2D) with large posterior tooth separated by narrow gap from smaller anterior tooth; minor chela sparsely setose; ambulatory dactyli biunguiculate, without distodorsal scales, ventrally non-pectinate; ventral margin feebly convex, with 14 accessory denticles, of diminishing size proximally, distally blunt, not swollen, without micro-denticulations; propodus with distoventral spines; telson and uropods typical for the genus.

#### Description

*Body* robust, subcylindrical, smooth, glabrous.

*Rostrum* (Fig. 1A) short, scarcely covering bases of eyestalks, very slightly depressed, distally rounded in lateral view (Fig. 1C), unarmed, without setae, broadly convex in dorsal view, with slight distomedian swelling (Fig. 4B), without distinct post-rostral carina. Inferior orbital angle (Fig. 4A) distinct, feebly developed; antennal spine well developed, acute, marginal, extending well beyond inferior



**Figure 3.** *Dactyлонia franseni* sp. nov., ovigerous female, holotype. **A.** frontal margin of carapace, dorsal. **B.** rostral region, left oblique. **C.** scaphocerite. **D.** right mandible. **E.** same, incisor process. **F.** same, molar process. **G.** same, posterior aspect. **H.** telson, posterior spines. **I.** same, distal dorsal spine.

**Figure 3.** *Dactyлонia franseni* sp. nov. Femelle ovigère, holotype. **A.** bord frontal de la carapace, vue dorsale. **B.** région rostrale, vue oblique gauche. **C.** scaphocérite. **D.** mandibule droite. **E.** idem, processus incisif. **F.** idem, processus molaire. **G.** idem aspect postérieur. **H.** telson, épines postérieures. **I.** idem, épine distale dorsale.

orbital angle, not beyond anterior carapace margin; pterygostomial region broadly rounded.

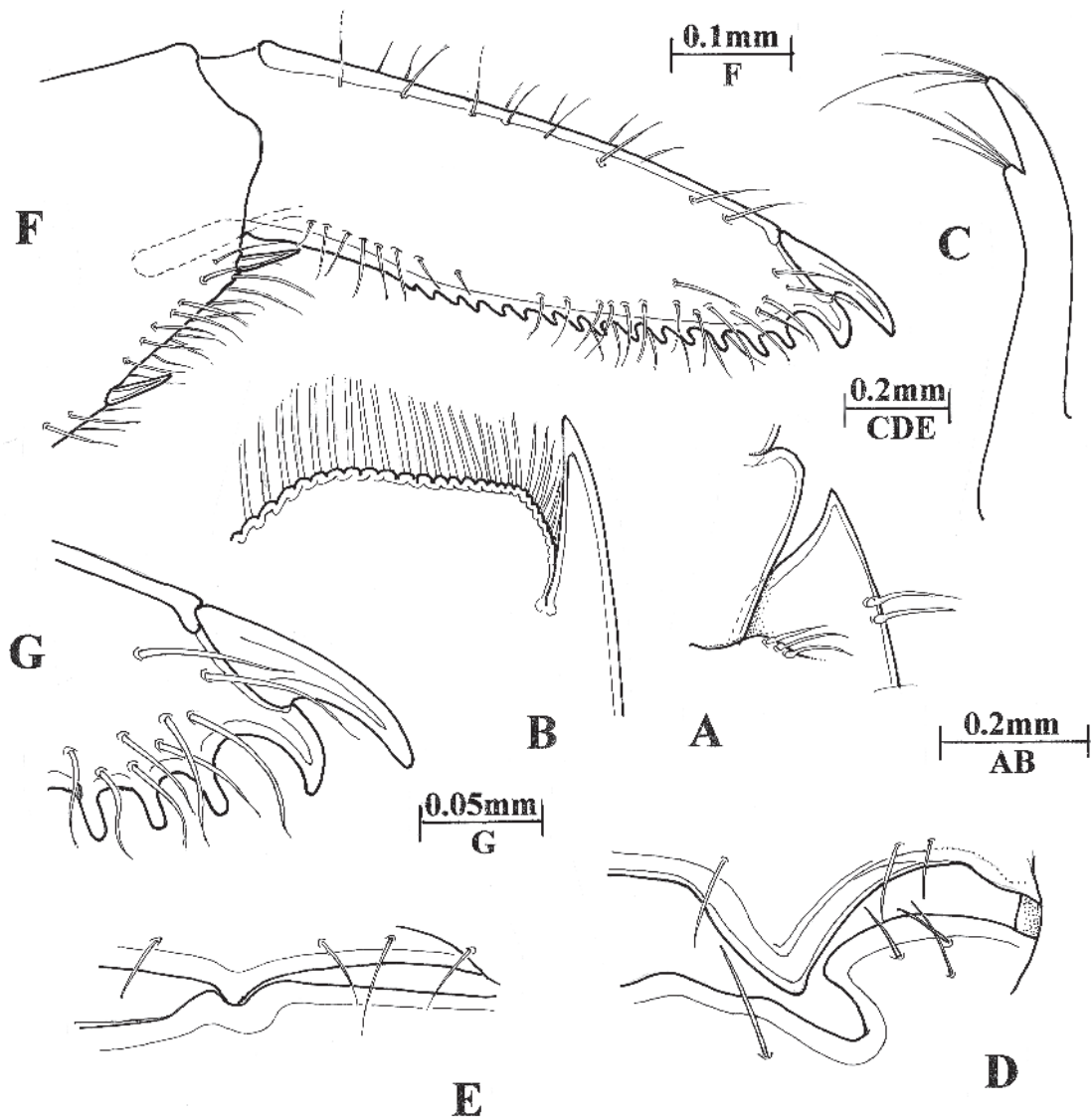
**Abdomen** without special features. Pleura of first five segments broadly rounded; sixth segment 0.28 of CL, posterolateral and posteroventral angles acute.

