

# A new species of *Galathea* Fabricius, 1793 (Crustacea, Decapoda, Anomura, Galatheidae) from Japan

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Osawa M. 2006. — A new species of *Galathea* Fabricius, 1793 (Crustacea, Decapoda, Anomura, Galatheidae) from Japan. *Zoosystema* 28 (2): 435-441.

## ABSTRACT

A new anomuran crustacean, *Galathea patae* n. sp., is described on the basis of a single specimen from the Ryukyu Islands, Japan. The new species seems to be unique among species of *Galathea* Fabricius, 1793 in having non-setiferous transverse ridges on the carapace and relatively short merus of the third maxilliped. The elongate ocular peduncles possessed by *G. patae* n. sp. are rather unusual among species of the genus, and may be similar to those of species of *Fennerogalathea* Baba, 1988 and *Lauriea* Baba, 1971.

## RÉSUMÉ

*Une nouvelle espèce de Galathea Fabricius, 1793 (Crustacea, Decapoda, Anomura, Galatheidae) du Japon.*

Un nouveau crustacé anomoure, *Galathea patae* n. sp., est décrit d'après un seul spécimen récolté aux îles Ryukyu (Japon). Cette nouvelle espèce semble unique parmi les espèces du genre *Galathea* Fabricius, 1793 par les stries transversales de la carapace dépourvues de soies et le mérius des troisièmes maxillipèdes relativement court. Les pédoncules oculaires allongés que présente *G. patae* n. sp. sont assez inhabituels chez les espèces du genre et rappellent ceux des *Fennerogalathea* Baba, 1988 et *Lauriea* Baba, 1971.

## KEY WORDS

Crustacea,  
Decapoda,  
Anomura,  
Galatheidae,  
*Galathea*,  
Japan,  
new species.

## MOTS CLÉS

Crustacea,  
Decapoda,  
Anomura,  
Galatheidae,  
*Galathea*,  
Japon,  
espèce nouvelle.

## INTRODUCTION

The genus *Galathea* Fabricius, 1793 includes 52 species in the Indo-Pacific region (Baba 2005). The majority of the species are characterized by the carapace covered with setiferous transverse ridges and flattish triangular rostrum with four lateral teeth, and are usually inhabitants of shallow waters.

A survey of the benthic fauna of the Ryukyu Islands, southwestern Japan, carried out by the National Science Museum, Tokyo, in 2002-2004, yielded abundant material of decapod crustaceans from lower sublittoral to upper bathyal zones. The collection contained a distinctive undescribed species assigned to *Galathea*. This paper describes and illustrates the new species from Amami-oshima Island, northern Ryukyu Islands.

## MATERIEL AND METHODS

The holotype of the new species is deposited in the National Science Museum, Tokyo (NSMT, with code of Cr). The postorbital carapace length (cl) is measured from the orbital margin to the posterior margin of the carapace in midline. Lengths of the segments of the first pereopod (cheliped) are measured along the mesial margins, and of second to fourth pereopods (ambulatory legs) along the dorsal margins.

## SYSTEMATICS

Family GALATHEIDAE Samouelle, 1819

Genus *Galathea* Fabricius, 1793

*Galathea patae* n. sp.

(Figs 1; 2)

TYPE MATERIAL. — **Japan**. Off Naze, Amami-oshima Island, Ryukyu Islands, stn DY-03-08, 28°25.27'-28°25.49'N, 129°28.39'-129°28.30'E, 74-86 m, dredge, 18.VI.2003, coll. M. Osawa, holotype, ovig. ♀ cl 3.2 mm (NSMT-Cr 16114).

ETYMOLOGY. — The new species is named in honor of Dr Patsy A. McLaughlin, in recognition of her outstand-

ing contributions to the systematic study of crustaceans, especially hermit crabs.

DISTRIBUTION. — Known only from the type locality.

