

A NEW SPECIES OF *MUNIDOPSIS* FROM SUBMARINE  
THERMAL VENTS OF THE EAST PACIFIC RISE  
AT 21°N (ANOMURA: GALATHEIDAE)<sup>1</sup>

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*Abstract.*—A new galatheid, *Munidopsis lentigo*, is described from depths of 2600 m on a thermally active area of the East Pacific Rise. The species has distinctive organs on the chelae and strikingly flattened eyes. Similarities to other species in the genus are discussed.

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Exploration of thermally heated vent areas on rift zones of the East Pacific Rise has yielded yet another previously unknown decapod crustacean species which is here described. One of us (CLVD) participated in the OASIS Expedition to vent sites at 21°N aboard the R/V *Melville*, 12 April to 8 May 1982, during which collections of *Munidopsis* and other decapods were made by various investigators with the aid of the deep submersible *ALVIN* on Dives 1211 and 1221.

*Munidopsis lentigo*, new species

Figs. 1-3

*Diagnosis.*—Differs from all other species of *Munidopsis* in possession of lenticular-shaped, flattened, smooth, light brown spot on ventral surface of each chela, and flattened eyes with depressed cornea shielded by projecting flat dorsal spine and ventral plate.

*Description.*—Carapace, exclusive of rostrum, distinctly longer than broad, moderately arched transversely; cervical and transverse grooves faintly indicated, slight depression in cardiac region, scattered obsolescent rugosities on each anterior branchial region, more distinct and transversely arranged rugosities on each posterior branchial region; posterior margin deeply, sometimes angularly emarginate medially. Frontal margin armed with strong triangular spine lateral to eye; anterior  $\frac{2}{3}$  of lateral margin armed typically with 7 spines. Rostrum slender, dorsally flattened, slightly deflexed and with serrate borders anteriorly, tip acute (bent to left in holotype). Lateral plate lightly rugose, projecting anteriorly below antennal peduncle and tipped anteriorly with obscure serration.

Abdomen unarmed, second and third segments bearing low dorsal transverse ridge paralleled by shorter ridge bordering posterior margin; obsolescent anterior transverse ridge on fourth segment; fifth and sixth segments smooth.

Eyes large, dorsoventrally flattened. Cornea cupped within overgrowths of ocular peduncle consisting of flat, broadly triangular, projecting dorsal spine with obscurely serrate margins having distal  $\frac{1}{3}$  slightly upturned and bent mesad to reach about  $\frac{2}{3}$  length of rostrum, continuous at each side with spatulate ventral lip serrated on margin.

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<sup>1</sup> OASIS Expedition Contribution No. 5.

Basal article of antennular peduncle with single outer terminal spine; preceded by slender spine on dorsal margin, a very short terminal spine on mesial margin. Antennal peduncle with 2 fixed spines on basal article, lateral one spatulate and acutely tipped, ventral one slender; short second and fourth articles each bearing short buttressed lateral spine, much larger third article with serrated lateral flange.

Third maxilliped with ischium  $\frac{1}{3}$  longer than merus and bearing mesial ridge armed with finely uniform, evenly spaced teeth; merus with distolaterally directed strong spine at midlength of ventrolateral border; carpus densely setose mesially, propodus and dactyl so on ventromesial borders. Projecting third thoracic somite with anterior margin nearly straight, lacking spines or median notch.

Epipods absent from pereopods.

