

THE ADULT MALE OF *HARBANSUS BRADMYERSI* KORNICKER,
1978, AND A KEY TO SUBFAMILIES OF THE PHILOMEDIDAE
(OSTRACODA: MYODOCOPINA)

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Abstract.—The adult male of *Harbanus bradmyersi* Kornicker, 1978, the type-species of the genus *Harbanus*, is described and illustrated, and sexual dimorphism discussed. A key is presented to subfamilies of Philomedidae.

In a recent paper (Kornicker, 1978) I proposed a new genus *Harbanus* with 10 species (2 left in open nomenclature). Adult males of members of the genus do not eat, and consequently die soon after mating. Therefore, they are not well represented in collections. Adult males of only *H. paucichelatus* (Kornicker, 1958) and *H. dayi* Kornicker, 1978 are known; they were described in the previous paper. A single adult male of *H. bradmyersi*, the type-species of the genus, was received too late for inclusion, and is described herein.

A key to the subfamilies of Philomedidae in the previous paper (p. 12) is incorrect in the last couplet; therefore, a new key to subfamilies is included herein.

I thank Mr. Brad Myers for the specimen described here, and Dr. Thomas E. Bowman, Mr. Brad Myers, and Mrs. Anne C. Cohen for criticizing the manuscript.

Key to the Subfamilies of Philomedidae

- Bristles on list of caudal infold broad, spinous, frondlike; sensory bristle of 1st antenna of adult male with long filaments concentrated on bulbous segment occupying about proximal $\frac{1}{2}$ or less of the bristle (proximal edge of bulb projecting backward); 3rd joint of exopodite of 2nd antenna of adult male shorter than 2nd; end joint of 6th limb with relatively slight posterior projection Pseudophilomedinae
- Bristles on list of caudal infold slender, usually bare (except *Euphilomedes ferox* Poulsen, 1962); sensory bristle of 5th joint of adult male with long filaments concentrated along an elongate widened segment occupying proximal $\frac{1}{3}$ – $\frac{2}{3}$ of bristle (proximal edge of widened part not projecting backward); 3rd joint of exopodite of 2nd antenna of adult male much longer than 2nd joint; end joint of 6th limb with considerable posterior projection (except for genus *Igene* Kornicker, 1975, and some species of *Euphilomedes* Poulsen, 1962) Philomedinae

Harbansus bradmyersi Kornicker, 1978
Figs. 1–3, Pls. 1, 2

Harbansus bradmyersi Kornicker, 1978:24, Figs. 12–14, Pls. 3–6.

- Holotype*.—USNM 151989, adult female.
- Type-locality*.—Station C-2, continental shelf off Oxnard, California, depth 18.3 m.
- Material*.—USNM 157201, 1 adult male, sample hand-collected by diver off Oxnard, Ventura County, California, Nov. 1974, depth 40–60 m.
- Distribution*.—The species has been collected off Oxnard, Laguna Beach and Santa Catalina Island, California. Females have been collected from depths of 10.7–27.4 m (Kornicker, 1978:24).
- Sexual dimorphism*.—Sexual dimorphism in the genus *Harbansus* has been discussed by Kornicker (1978:15). The following comments concern differences in dimorphism in the 3 species of which both adult males and females are known (*H. paucichelatus*, *H. dayi*, *H. bradmyersi*).

First antenna: The 3rd and 4th joints of the 1st antennae of the adult females bear 1 and 2 ventral bristles, respectively. Equivalent bristles are present on the adult male of *H. dayi*, but are missing on the adult males of *H. paucichelatus* and *H. bradmyersi*. The c- and f-bristles are extremely long only on the male of *H. dayi*.