## DESCRIPTION

Carapace (Fig. 1A, B), exclusive of rostrum and spines, 1.2 times as long as broad; dorsal surface with some breakable, feather setae; gastric, branchial, and cardiac regions with non-setiferous, interrupted transverse ridges; epigastric region with transverse row of four tubercle-like, very small spines; anterior branchial region also with few small tubercle-like spines medially; gastric region convex; branchial and cardiac regions elevated. Lateral margin slightly convex, with six spines: two in front of, and four behind cervical groove, first anterolateral and small, second minute, third shorter than fourth, fifth most prominent, sixth smaller than fifth; another spine ventral and somewhat posterior to anterolateral spine and dorsal to anterior end of linea anomurica. Cervical groove distinct. Frontal margin short, weakly oblique. Orbit produced but unarmed at lateral angle; infra-orbital margin with subtriangular process bearing few small denticles. Rostrum moderately narrow, triangular (apex broken), 0.4 length of remaining carapace, 1.5 times as long as broad when measured between proximal lateral incisions, nearly horizontal in lateral view; dorsal surface apparently naked, slightly concave medially; lateral margin with three shallowly incised teeth, proximal two teeth very small.

Pterygostomian flap (Fig. 1B) rugose but without spines on surface, anteriorly ending in minute spinule.

Third thoracic sternite (Fig. 1C) two times as broad as long; divided into two rounded lobes by median suture. Fourth thoracic sternite including lateral lobes 3.3 times longer than preceding sternite, 0.4 as long as broad, moderately narrowed anteriorly, grooved in anterior midline, with short transverse ridges bearing sparse short setae; anterolateral margin minutely tuberculate. Following sternites nearly smooth.

Abdominal segments (Fig. 1A) with some feather setae on dorsal surface; second to fourth segments with two uninterrupted, elevated transverse ridges, anterior ridge more prominent than posterior; sixth

