



## Shallow-water squat lobsters (Crustacea, Decapoda, Galatheidae) from Mayotte (Comoros Island), La Réunion and Madagascar, with the description of a new genus and two new species

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### Abstract

Shallow water species of galatheid crustaceans collected in Mayotte (Comoros Island), La Réunion and Madagascar have been studied. The collection contains one species of *Sadayoshia* and seven species of the genus *Galathea*, including a new species (*G. denticulata*) closely related to *G. amamiensis* known from the Indian Ocean and western Pacific waters, a new genus (*Macrothea*) and species (*M. bouchardi*). The new genus is closely related to the genus *Fennerogalathea* and it is easily distinguished by the following combination of characters: (1) rostrum with 4 strong lateral teeth on each side, (2) spines present on epigastric and hepatic regions only, (3) telson completely subdivided, (4) pereopods 2–4 dactyli sharply biunguiculate. The new genus is also close to *Lauriea* Baba, 1971, from which it can be differentiated, among other characters, by the shape of the endopod of uropods and the number of male gonopods.

**Key words:** Crustacea, Decapoda, Anomura, Galatheidae, new genus, new species, Mayotte, Madagascar, Indian Ocean

### Introduction

The squat lobster fauna in the South-West Indian Ocean has received much taxonomic attention in the last decades and numerous new species have been described as result of increased sampling effort (Baba *et al.* 2008). The different studies have covered different genera of both Chirostylidae and Galatheidae, e.g. *Uroptychus* Henderson, 1888, *Eumunida* Smith, 1883, *Galathea* Fabricius, 1793, *Munida* Leach, 1820, *Munidopsis* Whiteaves, 1784 (see Baba 1990, 2005), *Munida* (see Macpherson 1991, 1999; Macpherson & de Saint Laurent 2002), *Munidopsis* (see Macpherson 2007). These studies follow other papers from the western Indian Ocean, e.g., Alcock & Anderson (1894), Balss (1913), Doflein & Balss (1913), Laurie (1926), Barnard (1950), Lewinsohn (1969, 1981), Tirmizi (1964, 1966, 1980), Baba (1974), Tirmizi & Javed (1976, 1980, 1992, 1993), Baba & Tirmizi (1979), Tirmizi & Khan (1979) and Baba (2005). These works have shown the presence of a rich galatheid fauna with reports so far, mostly concentrated along the deeper continental shelf and slope and bathyal areas. Reports on squat lobsters in shallow waters (< 100 m) are still moderately scarce and a more intense sampling effort in this area has been recommended (Baba *et al.* 2008). The best represented genus in the shallow waters of Madagascar is *Galathea* with ten species known in the area, although other less diverse genera of Galatheidae are also present, e.g., *Allogalathea* Baba, 1969, *Coralligalathea* Baba & Javed, 1974, *Lauriea* Baba, 1971, *Phylladiorhynchus* Baba, 1969, *Sadayoshia* Baba, 1969 (Tirmizi & Javed 1980; Baba 1990; Cabezas *et al.* in press; Macpherson & Baba in press).

Numerous samples of the genus *Galathea* Fabricius, 1793 were recently collected from different expeditions in Madagascar carried out by the Florida Museum of Natural History, Gainesville (May 2008), and in Mayotte, thanks to the Direction of Forest and Agriculture of Mayotte, with the aim to create an inventory of the decapod fauna of the lagoon of the island (Bouchard *et al.* 2009). Most samples were taken in

shallow waters (< 30 m) and some containing several interesting galatheids were found. This paper illustrates and describes a new genus and species (*Macrothea bouchardi*), a new species of *Galathea*, and presents notes on occurrences of six other species of *Galathea* and *Sadayoshia*.

The material examined is deposited in the collections of the Muséum national d'Histoire naturelle, Paris (MNHN) and Florida Museum of Natural History, Gainesville (UF). Measurements of specimens represent the postorbital carapace length. Terminology used mainly follows Baba *et al.* (2009). The abbreviations used in the text include: Mxp (maxiliped), P1 (pereopod 1, cheliped), P2–P4 (pereopods 2–4, first to third walking legs), P5 (pereopod 5, last leg), M (male), F (female) and ov. (ovigerous).

## Systematic account

### *Galathea aegyptiaca* Paul'son, 1875

(Fig. 3A, B)

*Galathea aegyptiaca* Paul'son, 1875: 94, pl. 12, figs. 1, 1a–b. — Baba *et al.* 2008: 64 (compilation). — Baba *et al.* 2009: 107, figs. 86, 87 (Taiwan).

**Material examined.** Mayotte. Stn 12a, reef *La Prévoyante*, 12°41'34.70"S, 45°09'59.99"E, 6–11 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 06 November 2009, coral bottom with *Acropora*, 2 ov. F 3.1–4.2 mm (MNHN-Ga7329). — Stn 21b, Ilot Choizil, east of Malandzamiayatsini, 12°40'22.74"S, 45°3'47.46"E, 15–20 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 12 November 2009, fringing reef and outer slope, 1 F 3.3 mm (MNHN-Ga7330). — Stn 25, Ilot M'tzamboro, southern tip, 12°39'30.18"S, 45°01'38.65"E, 15–20 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll. 14 November 2009, accretions of coral blocks, 1 ov. F 3.6 mm (MNHN-Ga7331). — Stn 30, reef *Rani*, 12°56'34.23"S, 45°03'20.75"E, 3–15 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll. 18 November 2009, 2 M 3.5–4.7 mm, 2 ov. F 3.2–4.6 mm (MNHN-Ga7332). — Stn 32, Ilot M'tzamboro, north-east, 12°38'09.54"S, 45°02'27.12"E, 6–21 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 19 November 2009, *Acropora* coral boulder, 1 male 3.8 mm (MNHN-Ga7333). — Stn. 35, reef *Surprise*, Longoni pass, 12°38'29.95"S, 45°07'45.99"E, 4–25 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll. 20 November 2009, reef slope, 1 F 3.6 mm (MNHN-Ga7334).

