

***Janetogalatea*, a new genus of squat lobster, with redescription of its type species *Galathea californiensis* Benedict, 1902 (Anomura: Galatheidae)**

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Abstract. — *Janetogalatea*, a new genus, is proposed for *Galathea californiensis* Benedict, 1902. It is differentiated from *Galathea* by an ill-defined orbit, flattish rostrum laterally bearing a small basal and two large anterior spines, third thoracic sternite anteriorly narrowed and contiguous with laterally expanded preceding sternite, and antennal peduncle fused with the orbit.

Introduction

Galathea californiensis Benedict, 1902, a galatheid confined to the coast of California and vicinity, is known to have a rostrum quite unusual in the genus *Galathea*. This unique character provoked a debate between Janet Haig and one of us (KB) during a visit of KB to the Allan Hancock Foundation in 1989 as to the generic position of the species. It was then concluded that the species should be placed in a genus different than *Galathea*, but this proposal has not been submitted to date. In the meantime, eight galatheid genera have been established (Baba, 1991, 1993; Baba & de Saint Laurent, 1996) since the publication of Baba (1988) in which 16 genera were recognized in the Galatheidae. However, the species in question still cannot be placed in any of the known genera. We propose *Janetogalatea* to include it, a new genus dedicated to the late Janet Haig who contributed much to our knowledge of Galatheoidea.

The structure of the rostrum might seem to be the sole character to separate

Benedict's species from the remainder of the *Galathea* species. Close examination of the type as well as other material made available for study of his species, however, discloses additional characters that define it.

Due to the brevity of previous descriptions (Benedict, 1902; Schmitt, 1921), a full species account is provided. Color notes are taken from transparencies made by Karen Light, Monterey Bay Aquarium, from a living specimen in captivity.

The measurements indicated show postorbital carapace length.

The abbreviations used include: P1–4, pereopods 1–4 (P1, cheliped; P2–4, walking legs 1–3); G1, gonopod 1; G2, gonopod 2.

Janetogalatea new genus

Diagnosis. — Carapace with distinct elevated transverse ridges on dorsal surface. Rostrum flattish, subtriangular; lateral margin usually with 1 small basal and 2 large anterior spines. Pair of epigastric spines well developed, each spine situated directly behind anterior second large lateral spine of rostrum. Third thoracic sternite narrow, expanded laterally, following sternite subtriangular, narrowed anteriorly. Orbit not distinctly excavated, without lateral angle. Antennular basal segment with 3 spines (2 distal and 1 subdistal), all well developed, subdistal in particular. Antennal peduncle having basal segment fused with orbit. Male with G1 and G2.