Second antenna: The distribution of natatory hairs and ventral spines of some exopodial bristles on males and females of the 3 species are tabulated below (+ present, – absent):

	Female		Male	
	Natatory hairs	Ventral spines	Natatory hairs	Ventral spines
<i>H. paucichelatus</i>	+	+	+	+
<i>H. dayi</i>	–	+	+	–
<i>H. bradmyersi</i>	–	+	+	+

- Description of adult male* (Figs. 1–3, Pls. 1, 2).—Carapace elongate with rostrum broader than that of female, and with projecting caudal process; valve highest anterior to middle; dorsal margin more convex than ventral.
- Ornamentation*.—Each valve with 3 faint lateral ribs (Fig. 1); upper rib sloping downward slightly towards anterior end; anterior end of upper rib extending onto rostrum but not projecting past valve edge; horizontal middle rib ventral to central adductor muscle attachments; lower rib near ventral margin; surface with large shallow fossae (Pl. 1a–c) and sparsely distributed bristles, some divided (Pl. 1b, c); about 15 bristles forming row along ventral margin; bottom of fossae and area between fossae with

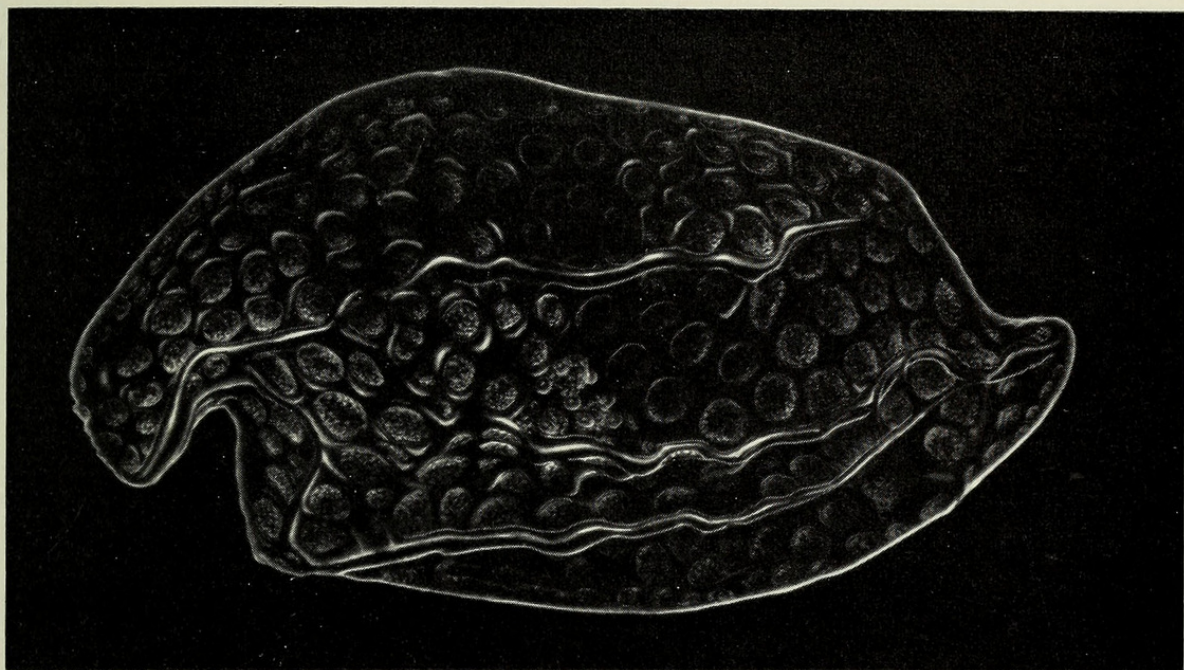


Fig. 1. *Harbansus bradmyersi*, adult male, USNM 157201: Lateral view of whole specimen, length 0.83 mm.

pustules with central pore (Pl. 1a, b); 2 narrow ribs present along each side of dorsal hinge (Pl. 1a, d); anterior margin of rostrum with minute nodes (Fig. 1); pair of bristles present on valve edge at inner end of incisur.