Chelipeds of mature male asymmetrical, rugose proximally but becoming smoother distally, spined and sparsely but inconspicuously setose; cutting edges of fingers placed toward dorsal side. Major (right) cheliped of holotype robust; ischium unarmed; merus with very strong subdistal spine preceded by smaller spine on mesial margin, distolateral spine small and acute, rounded mesioventral ridge bearing acute spine near midlength and terminating in blunt distal spine; carpus with 2 strong spines on mesial margin; chela broad, obscurely rugose, palm as long as fingers, convex irregular lateral margin bearing 4 remote dorsal spines, similar mesial margin bearing 5 obsolescent spines, swollen ventral surface marked with 3 longitudinal lines of remote setal tufts on obsolescent ridges, middle ridge becoming pronounced rib on fixed finger and curving mesad to terminate in hooked tooth; shallow concavity near base of fixed finger bearing slightly raised, flattened, smooth, light brown, bean-shaped spot ( $1.28 \times 2.11$  mm); fingers stout, more or less flattened above; cutting edges crenate, closing closely; fixed finger with single basal tooth fitting into notch distal to single basal tooth on dactyl, terminating in small dorsal tooth and slightly hooked ventral tooth; dactyl ending in hooked tooth confluent ventrally with truncate accessory cusp on rib running length of finger. Minor (left) cheliped of holotype acutely spined and sparsely but conspicuously setose; ischium unarmed; merus somewhat prismatic, dorsal crest bearing row of small spines, 2 strong spines on mesial margin distally plus a smaller distoventral and still smaller distolateral spine; carpus with 4 mesial spines grading from small proximally to very strong distally; chela somewhat broadened, more or less flattened above but palm with fixed finger and dactyl independently somewhat trigonal below; slight convexity on lateral margin at base of fixed finger adjacent to ventral, slightly raised, flattened, smooth, light brown oval spot ( $1.34 \times 1.98$  mm); palm slightly longer than fingers, 5 or 6 spines on lateral margin, 4 less outstanding spines on mesial margin; fingers nearly straight, cutting edges closing closely, straight and indistinctly crenate, hooked tip of dactyl closing between hooked acute upper and broader based lower terminal teeth of fixed finger.

Female with chelipeds analogous to minor cheliped of male; those of paratype 191161 slightly asymmetrical and rather slender, ventral smooth spot on palm at base of fixed finger conspicuous (on right chela  $0.54 \times 0.99$  mm, left  $0.64 \times 1.22$  mm); those of paratype 191162 also slightly asymmetrical but with chelae broader (fingers broken left side), ventral spot on palm at base of fixed finger (on right chela  $1.02 \times 1.34$ , left  $0.96 \times 1.34$  [est.] mm).

First walking legs reaching to or beyond base of dactyl on cheliped, second and third legs reaching about to base of dactyl on preceding legs. Merus of each walking leg slender; row of small spines dorsally, strongest and most numerous on third, less developed on second and first; first and second with strong disto-lateral spine. Carpi armed with distodorsal spine and smaller distoventral spine. Propodi compressed, slightly shorter than meri, each bearing 2 or 3 slender movable spines ventrally and unequal pair of slender movable spines distoventrally near articulation of dactyl. Dactyls about  $\frac{1}{3}$  length of propodi, compressed, curved, corneous tip preceded by comb of anteriorly directed spinules on ventral margin.

*Measurements in mm.*—

	M Holotype 191160	M Paratype 191163	F Paratype 191163	F Paratype 191162	F Paratype 191161
<b>Carapace</b>					
Base ocular peduncles to notch in posterior margin	12.8	10.6	8.2	11.5	11.9
Rostrum	3.8	3.1	2.6	3.2	3.5
Total length	16.6	13.7	10.8	14.7	15.4
Width	10.9	8.7	8.8	9.5	10.4
<b>Chelae</b>					
<b>Major</b>					
Length propodus	16.6(R)	missing		12.8(R)	12.1(L)
Width propodus	6.8			5.0	3.1
Length dactyl	7.7			5.5	6.1
<b>Minor</b>					
Length propodus	16.6(L)	missing		*11.1(L)	10.5(R)
Width propodus	4.4			4.1	2.7
Length dactyl	7.7			*4.5	5.3
<b>Eggs</b>					
				2.00 ×	2.24 ×
				2.20	2.24

\* Broken (estimated).