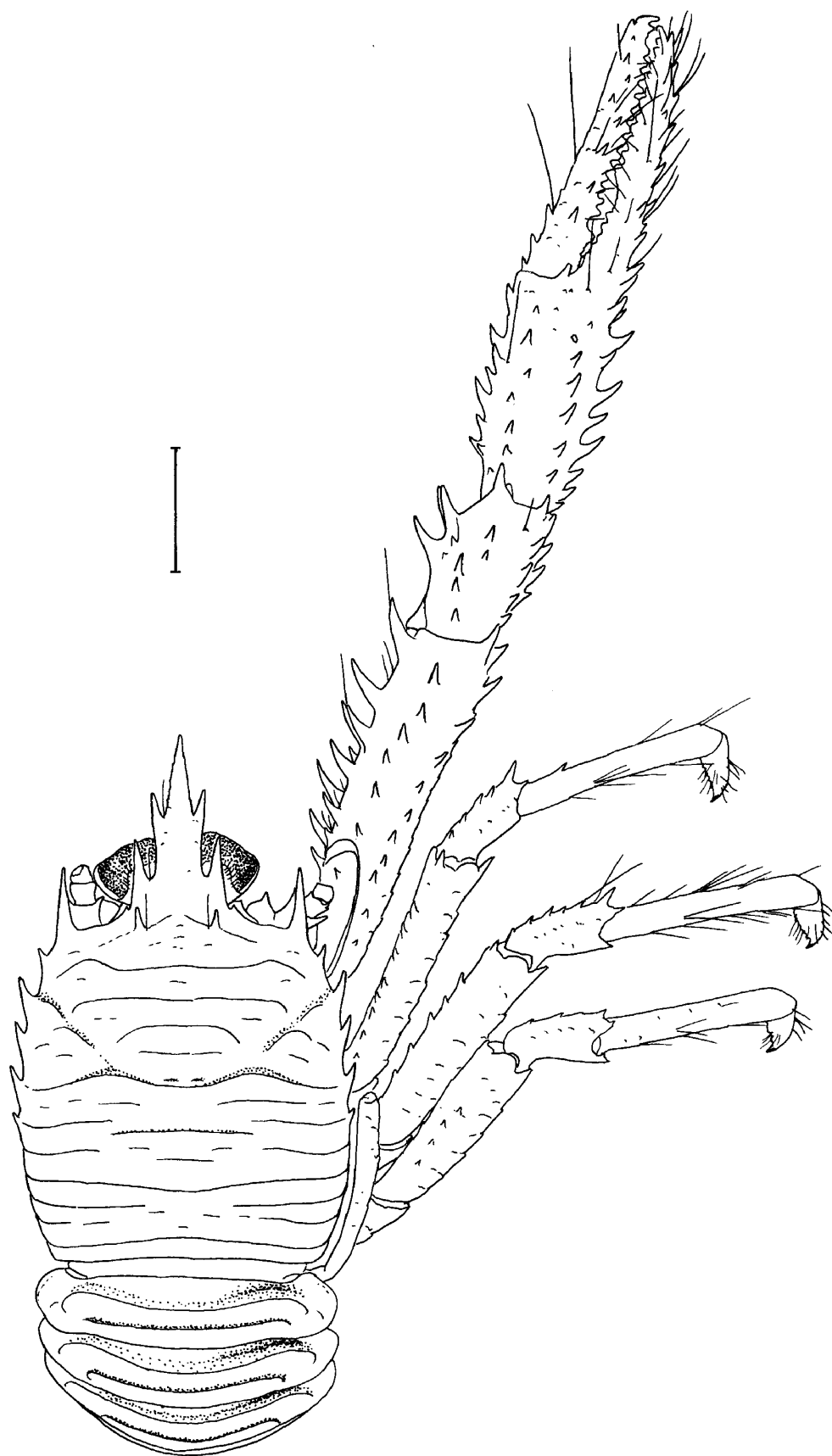


Fig. 1. *Janetogalatea californiensis* (Benedict, 1902), paralectotype, ov. ♀ cl, 13.7 mm, USNM 20551. Scale = 5 mm.

Type species. — *Galathea californiensis* Benedict, 1902.

Gender. — Feminine.

Janetogalatea californiensis

(Benedict, 1902)

Figs. 1–3

Galathea californiensis Benedict, 1902: 247, fig. 1 – type-locality: Channel Islands off Los Angeles (Albatross Sta 2946), 150 fms (275 m). — Schmitt, 1921: 164, fig. 104 (between Monterey and “Cerros” (? = Cedros) Island, Baja California, 104–3993 m). — Wicksten, 1982: 245. (between Pt. Conception and Anacapa Island, 165–500 m). — Wicksten, 1987: 50 (California and Gulf of California, 101–104 m).

