

***Lauriea siagiani*, a new galatheid (Decapoda: Anomura: Galatheidae) from Bali, Indonesia**

Keiji Baba

Abstract. — *Lauriea siagiani* new species from Bali, Indonesia is the second species of the genus. It is differentiated from *Lauriea gardineri* (Laurie, 1926) by lack of spines on both the distomesial margin of the antennular basal segment and the mesial margin of the second segment of the antennal peduncle, more slender distal segments of the antennule, more elongate eyestalks, less prominent anterior margin of the third thoracic sternite, and by different coloration.

Steene (1990) published a beautiful color illustration of a galatheid from the coral reefs of Bali which was referred to *Galathea* sp. The coloration shown was so different from that of *Lauriea gardineri* (see Kamezaki et al., 1988: 99), the only known species of the genus, that I was convinced that it might be a new species. In the meantime, three additional specimens recently taken from Bali, and apparently identical with the one illustrated in Steene (1990), were made available by Roger Steene, along with a color transparency. Examination of the material discloses to my satisfaction that it is an undescribed species, the differences between this and the known species being much greater than expected. The holotype will be deposited in the collection of the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM), and the paratypes are in the National Science Museum, Tokyo (NSMT).

***Lauriea siagiani* new species**

Fig. 1

Galathea sp. Steene, 1990: 82, 314 (Bali, Indonesia, 20 m).

Material. — Holotype, ♂ (6.2 mm), USNM 267671; paratypes, 2 ♀ (6.3, 4.7 mm), NSMT-Cr 11438; Tulambon, north-east coast of Bali, Indonesia, 12 m, on sponge, 18 Feb. 1993, coll. W. Siagian.

Etymology. — Named for Wilhelm Siagian who collected the specimens.

Description. — Carapace, excluding rostrum, 1.11–1.24 times as long as wide, dorsal surface covered with both long coarse and short fine setae arising from numerous short transverse ridges; 7 small dorsal spines constant on anterior portion: 2 anteriormost between first lateral teeth of rostrum, 3 on epigastric region (1 in midline, 1 behind lateral limit of orbit on each side), 1 posterior to hepatic region on each side. Cervical groove indistinct. Lateral margins convex, with 7 or 8 small but distinct spines on each side; first much smaller, directly lateral to lateral limit of orbit, second close to first, remainder more or less distantly separated from one another.

Rostrum sharply triangular, with 4 moderately incised teeth, dorsal surface flattish, also with long setae; length (measured from tip to level of orbital margin) 0.31–0.47 times postorbital carapace length.

Abdominal segments with thick long coarse setae, but first segment nearly glabrous. Second to fourth segments each

with 2 transverse setiferous ridges each preceded by groove.

Orbit not laterally produced, unarmed.

Eyestalks elongate, fully twice as long as wide, proximally somewhat wider, distally with long setae directly proximal to cornea; cornea not swollen, length distinctly less than half that of remaining eyestalk.

Antennular basal segment without terminal spine on mesial margin, bearing well-developed lateral terminal spine and somewhat smaller dorsolateral spine; 2 slender terminal segments, ultimate segment without tuft of pronounced setae on extensor distal margin. Antennal peduncle having first segment with lobe-like ventromesial process, second segment with subequal distolateral and distomesial spines; third segment with distomesial spine.

Ischium of third maxilliped shorter than merus when measured in midlateral line, flexor margin with well-developed distal spine, mesial ridge with 24–28 denticles. Merus with 2 subequal spines on flexor distal margin. Propodus and dactylus relatively wide.

Third thoracic sternite with anterior margin moderately produced and medially notched; with transverse ventral line of setiferous ridges preceded by depression.

Chelipeds about 3 times as long as postorbital carapace length; very setose and spinose dorsally, scarcely setose or nearly glabrous ventrally; long setae mostly plumose, partly coarse; spination in dorsal view as illustrated; mesial spines larger, distal ones prominent especially on merus and carpus. Carpus about as long as wide, equally wide as propodus, more than half length of merus. Propodus relatively wide, 1.7–1.8 times as long as wide; dorsal surface with scattered or moderately dense very small spines. Fingers slightly longer than propodus, not gaping and tips crossing when closed; terminating in

sharp curved spine, with 1 (on movable finger) or 2 (on fixed finger – 1 lacking in holotype) subterminal spines; both fingers with very small dorsal spines along opposable margin.