Madagascar. Nosy Be, W of Hellville, sand, sea grass, 13°24.936'S, 48°14.736'E, 0–3 m, 25 May 2008, 1 ov. F 3.6 mm (UF14013). — ENE side Nosy Vorona, 13°25.464'S, 48°21.852'E, 3–6 m, 15 May 2008, 1 ov. F 3.8 mm (UF14211). — Nosy Vorona, on dead *Porites* sp., 13°25.464'S, 48°21.852'E, 4 m, 15 May 2008, 1 M 3.3 mm (UF14237). — Nosy Be, S of CNRO, on *Pocillopora* sp., 13°24.498'S, 48°17.484'E, 1–5 m, 19 May 2008, 1 M 3.0 mm (UF14576).

**Coloration.** The species has variable color patterns (Miyake & Baba 1966). The specimens from Madagascar and Mayotte have the base color reddish or greenish, with darker ridges on the carapace dorsal surface and some red spots and stripes on abdominal somites and pereopods; proximal part of P1 fingers with dark red spot.

**Distribution.** Widely distributed in the Indo-West Pacific, from eastern Africa to western Australia, Japan, Taiwan, Palau, Indonesia, New Guinea, and Loyalty Islands (type locality in the Red Sea). The species is usually found among corals, in shallow waters (< 30 m), although the deepest record is from 146 m. The present material was collected from 0 to 25 m.

### *Galathea amamiensis* Miyake & Baba, 1966

*Galathea amamiensis* Miyake & Baba, 1966: 75, figs 13, 14. — Baba *et al.* 2008: 65 (compilation).

**Material examined.** Mayotte. Stn 23, Choizil pass, "Patate à Teddy", 12°40'56.91"S, 44°57'51.63"E, 15–30 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 13 November 2009, outer reef, collapsed barrier, 1 ov. F 2.6 mm (MNHN-Ga7352).

**Distribution.** Previously known from Japan, Ryukyu Islands, Okinawa, Oshima Strait, Amami-oshima (type locality), Indonesia, Moluccas, Gorong Island, and Madagascar, subtidal to 50 m. The new records from Mayotte were collected at 15–30 m.

***Galathea mauritiana* Bouvier, 1914**

(Figs. 3C, D)

*Galathea mauritiana* Bouvier, 1914: 5. — Baba *et al.* 2008: 73 (compilation). — Baba *et al.* 2009: 115, figs. 94–117 (Taiwan).

**Material examined.** Mayotte. Stn 12a, reef *La Prévoyante*, 12°41'34.70"S, 45°09'59.99"E, 6–11 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 06 November 2009, coral bottom with *Acropora*, 1 ov. F 3.2 mm (MNHN-Ga7335). — Stn 14, Banc de La Prudente, 12°38'50.68"S, 44°58'41.93"E, 15–17 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 09 November 2009, coral boulders on sand bottom, 1 M 3.8 mm (MNHN-Ga7336). — Stn 17, North Reef, 12°34'49.93"S, 45°05'52.62"E, 22 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 10 November 2009, outer reef, coral boulders on sand bottom, 2 M 3.4–4.2 mm, 2 ov. F 2.2–2.7 mm (MNHN-Ga7337).

Madagascar. Nosy Be, off Lokobe reserve, seagrass, 13°28.834'S, 48°18.336'E, 1–3 m, 16 May 2008, 1 ov. F 3.6 mm (UF14334).

**Coloration.** Base color reddish or brownish, with dark and light transverse lines. P1–4 sometimes with reddish longitudinal lines, and scattered reddish or greenish and whitish spots; distal portion of P1 palm and proximal part of P1 fingers whitish; dark blue spot on the dorsodistal part of P1 palm.

**Distribution.** Widely distributed in the Indo-West Pacific, from the eastern coast of Africa, including Mauritius (type locality) and Madagascar, to Japan, Indonesia, New Guinea, Loyalty Islands, Fiji Islands, and French Polynesia. The species is usually found on corals, rocks and seagrasses, from 0 to 48 m. The present material, from Mayotte and Madagascar, was caught at 1–13 m.

