

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

ALLACTAEA LITHOSTROTA, A NEW GENUS AND
SPECIES OF CRAB (DECAPODA: XANTHIDAE)
FROM NORTH CAROLINA, U.S.A.

BY AUSTIN B. WILLIAMS
*National Marine Fisheries Service Systematics
Laboratory, Washington, D. C. 20560*

In 1963 an unusual female crab of the family Xanthidae was brought to my attention in a collection of invertebrates made during a survey of benthic fauna off North Carolina, U.S.A., by M. J. Cerame-Vivas, then at Duke University Marine Laboratory. Description was delayed until males could be found and studied to allow more complete analysis of the species.

Genus *Allactaea*, new genus

Areoles of carapace prominent, indicated by large and small lobules often arranged in triads, tending to proliferate with increasing age. Mouth frame roughly quadrate, widest anteriorly. Third maxillipeds separated; merus wider than long, with anteroexternal corner produced, anterior margin sinuous, internal corner notched for insertion of palp. Lacinia of first maxillipeds moderate in size. Fused basal antennal segment extending into inner orbital hiatus. First gonopods of male terminating in a more or less flat and moderately developed lobe preceded by a tuft of long hairs in a nearly single file.

Type-species: Allactaea lithostrota.

Etymology: From the Greek "allos" other, and "actaea." The gender is feminine.

Allactaea lithostrota, new species

Figures 1-3

Holotypic male: Carapace xanthoid (Fig. 1B), wider than long, arched anteroposteriorly, regions prominently indicated by smooth raised lobules arranged in a radiating pattern emanating laterally and anteriorly from urogastric region. Smooth tracts between lobules almost completely

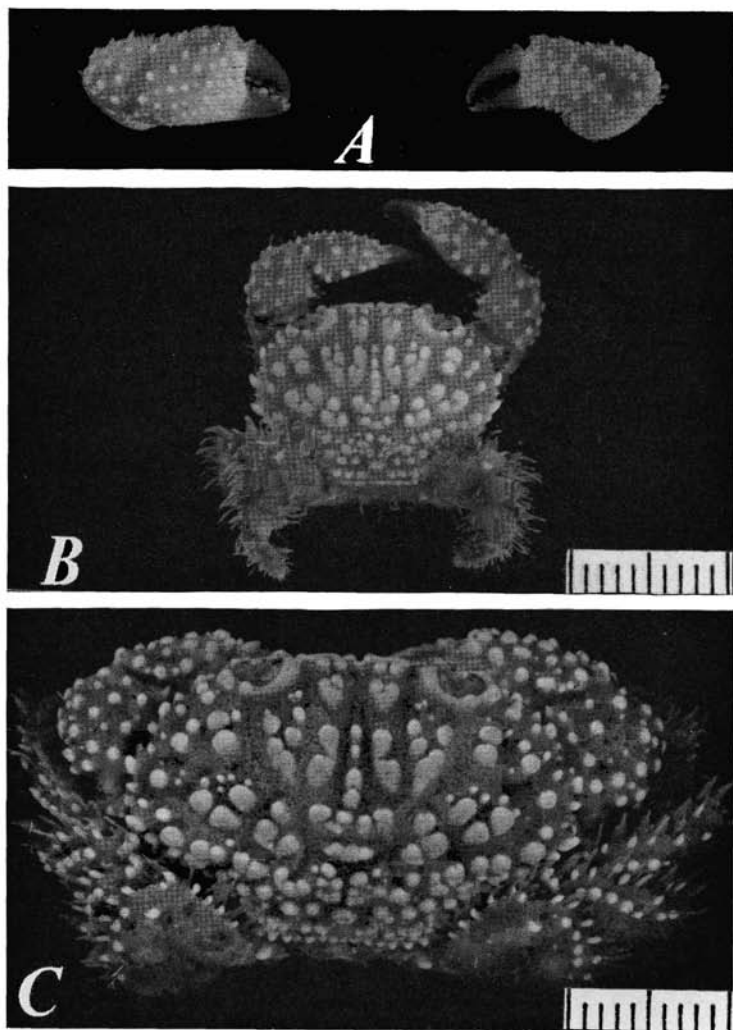


FIG. 1. A, right and left chelae of holotype ♂, frontal view; B, holotype ♂, dorsal view; C, allotype ♀, dorsal view; mm scales (upper, A-B; lower, C).

obscured by feltlike covering of clavate hairs anterior to urogastric region; hairy covering much thinner posteriorly.

