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INHABITING THE BUCCAL CAVITY OF THE
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A NEW GENUS OF GALAPAGAN AMPHIPOD INHABITING THE BUCCAL CAVITY OF THE SEA-TURTLE, *CHELONIA MYDAS*

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ABSTRACT

A remarkable inquilinous amphipod extracted from the buccal cavity of *Chelonia mydas*, a sea-turtle captured in the Galapagos Islands, is described as a new genus in the family Hyalidae. This is the first record of a talitroidean amphipod living as an ectocommensal; other superfamily members are represented by phycophilous scuds, beachhoppers and limnophiles. The pereopods of the new genus are formed as grasping organs similar to those in amphipods that are known to grasp lobsters, fish and medusae. Although a marine hyalid, this genus has become specialized in many features suggestive of antiboreal freshwater hyalids. Attention is called to the need for more exploration in the tropics of marine reptiles as hosts for ectocommensal amphipods.

INTRODUCTION

DURING the Galapagos International Scientific Expedition of January-March, 1964, three of my colleagues discovered an ectocommensal amphipod inhabiting the buccal cavity of the sea-turtle, *Chelonia mydas*. Eleven specimens of the crustacean were collected by Dr. Victor A. Zullo, Dr. John R. Hendrickson and Mr. Ross Kiester. These biologists were investigating sea-turtles for encrusting organisms, especially barnacles, that might give clues as to the migratory behaviour and origin of the particular reptile. According to Dr. Hendrickson, amphipods have been observed previously by turtle-experts in buccal cavities but apparently they have never been reported in the amphipodal taxonomic literature. One other species, *Podocerus chelonophilus* (Chevreux and de Guerne) (see Chevreux and Fage, 1925) has been collected from the external ventral shell of turtles but that is a tube-dwelling, fouling organism and presumably not an ectoparasite.

GET → The new genus of amphipod is remarkable in that it belongs to the family Hyalidae in the superfamily Talitroidea and represents the first record of an inquilinous amphipod in a superfamily composed of families and genera that occur not only in the shallow sea but also in freshwater and on land. Those amphipods known as sand-hoppers belong to this group.

→ The pereopods of the amphipod are modified as grasping organs similar to the independent development seen in many genera and species of other family groups (viz., several cyphocarid types in the Lysianassidae, a species of *Parapleustes* in the Pleustidae, and the genus *Isaea* in the Isacidae).

→ Apparently, the amphipod grasps the soft tissues of the buccal cavity especially at the base of the tongue and on the insides of the gums and feeds on residues of the turtle's food. Guts of four of the specimens of the type series were empty. Owing to the translucency of all the specimens it was determined that food was probably not present in any of the other specimens and none of the remainder was dissected (and hence destroyed). Nevertheless, the mouth parts of the amphipod are adapted for chewing and biting, not for piercing and sucking, hence the thesis that the amphipod eats food residues.

Family HYALIDAE

Hyachelia, new genus

Diagnosis.—Talitroidean with first maxillary palp vestigial, fourth article of maxillipedal palp reduced in size, blunt, not claw-shaped; gnathopods 1 and 2 of both sexes normally subchelate, gnathopod 2 enlarged in male, lacking a produced lobe of article 5; all pereopods somewhat subchelate, with short palms armed with several short, blunt, curved, grasping spines; pleopods long and biramous; urosomal segment 3 obsolescent, bearing vestigial third uropod that lacks rami; telson formed of 2 separated lobes attached obliquely in a vertical plane, urosomal segments 1 and 2 each produced ventrally and posteriorly to form a false peduncle for uropods 1 and 2.

Type-species.—*Hyachelia tortugae*, new species.

Relationship.—Although by virtue of its strongly cleft telson with separated lobes and the shape of its branchiae this genus belongs with the Hyalidae, it has several features that show a course of specialization similar to that of the freshwater Hyaletidae and to some extent the terrestrial Talitridae. The fourth article of the maxillipedal palp is reduced and blunt unlike other hyalids and the first maxillary palp is nearly obsolete. No other hyalid has lost both rami of uropod 3. Except for its telson this genus might be assigned to the Hyaletidae with close relationship to *Austrochiltonia* Hurley (1958) and secondarily to *Chiltonia* Stebbing (as amended by Hurley, 1958). The telson of those genera is a simple lobe formed of the fusion of two lobes; their fourth maxillipedal palp-article is reduced and not claw-shaped, their first maxillary palp is absent, the third uropod is either a single segment (peduncle) or bears a scale-like ramus or a well-developed ramus. In *Chiltonia* the first male pleopod is modified as a whip-like lash but not in *Austrochiltonia*. *Afrochiltonia* K. H. Barnard (1955) has a normal first pleopod but the gnathopods of both sexes are alike. The chiltoniids are freshwater organisms of New Zealand, Australia and South Africa.