Material. — NATIONAL MUSEUM OF NATURAL HISTORY, WASHINGTON, DC: 4 ♂ 6.6–25.1 mm, 8 ov. ♀ 7.6–21.5 mm, 3 ♀ 11.6–13.4 mm, syntypes of *G. californiensis* (ov. ♀ 16.2 mm is selected as lectotype and the others are paralectotypes), USNM 20551, off Santa Cruz Island, California, 150 fm (275 m). — MONTEREY BAY AQUARIUM: 1 ♂ 29.2 mm, taken in baited shrimp trap, Carmel Canyon, California, 189–240 m, 1996 (no date). — CALIFORNIA ACADEMY OF SCIENCES: 1 ov. ♀, 24.8 mm, CAS 106791, on rock, Santa Cruz, California, 1 Feb. 1963, coll. A. Sorensen; 5 ♂ 9.1–17.2 mm, 2 ♀ 10.7, 28.0 mm, Cat. No. 004150, soft brownish shale, on bank north of Santa Barbara Island, California, 14 Sept. 1938, ship *Zaca*. — LOS ANGELES COUNTY MUSEUM OF NATURAL HISTORY: 1 ♂ 29.2 mm, LACMNH 2076-1, off Santa Barbara Island, California, in gill net, 102–111 m, 27 Jun. 1980, boat *Galapagos*; 1 ♂ 32.6 mm, vicinity of Guadalupe Island, Baja California (Pacific side), Mexico, Mar. 1970, taken by fishermen; 5 ♂ 26.2–31.3 mm, 1 ov. ♀ 26.0 mm, 3.8 miles (7.0 km) SSW of west end, Anacapa Island, California, 240 m, 17 Jun. 1969, ship *N/B Scofield*, prawn set 40, Acc. No. 1969-9; 1 ♂ 28.5 mm, 1.3 miles (2.4 km)

WSW of Gull Island, California, 258 m, 17 Jun. 1969, ship *N/B Scofield*, prawn set 44; 1 ♀ 18.8 mm, *Velero III* Sta 1276-41, loose rock and sponge bottom, 10.75 miles (19.91 km) west of Point Dume, California, 87–89 m, 23 Mar. 1941; 4 ♂ 6.2–14.1 mm, 3 ♀ 5.9–17.1 mm, 6 juveniles 2.5–4.0 mm, *Velero III* Sta 1385-41, among rocks, crinoids and sponges, 13–16.5 miles (24.0–30.6 km) SSE of East Point, Santa Rosa Island, California, 131–140 m, 25 Aug. 1941; 2 ♂ 6.4, 15.5 mm, 5 ♀ 5.2–19.4 mm, *Velero III* Sta 1435-41, mud and sponge bottom, 1.5 miles (2.8 km) SW of Gull Island, off Santa Cruz Island, California, 89 m, 8 Nov. 1941; 5 ♂ 8.5–17.5 mm, *Velero IV* Sta 2062-51, 6.7 miles (12.4 km) NNW of North Light, Santa Barbara Island, California, 258–299 m, 18 Oct. 1951; 2 ♂ 15.3, 19.7 mm, 1 ♀ 15.5 mm, *Velero IV* Sta 11838-67, taken with scalpellid barnacle and hydroids, 8 miles (14.8 km) 283° true from south end of Isla San Lorenzo, Gulf of California, Mexico, 794–1015 m, 2 Dec. 1967; 1 ♂ 17.5 mm, *Velero IV* Sta 22680-75, taken in beam trawl, 6.16 miles (11.4 km), 45° true to Newport Beach pier, California, 358 m, 12 Sept. 1975.

Description. — Carapace excluding rostrum slightly longer than wide; dorsal surface with setiferous elevated transverse ridges as figured; first (anterior-most) ridge with pair of spines rather distantly separated, each spine situated directly behind anterior second lateral spine of rostrum; cervical groove distinct. Lateral margins moderately convex, bearing 3 spines in front of cervical groove: anterolateral spine prominent, directed straight forward, overreaching sinus between anterior 2 rostral lateral spines, followed behind by small one situated at midlength of hepatic margin between anterolateral spine and cervical groove, and another distinct spine ventral to it; 5 posteriorly diminishing spines on anterior branchial region, last one rarely

obsolete.

Rostrum flattish, triangular, lateral margin with 1 small basal spine (rarely 2 or absent) and 2 (rarely 3) anterior spines usually prominent and deeply incised.

Orbit not hollowed out, laterally ill-defined without any process.

Sternal plastron as figured, third thoracic sternite relatively short and wide, anterolaterally produced, following sternite anteriorly narrowed, medially depressed, with long stiff setae as illustrated.

Pterygostomian flap not acuminate anteriorly, ending in small spine.

Abdominal segments 1–2 with pair of gonopods. Tergites 2–4 each with 2 setiferous transverse ridges well elevated; smooth elsewhere.