Front fairly prominent and somewhat produced at each side of median, narrowly U-shaped notch; a dorsal, submarginal row of about 8

coalesced lobules on each side extending from antennal notch to near midline giving front a transversely doubled appearance (Fig. 2). Lobules, exclusive of margin, arranged as follows (Fig. 1B): 2 F (see Rathbun, 1930, Fig. 3), 2 well separated laterally; 1 M, 3 completely coalesced posteriorly, less so anteriorly; 2 M, evidence of 8 or 9 clumped in two groups, a longitudinally oriented and fused group of 3 near midline having a deep lateral cleft, and a more loosely clumped group of 3 and rudimentary fourth along lateral margin of region with 2 associated lobules in intermediate space; 3 M, a row of 6 in midline, 4 in transverse basal row, each series more or less fused; 4 M, 3 separated in crescentic transverse row; 1 L, solitary and small near anterolateral border; 2 L, 2 closely approximated and among largest individual lobules; 3 L, 2 approximately size of 1 L and not coalesced on right side, but coalesced into single large lobule on left side; 4 L, solitary and small near fourth and fifth anterolateral teeth; 5 L, a complex of 2 groups of 3 nearly coalesced, among largest on carapace; finally, a complex composed of 1 P, 2 P, 1 R and 3 R arranged in irregular, transverse, lunate rows with fairly symmetrical fusion of lobules within rows. Orbital margin thickened, raised and smooth dorsally with fissures closed but evident as depressions; outer orbital hiatus a broadly open notch; obtuse suborbital tooth followed laterally by irregularly increasing suborbital rim. Eyestalks with a tuft of clavate hairs in corneal emargination preceded by 2 spiniform tubercles and a number of much smaller tubercles at base of cornea. Four prominent anterolateral teeth exclusive of outer orbital widely separated and reduced to anteriorly directed mammillary lobules; on margin a bit below these a row of smaller slender intercalary teeth; hepatic and sub-branchial region lightly tuberculate. Posterolateral border bearing a row of lobules.

Epistome with 2 tubercles on lower border of each antennular socket, mesial one largest. Mouth frame roughly quadrate (Fig. 2), widest anteriorly, anterior margin smoothly and sharply cristate and shaped into a low angular arch on each side. Third maxillipeds separated, divergent anteriorly; ischium with a shallow, smooth, longitudinal, ventral depression; merus broader than long with slightly sinuous anterior margin, notched for reception of strong palp and produced anterolaterally, tubercles clustered on ventral surface along mesial border and emargination for palp but scattered elsewhere centrally and near anterior margin. Lacinia of first maxillipeds moderate in size covering roughly 40 percent of endostomial surface. Inner orbital hiatus filled by a club-shaped extension of fused basal antennal segment and first movable antennal segment.

Sternal plastron relatively smooth, bearing scattered clavate hairs. Abdomen with telson wider than long, tip rounded, segments 3-5 fused.

Chelipeds (Fig. 1A) dissimilar, right larger than left. Palm and carpus of each ornamented on outer surfaces with well separated distally directed lobules varying from sharpest along dorsal crest of carpus and palm to flared at top with narrower bases on external surface of carpus and