Infold: Infold of rostrum with 4 long spinous bristles (Pls. 1e, f, 2a, b); anteroventral infold with small bristle below inner end of incisur (Pls. 1f, 2c); ridge on infold of caudal process with 5 frondlike bristles (Pl. 2d, e); 1 short bristle present on posterior infold dorsal to caudal process; 5 bristles present along inner margin of infold of ventral margin in vicinity of caudal process.

Selvage: Broad lamellar prolongation with marginal fringe present along anterior and ventral margins of valves; prolongation divided at inner end of incisur.

Size: USNM 157201, length 0.83 mm, height 0.43 mm.

First antenna (Fig. 2a): 1st joint bare. 2nd joint with 1 long spinous dorsal bristle distal to middle. 3rd joint small with 2 dorsal bristles. 4th joint with 1 spinous dorsal bristle. 5th joint triangular, wedged ventrally between 4th and 6th joints; sensory bristle with abundant filaments on bulbous proximal part (complete filaments not shown in illustrated limb) and stem with 4 or 5 marginal filaments. Medial bristle of long 6th joint with short marginal spines. 7th joint: a-bristle spinous, about same length as bristle of 6th joint; b-bristle about twice length of a-bristle, with 3 marginal filaments and 2 spines at tip; c-bristle longer than sensory bristle of 5th joint, with 8 marginal filaments and 2 spines at tip. 8th joint: d- and e-bristles