Eyes moderate in size, not strongly dilated compared to eyestalk.

Antennular basal segment with 2 distal and 1 subdistal spines, former subequal, distomesial and distolateral in position, latter strongest and situated dorsally; distoventral margin between 2 distal spines bearing a few very small spines in small specimens, moderate-sized spine in large specimens.

Antennal peduncles having first (basal) segment fused with orbit, broadly produced ventrally, terminating in small spine; second segment with small distomesial and somewhat larger distolateral spines; third segment unarmed.

Maxilliped 3 bearing long stiff setae on merus and carpus; ischium relatively thick, nearly as long as merus, flexor margin with well-developed distal spine, mesial ridge with 23–25 denticles; merus having flexor margin with prominent median spine and small subterminal spine proximal to rounded distal end, extensor margin with 2 small spines, distal one terminal, proximal one situated at distal third of length; carpus unarmed.

P1 spinose, with coarse setae moderate in density; merus and carpus subcylindrical; merus with 5 rows of spines: 2

mesial rows of large spines, 2 dorsal rows of small spines, 1 ventrolateral row of small spines; and several spines in 2 rows on distal portion of lateral surface; carpus with 2 dorsal and 2 lateral rows of spines, 3 pronounced spines (2 mesial, 1 ventral), and scattered tubercles or often small spines on ventrolateral surface; palm somewhat depressed, distinctly shorter than fingers, with 6 rows of spines (1 dorsal, 2 lateral, 2 mesial and 1 ventral); fingers proximally gaping in large males (more than 29.2 mm long), usually not gaping in females and small males (even in specimen 25.1 mm long), distally deflexed, opposable margins with intermeshing teeth, movable finger with 2 rows of spines (1 dorsal, 1 ventral) along mesial margin, fixed finger with row of spines along dorsolateral margin.

P2–4 relatively slender, sparsely setose; meri and propodi posteriorly diminishing in length; meri with row of dorso-mesial spines and 1 distal ventrolateral spine, ventral surface with row of spines distinct along mesial margin on P2 only; carpi with row of dorsolateral spines paralleling row of flexor marginal spines; propodi with 7 small movable spines on flexor margin on P2, 6 or 7 on P3, 5 or 6 on P4; a few small fixed spines present on large specimens, obsolescent on small specimens, on proximal portion of extensor margin; dactyls having flexor margin convex, with seta-like corneous, inclined, movable spines, 9–10 in number on P2–3, 8 on P4, each arising from low process, ultimate one much finer and nearly contiguous with margin.

Epipods absent from all pereopods.

Color. — Reddish on much of surface, carapace with white transverse stripes along main transverse ridges and white background on pereopods (Fig. 3).

Habitat. — Found on rock or among rocks; soft brownish shale; loose rock and sponge; mud and sponge; crinoids and sponges.