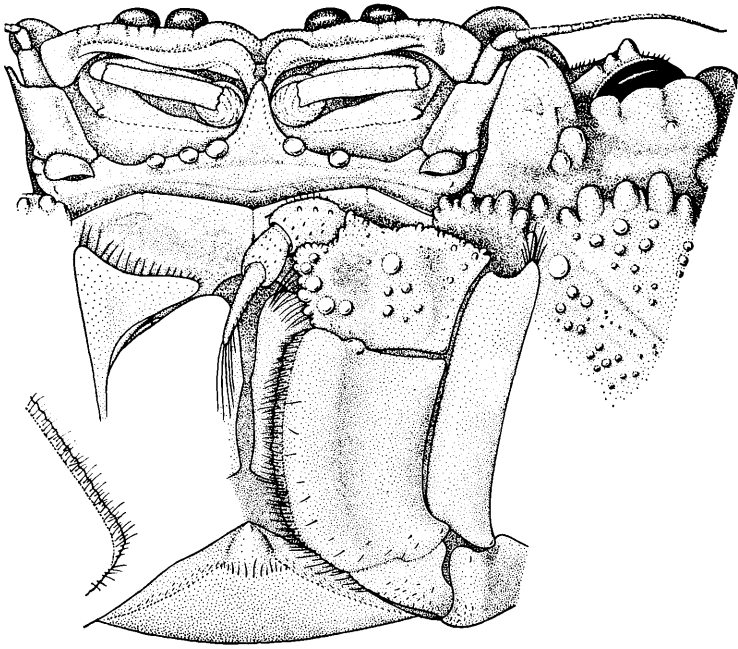


FIG. 2. Portion of frontal, suborbital and mouth field regions of allotype ♀ showing edge of front, antennules, left antenna and eye, epistome, left third maxilliped, lacinia of right first maxilliped in situ with overlying mouthparts turned aside, and outline of mandibles in situ.

dorsal portion of palm, becoming smaller, sharper and tending to alignment in longitudinal rows on outer surface of palm. Carpus with a spiniform lobule at inner angle and another below it; anterior border with a few small teeth hidden in hairs. Dorsal and outer surfaces of chela, carpus and merus with spaces between lobules and tubercles covered with dense coating of clavate hairs, inner surfaces smooth. Fingers dark colored, a crest of tubercles at base of each dactyl; teeth distinct but forming a continuous row on occlusal surface of each finger, proximal teeth of major chela somewhat molariform. Merus of each cheliped with a dorsal crest of sharp forward-curved spines flanked laterally by a few tubercles.

Second and fifth pereopods with external surfaces covered by a dense ragged coat of clavate hairs (third and fourth pairs of pereopods missing). Dorsal crest of merus, carpus and propodus of each leg armed with erect, well separated, distally trending spines; a secondary lateral row of spiniform tubercles nearly hidden in hairs on carpus and propodus.

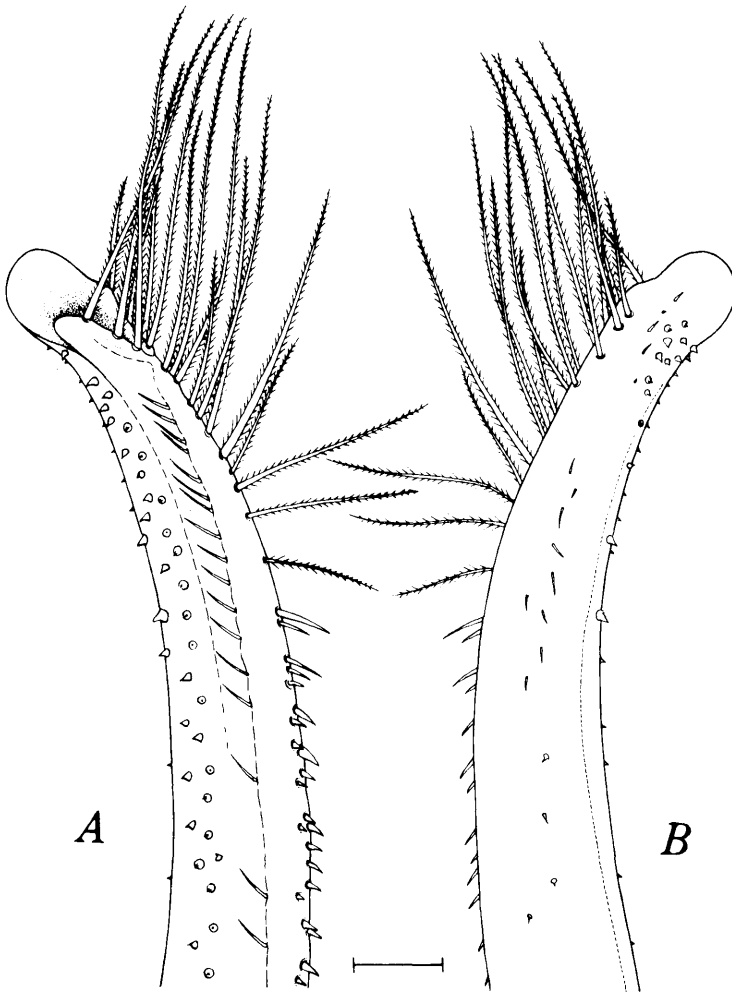


FIG. 3. First right gonopod of paratype ♂ (USNM 143774), terminal portion; A, mesial view, B, lateral view; scale = 0.1 mm.