**Telson** (Fig. 1H) 0.44 of CL, 1.66 times longer than wide, lateral margins feebly convex, with 2 similar pairs of large submarginal dorsal spines (Fig. 3I), about 0.28 of telson length, at 0.14 and 0.5 of telson length, posterior margin (Fig. 3H) 0.4 of anterior margin width, broadly convex, with 3 pairs of spines, lateral spines small, about one third of intermediate spine length, intermediate spines robust, about 0.14 of telson length, submedian spines slender, setulose, subequal to intermediate spine length, both intermediate and submedian spines proximally swollen, distally attenuate.

**Eyestalk** (Fig. 1D) slightly longer than broad, broader than cornea; cornea hemispherical, well pigmented, diameter about 0.08 of CL. without distinct accessory pigment spot.

**Antennule** (Fig. 1E) normal; proximal segment of peduncle with small ventromedial tooth, distolateral tooth (Fig. 3A) well developed, exceeding half length of intermediate segment, stylocerite reaching about 0.6 of segment length, sparsely setose laterally; intermediate and distal segments of subequal length; upper flagellum biramous with 4 proximal segments fused, short ramus with single segment only, longer with three, lower flagellum short, slender, with 11 segments.

**Antenna** (Fig. 1F) with basicerite robust, unarmed, antennal gland tubercle conspicuous; carpocerite about 5.2 times longer than wide, subcylindrical, scarcely reaching distal margin of lamella of scaphocerite; scaphocerite (Fig. 3C) reaching to end of antennal peduncle, broad, about 1.8 times longer than wide, anterior margin rather truncate, lateral margin moderately convex, with strong distal tooth, about 0.16 of lamella length, extending well beyond distal border of lamella.



**Figure 4.** *Dactylonia franseni* sp. nov., ovigerous female, holotype. **A.** antennal peduncle, proximal segment, distolateral angle. **B.** scaphocerite, distal margin. **C.** first maxilliped, basal endite. **D.** major second pereiopod, teeth of cutting edges. **E.** minor second pereiopod, teeth of cutting edges. **F.** third pereiopod, distal propod and dactylus. **G.** same, dactyl, unguis and distal corpus.