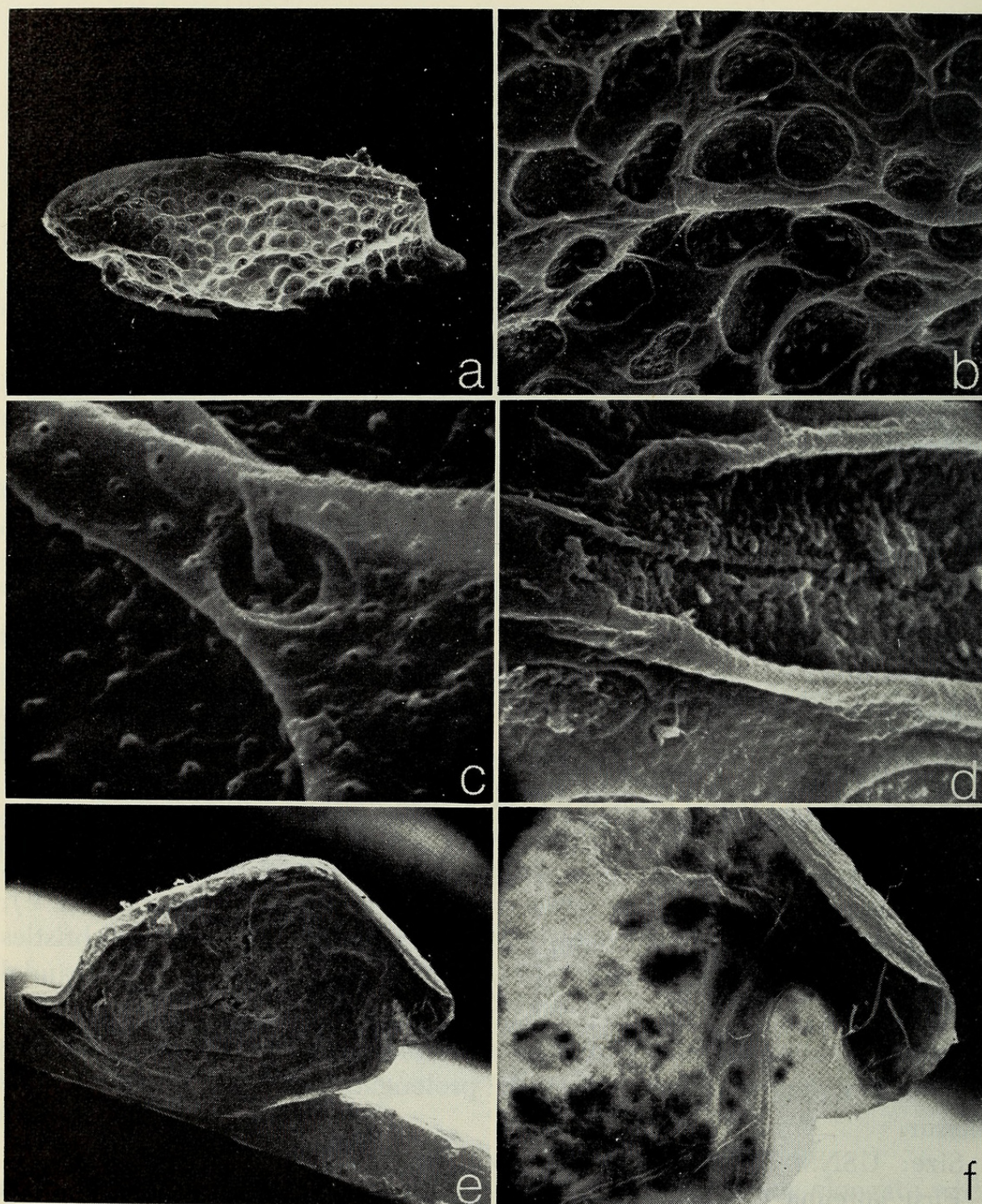


Plate 1. *Harbansus bradmyersi*, adult male, USNM 157201: a, Oblique dorsal view of left valve with narrow strip of dorsal part of right valve attached, $\times 120$; b, Fossae near middle of a, $\times 500$; c, Bristle just below middle of b, $\times 5,000$; d, Dorsal view of anterior end of hingement, from a, $\times 2,000$; e, Inside view of right valve, $\times 80$; f, Rostrum and incisur shown in e, $\times 300$. Magnifications given are those at which the micrographs were made on SEM; these have been reduced 43% for publication.