Dactyl of second legs densely hairy on all surfaces, of fifth legs nearly naked on inner surface, both with darkened corneous tip.

First gonopod of male (Fig. 3) rather stout, approximated along middle part but tips diverging ventrolaterally, terminating in a membranous rounded lobe. An irregular row of articulated retrogressive spines along sternal edge near tip grading from scattered and smallest proximally to

denser, longer and more slender distally, and merging finally into an irregular subterminal file of elongate hairs; a broader tract of similar scattered spines on mesioventral surface and a lateral cluster at base of terminal lobe. In addition, a row of slender short spinules on mesial surface following course of sperm duct.

Measurements in mm: Holotypic male: greatest width of carapace at level of fourth anterolateral tooth, 16.2, length in midline, 11.6; telson width, 1.8, length, 1.6.

Allotypic female: Lobular pattern (Fig. 1C) basically same as in holotype but specimen larger and more ornate suggesting greater age. Coalescence of lobules varying in minor details from that in holotype with introduction of additional small solitary lobules at edge of and between areoles, especially behind orbits, on branchial regions and anterolateral borders. Lunate arrangement or rows of lobules behind urogastric region in 1 P, 2 P, 1 R, 2 R and 3 R not so evident as in holotype.

Epistome with tendency to formation of a row of tubercles on lower border (Fig. 2) of antennular socket, 3 on right side, 2 on left. Lobulation at corners of buccal frame and subhepatic region much bolder and merus of third maxillipeds with ventral tubercles stronger than in holotype. Sternal plastron lightly punctate and hairy on exposed parts becoming ornamented with obsolescent granules along anterior and anterolateral borders at base of third maxillipeds and chelipeds.

Abdomen ovate, densely edged with long hairs; segments lightly covered externally with clavate hairs except on worn raised portions. Telson broadly rounded, broader than long.

Chelipeds with disparity in size and shape more pronounced than in holotype. Lobules not pointed but many with tips rounded, flattened and flared forming knobs. Anterior edge of carpus with a row of spines, a strong spine at inner angle followed by a second almost equal below it. Proximal teeth of major chela more molariform than in holotype.

Remaining pereopods essentially as in holotype, each with crest of distally trending spiniform lobules, many of them club shaped, along upper border of merus, carpus and propodus; crest most pronounced in coalesced ornate lobules on superodistal angle of merus. Each leg with an external flanking row of lobules on carpus and propodus, and a scattering of lobules on merus of fifth leg. Lower edges of each merus with ornamentation grading from proximal granules to attenuated distal lobules. Legs clothed in dense growth of clavate hairs, longest and most ragged along crests.

Measurements in mm: Allotypic female: greatest width of carapace at level of fourth anterolateral tooth, 28.1, length in midline, 18.1; telson width, 4.9, length, 4.0. Ovigerous female paratype: greatest width of carapace at fourth and fifth anterolateral teeth, 17.2, length in midline, 12.1.

Type locality: Approximately SE Cape Lookout, N. C., 33°43' N, 76°40' W, 90 m—33°42.7' N, 76°40.2' W, 110 m, *Eastward Sta.* 1087.

Material studied: Specimens studied are confined to the type series deposited in collections of the National Museum of Natural History (USNM), Washington, D. C., and University of North Carolina Institute of Marine Sciences (UNC-IMS), Morehead City, N. C.