Hyachelia tortugae, new species

(Figs. 1-4)

Diagnosis.—With the characters of the genus.

Description.—Body similar to that of other talitroideans but pleon somewhat thinner and generally smaller except for urosomal segment 1; segments 6 and 7 of pereon dipping ventrally more than in other talitroideans; third pleonal epimeron especially small, with nearly straight posterior edge and subquadrate posteroventral corner; posterior edges of first and second pleonal epimera slightly convex, rounded posteroventrally, anteroventral corners slightly but bluntly produced; head with distinct, asymmetrically subconical, small lateral lobe, first article of second antennal peduncle invaginating into anteroventral corner of the head (unusual), eyes intermediate in size, asymmetrically oval; antennae short, first shorter than second, article 3 of first longer than article 2, flagellum with about 8 articles; article 5 of second antennal peduncle longer than article 4; article 2 obsolescent, hidden from lateral view; coxa 1 with the typical anterodorsal lobe over-riding pereonal segment 1, much narrower than coxa 2, pointedly rounded below, coxa 2 nearly quadrate, coxa 4 with rather large posterior, quadrate extension, coxa 5 unusually long to fit large, shallow excavation of coxa 4 and much larger than coxae 6 and 7; medial setae present only on coxae 2 and 3; upper lip slightly truncate below; each mandible with well-developed lacinia mobilis and 2-3 spines in spine row, molar triturating, armed with a long seta; outer plate of maxilla 1 with 9 spines, progressively more serrate medially, maxilla 2 with especially slender lobes for the family, maxillipedal plates extending approximately the same distance, medial edges of inner plates rather barren of setae, apices each with 2 articulated spines and 1 lateral, partially fused, spinal process, articles 2 and 3 of palp slightly produced mediodistally, article 4 very small, short, blunt, armed apically with 2 spines. Gnathopods of the two sexes strikingly different in