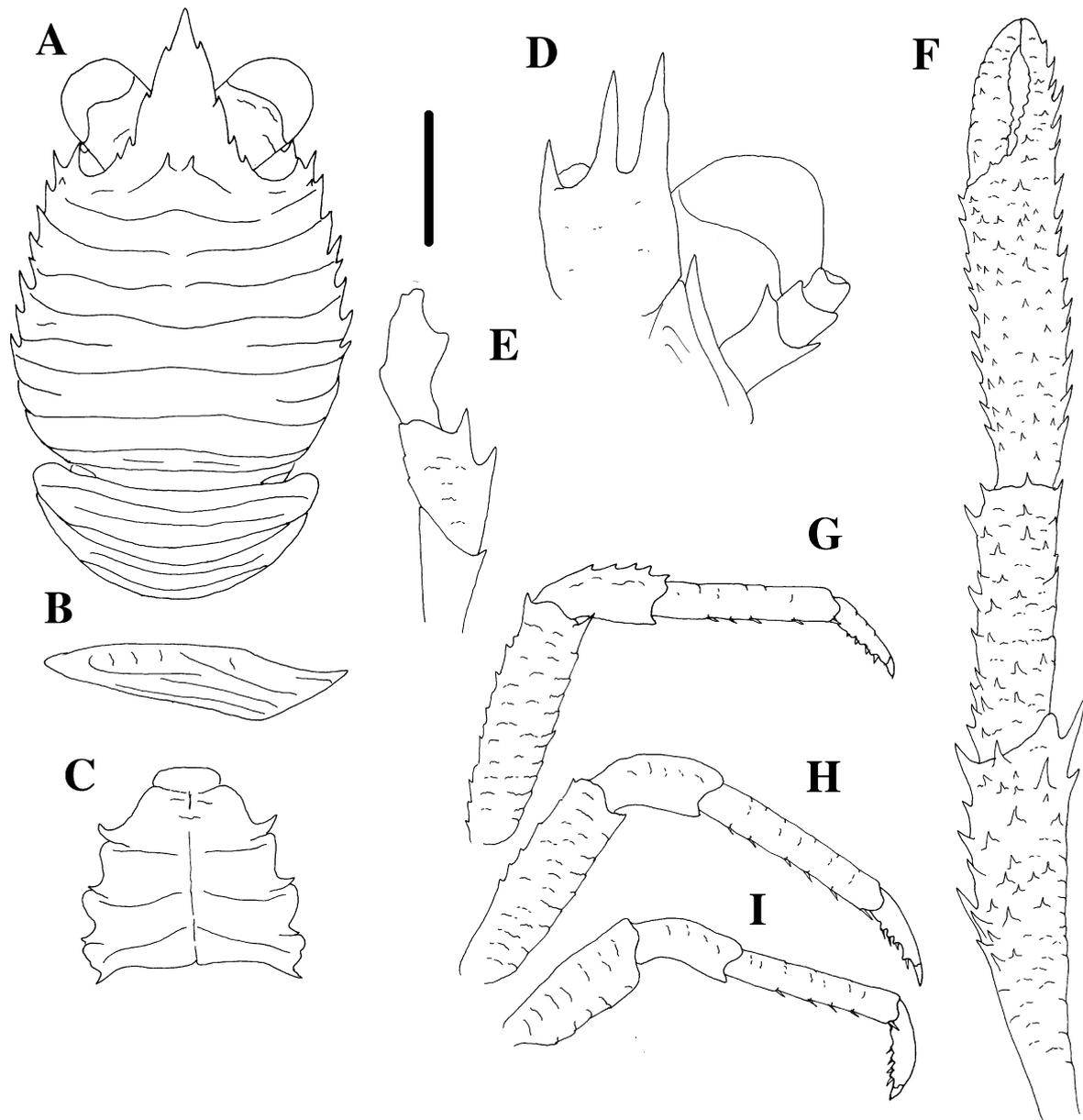
***Galathea denticulata* new species**

(Figs. 1, 3E)

**Material examined.** Mayotte. Stn 9, 'S' pass, 12°51'14.06"S, 45°15'56.05"E, 0–20 m, J.-M. Bouchard, R. Cleva, J. Dumas, V. Dinhut, J. Poupin coll., 05 November 2009, seagrass, 1 M 2.2 mm, holotype (MNHN-Ga7338). — Stn 14, La Prudente bank, 12°38'50.68"S, 44°58'41.93"E, 15–17 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 09 November 2009, coral boulders on sand bottom, 1 ov. F 2.3 mm, paratype (MNHN-Ga7339).

**Description.** Carapace, exclusive of rostrum, 0.9 times as long as broad; dorsal surface nearly horizontal from anterior to posterior; anterior cervical groove indistinct, ridges with dense short setae; 4 ridges on gastric region, anterior 2 (first and second) ridges medially convex anteriorly, first scale-like and placed medially, with 2 epigastric spines, second uninterrupted extending laterally to second lateral spines, third and fourth ridges medially interrupted; mid-transverse ridge uninterrupted, preceded by indistinct cervical groove, followed by 2 interrupted and 2 uninterrupted transverse ridges placed alternately. Lateral margins medially convex, with 8 spines: 2 spines in front of and 6 spines behind indistinct anterior cervical groove; first anterolateral, relatively small, with accompanying small spine on hepatic region; second ventral to between first and third; 3 spines on anterior branchial region, and 3 spines on posterior branchial margin. Lateral orbital angle ending in acute spine; infra-orbital margin with a few obsolescent denticles. Rostrum broad triangular, 1.0–1.2 times as long as broad, length 0.5–0.6 that of breadth 0.4–0.5 that of carapace, dorsal surface concave, with some short setae; lateral margin with 4 small teeth.

Pterygostomian flap rugose with sparse setae, anterior margin acute.



**FIGURE 1.** *Galathea denticulata* new species, holotype, male, 2.2 mm, Mayotte, Stn 9 (MNHN-Ga7338). A, carapace and abdomen, dorsal view; B, pterygostomial flap, lateral; C, sternal plastron; D, left cephalic region, showing antennular and antennal peduncles, ventral view; E, right Mxp3, lateral view; F, right P1, dorsal view; G, right P2, lateral view; H, right P3, lateral view; I, right P4, lateral view. Scale, 1 mm.

Sternal plastron 0.9 times as long as broad, lateral limits divergent posteriorly. Sternite 3 3.0 times as broad as long, anterior margin slightly convex, with minute median notch. Sternite 4 2.5 times longer and 2.5 times broader than preceding sternite, 0.3 as long as broad; surface with several short transverse ridges bearing short setae. Following sternites smooth.

Abdominal somites 2–4 each with 2 uninterrupted transverse ridges on tergite, with or without interrupted ridge between; somite 5 and 6 each with 1 ridge. Telson 0.6 as long as broad. Two pairs of male gonopods.

Ocular peduncles 1.2–1.3 times longer than broad; eyestalk (other than cornea) with short fine setae on dorsal anterior extension; cornea not dilated.

Basal article of antennular peduncle with well-developed distolateral and distodorsal spines; distomesial spine clearly smaller than others. Ultimate article with a few short setae not in tuft on distodorsal margin.

Article 1 of antennal peduncle hardly visible from dorsal view, with depressed ventral distomesial process not reaching distal margin of article 2. Article 2 with distomesial spine smaller than distolateral, barely reaching midlength of article 3. Articles 3 and 4 unarmed.

Mxp3 basis with some small denticles on mesial ridge. Ischium with small distal spine on flexor margin; extensor margin unarmed; crista dentata with 25 denticles. Merus shorter than ischium, with 2 strong spines of subequal size on flexor margin, proximal one located at midlength, distal one at terminal end; extensor margin unarmed. Carpus spineless.

