

A NEW GENUS AND SPECIES OF SNAPPING SHRIMP (DECAPODA,
ALPHEIDAE) FROM THE SOUTHEASTERN UNITED STATES

BY

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Leptalpheus gen. nov.

Body compressed; carapace and abdomen smoothly rounded, not carinate; cardiac notch present. Frontal border of carapace produced into projection covering eyes; cornea of eyes visible from front. Rostrum absent.

Antennular peduncles long and well developed; stylocerite short and closely appressed to basal article at midlength.

Third maxilliped with ischio-meral article not expanded.

First pair of chelipeds very asymmetrical, slender. Large chela normally folded back against merus; propodus excavated on side folding against merus; fingers slender, not inverted, bent in two planes, toothed proximally with well-separated, meshing teeth, and with a hiatus between distal teeth and recurved tips; carpus cup-shaped; merus irregularly triangular in cross section, excavated somewhat internally, twisted, and smooth.

Second legs weaker than third and fourth legs; carpus subdivided into five segments.

Fifth legs weaker than third and fourth legs. Dactyls of last three pairs of legs simple.

Epipods present on all maxillipeds and first four pairs of legs; an arthrobranch present on third maxilliped; a pleurobranch present near base of each leg.

Abdomen of usual form; posterolateral angle of sixth segment with movable plate. Telson rounded distally, armed with two pairs of movable dorsal spines and a movable short and adjacent inner long spine at each posterolateral corner. Outer branch of uropod truncate terminally, lateral margin with an overlapping rectangular cleft armed with a subterminal spine originating ventrally; inner margin with an overlapping pointed lamina; no well-defined transverse suture present.

Type. — *Leptalpheus forceps* new species.

Only one species of this genus is known. The genus is probably most closely related to *Betaeus* differing from it in having the chelipeds quite dissimilar and not inverted, a small appressed stylocerite, and no well-defined transverse suture on the outer branch of the uropod. Resemblances to *Betaeus* are in the shape of the