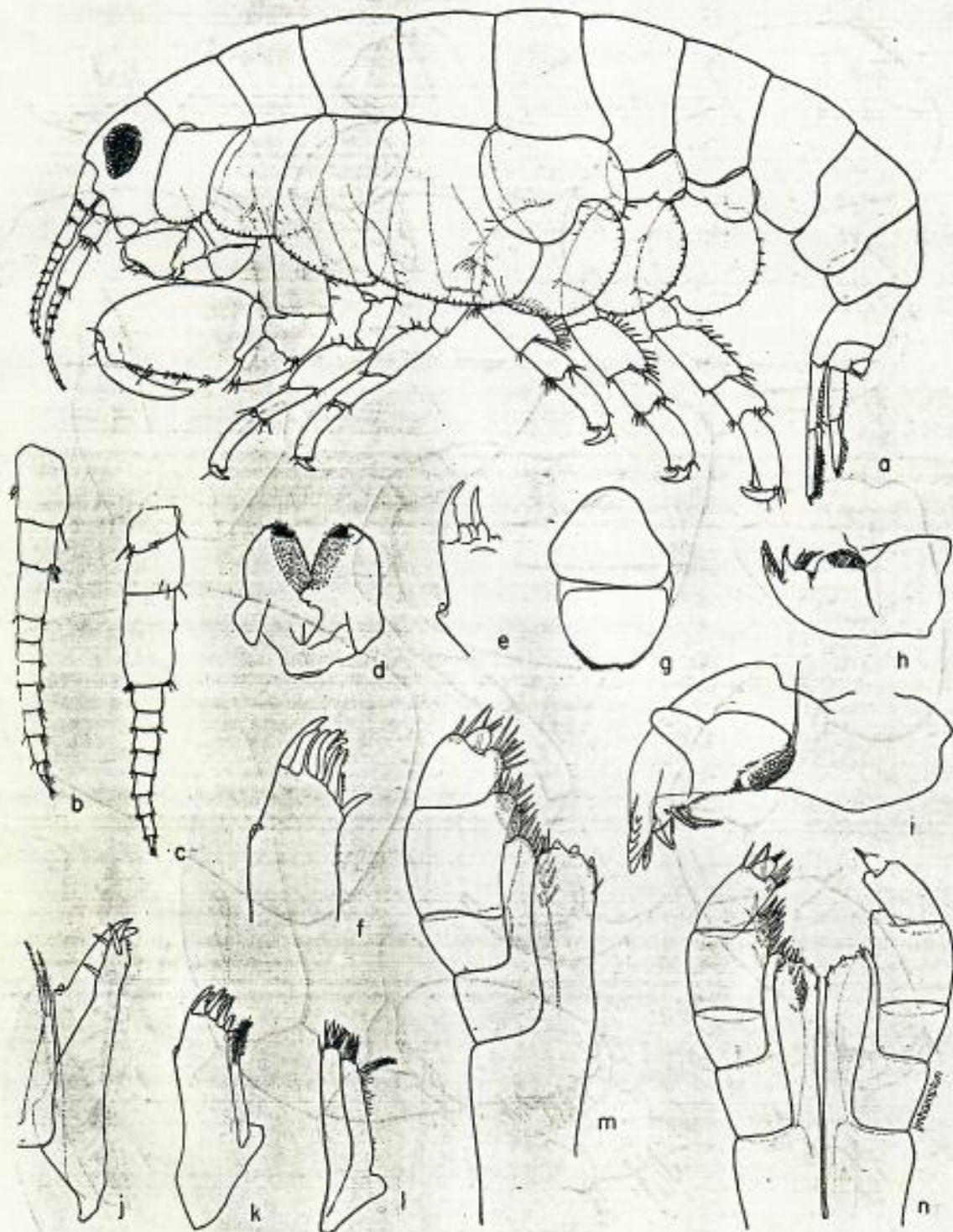


FIG. 1. *Hyachelia tortugae* n. gen. n. sp. Male, 7.1 mm., Galapagos Islands: (a) lateral view; (b, c) antennae 1, 2; (d) lower lip; (e, f) palps of maxilla 1; (g) upper lip; (h, i) mandibles; (j, k) maxilla 1; (l) maxilla 2. Female, 6.9 mm.: (m, n) maxilliped, flattened and normal views.