P1 3.9 (M), 3.0 (F) times postorbital carapace length, relatively slender, subcylindrical, with some short setae on all articles. Merus 1.3 (M), 1.0 (F) times length of carapace, 1.4–1.5 times as long as carpus, with numerous spines, distal ones stronger than others. Carpus 0.9 length of palm, 6.3 (M), 3.0 (F) times longer than broad lateral and mesial margins; dorsal surface with small spines; mesial margin with well-developed spines; row of small spines along lateral margin. Palm 3.2 (M), 3.5 (F) times longer than broad, lateral and mesial margins slightly divergent distally; dorsal surface with small spines; mesial and lateral margins with well-developed spines; dorsolateral row continued on to whole lateral margin of fixed finger; fixed finger with several small dorsomesial spines. Fingers 0.6 (M), 0.7 (F) as long as palm, distally touching each other with 4 intermeshing teeth, when closed.

P2–4 relatively slender, somewhat compressed, sparsely furnished with long setae on all articles. Meri successively shorter posteriorly (P3 merus 0.9 length of P2 merus, P4 merus 0.7 length of P3 merus), equally broad on P2–4; P2 merus 0.9 carapace length, 3.7 times as long as broad, 1.6 times longer than P2 propodus; P3 merus 3.2–3.4 times as long as broad, 1.2 times length of P3 propodus; P4 merus 2.7–3.0 times as long as broad, 1.0–1.1 length of P4 propodus. Dorsal margins with row of small proximally diminishing spines on P2–3, unarmed on P4; dorsolateral surface unarmed on P2–4; ventrolateral margins with well-developed terminal spine on P2–3, unarmed on P4 merus. Carpi with 5 small spines on P2 and unarmed on P3–4; dorsolateral surface rugose; flexor margin with very small distal spine. Propodi subequal in length on P2 and P4, slightly longer on P3, each 4.5–5.0 times as long as broad; extensor margin unarmed; flexor margin with 5 or 6 movable spines, terminal one paired with another smaller spine mesial to it. Dactyli subequal in length, 0.4–0.6 times length of propodi, ending in incurved, strong, sharp spine; flexor margin with prominent triangular terminal tooth preceded by obsolescent 3 or 4 obsolescent teeth, each with seta-like movable spine.

Epipods present on P1 (minute in holotype), absent on P2–3.

**Coloration.** Base color light orange, anterior part of carapace bluish. P1 light orange, with red and white stripes on distal part of P1 palm. P2–4 propodi and dactyli with transverse red and white stripes.

**Etymology.** From the Latin *denticulatus* (with small teeth), in reference to the armature of the rostrum, with small teeth on each lateral margin.

**Remarks.** The new species belongs to the group of *Galathea* with laterally uninterrupted stria between the anteriormost branchial marginal spines directly behind the anterior cervical groove, a pair of epigastric spines, the pterygostomial flap without spines on the upper margin, no plumose setae on carapace and abdomen, and epipods only on P1.

*Galathea denticulata* is closely related to *G. amamiensis* Miyake & Baba, 1966 (see above). However, the two species can be easily distinguished by the following characters:

1. The lateral margin of the rostrum bears small teeth in *G. denticulata*, whereas these teeth are clearly stronger in *G. amamiensis*.
2. The stria between the anteriormost branchial marginal spines directly behind the anterior cervical groove is medially interrupted in *G. denticulata*, whereas it is uninterrupted in *G. amamiensis*.
3. The parahepatic spine on each side of the second stria is absent in *G. denticulata*, whereas it is present in *G. amamiensis*.
4. The P1 carpus is 3.0–6.0 times longer than broad in the new species, 2.0–2.3 times longer in *G. amamiensis*.
5. In *G. amamiensis*, there is no spine between the anterolateral spine and the end of the anterior cervical groove, and no spine on the hepatic region. Both spines are present in the new species.

**Distribution.** Only known from Mayotte, at 0–20 m, on coral boulders on sand.

***Galathea spinosorostris* Dana, 1852**

(Fig. 3F)

*Galathea spinoso-rostris* Dana, 1852: 480.

*Galathea spinosorostris*. — Baba *et al.* 2008: 77 (compilation).

**Material examined.** La Reunion, Pierre au Prefet, fore reef, 21°03.75'S, 55°12.768'E, 10–19 m, 15 August 2007, 1 M 3.0 mm (UF12841).

Mayotte. Stn 23, Choizil pass, "Patate à Teddy" 12°40'56.91"S, 44°57'51.63"E, 15–30 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 13 November 2009, outer reef, collapsed barrier, 1 M 3.2 mm, 1 ov. F 3.4 mm (MNHN-Ga7340).

**Coloration.** Base of carapace and abdomen light orange, with striae reddish. P1–4 whitish with red stripes on distal part of meri, carpi and propodi; P1 fingers reddish, distal part whitish.

**Distribution.** Widely distributed along the Indian Ocean and West and Central Pacific, from Hawaiian Islands (type locality), French Polynesia, Palau, Philippines, Indonesia, Andaman Sea, eastern coast of Africa, from Zanzibar to Seychelles and Madagascar, between 1.5 and 772 m. The wide depth range of the species recommends a revision of the material from different depths and localities. The present material from La Réunion and Mayotte was collected at 10–30 m.

***Galathea tanegashimae* Baba, 1969**

(Figs. 3G, H)

*Galathea tanegashimae* Baba, 1969: 16, fig. 4. — Baba *et al.* 2008: 80 (compilation). — Baba *et al.* 2009: 127, figs. 107–109.