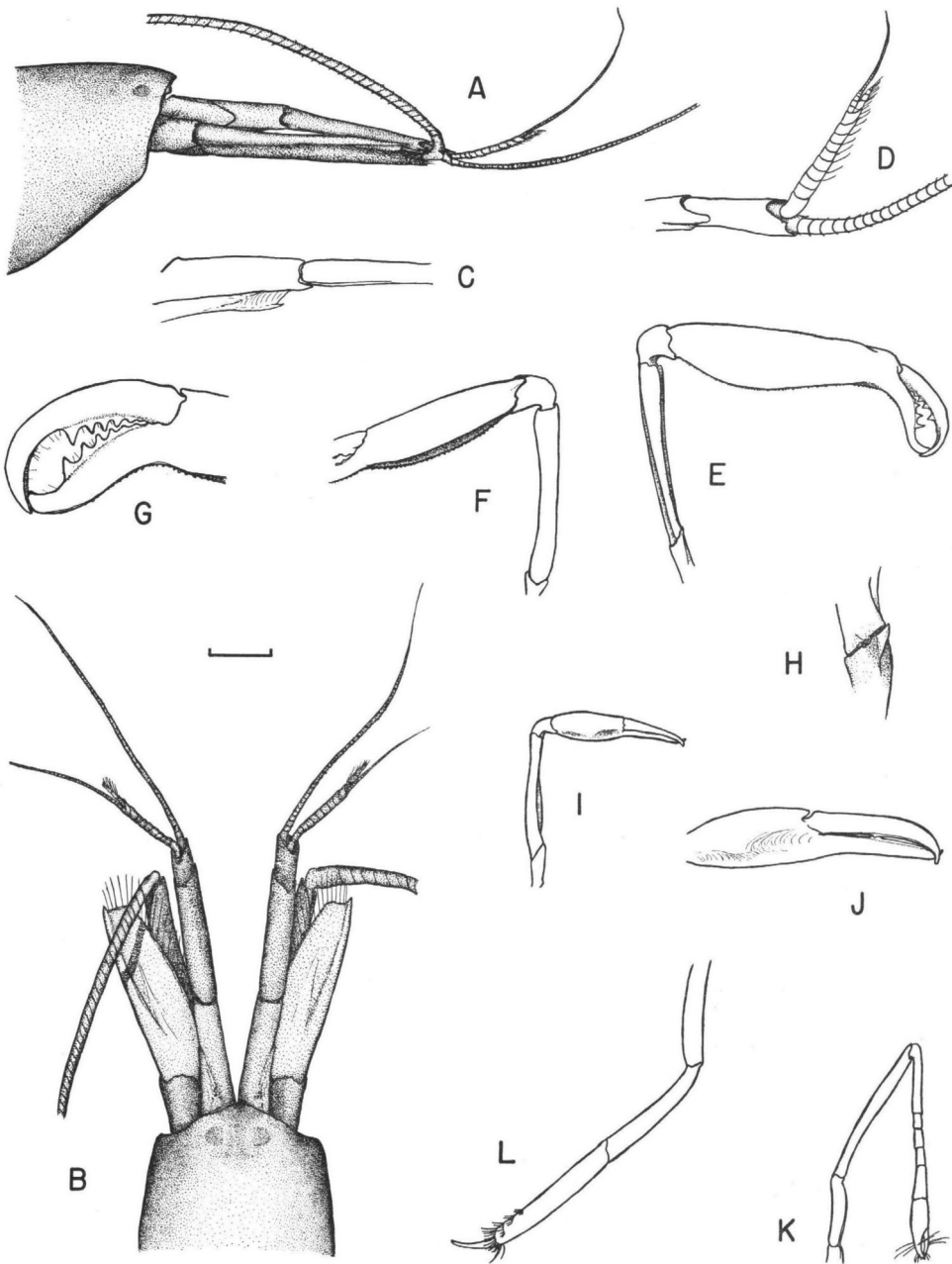


Fig. 1. *Leptalpheus forceps* sp. nov. A, B, holotypic female; C-L, paratypic female. A, anterior portion of body in lateral view; B, the same in dorsal view; C, lateral view of antennular peduncle showing mesioventral keel; D, antennular flagella; E, large cheliped in lateral view; F, portion of large cheliped in mesioventral view; G, fingers of large chela; H, ischio-meral articulation of large cheliped; I, small cheliped; J, fingers of small chela; K, second leg; L, terminal articles of last leg.

A, B, E, F, I, scale = 1 mm; C, D, G, H, J, K, L, scale = 0.5 mm.

united orbital hoods, lack of rostrum, and presence of a movable plate articulated at the posterolateral angle of the sixth abdominal segment; the latter is exhibited by a number of alpheid genera (Banner & Banner, 1960; Holthuis, 1952, 1955; Hart, 1964). The distinctive major cheliped shows a remote similarity to *Salmoneus* in the shape of the fingers, although they are more bent, gaping, and have a distinctive tooth pattern in the present genus, while the hand and merus show some similarities to those of *Neopalpheopsis* (cf. Banner, 1953).

The genus is named for the slender form of the body and major chela.

Leptalpheus forceps sp. nov.

Description. — Body compressed, carapace smooth and produced into a hood projecting over eyes; hood nearly flat above with a broad, extremely shallow excavation between eyes and with anterior border bent slightly downward in front of eyes; anterolateral border in pterygostomial region forming a broadly obtuse angle; a well-developed cardiac notch present on posterior border.

Eyes concealed in dorsal view but visible from anterior view; cornea well developed.

Antennular peduncle slightly longer than antennal peduncle, somewhat broader proximally than distally; first and second articles of about equal length, third article much shorter; basal and second articles each with a prominent but appressed spine at anterolateral corner; basal articles with small stylocerite closely appressed to lateral side with tip nearly concealed, and each with a prominent, thin mesioventral keel terminating anteriorly in a small spine; inner flagellum somewhat longer than outer one; outer flagellum thickened for 10 segments proximal to bifurcation.

Antennal peduncle somewhat shorter than antennular peduncles; spine of basicerite small with tip hidden from view dorsally; antennal scale shorter than carpo-cerite, three times longer than broad, slightly convex laterally with lateral spine exceeding lamella, lamella evenly rounded mesially and truncate distally; flagellum longer than carapace.

Mandible with incisor process broad and shallowly toothed; molar process small and unadorned; palp two-segmented. First maxilla of usual shape with palp bilobed. Second maxilla with upper endite broad, bilobed, and edged with hairs; lower endite reduced; palp present, scaphognathite well developed. All maxillipeds with well-developed exopods. Endites of first maxilliped separated by a distinct notch; palp long and slender; caridean lobe well developed; epipod slightly bilobed. Second maxilliped of usual shape with an epipod. Third maxilliped reaching to midlength of carpo-cerite; terminal article with transverse rows of plumose setae on mesial surface, setae becoming progressively longer distally; a slender epipod and arthrobranch present.