Walking legs very setose on lateral face and margins, setae long and coarse, often plumose on extensor margin; mesial face less setose. Meri posteriorly diminishing in size, with row of proximally diminishing spines on extensor margin, a few (4 on first leg, 2 on second and third) on flexor margin, and 2 extra spines on terminal margin close to distal flexor marginal spine. Carpi with 5–6 small spines on extensor margin (distal one larger). Propodi with line of very small spines along extensor margin and a few movable slender spines on flexor margin. Dactyli sharply biunguiculate, terminal claw strongest.

Color. — Background color of body and appendages pale orange or pink, with marks of purplish red along left and right margins of carapace leading anteriorly onto margins of eyestalks, crossing base of rostrum, posteriorly along lateral margins of abdominal tergites. Chelipeds with specks of same (purplish red) color on surface, especially along mesial and lateral margins, chela distinctly fringed with purplish red along opposable margins. Walking legs also purplish red on dorsal face of entire third leg, distal three segments and even distal portion of meri of first and second legs. Cornea brilliant orange, dorsal setae reddish. Setae elsewhere on body and appendages pale pink.

Parasites. — The larger female paratype bears an externa of a rhizocephalan on the abdomen, and the smaller female has numerous externae.

Remarks. — *Lauriea*, first established by monotypy (Baba, 1971), is unique in the ordinary lateral margin of the endopod of the uropod being posterior in position, lack of continuous transverse carapace ridges, biunguiculate dactyli of