**Material examined.** Mayotte. Stn 12a, reef *La Prévoyante*, 12°41'34.70"S, 45°09'59.99"E, 6–11 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 06 November 2009, coral bottom with *Acropora*, 1 M 1.8 mm, 1 ov. F 2.5 mm, 1 F 2.1 mm (MNHN-Ga7341). — Stn 14, La-Prudente bank, 12°38'50.68"S, 44°58'41.93"E, 15–17 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 09 November 2009, coral boulders on sand bottom, 5 M 2.0–4.3 mm, 2 ov. F 3.0–3.7 mm, 1 F 2.7 mm (MNHN-Ga7342). — Stn 17, North Reef, 12°34'49.93"S, 45°05'52.62"E, 22 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 10 November 2009, outer reef, coral boulders on sand bottom, 3 M 2.0–4.2 mm, 7 ov. F 2.1–4.0 mm (MNHN-Ga7343). — Stn 20b, Ilot M'tzamboro, western reef, 12°39'30.18"S, 45°00'42.76"E, 10–15 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 12 November 2009, near collapsed reef, steep sand slope, 1 ov. F 2.4 mm (MNHN-Ga7344). — Stn 21b, Ilot Choizil, east of Malandzamiayatsini, 12°40'22.74"S, 45°03'47.46"E, 15–20 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 12/11/2009, fringing reef and outer slope, 1 M 3.4 mm (MNHN-Ga7345). — Stn 23, Choizil pass, "Patate à Teddy", 12°40'56.91"S, 44°57'51.63"E, 15–30 m, J.-M. Bouchard, V. Dinhut, J. Delmas coll., 13 November 2009, outer reef, collapsed barrier, 1 M 2.7 mm, 1 ov. F 2.1 mm (MNHN-Ga7346). — Stn 25, Ilot M'tzamboro, southern tip, 12°39'30.18"S, 45°01'38.65"E, 15–20 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 14 November 2009, slope with accretions of coral blocks, 2 M 3.1–3.2 mm, 2 ov. F 2.2–3.1 mm (MNHN-Ga7347). — Stn 28, Ilot Mbouini, east, 13°00'27.42"S, 45°08'16.96"E, 3–20 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 17 November 2009, high tide, outer reef and slope, 1 M 2.7 mm (MNHN-Ga7348). — Stn 32, Ilot M'tzamboro, north east, 12°38'09.54"S, 45°02'27.12"E, 6–21 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 19 November 2009, huge *Acropora* coral boulder, 1 ov. F 2.9 mm (MNHN-Ga7349).

Madagascar, Nosy Be, W of Hellville, 13°25.164'S, 48°15.63'E, 6–9 m, 17 May 2008, 1 M 3.8 mm (UF14413).

**Coloration.** Body base color and pereopods reddish or greenish. Juncture area between palm and fingers white forming a whitish X-marking; some white dots on abdomen.

**Distribution.** Previously known from West Pacific from southern Kyushu, Japan (type locality) to Lord Howe Rise, and East Indian Ocean from Zanzibar and Somalia, in corals, rocks and sponges, at 10–165 m. The present material from Mayotte was collected at 3–30 m, on corals.

## ***Galathea ternatensis* De Man, 1902**

(Figs. 3I, J)

*Galathea orientalis* var. *ternatensis* De Man, 1902: 714.

*Galathea ternatensis*. — Baba *et al.* 2008: 80 (compilation).

**Material examined.** Madagascar, between Nosy Be and Nosy Tanikely, muddy lagoon, 13°27.432'S, 48°14.904'E, 24–25 m, 21 May 2008, 1 M 2.9 mm (UF12548), 2 F 3.4–4.0 mm (UF12544, 14630).

**Coloration.** Body ground and pereopods light orange or greenish. P1–4 with some dark stripes.

**Distribution.** Widely distributed along Japan, Philippines, Indonesia, Moluccas (type locality), Sulu Archipelago, Western Australia, New Guinea and New Caledonia in the western Pacific. Maldives and Mozambique Channel in the Indian Ocean at 18–210 m. The present material from Madagascar was collected at 24–25 m.

## ***Macrothea* new genus**

**Diagnosis.** Carapace clearly longer than broad, lateral margins nearly parallel in posterior third, distinctly taper anteriorly; dorsal surface devoid of distinct striae, with some scattered short or long setae; spines only on epigastric and hepatic regions; lateral margins with some spines. Rostrum triangular, with 4 strong lateral teeth on each side. Epistome with ridge between marginal ridge (mouth) and ventral margin of orbit, without protuberance near marginal ridge; ridge at base of antennule scarcely discernible. Telson well developed, completely subdivided. Endopod of uropod longer than broad; dorsal surfaces of endopod and exopod of uropods with some articulated spines. Basal antennular segment with 3 distal spines. P1–4 stout, spinose and setose. Dactylus of walking legs curved inward distally, biunguiculate, with a well-developed claw on flexor margin. Chela of P5 with setae moderate in density on flexor face, without brush of plumose setae, fingers more setose, setae simple, not ribbon-like. Two pairs of male gonopods.

**Type species.** *Macrothea bouchardi*, new species.

**Etymology.** From the Greek *makros*, long, plus the last syllables of *Galathea*. Gender: feminine.

**Remarks.** The carapace dorsal surface devoid of distinct striae, the triangular rostrum with lateral spines on each side, well-developed eyes with broad and short eyestalks, and males with two pairs of gonopods link this new genus to *Fennerogalathea* Baba, 1988, but their relationships are probably rather distant. *Macrothea* may be easily differentiated from *Fennerogalathea* by the following characters: (1) rostrum with 4 strong lateral teeth on each side, (2) carapace dorsal surface with spines only on epigastric and hepatic regions, (3) telson completely subdivided, and (4) P2–4 dactyli sharply biunguiculate. The shape of the P2–4 dactyli is similar to that of the genus *Lauriea* Baba, 1971, from which the new genus can be differentiated, among other characters, by the shape of the endopod of uropods (clearly elongated in *Lauriea*) and the presence of male gonopod 1 (only one in *Lauriea*).