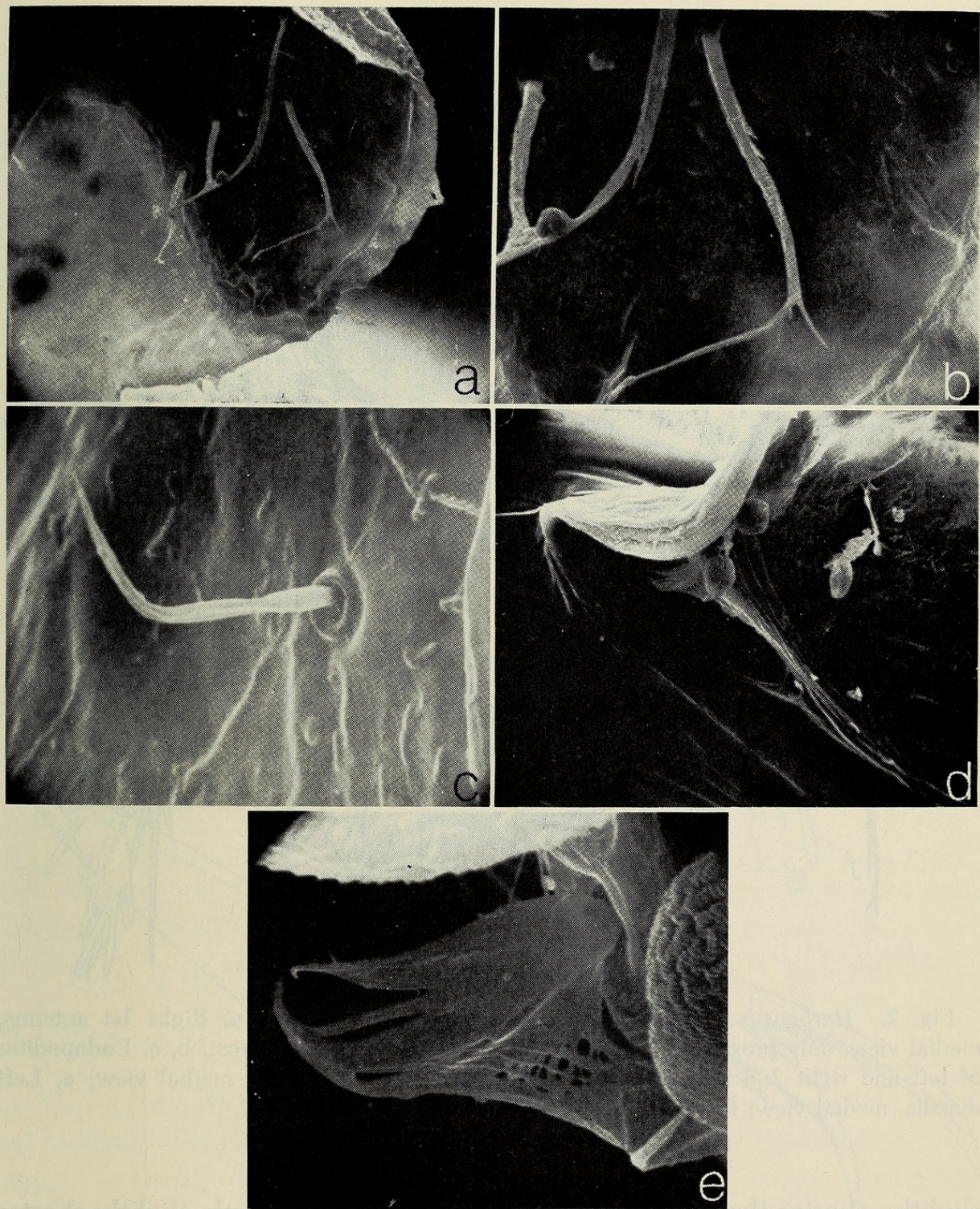


Plate 2. *Harbanus bradmyersi*, adult male, USNM 157201: a, Bristle on rostral infold, from Plate 1f, $\times 680$; b, Detail of bristles shown in a, $\times 1,650$; c, Bristle near inner end of incisur, from Plate 1f, $\times 3,200$; d, Inside view of caudal process, from Plate 1e, $\times 480$; e, Detail of bristle on infold of caudal process, from d, $\times 3,200$. Magnifications given are those at which the micrographs were made on SEM; these have been reduced 43% for publication.