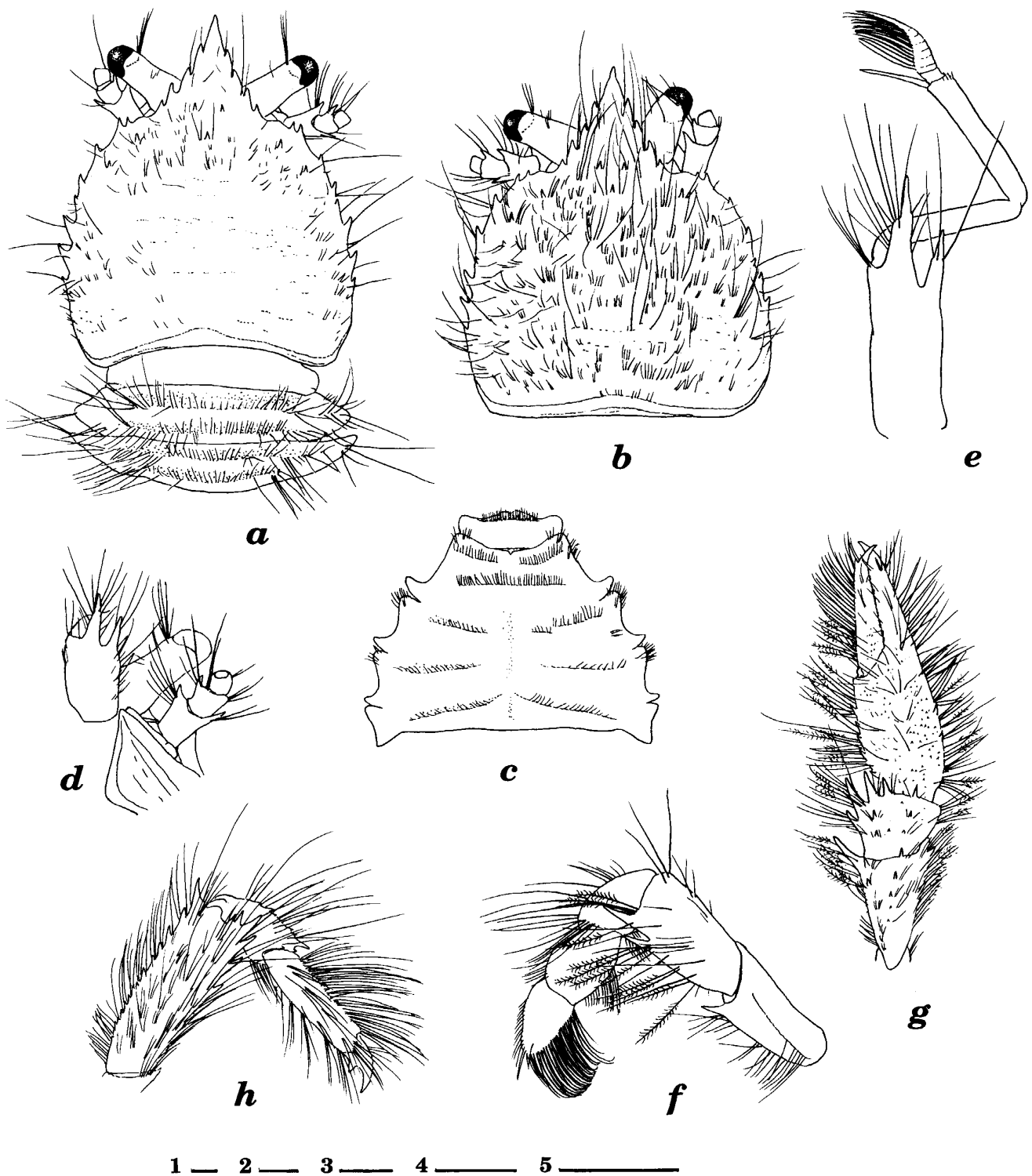


Fig. 1. *Lauriea siagiani* new species, *a-g*, holotype male, USNM 267671; *b*, paratype female, NSMT-Cr 11438: *a*, carapace and abdomen, dorsal view, fifth abdominal segment omitted; *b*, carapace, dorsal view; *c*, sternal plastron; *d*, anterolateral part of cephalothorax showing antennular and antennal peduncles, ventral view; *e*, left antennule, lateral view; *f*, endopod of left third maxilliped, lateral view; *g*, right cheliped, dorsal view; *h*, right first walking leg, lateral view. Scales = 1 mm; scale 1 for *g*; scale 2 for *a*, *b*, *h*; scale 3 for *c*, *d*; scale 4 for *f*; scale 5 for *e*.

the walking legs, and absence of gonopods from the first abdominal segment in the male. *Lauriea gardineri* (Laurie, 1926) has been known widely from the Indo-West Pacific (the Red Sea, Madagascar, Providence, Western Australia, Malay Archipelago, Palau Islands, Ryukyu Islands, and Kyushu, Japan), in 3–106 m (Laurie, 1926; Miyake, 1953; Tirmizi, 1966; Baba, 1971; Haig, 1974; Baba, 1977; Lewinsohn, 1982; Baba, 1988, 1989; Kamezaki *et al.*, 1988; Baba, 1990).

The present material does not fit the definition of *L. gardineri* and is distinctive in the eyestalks, sternal plastron, antennules, and antennae. To establish further details of discriminatory characters, the following comparative material of *L. gardineri* was examined: 1 ♂ 3.3 mm (MNHN Ga 765), New Caledonia, A. M. Edwards coll. — 1 ♂ 2.3 mm (MNHN Ga 782), Tulear, Madagascar, B. Thomassin coll. — 1 ♂ 4.0 mm (MNHN Ga 2260), south coast, Madagascar (as reported by Baba, 1990:961). — 1 ♂ 2.8 mm, Akajima, Kerama-shoto, Ryukyu Is., 15 m, from sponge, 4 July 1993, K. Nomura coll.; 1 ♂ 2.9 mm, same locality, 6 m, under rock, 22 Apr. 1994, K. Nomura coll.

Provided below are the details of distinguishing characters that help to separate the two species.

Eyestalk (Figs. 1a, 1b, 2a): At first glance it is apparently more elongate in *L. siagiani*. The length including the cornea in *L. siagiani* is fully more than twice the width measured at the proximal portion of the cornea, instead of being about 1.5 times in *L. gardineri*.

Sternal plastron (Figs 1c, 2b, 2c): The third thoracic sternite has the anterior margin weakly produced in *L. siagiani*, strongly produced in *L. gardineri*.

Antennule (Figs. 1d, 1e, 2d, 2e): The distomesial spine of the basal segment is small but apparent in *L. gardineri*, rudimentary or barely discernible in *L. siagiani*. The distal two segments of the peduncle in *L. siagiani* is more elongate

and more slender than in *L. gardineri*; a tuft of pronounced setae on the extensor distal margin is present in *L. gardineri*, absent from *L. siagiani*.

Antenna (Figs. 1d, 2d, 2f): The first segment of the peduncle bears a ventromesial process in both species, but it ends in a rounded lobe in *L. siagiani*, and a sharp spine in *L. gardineri*. The second segment bears an extra spine proximal to the distomesial margin in *L. gardineri*, whereas it is absent in *L. siagiani*.