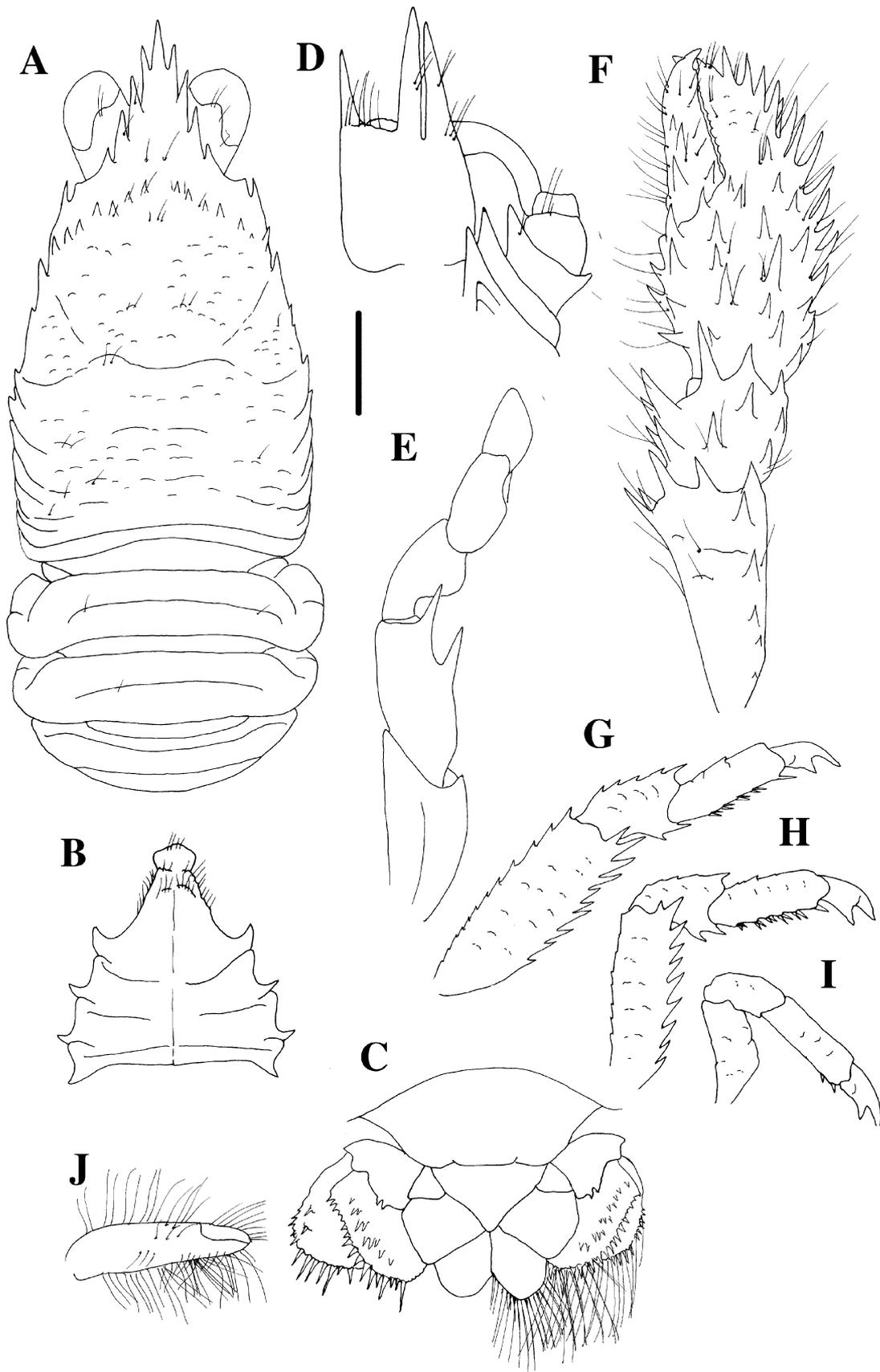
## ***Macrothea bouchardi* new species**

(Figs. 2, 3K)

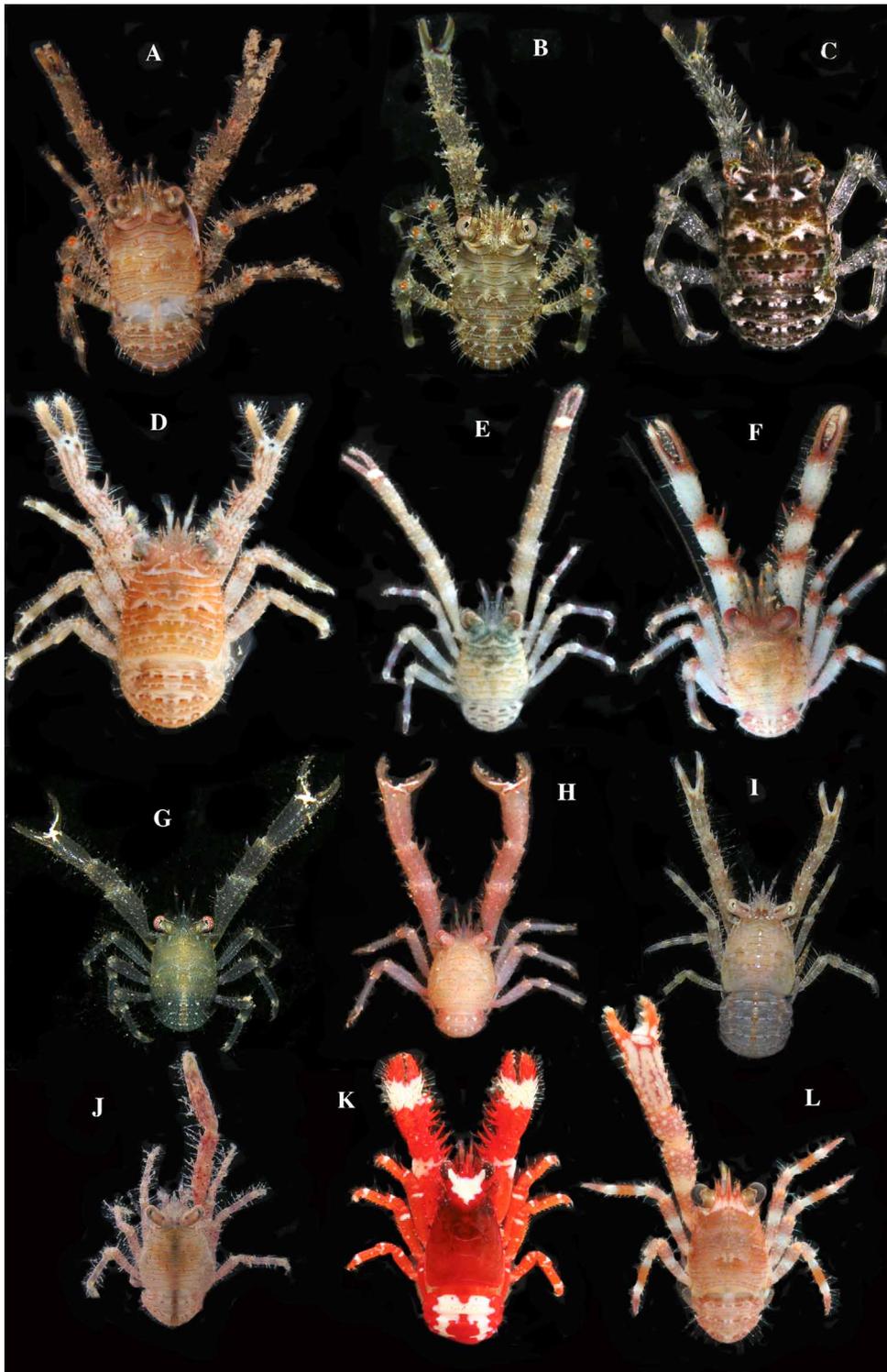
**Material examined.** Mayotte. Stn 23, Choizil pass, "Patate à Teddy", 12°40'56.91"S, 44°57'51.63"E, 15–30 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 13 November 2009, outer reef, collapsed barrier, 1 M 3.5 mm, holotype (MNHN-Ga7350).