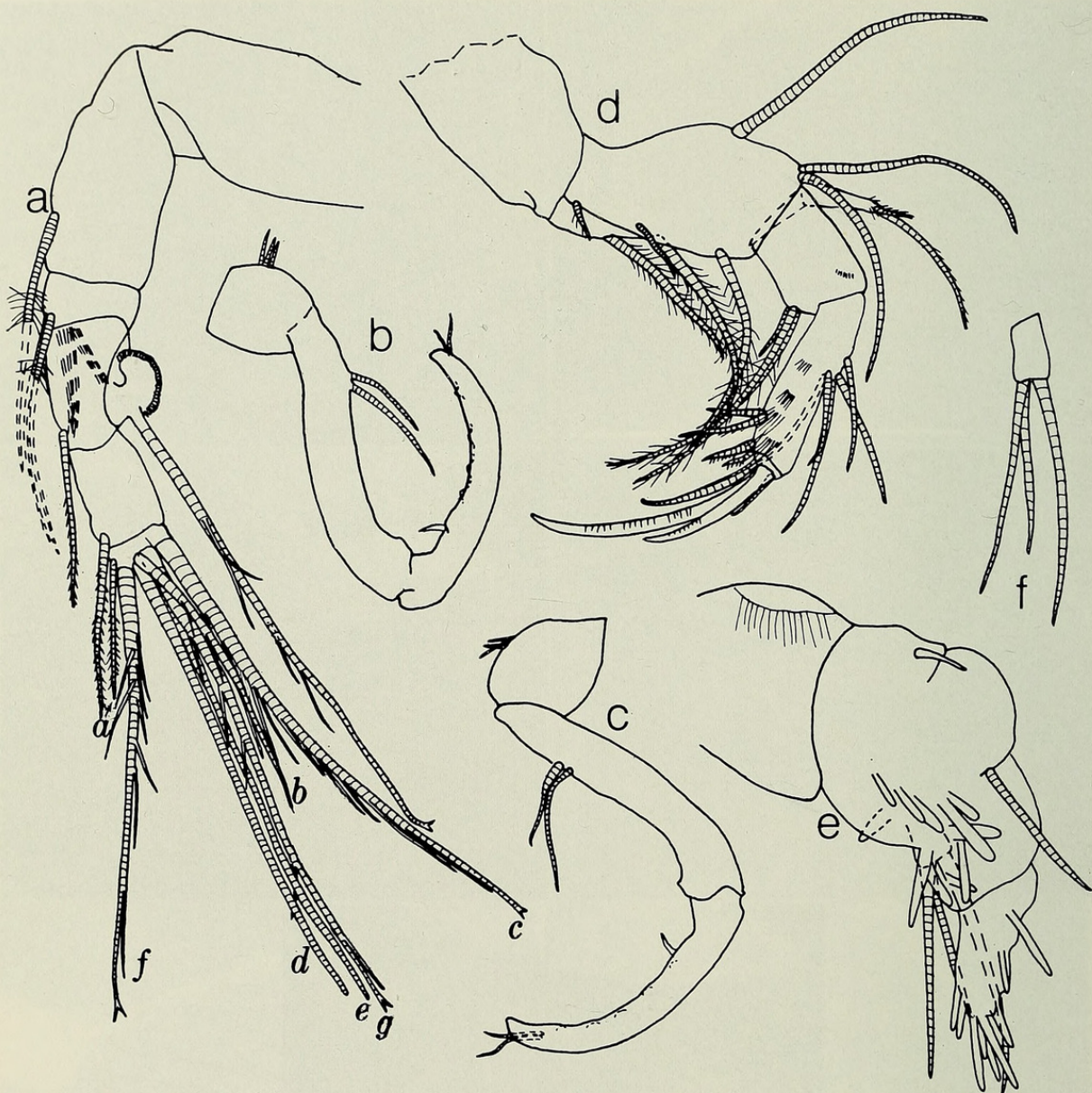


Fig. 2. *Harbansus bradmyersi*, adult male, USNM 157201: a, Right 1st antenna, medial view, only proximal ends of filaments of sensory bristle shown; b, c, Endopodites of left and right 2nd antennae, medial views; d, Left mandible, medial view; e, Left maxilla, medial view; f, Detail of exopodite of maxilla shown in e.

slightly shorter than c-bristle, bare with blunt tips; f-bristle slightly shorter than c-bristle, with about 9 marginal filaments and 2 spines at tip; g-bristle about same length as c-bristle, with about 5 marginal filaments and 2 spines at tip.

Second antenna (Fig. 2b, c): Protopodite bare. Endopodite 3-jointed: 1st joint short with 3 short anterior bristles; 2nd joint elongate with 2 long proximal bristles; 3rd joint elongate, reflexed, with 2 short bristles near sclerotized beaklike tip, and faint proximal process on inner concave margin. Exopodite: 1st joint elongate with minute terminal recurved medial bristle;