Chelipeds (Fig. 1g): Under high magnification, very small spines are discernible on the dorsal surfaces of the propodus and along the opposable margins of the fingers in *L. siagiani*, but such spines are absent on *L. gardineri*.

Walking legs (Figs. 1h, 2g): The propodi in *L. siagiani* bear numerous small spines along the extensor margin instead of a few to several spines in *L. gardineri*.

Coloration: According to Kamezaki *et al.* (1988: 99) and a color transparency for one of the specimens provided by K. Nomura (see above for comparative material), *L. gardineri* is totally pale brown, with numerous dark brown chromatophores on entire body and appendages. In *L. siagiani*, the body and appendages are pale orange or pink in ground color, with brilliant purplish red specks and tinges (see above for description).

Acknowledgments

I thank R. E. Steene for making this interesting material available for study. Comparative material of *Lauriea gardineri*, along with a color transparency of a fresh specimen, was made available by K. Nomura at the Kushimoto Marine Park, Kushimoto. Access to the other comparative material in the collection of MNHN was made possible during my visit in 1993. The manuscript benefited from reviews by C. L. McLay of the Uni-

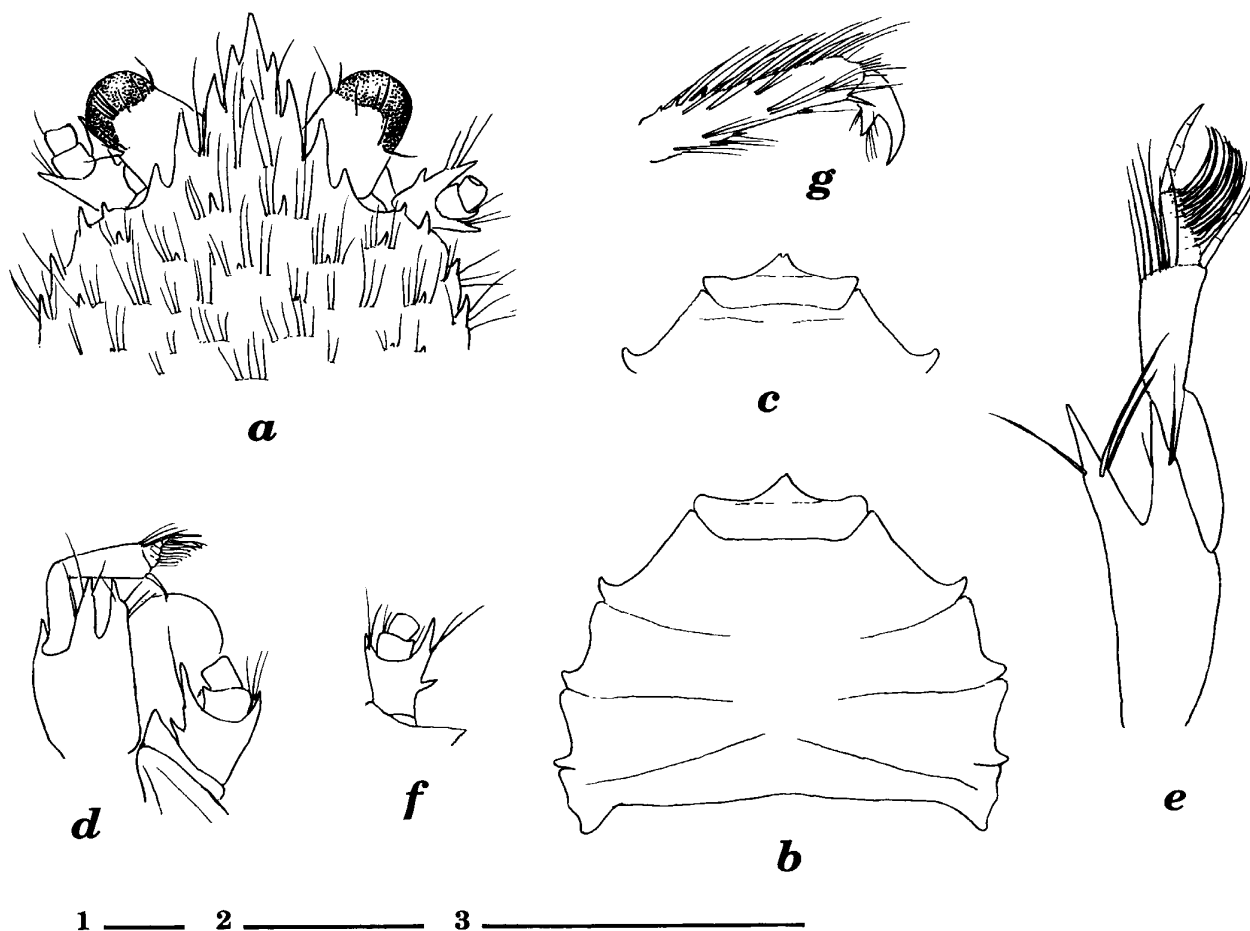


Fig. 2. *Lauriea gardineri* (Laurie, 1926), a, c, e-g: male from Madagascar (MNH Ga 2260); b, d: male from New Caledonia (MNH Ga 765). a, anterior part of carapace, dorsal view; b, sternal plastron; c, anterior part of sternal plastron; d, anterolateral part of cephalothorax showing antennular and antennal peduncle, ventral view; e, right antennule, lateral view; f, right antennal peduncle, ventral view; g, distal segments of right first walking leg, lateral view. Scales = 1 mm; scale 1 for f; scale 2 for a-d, g; scale 3 for e.

versity of Canterbury, Christchurch, and A. B. Williams of the National Marine Fisheries Service, Washington, D.C.

Literature Cited

- Baba, K. 1971. *Lauriea*, a new genus proposed for *Galathea gardineri* Laurie (Crustacea, Anomura, Galatheidae). *Memoirs of the Faculty of Education, Kumamoto University, Kumamoto, section 1 (Natural Science)*, 19: 51-53.