*Variation.*—The posterior border of the carapace varies from evenly concave (usual) to notched medially (paratype F 191161). The latter specimen also has a more prominent and distinctly outlined cardiac region than do other members of the type-series, and the ventral margin of lateral plates on its cephalothorax is more rounded. Variability in chelae is noted in the description.

*Type-locality.*—Pacific Ocean, East Pacific Rise, 20°49.6'N, 109°6'W, 2600 m.

*Material studied.*—Confined to the type-series listed under *measurements* and deposited in the crustacean collection of the United States National Museum of Natural History, Smithsonian Institution (USNM), Washington, D.C.

*Etymology.*—The name is a noun in apposition from the Latin "lentigo," meaning a lentil-shaped spot, referring to the oval spot on the ventral side of each chela.

*Remarks.*—*Munidopsis lentigo* has features that set it well apart from other species in the richly diverse genus *Munidopsis*, but a more comprehensive study than we have made should precede any attempts to separate it from that genus

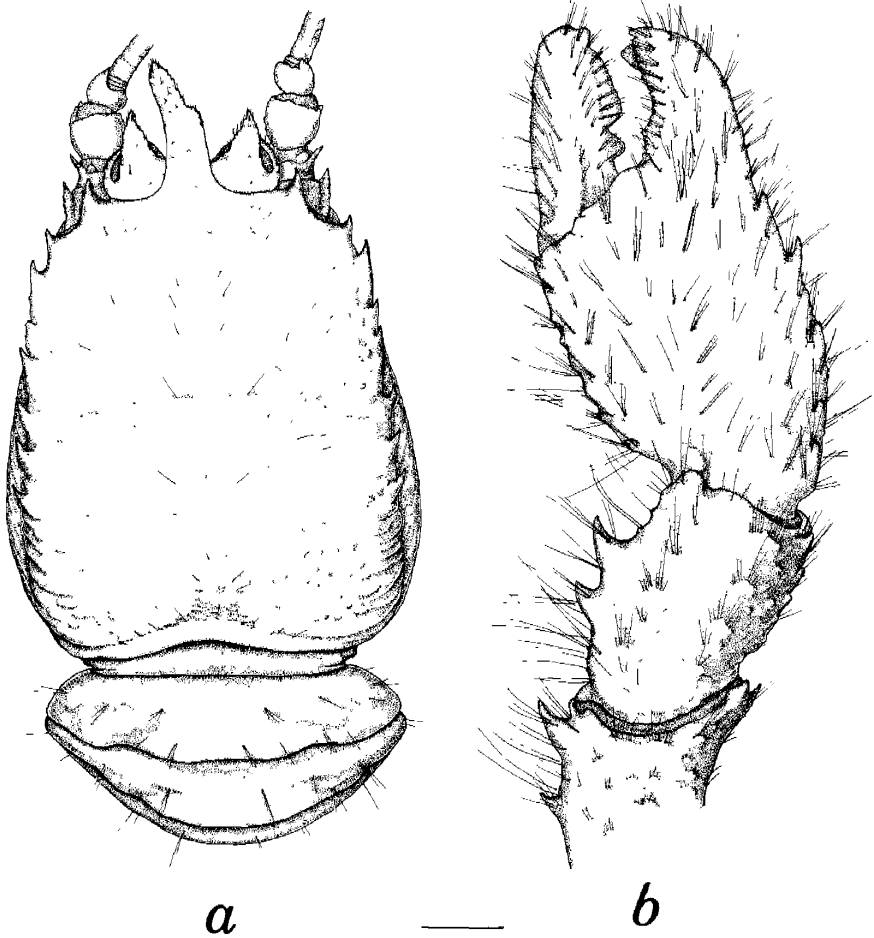


Fig. 1. *Munidopsis lentigo*. Male holotype USNM 191160: a, Dorsal view (tip of rostrum bent to left), appendages not shown; b, Right chela, carpus, and distal part of merus. Scale = 2 mm.