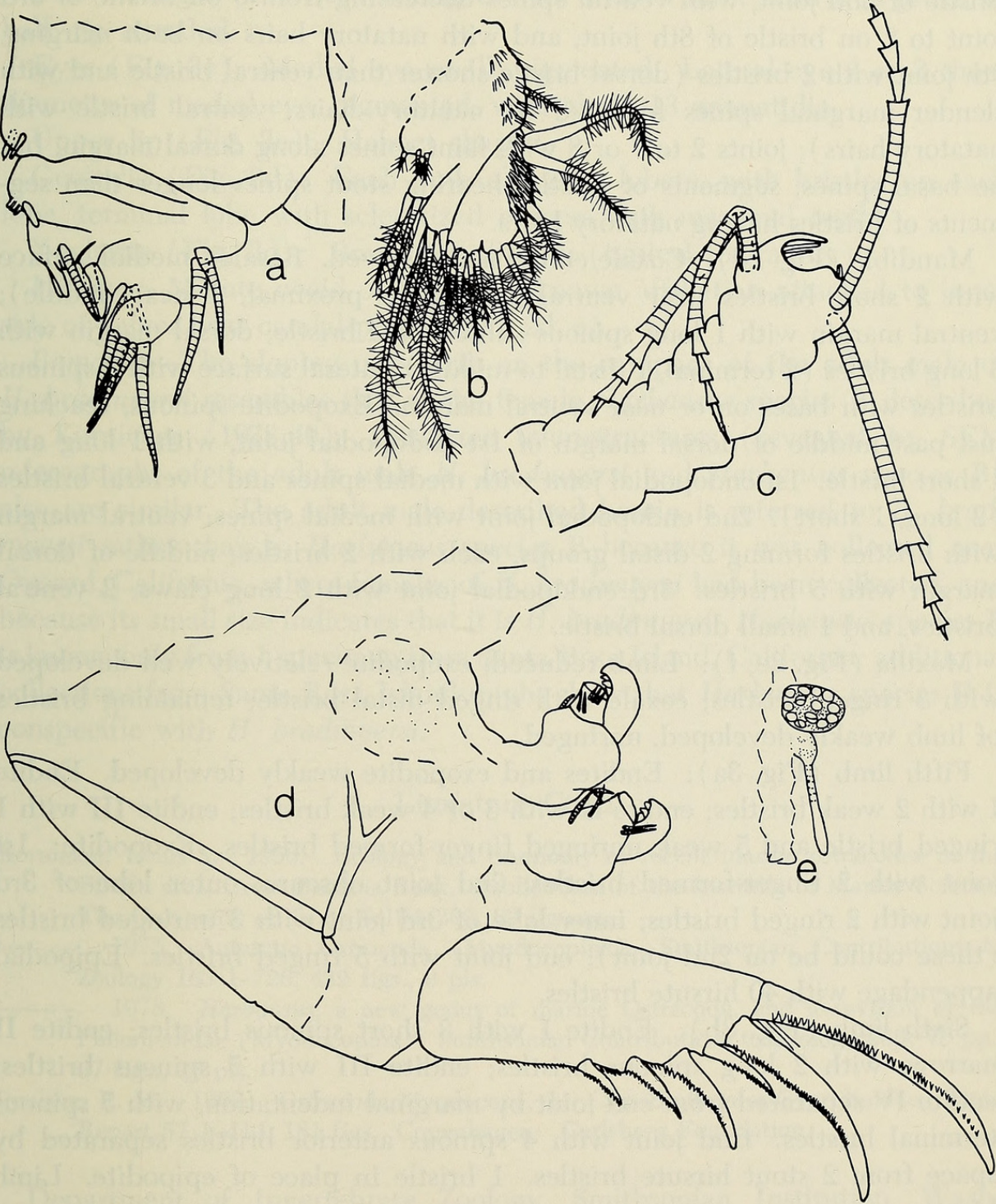


Fig. 3. *Harbansus bradmyersi*, adult male, USNM 157201: a, Tip of 5th limb; b, Right 6th limb, medial view; c, Tip of 7th limb; d, Posterior of body showing right lamella of furca, right Y-sclerite, and both copulatory limbs; e, Anterior of body showing right lateral eye, medial eye, bellonci organ, and upper lip.

2nd joint slightly larger than 3rd joint; bristle of 2nd joint with 3 proximal hairs on dorsal margin followed by about 6–10 stout spines on ventral margin, and also natatory hairs on both margins; bristles of joints 3–8 longer than bristle of 2nd joint, with more proximal hairs on dorsal margin than on

bristle of 2nd joint, with ventral spines decreasing from 6 on bristle of 3rd joint to 2 on bristle of 8th joint, and with natatory hairs on both margins; 9th joint with 2 bristles (dorsal bristle shorter than ventral bristle and with slender marginal spines followed by natatory hairs; ventral bristle with natatory hairs); joints 2 to 7 or 8 with faint spines along dorsal margin, but no basal spines; segments of bristles bearing stout spines longer than segments of bristles having natatory hairs.