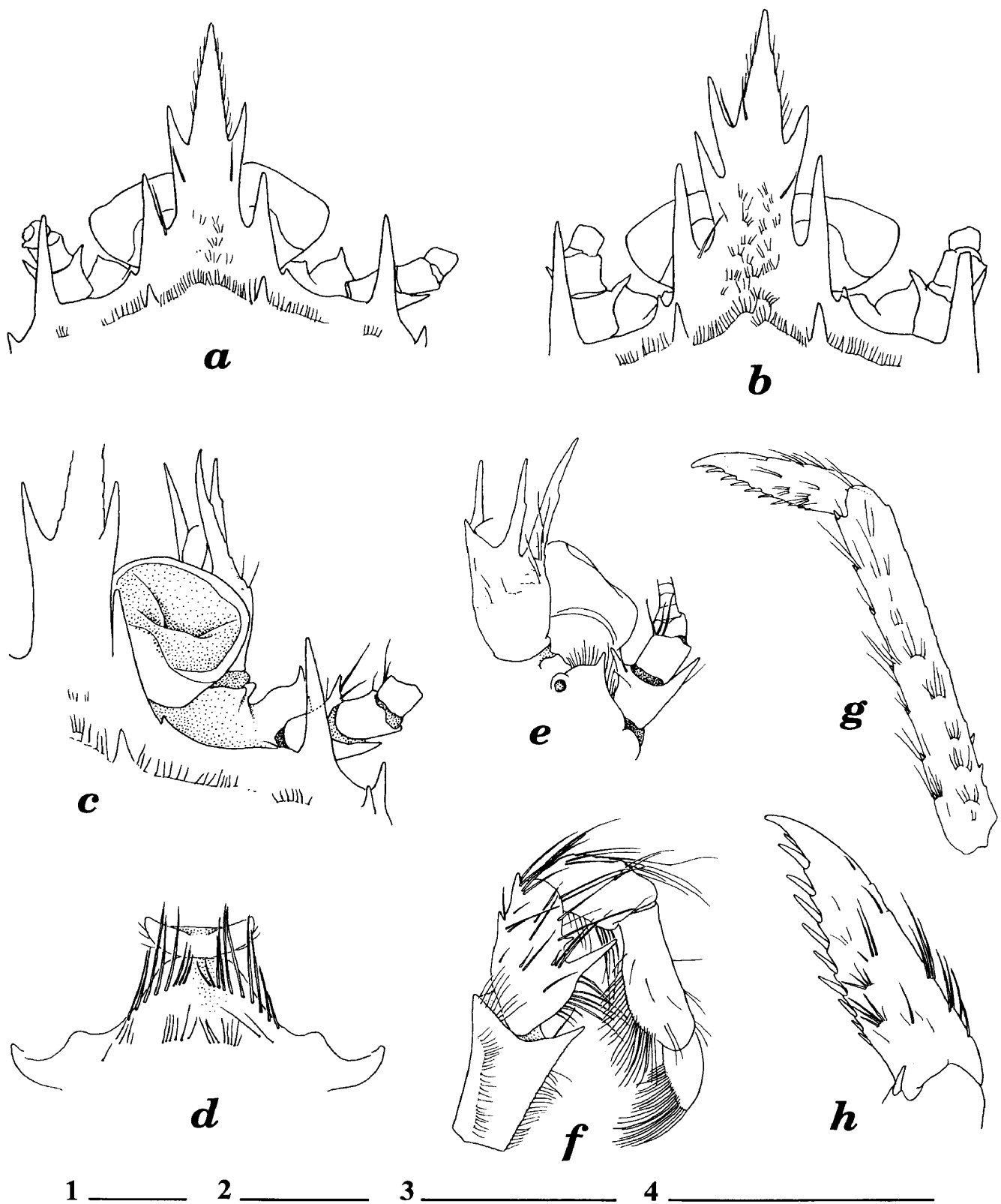


Fig. 2. *Janetogalathea californiensis* (Benedict, 1902), paralectotypes, USNM 20551; *a, c*, ov. ♀ 12.7 mm; *b, d, e*, ov. ♀ 15.3 mm; *f-h*, ♂ 25.1 mm: *a*, anterior part of cephalothorax, dorsal view; *b*, same; *c*, same, right side showing orbit, dorsolateral view; *d*, anterior part of sternal plastron, ventral view; *e*, antennule, antenna and eye, ventral view; *f*, endopod of right maxilliped 3, lateral view; *g*, P2, distal two segments, lateral view; *h*, same, dactyl. Scales = 5 mm; scale 1 for *g*; scale 2 for *f*; scale 3 for *a, b, e, h*; scale 4 for *c, d*.

Size. — Males, 6.2–32.6 mm; ovigerous females, 12.2–26.0 mm; nonovigerous females, 5.2–28.0 mm.

Ova, 0.50 x 0.54 – 0.52 x 0.56 mm.

Range. — Restricted to the west coasts of America and Mexico: Monterey, between Pt. Conception and the Channel Islands, Guadalupe Island off Baja California, “Cerros (? = Cedros) Island, and Gulf of California off Isla San Lorenzo and Isla San Pedro Nolasco; taken in depths between 89 and 3993 m.