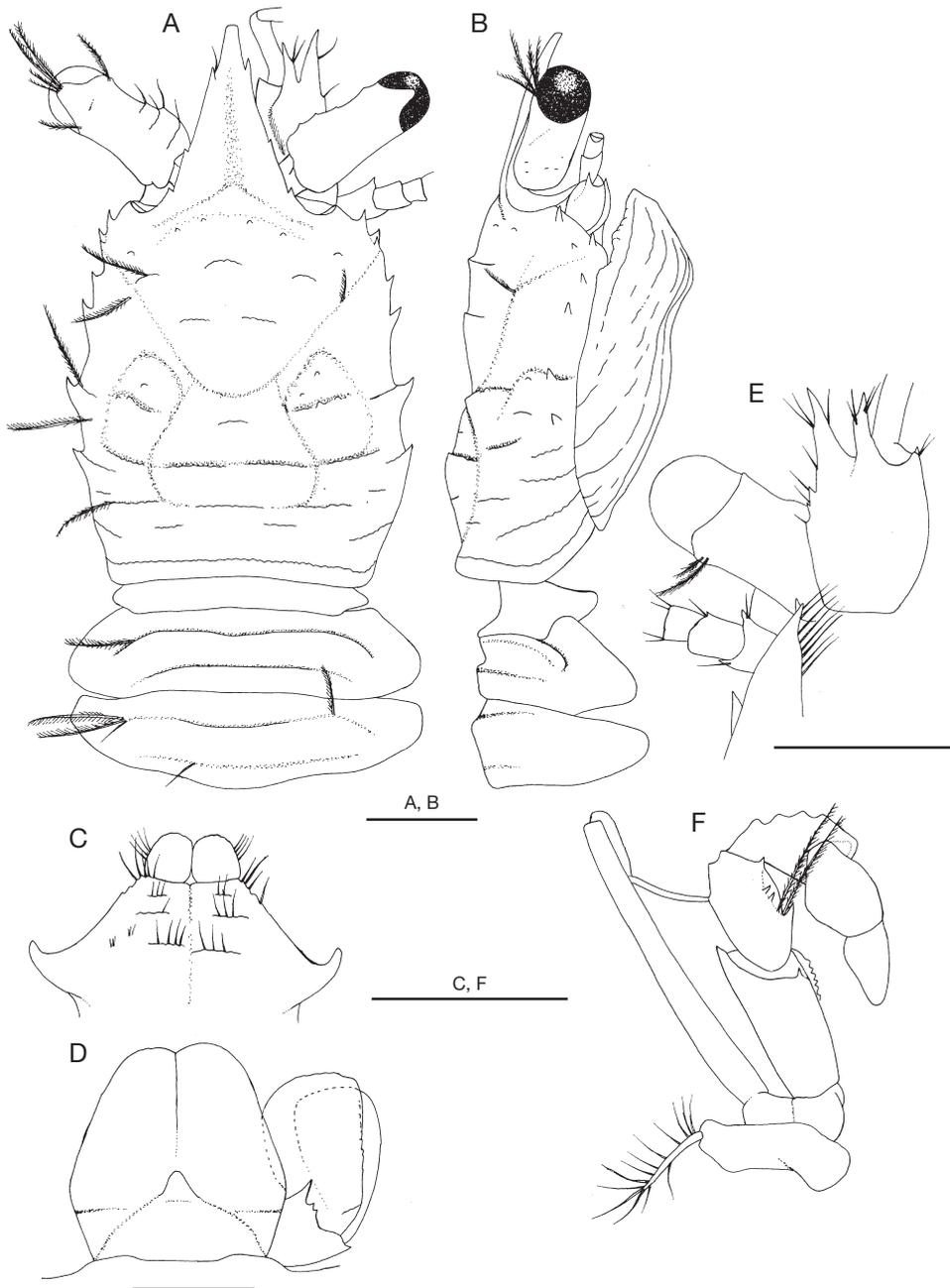


FIG. 1. — *Galathea patae* n. sp., holotype, ovigerous ♀ cl 3.2 mm, Amami-oshima Island (NSMT-Cr 16114): **A**, carapace, anterior part of abdomen, and left cephalic appendages, dorsal view (setae partially omitted); **B**, same, right lateral view; **C**, anterior part of sternal plastron, ventral view; **D**, telson and left uropods, extensor view (setae omitted); **E**, anterior part of cephalothorax, showing right ocular peduncle, basal segment of antennular peduncle, and antennal peduncle, ventral view (most setae omitted); **F**, right third maxilliped, lateral view (most setae omitted). Scale bars: 1 mm.

segment nearly transverse on posteromedian margin. Telson (Fig. 1D) well developed, relatively long, as long as broad, incompletely subdivided.

Ocular peduncles (Fig. 1A, B, E) subcylindrical, elongate, broadened proximally; mesial margin more strongly concave than lateral; surface with short protuberant ridges bearing sparse short setae; dorsal extension onto cornea rounded, with tuft of feather setae; cornea not dilated, 0.4 length of remaining peduncle.

Basal article of antennular peduncle (Fig. 1A, E) with well developed distodorsal and distolateral spines, distodorsal larger; distomesial spine very small; lateral margin with few small spines. Ultimate article with several short setae (not as tufts), on dorsodistal margin.

Antennal peduncle (Fig. 1A, B, E) short, barely reaching base of cornea. First article hardly visible from dorsal view, with distomesial spine barely reaching distal margin of second article. Second article with two small distal spines, distolateral spine terminating in proximal 0.3 length of third article and nearly paralleling lateral margin of third article, distomesial spine directed rather mesially. Third article with very small distomesial spine. Fourth article unarmed.

Third maxilliped (Fig. 1F) with ischium bearing small distal spines on each of flexor and extensor margins; mesial ridge with 15 denticles. Merus subequal in length to ischium measured in lateral midline, with four spines and few feather setae on flexor margin, proximal spine largest; extensor margin with subdistal protuberance, distal corner slightly produced but unarmed. Carpus with four protuberances on extensor margin. Propodus widened medially. Dactylus subovate. Exopod distinctly overreaching distal margin of merus.

Left first pereopod missing. Right first pereopod (broken in proximal part of palm) (Fig. 2A-C) three times as long as carapace including rostrum, slender, subcylindrical, with sparse feather setae on merus to palm and tufts of simple setae on fingers. Merus 1.8 times as long as carpus, with row of spines on each of dorsolateral, dorsomesial, ventrolateral, and ventromesial margins, distal spines prominent; lateral and mesial surfaces with few small spines. Carpus 0.9 length of palm, 3.6 times as long as

distal breadth, with row of small spines on each of dorsolateral and dorsomesial margins; lateral and mesial surfaces with few small spines and short ridges. Palm 4.3 times longer than distal breadth, with some short, scale-like ridges and small spines. Fingers 0.7 length of palm, crossing distally; opposable margins slightly gaping, distally spooned; prehensile edge with row of small subtriangular teeth, proximal tooth larger; distal margin with three or four small teeth.