(see Chace 1942; Ambler 1980). No other known members of *Munidopsis* possess the peculiar oval organs on the chelipeds nor do any have flattened eyes with depressed cornea covered by a projecting flat dorsal spine as well as shielded by a ventral plate. Several species, however, have eyes armed with spines. Among those that can be compared with *M. lentigo* in this respect, *M. beringana* Benedict, 1902, *M. ciliata* Wood-Mason, 1891, *M. crassa* Smith, 1885, *M. pilosa* Henderson, 1885 (illustrated 1888), and *M. verrilli* Benedict, 1902 each have a slender compressed, somewhat upturned rostrum which leaves the eyestalks exposed to dorsal view. In all of these species except *M. pilosa*, the eyestalk is drawn into a prominent mesial spine exceeding the subglobular lateral cornea, and in *M. ciliata* and *M. verrilli* there is a small posterolateral spine as well. The eyestalk of *M. pilosa* terminates in a long slender spine that covers only the middorsal part of the subglobular cornea and reaches about half the length of the rostrum beyond it; there is also a short acute ventral spine but no ventral plate.

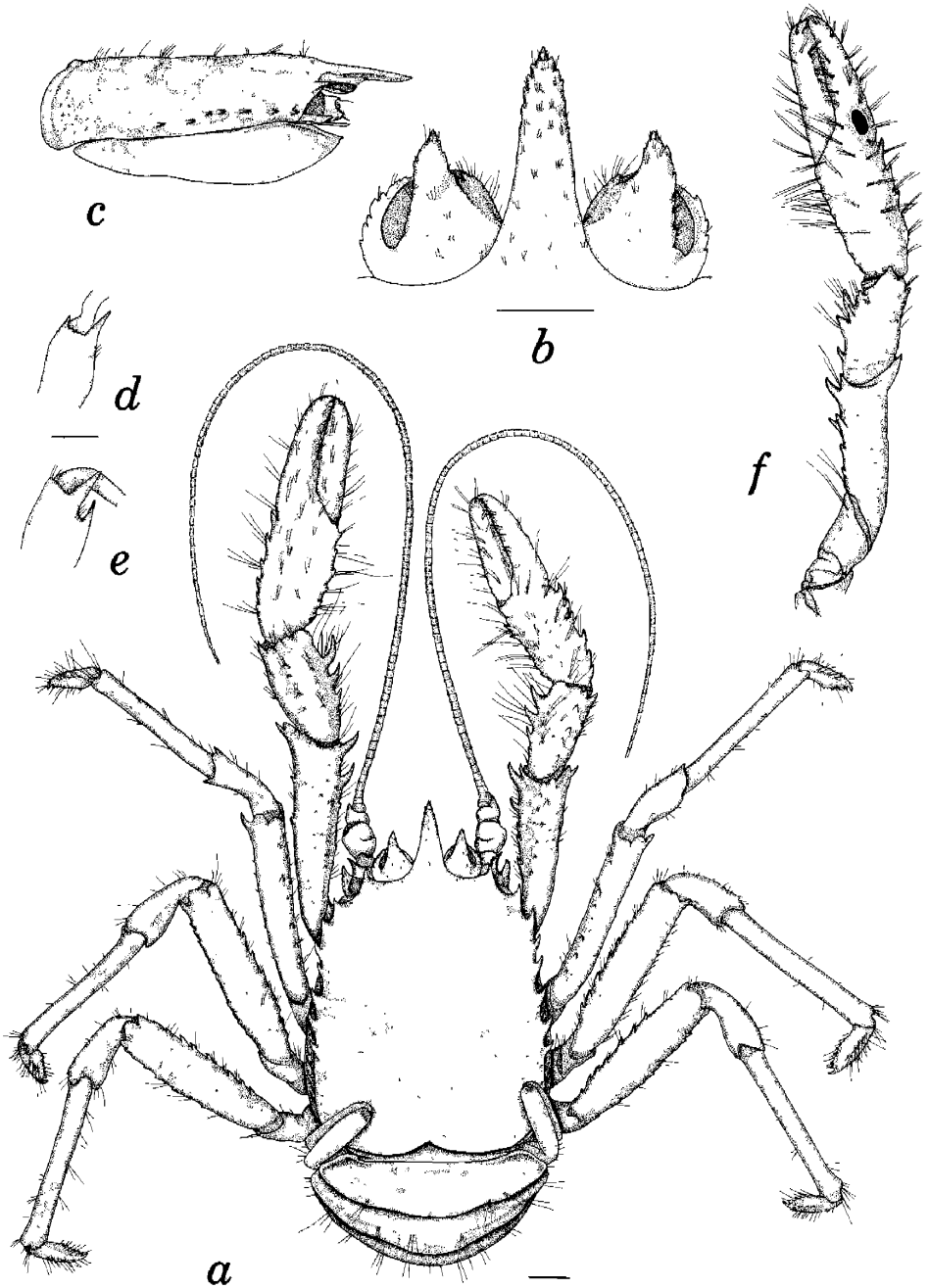


Fig. 2. *Munidopsis lentigo*. Female paratype USNM 191161: a, Dorsal view; b, Rostrum and eyes; c, Carapace, eye and base of antenna, lateral view; Basal article of antennal peduncle, distal part; d, Ventral view; e, Same, lateral view; f, Left cheliped, ventral view. Scales = 1 mm.