Remarks. — In a previous paper (Baba & de Saint Laurent, 1996) an attempt was made to divide the family Galatheidae into two groups: one bearing G1 and G2 and the other lacking G1. The systematic importance of this feature still remains unclear. This species belongs to the former group.

The carapace ornamentation, general features of rostrum, and armature of maxilliped 3 and P2–4 are similar in *Galathea* and *Janetogalatea*. However, the latter is characterized by the following particulars: the orbit not excavated, with its lateral limit ill-defined and not produced, the rostrum bearing two large lateral spines flanked by a small basal spine, the antennal peduncle having the first (basal) segment fused with the orbit, thoracic sternite 3 laterally widened and contiguous with the anteriorly narrowed next sternite, a pair of epigastric spines widely separated from each other, and the prominent anterolateral spine overreaching the sinus between the rostral lateral spines, all of which are distinctly different from the former.

The ill-defined lateral limit of orbit fused with the first segment of the antennal peduncle and the widely separated epigastric spines are also possessed by *Pleuroncodes* Stimpson, 1860. But the new genus is readily distinguished from that genus by the flattish rostrum armed with lateral spines and the antennular

basal segment lacking a small lateral spine.

Relationships between the new genus and *Leiogalatea* Baba, 1969, are rather distant in the rostral shape and ornamentation of the carapace but they share the laterally ill-defined orbit. In fact, however, the orbit in *Leiogalatea* is well excavated as in *Galathea*.

No male is known in *Nanogalatea* Tirmizi & Javed, 1980. Other than the absence of rostral basal spines, the genus shows overall affinities to *Phylladio-rhynchus* Baba, 1969, in which G1 is missing. The following is a key to genera bearing G1 and G2, including *Janetogalatea*. A key to genera lacking G1 can be found in Baba & de Saint Laurent (1996).

Key to genera of Galatheidae bearing G1 and G2

- 1 Eyes reduced. Maxilliped 1 without lash *Munidopsis* Whiteaves, 1874
- Eyes well developed. Maxilliped 1 with lash 2
- 2 Rostrum spiniform 3
- Rostrum triangular and flattish 7
- 3 Rostrum with dorsal and ventral spines.. *Cervimunida* Benedict, 1902
- Rostrum lacking dorsal and ventral spines 4
- 4 Rostral spine flanked by 2 lateral spines..... *Sadayoshia* Baba, 1969
- Rostral spine flanked by supraocular spine 5
- 5 Pterygostomian flap visible in dorsal view ... *Pleuroncodes* Stimpson, 1960
- Pterygostomian flap not visible in dorsal view 6
- 6 Lateral angle of orbit produced. P2–4 meri unarmed dorsally, dactyls smooth on flexor margin
..... *Anomoeomunida* Baba, 1993
- Lateral angle of orbit ill defined. P2–4 meri armed with dorsal spines, dactyls