Second to fourth pereopods (Fig. 2D-G) moderately slender and long, decreasing in size posteriorly, second longest, with scattered feather setae on ischium, merus, carpus, and dorsal margin of propodus, and simple setae on dactylus, and ventral and distal margins of propodus. Meri slender on second but rather stout on third and fourth; lateral surface with few, weakly elevated scale-like ridges, bearing median spine near dorsal margin on fourth; dorsal margin with five or six (second), five (third), and four (fourth) spines; ventrolateral distal margin with spine on second and third but unarmed on fourth. Carpus with three (second and third) and one or two (fourth) spines on dorsal margin; lateral surface with two (second), three (third), and zero or one (fourth) spines subparalleling dorsal margin; ventrodistal margin with few obsolescent denticles. Propodus, exclusive of distal rounded projection, 1.3-1.5 times as long as dactylus, 4-4.3 times as long as high measured at base of distal projection; dorsal margin with two (second and fourth) and three or four (third) spines on proximal half; lateral surface unarmed; ventral margin with four or five slender corneous spines including distal paired spines. Dactylus gently curving, ending in strongly curved, sharp claw; ventral margin with four teeth diminishing in size proximally, each with slender corneous spine.

No epipods on pereopods.

#### *Coloration*

In freshly preserved: carapace, abdomen, ocular peduncles, and pereopods milky white, with scattered small red spots. Scattered feather setae on carapace, abdomen, ocular peduncle, and first pereopod red; plumose setae on second to fourth pereopods white.