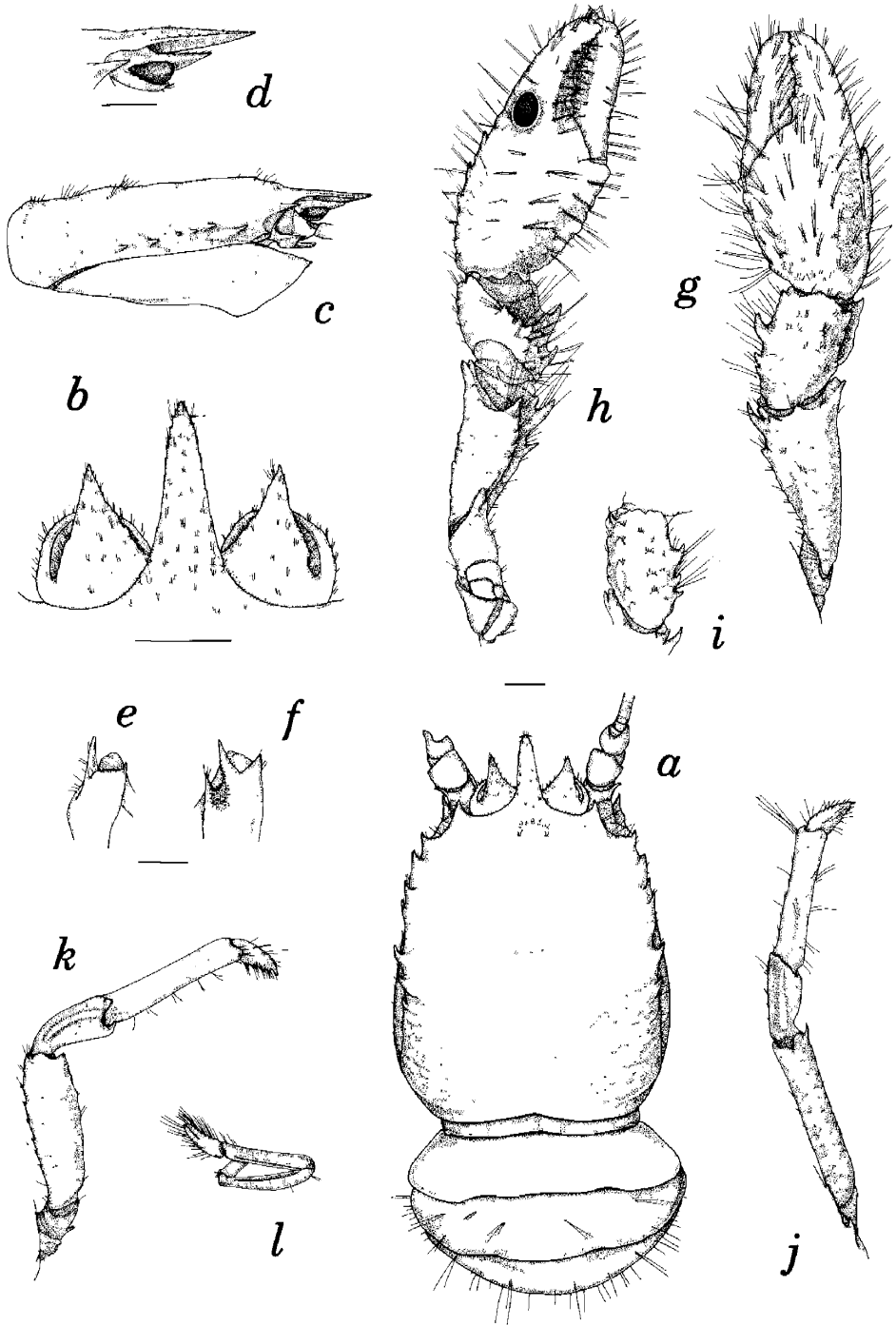


Fig. 3. *Mundopsis lentigo*. Female paratype 191162: a, Dorsal view, appendages not shown; b, Rostrum and eyes; c, Carapace, eye and base of antenna, lateral view; d, Rostrum and eyes, lateral view; e, Basal article of antennal peduncle, distal part, dorsal view; f, Same, lateral view; g, Right cheliped, dorsal view; h, Same ventral view; i, Carpus, left cheliped; j, Right second pereopod; k, Right third pereopod; l, Left fifth pereopod. Scales = 1 mm.

Other species such as *M. bermudezi* Chace, 1942, have eyestalks resembling those of species mentioned above, but the rostrum is broader at its base, while species such as *M. nitida* (A. Milne Edwards, 1880, illustrated by Milne Edwards and Bouvier, 1897) and *M. scabra* Faxon, 1895, have eyestalks with short, extremely slender mesiodorsal spines which hardly conceal the prominent globular cornea at all. The broad rostrum of *M. latirostris* Faxon, 1895, is emarginate basally, exposing fixed eyestalks with subglobular cornea partly covered by a broad, mesiodorsal outgrowth of the peduncle.

The oval spots on the chelipeds recall similar organs in homolid crabs of the genus *Hypsophrys* both in shape and placement at the base of the fixed finger (Williams 1974, 1976). Species of *Hypsophrys* displays a spot on both inner and outer surface of the chelae whereas *M. lentigo* has them only on the ventral surface, analogous to the inner surfaces in *Hypsophrys*. Fingers on the right chela of female 191162 were broken by an accidentally dropped camera lens during study, the break on the fixed finger passing through the spot on that hand. Inspection of the broken spot under a binocular dissecting microscope indicates an internal structure resembling that in the organs on *H. nour* Williams, 1974, and *H. superciliosa* Wood-Mason, 1891, whose function is unknown (Williams 1976). Histological structure of the spots in *M. lentigo* remains to be studied.

In none of the comparable species of *Munidopsis* does armature of the integument closely resemble that of *M. lentigo*. The narrow, compressed and upturned rostrum of the first five species is unlike the rather slender, dorsally flattened and somewhat distally downturned rostrum of *M. lentigo*; moreover, all of these species except *M. pilosa* have both lateral and gastric spines on the carapace. The species with a broad rostrum have hairy or scabrous surfaces quite unlike that of *M. lentigo*.

Finally, *M. lentigo*, *nitida*, *pilosa*, *scabra*, and *verrilli* lack epipods on the pereopods whereas the remaining species mentioned above have them on the chelipeds.