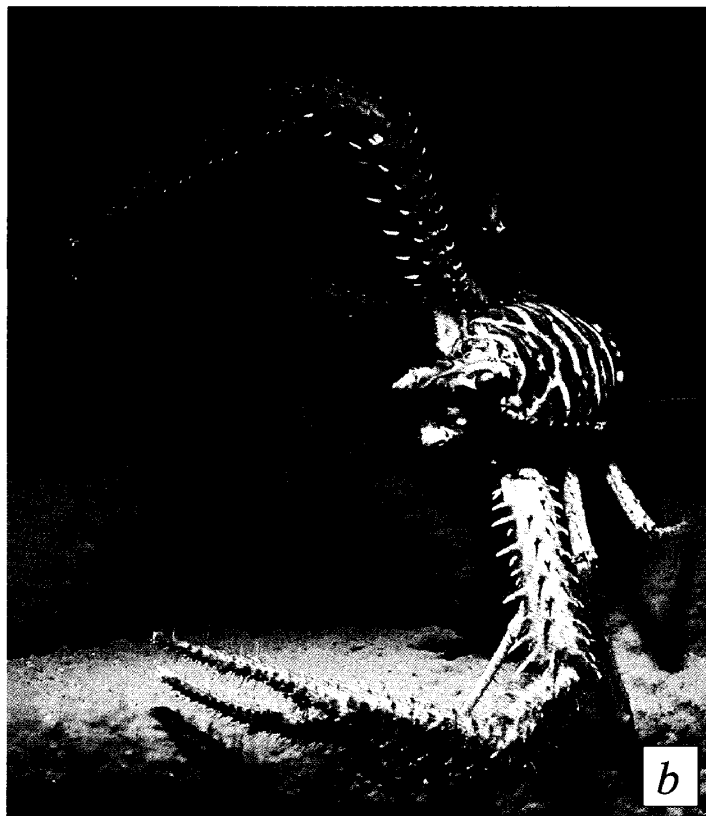
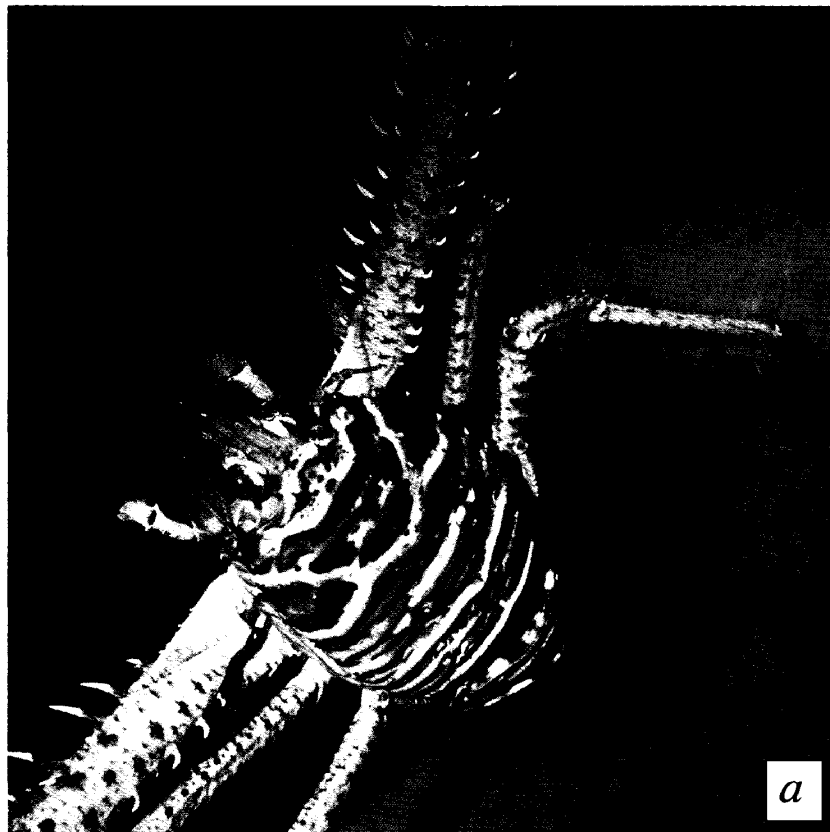


Fig. 3. *Janetogalatea californiensis* (Benedict, 1902), ♂ 29.2 mm in captivity, taken in baited shrimp trap, Carmel Canyon, Monterey County, California, 189–240 m, 1996: *a*, dorsal view; *b*, anterolateral view. Photographs by Karen Light.

- with seta-like spines on flexor margin
..... *Munida* Leach, 1820
- 7 Carapace lacking setiferous ridges.
Eyestalks narrow and elongate
..... *Fennerogalatea* Baba, 1988
- Carapace bearing setiferous ridges.
Eyestalks relatively wide and short
..... 8
- 8 Second segment of antennal peduncle
unarmed. P2–4 without dorsal spines
on meri and carpi
..... *Allomunida* Baba, 1988
- Second segment of antennal peduncle
with distomesial and distolateral
spines. P2–4 with dorsal spines on
meri and carpi 9
- 9 Orbit not excavated. First segment of
antennal peduncle fused with orbit
..... *Janetogalatea* new genus
- Orbit excavated. First segment of
antennal peduncle free from orbit.. 10
- 10 Rostrum extremely elongate, ventrally
carinate, with 5–9 lateral spines
..... *Allogalatea* Baba, 1969
- Rostrum moderate in length, usually
flattish, with 2–5 spines 11
- 11 Rostrum with reduced lateral spines.
Carapace with obsolescent transverse
ridges provided with coarse setae
..... *Leiogalatea* Baba, 1969
- Rostrum with distinct lateral spines.
Carapace with setiferous transverse
ridges *Galatea* Fabricius, 1793