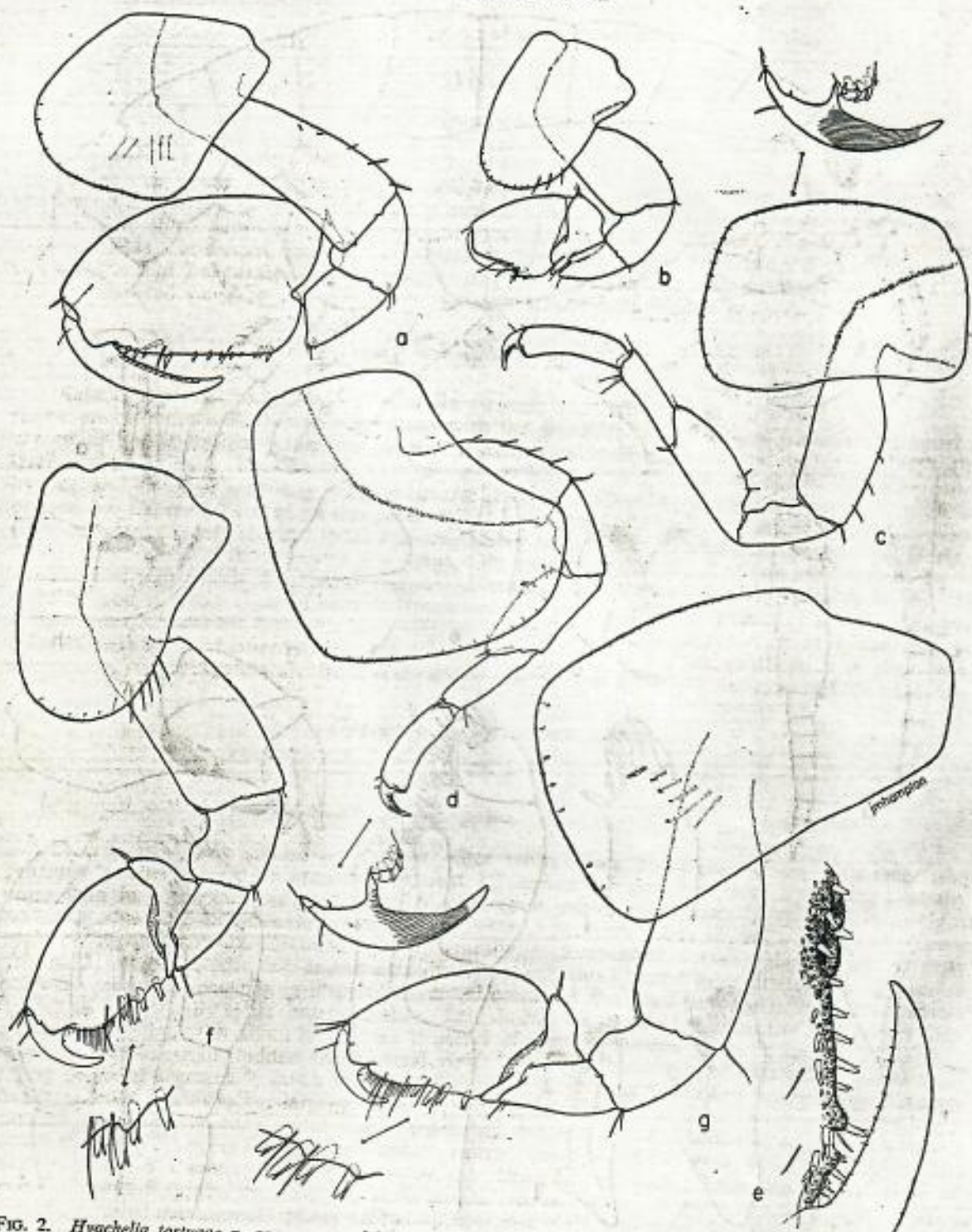


FIG. 2. *Hyachelia tortugae* n. gen. n. sp. Male, 7.1 mm.: (a) gnathopod 2; (b) gnathopod 1; (c, d) pereopods 1, 2; (e) palm of gnathopod 2. Female, 6.9 mm.: (f) gnathopod 1; (g) gnathopod 2.