**Figure 4.** *Dactylonia franseni* sp. nov. Femelle ovigère, holotype. **A.** segment proximal du pédoncule oculaire, angle disto-latéral. **B.** scaphocécrite, bord distal. **C.** premier maxillipède, endite basal. **D.** grand deuxième péréiopode, dents du bord incisif. **E.** petit deuxième péréiopode, dents du bord incisif. **F.** troisième péréiopode, extrémités des propodite et dactylopodite. **G.** idem, extrémité du dactylopodite.

*Mouthparts* generally similar to those of *D. ascidicola* (Borradaile, 1917, see Fransen 2001, fig.188c-h). *Mandible* (Fig. 3D) with incisor process (Fig. 3E) obliquely truncate distally, with 5 blunt teeth, outer teeth slightly larger than 3 central teeth, medial margin with 6 small denticles along distomedial margin; molar process (Fig. 3FG) robust, centrally excavate with 4 blunt teeth, fringed by bands of short setae. *Maxilla* with slender bilobed palp, proximal

lobe small, both with 3 slender terminal setae. *Third maxilliped* (Fig. 1G) reaching to half scaphocerite length, with ischiomerus completely fused with basis, about 2.7 times longer than greatest width, sparsely covered with short setae medially, laterally glabrous, without long marginal setae, carpal segment about 1.75 times longer than central width, 0.33 of antepenultimate segment length, 1.3 times terminal segment length.

*First pereopod* (Fig. 2A) slender, as in *D. ascidicola* (Borradaile, 1917, see Fransen 2002, fig.188I); chela (Fig. 2B) with fingers slightly longer than palm, fixed finger densely setose, dactylus less setose, carpus slightly shorter than merus.

*Second pereopods* well developed, unequal in size, dissimilar in shape.

*Major chela* (Fig. 2C) about 1.16 of CL, palm compressed, about twice as long as depth, glabrous, ventral margin not carinate, without serrations, fingers (Fig. 2D) about half palm length, dactylus about 4.0 times longer than central depth, with single large acute slightly recurved tooth proximal to half length, distal cutting edge entire, tip strongly hooked, acute; fixed finger about 1.4 times longer than proximal depth, ventrally subcarinate, proximal half of cutting edge with 2 large teeth (Fig. 3D), proximal tooth strongly curved distally, dorsal margin convex, distal margin concave, both margins without denticulations, separated by narrow U-shaped notch from low feebly bidentate distal tooth, without denticulations.

*Minor chela* (Fig. 2E) subequal to CL, palm compressed, about twice as long as depth, glabrous, ventral margin without serrations, fingers (Fig. 2F) about 0.75 of palm length, dactylus about 5.0 times longer than central depth, with single small acute tooth proximally at about 0.2 of length, distal cutting edge entire, tip feebly hooked, acute; fixed finger twice as long as proximal depth, with 2 small blunt teeth opposing dactylar tooth (Fig. 3E), tip acute, strongly hooked, cutting edges entire.

*Third pereopod* (Fig. 2G) slender. Dactylus (Fig. 4F) about 0.25 of propod length, corpus compressed, about 3.2 times longer than central depth, dorsal and ventral margins similarly convex, sparsely setose, distal accessory tooth robust, blunt, recurved, without denticulations, with 15 ventral accessory teeth, mainly anteriorly directed, blunt, not distally swollen, without micro-denticulations, of diminishing size proximally; unguis (Fig. 4G) about 0.26 of corpus length, slender, obliquely articulated with corpus, subacute, without micro-denticulations. Propodus (Fig. 2H) about 0.5 of CL, subcylindrical, about 7.5 times longer than central width, with pair of small distoventral spines, 2 small ventral spines distally, sparsely setose distally.

*Uropod* typical for the genus.