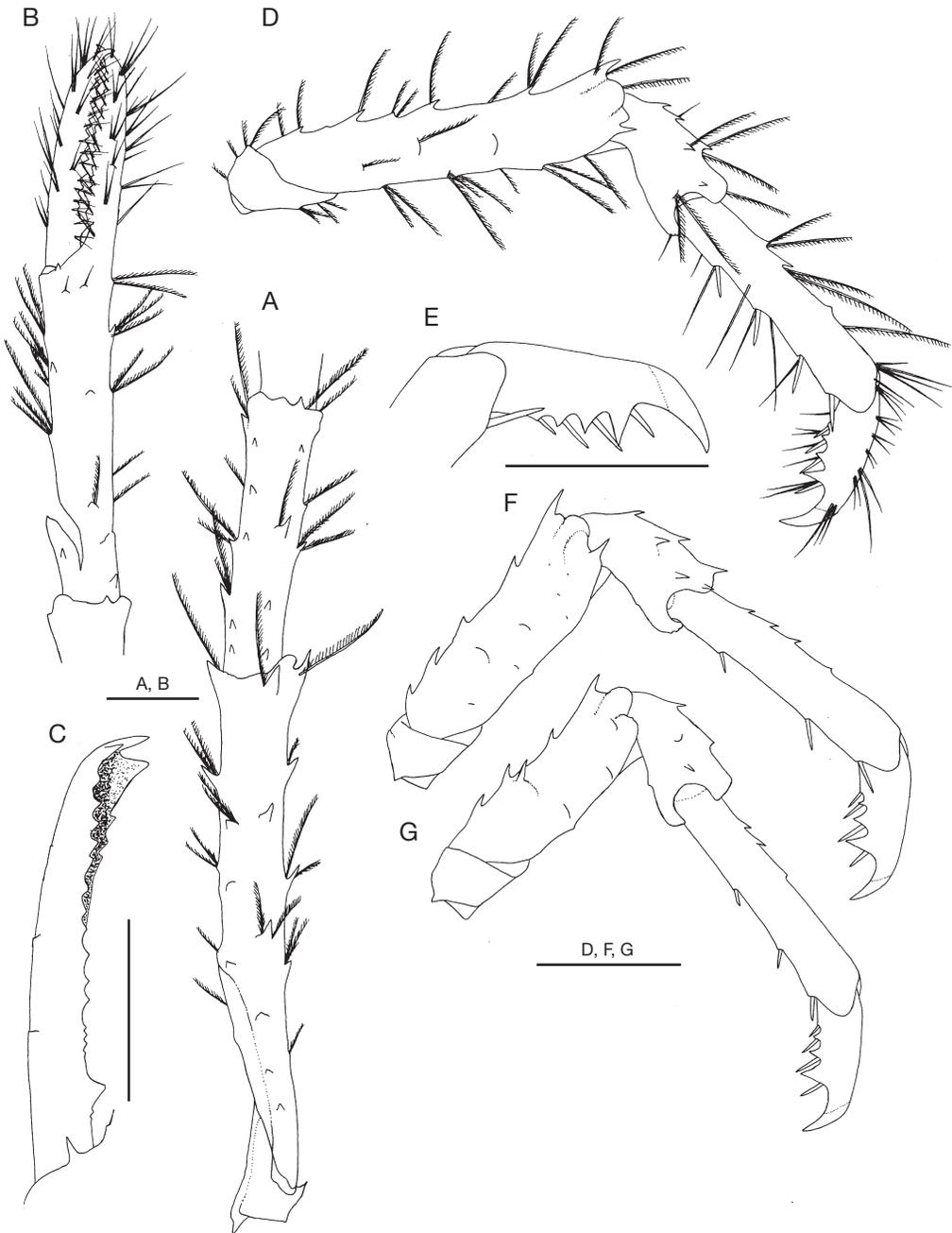


FIG. 2. — *Galathea patae* n. sp., holotype, ovigerous ♀ cl 3.2 mm, Amami-oshima Island (NSMT-Cr 16114): **A**, right first pereopod, ischium, merus, and carpus, dorsal view; **B**, same, chela, dorsal view; **C**, same, dactylus, dorsolateral view (setae omitted); **D**, right second pereopod, lateral view; **E**, same, dactylus, lateral view (setae omitted); **F**, right third pereopod, lateral view (setae omitted); **G**, right fourth pereopod, lateral view (setae omitted). Scale bars: 1 mm.

## REMARKS

The new species is assigned to the genus *Galathea* based on the following characters: carapace with transverse ridges on the entire surface; flattish, subtriangular but not dagger-shaped rostrum without a ventral carina; excavated orbit; third thoracic sternite with an anteromedian notch but not laterally widened; endopod of the uropod with a lateral margin being normal in position; second article of the antennal peduncle with distomesial and distolateral spines; and dactyli of second to fourth pereopods bearing proximally diminishing teeth on the flexor margin.

The elongate ocular peduncles and shapes of the telson and antennular basal article displayed by the new species are much like those of *Fennerogalathea* Baba, 1988. However, *Fennerogalathea* is characterized by the carapace having scattered dorsal spines and no distinct set of transverse ridges, and the first article of the antennal peduncle being unarmed. The elongate ocular peduncles are also seen in *Lauriea gardineri* (Laurie, 1926) and *L. siagiani* Baba, 1994 (see Baba 1971, 1994; Osawa & Okuno 2004) and *Galathea robusta* Baba, 1990 (see Baba 1990, 2005). However, *Lauriea* is remote from *Galathea*, as noted by Baba (1971, 1988) and Baba & de Saint Laurent (1996).

*Galathea patae* n. sp. is unique among species of the genus in having non-setiferous transverse ridges on the carapace and relatively short merus of the third maxilliped. These characters separate this new species from all other congeners.

Although the rounded lateral orbital angle without a spine is one of the diagnostic characters of *G. patae* n. sp., this character is shared with *G. bidens* Baba, 1988, *G. multilineata* Balss, 1913, and *G. pilosa* de Man, 1888 (see Miyake & Baba 1966, 1967; Baba 1988). *Galathea patae* n. sp. has three small teeth on each lateral margin of the rostrum, whereas other known species of *Galathea* have four teeth, except for *G. bidens* (two distal teeth), *G. lumaria* Baba, 2005 (two long proximal spines and one small median spine), *G. quinquespinosa* (Balss, 1913) (two long proximal spines), and *G. multilineata* and *G. tropis* Baba, 2005 (both, five teeth) (see Baba 1988, 2005).

## Acknowledgements

I am indebted to Drs T. Fujita, K. Hasegawa, and H. Saito of the National Science Museum, Tokyo, and the captain of the boat *Daiyu-maru*, for their cooperation and assistance during the field survey. I am also grateful to Dr K. Baba for critically reading the manuscript and making valuable comments and suggestions on it. This study was supported in part by a grant for the 21st Century COE program "The Comprehensive Analyses on Biodiversity in Coral Reef and Island Ecosystems in Asian and Pacific Regions" from the Ministry of Education, Culture, Sports, Science and Technology, Japan (Monbukagakusho).

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*Submitted on 19 September 2005;  
accepted on 16 December 2005.*