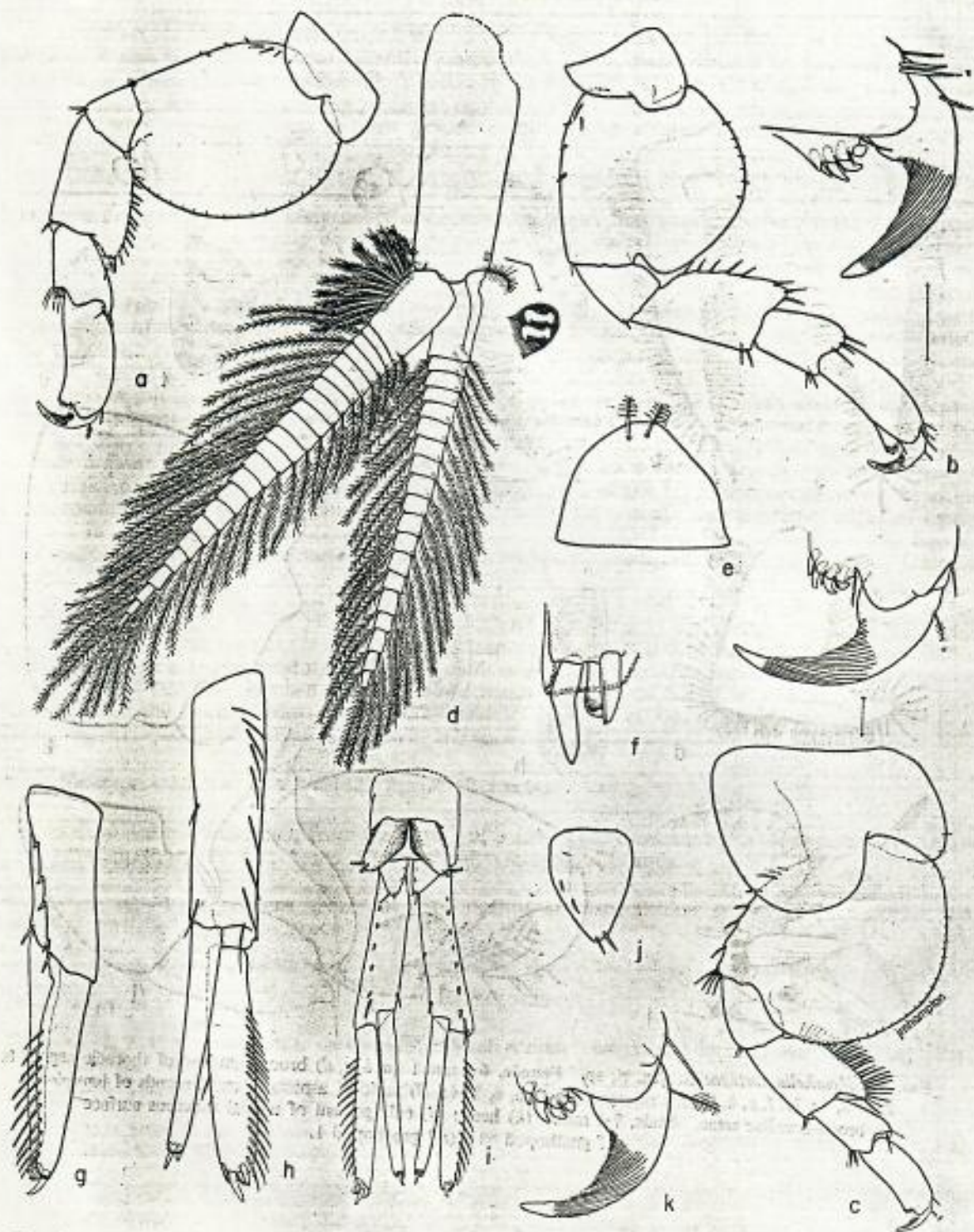


FIG. 3. *Hyachella tortugae* n. gen. n. sp. Male, 7.1 mm.: (a, b, c) pereopods 4, 5, 3; (f) apex of outer ramus of uropod 1; (g, h) uropods 2, 1; (i) dorsal view of telson, uropod 3 and uropod 2; (k) end of pereopod 4. Female, 6.9 mm.: (d) pleopod 1; (e) telson; (j) uropod 3.