#### Acknowledgments

We are indebted to K. Smith, Scripps Institution of Oceanography, who as chief scientist made cabin space available aboard the R/V *Melville*, and to expedition personnel who helped to collect the material studied. We thank F. A. Chace, Jr., and B. B. Collette for critical reading of the manuscript, Keiko Hiratsuka Moore for making the illustrations, and Virginia R. Thomas for entering the text on a word processor.

#### Literature Cited

- Ambler, J. W. 1980. Species of *Munidopsis* (Crustacea, Galatheidae) occurring off Oregon and in adjacent waters.—Fishery Bulletin 78(1):13–34.
- Benedict, J. E. 1902. Description of a new genus and forty-six species of crustaceans of the family Galatheidae, with a list of the known marine species.—Proceedings of the United States National Museum 26(1311):243–334.
- Chace, F. A., Jr. 1942. Reports on the scientific results of the Atlantis expeditions to the West Indies, under the joint auspices of the University of Havana and Harvard University. The anomuran Crustacea. I. Galatheidae.—Torreia, Havana 11:1–106.
- Faxon, W. 1895. Reports on an exploration off the west coasts of Mexico, Central and South America, and off the Galapagos Islands, in charge of Alexander Agassiz by the U.S. Fish

- Commission steamer "Albatross," during 1891, Lieut.-Commander Z. L. Tanner, U.S.N., commanding. XV. The stalk-eyed Crustacea.—Memoirs of the Museum of Comparative Zoology 18:292 pp., 67 pls. (10 pls. colored).
- Henderson, J. R. 1885. Diagnoses of the new species of *Galatheidea* collected during the "Challenger" Expedition. *Annals and Magazine of Natural History* (5) 16(96):407-421.
- . 1888. Report of the Anomura collected by H.M.S. Challenger during the years 1873-76. Challenger Expedition, 1872-76.—Report on the Scientific Results of the Voyage of H.M.S. Challenger during the years 1873-76. *Zoology* 27(69):i-xi, 1-221, 21 pls.
- Milne-Edwards, A. 1880. Reports on the results of dredging, under the supervision of Alexander Agassiz, in the Gulf of Mexico, and in the Caribbean Sea, 1877, '78, '79, by the United States Coast Survey Steamer "Blake." Lieut.-Commander C. D. Sigsbee, U.S.N., and Commander J. R. Bartlett, U.S.N., commanding. VIII.—Études préliminaires sur les Crustacés.—Bulletin of the Museum of Comparative Zoology, at Harvard College 8(1):1-68, 2 pls.
- , and E. L. Bouvier. 1897. Reports on the results of dredging under the supervision of Alexander Agassiz in the Gulf of Mexico (1877-78) in the Caribbean Sea (1878-79) and along the Atlantic coast of the United States (1880) by the U.S. Coast Steamer "Blake" . . . . Description des Crustacés de la famille des Galathéidés recueillis pendant l'expédition.—Memoirs of the Museum of Comparative Zoology 19(2):1-141, 12 pls.
- Smith, S. I. 1885. On some new or little known decapod Crustacea, from recent Fish Commission dredging off the east coast of the United States.—Proceedings of the United States National Museum 7(32):493-511.
- Williams, A. B. 1974. A new species of *Hypsophrys* (Decapoda: Homolidae) from the Straits of Florida, with notes on related crabs.—Proceedings of the Biological Society of Washington 87(42):485-492.
- . 1976. Integumental organs of unknown function on chelipeds of deep-sea crabs, genus *Hypsophrys*.—*Journal of Morphology* 150(4):889-899.
- Wood-Mason, J., and A. Alcock. 1891. Natural history notes from H. M. Indian Marine Survey Steamer "Investigator," Commander R. F. Hoskyn, R.N., commanding.—No. 21. Note on the results of the last season's deep-sea dredging.—*Annals and Magazine of Natural History*, (6) 7(27):258-272.

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