Chelipeds very asymmetrical and carried folded back completely on merus. Large cheliped with propodus longer than merus, slender, excavated along entire surface folding against merus, finely tuberculate along entire ventrolateral border

and somewhat on mesioventral border; fingers thin, not inverted, conspicuously curved, gaping, gripping edge of propodal finger with conical teeth on proximal two-thirds, dactyl with conical teeth on proximal half, teeth on both fingers increasing in length distally and arranged to mesh with fingers closed, remainder of fingers unarmed distally, tips crossing each other, a few hairs on opposed edges; carpus cup-shaped, a spine at each distoventral corner; merus long, irregularly triangular in cross section, excavated somewhat internally, twisted and smooth; ischium also irregularly triangular and twisted distally, with a bladelike spine on mesiodistal border. Small cheliped much different in shape and size from larger opposite member; propodus somewhat longer than merus; both propodus and merus excavated on surfaces folding against each other; fingers and palm of nearly equal length; fingers nearly straight, a single cutting tooth at midlength of each finger and distal to these a thin shearing edge on each, tips of fingers crossing when closed; carpus cup-shaped; merus slightly bent, broadened laterally and more excavated near base than distally.

Second legs weak, chelate; carpus subdivided into five segments, proximal segment longest, distal segment intermediate in length, middle three segments almost equally short.

Third and fourth legs strong; merus in each well developed; carpus with a distoventral movable spine; propodus with four ventral movable spines, a pair of these at distal end adjacent to simple dactyl; dactyls slightly curved with a uniform taper to acute tips. Fifth legs weaker than preceding two pairs of legs; propodus with distal brush of setae consisting of four transverse rows, proximal row shortest, distal row longest; dactyl simple.

First four pairs of legs with epipodites present.

Abdomen smooth; pleura of first five segments broadly rounded. Pleura of sixth segment ending in an acute, triangular, movable plate. Both sexes with endopod of first pleopod short, slender, and lacking an appendix. Both sexes with an appendix interna on endopodites of second to fifth pleopods. Males with appendix masculina on second pleopod extending well beyond appendix interna.

Uropods with outer branch more or less truncate distally, lateral edge broken by an overlapping rectangular cleft armed with a strong subterminal spine originating ventrally; inner margin with an overlapping pointed lamina; no well-defined transverse suture present; inner branch ovate in shape and longer than outer branch. Telson rounded distally, armed with two pairs of movable dorsal spines at one-third and two-thirds length, and with a movable outer short and adjacent inner long spine at each posterolateral corner.

Measurements (in mm). — Holotypic ovigerous female. Carapace: length in middorsal line, 7.8; height, 3.5; width, 3.7. Antennular peduncle: length visible portion basal article, 1.5; length second article, 2.0; length third article, 0.8; maximum width peduncle, 0.6. Antennal scale: length, 3.0; width, 1.0. Large cheliped: length propodus, 7.4; width propodus, 1.1; length fixed finger, 2.0; length dactyl, 2.2; length merus, 5.0. Small cheliped: length propodus, 3.2; width

propodus, 0.5; length both fingers, 1.6; length merus, 2.6. Length carpal segments of second leg: basal segment, 1.0; total second to fourth segments, 1.0; fifth segment, 0.5. Third leg: length merus, 4.7; length carpus, 1.8; length propodus, 1.6; length dactyl, 0.7.