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Literature Cited

- Baba, K., 1969. Four new genera with their representatives and six new species of the Galatheidae in the collection of the Zoological Laboratory, Kyushu University, with redefinition of the genus *Galatea*. Ohmu, Occasional Papers of the Zoological Laboratory, Faculty of Agriculture, Kyushu University, 2(1):1–32.
- , 1988. Chirostyloid and galatheid crustaceans (Decapoda: Anomura) of the “Albatross” Philippine Expedition, 1907–1910. *Researches on Crustacea*, The Carcinological Society of Japan, Special Number 2: v + 203 pp.
- , 1991. Crustacea Decapoda: *Alainius* new genus, *Leiogalatea* Baba, 1969, and *Phylladiorhynchus* Baba, 1969 (Galatheidae) from New Caledonia. In: A. Crosnier, (ed.), Résultats des Campagnes MUSORSTOM, Volume 9. Mémoires du Muséum national d’Histoire naturelle, Paris, Zoologie, 152: 479–491.
- , 1993. *Anomoeomunida*, a new genus proposed for *Phylladiorhynchus caribensis* Mayo, 1972 (Crustacea: Galatheidae). Proceedings of the Biological Society of Washington, 106(1): 102–105.
- , & de Saint Laurent, M., 1996. Crustacea Decapoda: Revision of the genus *Bathymunida* Balss, 1914, and description of six new related genera (Galatheidae). In: A. Crosnier (ed.), Résultats des Campagnes MUSORSTOM, Volume 15. Mémoires du Muséum national d’Histoire naturelle, Paris, 168: 433–502.
- Benedict, J. E., 1902. Descriptions of a new genus and forty-six new species of crustaceans of the family Galatheidae, with a list of the known marine species. Proceedings of the United States National Museum, 26: 243–334, figs. 1–47.
- Fabricius, J. C., 1793. Entomologia systematica emendata et aucta secundum classes, ordines, genera, species ajectis synonymis, locis, observationibus, descriptionibus. Volume 2, viii + 519 pp., Hafniae.
- Leach, W. E., 1820. Galatédées. Dictionnaire des Sciences Naturelles, Paris, 18: 48–56.

- Schmitt, W. L., 1921. The marine decapod Crustacea of California with special reference to the decapod Crustacea collected by the United States Bureau of Fisheries Steamer "Albatross" in connection with the biological survey of San Francisco Bay during the years 1912-1913. University of California Publications in Zoology, 23: 1-359, pls. 1-50.
- Stimpson, W., 1860. Notes on North American Crustacea, in the Museum of the Smithsonian Institution, No. II. Annals of the Lyceum of Natural History of New York, 7: 177-246, pls. 2, 5.
- Tirmizi, N. M., & Javed, W., 1980. *Nanogalathea raymondi*, a new genus and species of Galatheidæ (Decapoda, Anomura) from the Bay of Bengal. Crustaceana, 38(2): 127-130.
- Von Martens, E., 1878. Einige Crustaceen und Mollusken, welche das zoologische Museum in letzter Zeit erhalten. Sitzungsberichte der Gesellschaft naturforschender Freunde zu Berlin, 18 Juni 1878: 131-135.
- Whiteaves, J. F., 1874. On recent deep-sea dredging operations in the Gulf of St. Lawrence. American Journal of Science, series 3, 7:210-219.
- Wicksten, M., 1982. Crustaceans from baited traps and gill nets off southern California. California Fish and Game, 67(4): 244-248.
- , 1987. Range extensions of offshore decapod crustaceans from California and western Mexico. California Fish and Game, 73(1): 54-56.

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