Mandible (Fig. 2d): Coxale endite not observed. Basale: medial surface with 2 short bristles near ventral margin (1 proximal, 1 near middle); ventral margin with 1 long spinous subterminal bristle; dorsal margin with 3 long bristles (2 terminal, 1 distal to middle); lateral surface with 2 spinous bristles with bases on or near ventral margin. Exopodite spinous, reaching just past middle of dorsal margin of 1st endopodial joint, with 1 long and 1 short bristle. 1st endopodial joint with medial spines and 3 ventral bristles (2 long, 1 short). 2nd endopodial joint with medial spines; ventral margin with bristles forming 2 distal groups, each with 2 bristles; middle of dorsal margin with 5 bristles. 3rd endopodial joint with 2 long claws, 2 ventral bristles, and 1 small dorsal bristle.

Maxilla (Fig. 2e, f): Limb reduced; exopodite relatively well developed with 3 ringed bristles; coxale with ringed distal bristle; remaining bristles of limb weakly developed, unringed.

Fifth limb (Fig. 3a): Endites and exopodite weakly developed. Endite I with 2 weak bristles; endite II with 3 or 4 weak bristles; endite III with 1 ringed bristle and 5 weak unringed finger-formed bristles. Exopodite: 1st joint with 2 finger-formed bristles; 2nd joint obscure; outer lobe of 3rd joint with 2 ringed bristles; inner lobe of 3rd joint with 3 unringed bristles (these could be on 2nd joint); end joint with 5 ringed bristles. Epipodial appendage with 40 hirsute bristles.

Sixth limb (Fig. 3b): Endite I with 3 short spinous bristles; endite II narrow, with 2 long spinous bristles; endite III with 5 spinous bristles; endite IV separated from end joint by marginal indentation, with 5 spinous terminal bristles. End joint with 4 spinous anterior bristles separated by space from 2 stout hirsute bristles. 1 bristle in place of epipodite. Limb hirsute.

Seventh limb (Fig. 3c): Each limb with 4 terminal bristles, 2 on each side; each bristle with 4 bells; terminus with comb with 5 teeth opposite 2 minute pegs.

Furca (Fig. 3d): Each limb with 6 claws; claw 3 shorter and weaker than claw 4; each claw with rows of teeth of fairly equal length along posterior margin; long hairs present medially at bases of claws; faint minute spines present on lamella between claws 5 and 6 and following claw 6.

Bellonci organ (Fig. 3e): Elongate with about 7 faint sutures in proximal half; tip rounded.

Eyes (Fig. 3e): Medial eye small, pigmented. Lateral eye 2 or 3 times diameter of medial eye, pigmented, with about 13 ommatidia.

Upper lip (Fig. 3e): Helmet shaped.

Genitalia (Fig. 3d): Each limb elongate, lobate, with bristles on each lobe, terminal lobe with sclerotized process with marginal teeth.

Y-sclerite (Fig. 3d): Branching distally (typical for family).

Ectozoa: Minute ovoid objects of unknown affiliation attached to inner side of valves near caudal process (Pl. 2d, e).

Remarks.—The sloping upper rib on the carapace of the adult male of *H. bradmyersi* resembles that of the female *Harbansus* species B described by Kornicker (1978:49). Carapace microstructures (revealed by SEM micrographs of the adult male *H. bradmyersi* and *Harbansus* species B) also are similar. The adult male described herein is referred to *H. bradmyersi* rather than to *Harbansus* species B because it was collected near Oxnard, California, where females of *H. bradmyersi* had been collected, and because its small size indicates that it is *H. bradmyersi*. *Harbansus* species B is known only from 1 specimen from Santa Rosa Island, California; additional collections from Santa Rosa Island might show that *Harbansus* species B is conspecific with *H. bradmyersi*.

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