Madagascar. Antimo Vatae Cruise, Stn 3572, 25°11.63'S, 47°11.61'E, 75–77 m, 08 May 2010: 1 M 5.0 mm, paratype (MNHN-Ga 7467).

**Description.** Carapace, exclusive of rostrum, 1.2 times as long as wide; dorsal surface nearly horizontal from anterior to posterior, with numerous short transverse ridges and some scattered short fine setae; cervical groove barely distinct, laterally bifurcated; row of 12–14 spines in 6 or 7 pairs arranged in concentric arc along epigastric and hepatic regions; 1 additional hepatic spine behind anterolateral spine and some small



**FIGURE 2.** *Macrothea bouchardi* new species, holotype, male, 3.5 mm, Mayotte, Stn 23 (MNHN-Ga7350). A, carapace and abdomen, dorsal view; B, sternal plastron; C, telson and uropods, dorsal; D, left cephalic region, showing antennular and antennal peduncles, ventral view; E, right Mxp3, lateral view; F, right P1, dorsal view; G, right P2, lateral view; H, right P3, lateral view; I, right P4, lateral view; J, right P5 palm and fingers, lateral view. Scale, 1 mm.



**FIGURE 3.** A, *Galathea aegyptiaca* Paul'son, 1875, Madagascar, Nosy Be, ov. F 3.6 mm (UF14013), dorsal view. B, *Galathea aegyptiaca* Paul'son, 1875, Madagascar, Nosy Be, M 3.0 mm (UF14576), dorsal view. C, *Galathea mauritiana* Bouvier, 1914, Madagascar, Nosy Be, ov. F 3.6 mm (UF14334), dorsal view. D, *Galathea mauritiana* Bouvier, 1914, Mayotte, ov. F 3.2 mm (MNHN-Ga7335), dorsal view. E, *Galathea denticulata* new species, Mayotte, holotype, M 2.2 mm (MNHN-Ga7338), dorsal view. F, *Galathea spinosorostris* Dana, 1852, Mayotte, M 3.2 mm (MNHN-Ga7340), dorsal view. G, *Galathea tanegashimae* Baba, 1969, Madagascar, Nosy Be, M 3.8 mm (UF14413), dorsal view. H, *Galathea tanegashimae* Baba, 1969, Mayotte, ov. F 3.7 mm (MNHN-Ga7342), dorsal view. I, *Galathea ternatensis* De Man, 1902, Madagascar, Nosy Be, F 4.0 mm (UF12554), dorsal view. J, *Galathea ternatensis* De Man, 1902, Madagascar, Nosy Be, F 3.4 mm (UF14630), dorsal view. K, *Macrothea bouchardi* new species, Mayotte, holotype, M 3.5 mm (MNHN-Ga7350), dorsal view. L, *Sadayoshia edwardsii* (Miers, 1884), Mayotte, M 4.6 mm (MNHN-Ga7351). Photographs: Madagascar, G. Paulay; Mayotte, J. Poupin & R. Cleva.

protogastric spines in paratype specimen. Rostrum triangular, 1.2 times as long as broad, length 0.5 postorbital carapace length and breadth 0.4 that of carapace, slightly deflexed anteriorly; dorsal surface concave, with several fine setae; lateral margin with 4 deeply incised sharp teeth, ventrally convex. Orbital margin oblique, lateral extremity unarmed; infraorbital margin smooth. Lateral margins convex, diverging on posterior half, with 6 spines: 1 spine in front of and 5 spines behind anterior cervical groove; first anterolateral, distinctly posterior to lateral limit of orbit; 2 spines on anterior branchial margin, anterior one distinctly larger than posterior one, and 3 small spines on posterior branchial margin, last very small.

Pterygostomian flap smooth, with few short ridges, anterior margin ending in acute spine.

Sternal plastron as long as wide, lateral extremities gently divergent posteriorly. Sternite 3 1.5 times as broad as long, anterior margin convex, with minute dentitions. Sternite 4 3.8 times longer and 3.7 times broader than sternite 3, 0.7 as long as broad; surface with a few short setiferous ridges. Following sternites smooth.