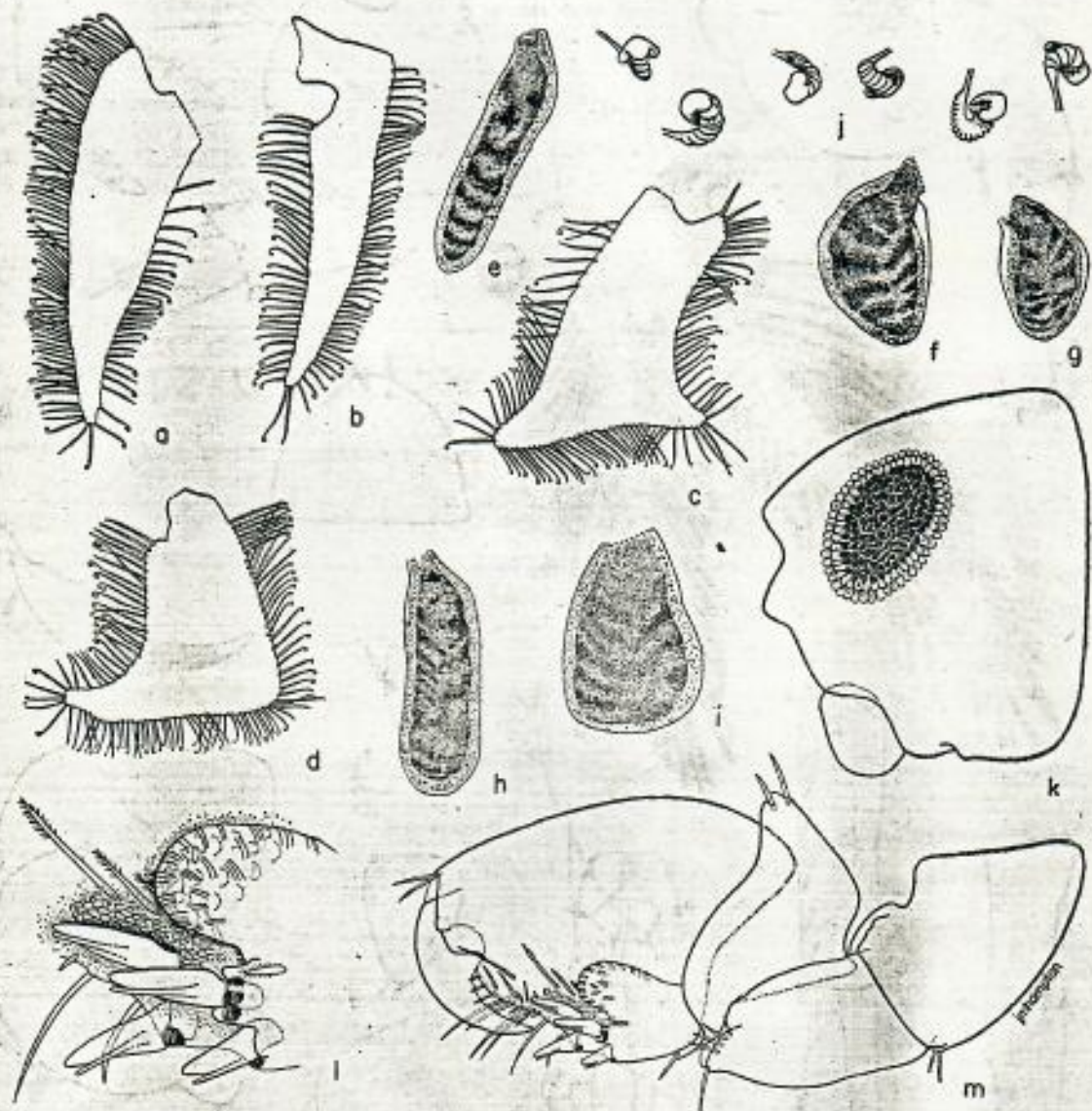


FIG. 4. *Hyachelia tortugae* n. gen. n. sp. Female, 6.9 mm.: (a, b, c, d) brood lamellae of thoracic segments 2, 5, 3, 4; (e, f, g, h, i) gills of segments 2, 5, 6, 3, 4; (j) various aspects of curl-tip ends of feminine brood-lamellae setae. Male, 7.1 mm.: (k) head; (l) enlargement of medial tuberos surface of gnathopod 1; (m) gnathopod 1.

various details: MALE.—Gnathopod 1 with article 5 short, narrowly produced posteriorly between articles 4 and 6, article 6 stout, slightly longer than broad, palm oblique and longer than hind margin of article 6, finger rather short and not fitting palm, simple, stout and curved; laterally palm showing few setae, medially palm strongly armed with setae along distal two-thirds, the edge minutely and irregularly serrate, palm defined proximally by a large spine, then a broad incision and another spine; the 2 defining spines matched on the medial, submarginal surface of the palm by 2 more spines; anteriorly subtended by a row of 4 setae, two proximal members of which partly covered by a large, rugose tuberosity; 2 of the spines (as figured) have small, strongly ridged bosses at their bases; large tuberosity covered densely with pairs and triads of short ridges, lower half of medial face of article 6 also covered with ridge patterns, dactyl covered with linear striated pattern of ridges (possibly these act to roughen the surface of appendages to prevent slippage on the mucoid tissues of the host); gnathopod 2 of the hyalid form, with article 5 very small and not produced posteriorly, article 6 stout, but longer than broad, palm very oblique and extending nearly full length of article, armed sparsely with spines and 2 small distal tuberosities, one elongated; dactyl about two-thirds as long as palm. FEMALE.—Gnathopods small, subequal in size, second slightly longer than first, nearly identical in structure and somewhat similar to male gnathopod 1 but lacking minute armature and medial tuberosity, palm very oblique, slightly convex, not departing from tangent of posterior margin of article 6, but slightly longer than posterior margin as defined by last distal spine and notch, palm armed with small setae, dactyl scarcely half as long as palm; article 5 short and produced into slender lobe between articles 4 and 6; female gnathopods appear to mimic, to some extent, the grasping pereopods because of the taper and armature of the palm. Pereopods 1-5 of both sexes generally of hyalid shape but anterior and posterior edges of article 6 bare of spines or setae and distal ends truncated to form subchela armed with 4 stout, hooked spines, dactyls short, curved, striated; pleopods biramous, subequal, rami long, setose. Uropods 1 and 2 with lateral margins of outer rami densely setose, inner rami more slender and lacking setae; uropod 3 formed of a small, bluntly subconical piece armed with 2 setules, attached to last body segment ventral to the telson; pleonites 5 and 6 apparently completely fused, at least from lateral view no sixth segment is demarcated; telson composed of 2 detached bracts set in an oblique but vertical plane, each armed with 2 setules. Gills consisting of lamellar sacs as shown in the figures; female brood lamellae attached to pereonal segments 2, 3, 4 and 5 and of strikingly varied shape as shown in the figures (drawn from the left side); edges of gills armed with curl-tipped setae of complex terminal morphology as shown in the figures.

Holotype.—USNM No. 111527, male, 7.1 mm.

Type-locality.—Zullo 363, from the mouth of a sea-turtle, *Chelonia mydas* collected on February 24, 1964, at Porto Nuñez, Santa Cruz Island, Galapagos Islands.

Material.—10 specimens from the type-locality and one further specimen from Zullo 364, another turtle of the same species.

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