#### *Measurements* (mm)

Holotype female: post-orbital carapace length, 4.2; carapace and rostrum, 4.5; total body length, approx., 14.0; major second pereopod chela, 5.8; minor second pereopod chela, 5.0; length of ovum, 0.5.

#### *Host*

*Ascidia* sp. (Asciacea: Ascidiidae), det. R.H.Millar (13 February 1974).

#### *Colouration* (from field notes)

Body and appendages mainly transparent with numerous small pale chromatophores, white over body, yellowish on eyes, antennae, mouthparts and caudal fan, with many minute red chromatophores interspersed; similar on second pereopods but as rings round distal ends of carpus, merus and ischium of first and ambulatory pereopods; markings less conspicuous over branchiostegite and pleura.

#### *Etymology*

Named after Dr Charles H.J.M. Fransen, in recognition of his major contribution to the systematics of the genus *Pontonia* Latreille sensu lato.

#### *Systematic position*

Seven species of the former genus *Pontonia* s.l. Latreille, 1829, all from the Indo-West Pacific region, have been referred to the genus *Dactylonia* Fransen, 2002.

*Dactylonia franseni* sp. nov. is most closely related to *D. ascidicola* (Borradaile, 1898, 1899; Holthuis, 1952).

*Dactylonia franseni* sp. nov. is distinguished from *D. ascidicola* by a combination of minor morphological characters.

(1) Scaphocerite is about 1.55 times longer than wide, distally truncate, with distolateral tooth reaching well beyond distal lamellar margin in *D. franseni* sp. nov.; about 4.2 times longer than wide, distally rounded, and reaching slightly beyond in *D. ascidicola*.

(2) Maxilla with slender bilobed palp in *D. franseni* sp. nov.; simple in *D. ascidicola*.

(3) Third maxilliped with penultimate segment of endopod robust, about 1.75 times longer than central width in *D. franseni* sp. nov., about 2-3.0 times in *D. ascidicola*; antepenultimate segment sparsely setose, without long lateral marginal setae in *D. franseni* sp. nov., vs. with in *D. ascidicola*. The ischiomerus and basis appear to be fully fused in *D. franseni*, but distinct in *D. ascidicola*.

(4) Major second pereopod chela with ventral border entire in *D. franseni* sp. nov., vs. strongly carinate and feebly serrate in *D. ascidicola*. In *D. franseni* sp. nov. the fixed finger bears two teeth separated by a deep, narrow notch, the posterior tooth is anteriorly directed and both teeth are without denticulations. In *D. ascidicola* the interdental notch is broadly open and the denticulations on the teeth are present; the proximal tooth is not anteriorly directed.

(5) The dactyls of the ambulatory pereopods have the unguis slender, subacute, without distodorsal denticles, the distal accessory tooth is blunt, also without distodorsal denticles, the ventral accessory teeth are simple, distally blunt. In contrast, in *D. ascidicola* they are very acute, with distodorsal denticulations; while the ventral accessory teeth are distally truncate, with denticulations.

#### *Remarks*

With only one single specimen the range of morphological variation cannot be assessed. The unusual frontal margin

may be a developmental abnormality. A very similar rostrum has been reported in a single specimen of *Coralliocaris venusta* Kemp by Bruce (1976b). However, *Dactylonia medipacifica* (Edmondson), an unusual species found in association with bivalve molluscs of the genus *Spondylus*, also has a very short rostrum that barely covers the bases of the eyestalks, although with a small acute median point (Edmondson, 1935; Bruce, 1980; Fransen, 2002).

*Dactylonia ascidicola* (Borradaile) has been recently re-described by Fransen (2002), who noted that the location of the type specimens was unknown. The male and female syntypes are in the collections of the Zoology Museum, Cambridge, U.K., catalogue number ZMC19515. These have been recently examined by Dr Richard Preece, who has confirmed that the dactyls of the ambulatory pereopods are as described and illustrated by Fransen (2002). "The details of the third pereopod appear to match the drawings in Fransen (Fig. 191): (the unguis) and (distal accessory tooth) are certainly bifid and (the ventral accessory teeth) expand distally and appear to have microdenticulations" (R. Preece, pers. comm., 10-1-03). The absence of a bifid unguis and ventrally expanding accessory teeth with microdenticulations in the present specimen of *D. franseni* helps to confirm its identity as a distinct species.