Abdominal somites 2–4 each with 2 transverse ridges on tergite; somite 5 with 1 scale-like ridge; tergite of somite 6 smooth, posteromedian margin nearly transversal. Telson 0.8 as long as broad, subdivided in 7 plates.

Ocular peduncles 1.4 times longer than broad; eyestalk (other than cornea) with lateral margin straight, dorsal anterior extension with stiff setae; cornea not dilated.

Basal article of antennular peduncle with well-developed distodorsal and distolateral spines; distomesial spine well-developed, slightly smaller than others. Ultimate article with a few short fine setae not in tuft on distodorsal margin.

Antennal peduncle having article 1 with ventral distomesial spine overreaching distal margin of article 2. Article 2 with well-developed distomesial spine, distolateral spine clearly smaller than distomesial spine and not reaching midlength of article 3. Article 3 with small distomesial spine in paratype specimen. Article 4 unarmed.

Mxp3 basis unarmed. Ischium with small distal spine on flexor margin; extensor margin unarmed; crista dentata with 24–30 denticles. Merus shorter than ischium; flexor margin with 2 strong spines of subequal size, proximal one located at midlength, distal one at terminal end; extensor margin unarmed. Carpus unarmed.

P1 2.9 times postorbital carapace length, relatively stout, subcylindrical, somewhat depressed on palm, and spinose, with sparse long setae. Merus 0.9 times length of carapace, 1.5 times as long as carpus, with some spines scattered on dorsal and mesial surfaces, distal spines prominent. Carpus 0.8 length of palm, 1.9 times as long as broad; dorsal surface with spines; mesial margin with 1 strong median spine. Palm 2.2 times longer than broad, lateral and mesial margins subparallel; some spines on dorsal surface; mesial margin with some spines; dorsolateral row of larger spines continued on to whole lateral margin of fixed finger. Fingers as long as palm, each distally ending in incurved spine; opposable margins nearly straight, with blunt serration; mesial and dorsal margins of movable finger with some proximal spines.

P2–4 stout, with long sparse setae. Meri successively shorter posteriorly (P3 merus 0.9 length of P2 merus, P4 merus 0.6 length of P3 merus); P2 merus 0.6 times carapace length, 3.0 times as long as broad, 2.3 times longer than P2 propodus; P3 merus 3.5 times longer than broad, 2.0 times longer than P3 propodus; P4 merus 2.6 times as long as broad, 1.2 length of P4 propodus; dorsal margins with row of proximally diminishing small spines on P2–3, unarmed on P4; dorsolateral surface unarmed on P2–4; ventral margin with row of well-developed spines on P2–3, unarmed on P4. Carpi with 2–5 small spines on extensor margin on P2–3, unarmed on P4; dorsolateral surface rugose; flexor margin with 2 distal spines on P2–3, unarmed on P4. P3 propodus as long as P2 propodus and slightly longer than P4 propodus, each 2.4–2.5 times as long as broad; extensor margin with several acute scales, not true spines, on proximal half on P2 and P3, unarmed on P4; flexor margin with 5 or 6 movable spines, each paired with another spine mesial to it, on P2–3; distal paired spines on P4. Dactyli subequal in length, sharply biunguiculate.

Epipods on pereopods 1–3.

**Coloration.** Base of carapace, abdomen and pereopods red. Base of rostrum and epigastric region white; abdominal somites with median wide white stripes. Eyestalks dorsally white and red. P1 with distal part of merus, proximal part of carpus and hand white; proximal part of fingers white. P2–4 with some white spots and stripes.

**Etymology.** The new species is dedicated to Jean-Marie Bouchard (head of the KUW company), who proposed to the Mayotte authorities and organized the expedition.

**Distribution.** Known from Mayotte, 15–30 m, and Madagascar, 75–77 m.

***Sadayoshia edwardsii* (Miers, 1884)**

(Fig. 3L)

*Munida edwardsii* Miers, 1884: 560, pl. 51, figs A, a.

*Sadayoshia edwardsii*. — Macpherson & Baba, in press (compilation and revision).

**Material examined.** Mayotte, Stn 23, Choizil pass, "Patate à Teddy", 12°40'56.91"S, 44°57'51.63"E, 15–30 m, J.-M. Bouchard, V. Dinhut, J. Dumas coll., 13 November 2009, outer reef, collapsed barrier, 1 M 4.6 mm (MNHN-Ga7351).

**Coloration.** Body red or reddish orange, with small purple spots along transverse ridges. Sometimes, a few white spots scattered on carapace and abdominal somites. Rostrum and supraocular spines red, base of rostrum whitish in some specimens. P1–4 with whitish and reddish bands; P1 with some whitish spots; tips of fingers orange.

**Distribution.** Amirante Islands (type locality), Mauritius Island, La Réunion, Aldabra Island, Mariana Islands, Palau Islands, French Polynesia (Tuamotu Archipelago, Society Islands, Austral Islands), Line Islands, Vanuatu, New Caledonia, Loyalty Islands. Depths between 3 and 90 m. *Halimeda* flat bottom, on *Seriatopora hystrix*, from dead *Pocillopora verrucosa* head, under dead coral, rubble.

## Acknowledgements

We are greatly indebted to Gustav Paulay from Florida Museum of Natural History, Gainesville for placing at our disposal part of these interesting specimens. Collections at Mayotte have been made by second author in collaboration with J.-M. Bouchard, V. Dinhut, J. Dumas and J. Poupin. Fieldwork in Mayotte Island was organized by KUW Company, with participation of the Institut de Recherche de l'École Navale (J. Poupin), Muséum national d'Histoire naturelle (R. Cléva) and financial support of Total Foundation and the DAF, Direction de l'Agriculture et de la Forêt. We thank P. Bouchet and T. Y. Chan for providing us one specimen of the new genus from Madagascar. Thanks are also due to K. Baba for improvements to the manuscript.

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