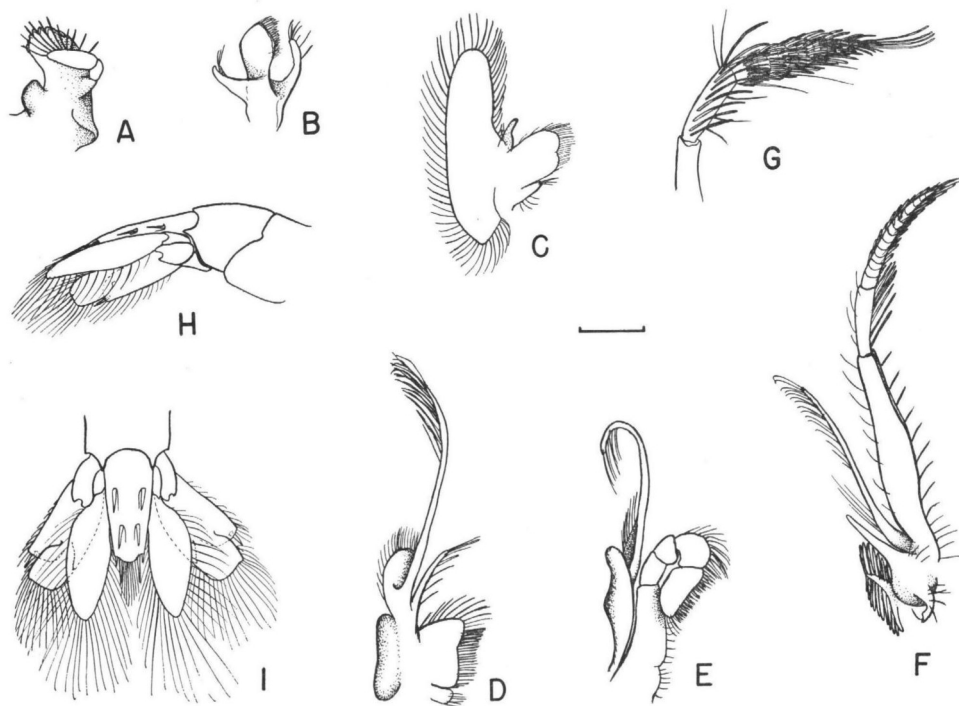


Fig. 2. *Leptalpheus forceps* sp. nov., paratype female. A, mandible; B, first maxilla; C, second maxilla; D, first maxilliped; E, second maxilliped; F, third maxilliped; G, terminal portion of third maxilliped in mesial view; H, sixth abdominal segment and caudal appendages in lateral view; I, caudal appendages in dorsal view. A-G, scale = 0.5 mm; H, I, scale = 1 mm.

Paratype male (IFR No. 1928). Carapace: length in middorsal line, 5.2; height, 2.2; width, 2.7. Antennular peduncle: length visible portion basal article, 0.9; length second article, 1.0; length third article, 0.3; maximum width peduncle, 0.4. Antennal scale: length, 1.6; width, 0.6. Large cheliped: length propodus, 4.4; width propodus, 0.8; length fixed finger, 1.0; length dactyl, 1.3; length merus, 2.5. Small cheliped: length propodus, 1.8; width propodus, 0.3; length both fingers, 1.0; length merus, 1.7. Total length carpal segments of second leg, 1.0. Third leg: length merus, 2.0; length carpus, 1.1; length propodus, 1.1; length dactyl, 0.6.

Color. — Translucent, colorless in life. Eggs light green in formalin (note by Raymond B. Manning).

Variations. — The fingers of the major chela are slightly less gaping in females than in males. There is a slight variation in the number of teeth on the fingers of the major cheliped, and in the number of segments in the thickened proximal

portion of the outer antennular flagellum in different individuals. The mesioventral keel on the basal antennular article is not armed with a distal tooth in young individuals.

Types. — The holotypic ovigerous female is deposited in the United States National Museum (No. 111084). A series of paratypes is deposited in the USNM (Nos. 111093, 111095, ♂♂; 111094, 111096, ♀♀) and in the collection of the University of North Carolina Institute of Fisheries Research, Morehead City, N. C. (Nos. 1426, ♂; 1928, ♀ and ♂).

Type locality. — Gallants Point, Newport River, Carteret County, North Carolina.

Known range. — Drum Inlet, Carteret County, N. C.; estuaries adjacent to Beaufort Inlet, N. C.; Inland Waterway adjacent to Lockwoods Folly Inlet, Brunswick County, N. C.

Habitat. — This species has been taken at intervals in plankton tows made in estuaries near inlets at night on flood tide. For six years it was recognized as an undescribed form, but until an ovigerous female (the type) was collected by Mr. Lawrence McCloskey of Duke University Marine Laboratory, no description was attempted because the adult size was not known with certainty. Mr. McCloskey found the ovigerous female in a pool adjacent to an excavated burrow of *Upogebia affinis* (Say) at Gallants Point, Newport River, Carteret County, N. C., on August 4, 1963, and he collected a male specimen under similar circumstances in the Newport River mud flats on November 3, 1963. Proof that *Leptalpheus forceps* actually lives in burrows of *Upogebia affinis* was obtained when Mrs. Anne McCrary, University of North Carolina, took an adult male from a burrow at the east end of Taylor Creek, near Beaufort, Carteret County, N. C., on January 28, 1964. Interestingly, this specimen lived in a covered watch glass containing approximately 25 percent sea water for a day before it was preserved.

It is strange that this symbiotic shrimp has not been taken previously during studies on *Upogebia affinis* in this region. It will be interesting to learn whether the two forms have similar geographic ranges and whether *Leptalpheus* associates with other burrowing animals such as *Callianassa*.

Remarks. — The species is named for the forceps-shaped fingers on the major chela.

I am indebted to the abovementioned people for the data they have supplied, and to Dr. Fenner A. Chace, Jr., of the U. S. National Museum, who aided me in comparison of the new form with other alpheids and pointed out its uniqueness.

RÉSUMÉ

Leptalpheus forceps, nouveau genre et nouvelle espèce de la famille des Alpheidae, est décrit de la côte atlantique des États-Unis. Cette espèce habite dans les tubes d'*Upogebia affinis* (Say), mais a été également recueillie de nuit parmi le plancton, dans les estuaires. Une femelle ovigère a été recueillie en août dans un tube d'*Upogebia*.

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