- , 1977. The galatheid Crustacea of the Snellius Expedition. In: *Biological results of the Snellius Expedition XXVIII. Zoologische Mededelingen Uitgegeven door het Rijksmuseum van Natuurlijke Historie te Leiden*, 50(15): 243-259.
- , 1988. Chirostyliid and galatheid crustaceans (Decapoda: Anomura) of the "Albatross" Philippine Expedition, 1907-1910. *Researches on Crustacea, Special Number 2: v + 203 pages*.
- , 1989. Anomuran crustaceans obtained by dredging from Oshima Strait, Amami-Oshima of the Ryukyu Islands. *Memoirs of the National Science Museum, Tokyo*, 22: 127-134.
- , 1990. Chirostyliid and galatheid crustaceans of Madagascar (Decapoda, Anomura). *Bulletin du Muséum national d'Histoire naturelle, Paris*, (4), 11, sect. A (4): 921-975.
- Haig, J., 1974. The anomuran crabs of Western Australia: their distribution in the Indian Ocean and adjacent seas. *Journal of the Marine Biological Association of India*,

- 14(2): 443-451.
- Kamezaki, N., Nomura, K., Hamano, T., & Omae, H., 1988. Crustacea. In: Illustrated Encyclopedia of the Coastal Marine Animals on Okinawa. 232 pp. Shinsei-Tosho Printing, Inc., Naha.
- Laurie, R.D., 1926. Reports of the Percy Sladen Trust Expedition to the Indian Ocean in 1905, under the leadership of Mr. J. Stanley Gardiner, M.A. Vol. 8, No. VI. — Anomura collected by Mr. J. Stanley Gardiner in the western Indian Ocean in H.M.S. "Sealark." "The Transactions of the Linnean Society of London, Series 2, Zoology, 19: 121-167, pls. 8, 9.
- Lewinsohn, C., 1982. *Phylladorhynchus integrirostris* (Dana) und *Lauriea gardineri* (Laurie) (Decapoda, Anomura) aus dem nordlichen Roten Meer. *Crustaceana*, 42(3): 295-301.
- Miyake, S., 1953. On three new species of *Galathea* from the western Pacific. *Journal of the Faculty of Agriculture, Kyushu University*, 10(2): 199-208.
- Steene, R. E., 1990. Coral Reefs. Nature's Richest Realm. A Cranford House Press Book. 335 pp. Charles Letts & Co. Ltd., London.
- Tirmizi, N. M., 1966. Crustacea: Galatheidae. The John Murray Expedition 1933-34, *Scientific Reports*, 11(2): 167-234.
-
- Kumamoto University Faculty of Education, 2-40-1 Kurokami, Kumamoto 860, Japan.