*Dactylonia franseni* sp. nov. is also closely related to *D. okai* (Kemp, 1922), which resembles *D. ascidicola* in the form of the ambulatory dactyls, with truncate accessory teeth bearing micro-denticulations and scales on the distal accessory tooth and unguis. However, the species may be distinguished from *D. okai* by the short third maxilliped, reaching only to the middle of the scaphocerite (vs. long, reaching beyond scaphocerite in *D. okai*), with the penultimate segment robust, 1.75 times longer than wide (vs. slender, 4 times longer than wide in *D. okai*). *Dactylonia okai* is also different in having a simple palp on the maxilla and the third maxilliped with long marginal setae laterally on the ischio-meral segment. Further, in *D. okai*, the carpus of the first pereopod is much shorter than the merus, while these segments are subequal in the new species.

The specimens from New Caledonia referred to *Dactylonia ascidicola* by Bruce (1996) show differences in the details of the dactyl of the third pereopod. The unguis and the distal accessory tooth bear scales and the ventral accessory teeth are markedly swollen distally and devoid of micro-denticulations. The proximal ventral margin of the unguis is also minutely pectinulate. These specimens are therefore distinct from both *D. franseni* and *D. ascidicola* and will be reported upon elsewhere.

Most species of *Dactylonia* (with the exception of the bivalved associated *D. medipacifica*) are strongly, but not exclusively, associated with phlebobranchiate ascidians of the genus *Ascidia*.

<i>Dactylonia ascidicola</i> (Borradaile, 1898)	<i>Ascidia empheres</i> Sluiter, 1895
<i>Dactylonia franseni</i> nov. sp.	<i>Ascidia</i> sp.
<i>Dactylonia monnioti</i> (Bruce, 1990)	<i>Ascidia alterna</i> Monniot & Monniot, 1991
<i>Dactylonia okai</i> (Kemp, 1922)	<i>Ascidia willeyi</i> Oka, 1915
	<i>Ascidia depressiuscula</i> Heller, 1878
<i>Dactylonia</i> sp., New Caledonia (Bruce, 1996 as <i>Pontonia ascidicola</i> )	<i>Ascidia sydneyensis</i> Stimpson, 1854

*Dactylonia ascidicola* has also been reported in association with the ascidian *Rhopalaea crassa* (Herdman, 1880) (Fransen, 2002) and *D. okai* with *Corella aequabilis* Sluiter, 1904 (Holthuis, 1952; Bruce, 1979) and *Plurella* sp. (Fransen, 2002). *Dactylonia anachoreta* (Kemp, 1922) is an associate of *Polycarpa annandalei* Oka, 1915 (Kemp, 1922) and *D. holthuisi* of *Plurella* sp. (Fransen, 2002).

About 100 species of the genus *Ascidia* are known from the Indo-West Pacific region and about half that number may occur in the Indian Ocean, but probably less than 10 from the coasts of Kenya and Tanzania (Mather, pers. comm.). *Ascidia arenosa* Hartmeyer, *A. archaia* Sluiter, *A. fichte* Monniot, *A. incrassata* Heller and *A. sydneyensis* Stimpson have been reported from Moçambique and *A. retisiphon* Millar from Kenya and Somalia. *Ascidia empheres*, *A. depressiuscula*, and *A. willeyi* are not known to occur in Kenyan - Tanzanian waters. *Ascidia sydneyensis* clearly has a widespread distribution. The discovery of closely related *Dactylonia* species in the numerous other species of *Ascidia* would seem highly likely. These species may well be distinguished by small differences in the morphology of the ambulatory dactyls and other features.

#### Distribution

Known only from the type locality.

#### Acknowledgements

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