USNM 143770 ♂ holotype; USNM 143772 ♂ juv. paratype, *Eastward* Sta. 1087, 27 Apr. 1965, L. R. McCloskey, col. USNM 143771 off Cape Lookout, N. C., 91 m, Oct. 1963, ♀ allotype, M. Cerame-Vivas, col. USNM 143773 32°39' N, 78°32' W, 91–95 m, 28 July 1960, ♀ (ov) paratype, R/V *Silver Bay* Sta. 2266, clam dredge. USNM 143774 33°25.7' N, 77°01' W, 60–70 m, 17 Mar. 1969, ♂ paratype (frags.), *Eastward* Sta. 11552, dredge, N. Chamberlain, col. UNC-IMS 2299, 34°11' N, 76°10' W, 60 m, 4 May 1969, ♀ paratype, *Eastward* Sta. 11943, F. J. Vernberg, col. UNC-IMS 2366, about 34°08' N, 76°10' W, 50 m, 27–30 Apr. 1966, ♀ juv. (dry) paratype, *Eastward*, C. E. Jenner and class, col.

Name: The name is from the Greek "lithostrotos" meaning inlaid with stones, a term descriptive of the symmetrical lobate ornamentation.

Remarks: *Allactaea lithostrota* is unusual among numerous species of the actaeid group in that lobules of the carapace are large, smooth, and either clustered or solitary in each area. Tending to be rather sharply pointed in juveniles, the lobules become progressively blunter as they increase in size, many of them finally becoming flattened knoblike expansions on somewhat constricted bases. In addition, new small lobules proliferate with increasing size. Clusters on frontal and medial areas tend to be tripartite with an opening in the cluster directed forward and outward. All lobulations of the carapace tend to be peripherally directed away from the urogastric area.

Surface ornamentation indicates close relationship to none of the American actaeas, but characters of the mouth field and orbito-antennal region are similar to *Actaea* de Haan 1833 (emend.) and those of the first male gonopod resemble *Paractaea* Guinot, 1969 (Guinot, 1967; 1969; 1971). On the basis of these comparisons, the mouth field of *Allactaea lithostrota* has a remote resemblance to that of Indo-Pacific *Actaea calculosa* (H. Milne Edwards, 1834) and *A. glandifera* Rathbun, 1914 (Guinot, 1969), and the pleopods to those of western Atlantic *Paractaea rufopunctata nodsa* (Stimpson, 1860) (Guinot, 1969).

Allactaea lithostrota may be confined to the *Lithothamnion* reeflike structure described by Menzies, Pilkey, Blackwelder, Dexter, Huling and McCloskey (1966), and Menzies, George and Rowe (1973) in warm water near the edge of the continental shelf off North Carolina.

I am indebted to M. J. Cerame-Vivas, N. A. Chamberlain, C. E. Jenner, L. R. McCloskey and F. J. Vernberg for gifts of specimens, H. B. Roberts for counsel, F. A. Chace, Jr., B. B. Collette and I. Pérez Farfante for criticism of the manuscript, and M. Diéguez for drawings and assembly of figures. The type, allotype and two paratypes have been transferred to USNM from UNC-IMS lots 2365, 1899 and 2374.

LITERATURE CITED

- GUINOT, D. 1967. Recherches préliminaires sur les groupements naturels chez les crustacés décapodes brachyours. III. A propos des affinités des genres *Dairoides* Stebbing et *Daira* de Haan. Bull. Mus. Natl. Hist. Nat. Paris Ser. 2, 39(3):540-563.
- . 1969. Sur divers Xanthidae notamment sur *Actaea* de Haan et *Paractaea* gen. nov. (Crustacea Decapoda Brachyura). Cah. Pac. No. 3:223-267.
- . 1971. Recherches préliminaires sur les groupements naturels chez les crustacés décapodes brachyours. VIII. Synthèse et bibliographie. Bull. Mus. Natl. Hist. Nat. Paris Ser. 2, 42(5): (for 1970):1063-1090.
- MENZIES, R. J., R. Y. GEORGE AND G. T. ROWE. 1973. Abyssal environment and ecology of the world oceans. John Wiley and Sons, New York. xxiii + 488 pp.
- , O. H. PILKEY, B. W. BLACKWELDER, D. DEXTER, P. HULING AND L. McCLOSKEY. 1966. A submerged reef off North Carolina. Int. Rev. Gesamten Hydrobiol. 51(3):393-431.
- RATHBUN, M. J. 1930. The canceroid crabs of America of the families Euryalidae, Portunidae, Atelecyclidae, Cancridae and Xanthidae. U. S. Nat. Mus. Bull. 152:1-609.