Eualus berkeleyorum n.sp., and Records of Other Caridean Shrimps (Order Decapoda) from British Columbia

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During the course of surveys by this station's vessels between 1963 and 1969, a large and varied collection of shrimps was obtained. Examination of the material has led to the preparation of this paper, which aims to describe a new species, Eualus berkeleyorum, and to record the first known occurrences in the British Columbian marine environment of four bathypelagic species: Parasiphae sulcatifrons Smith (family Pasiphaeidae); Acanthephyra curtirostris Wood-Mason, A. quadrispinosa Kemp, and Systellaspis braueri (family Oplophoridae).


L'auteur décrit une nouvelle espèce de crevette, Eualus berkeleyorum (famille Hippolytidae). Il mentionne pour la première fois la présence de quatre espèces pélagiques au large de la Colombie britannique: Parasiphae sulcatifrons Smith (famille Pasiphaeidae); Acanthephyra curtirostris Wood-Mason, A. quadrispinosa Kemp et Systellaspis braueri (famille Oplophoridae).

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Parasiphae sulcatifrons Smith 1884

Distribution — North Atlantic Ocean, West Africa, Indian Ocean, North Pacific Ocean to Queen Charlotte Sound, B.C.; 500-5400 m.

Present collection — 35 miles S X W Cape St. James (51°26'N, 131°09'W), June 15, 1964; G. B. Reed station 64-6-21; daytime, horizontal tow between 640 and 730 m.
with a large nonclosing Engel midwater trawl\(^2\). One male, c.l. 22.1 mm, total length unobtainable due to damaged telson.

**Remarks** — The paper by Sivertsen and Holthuis (1956) has been consulted for the previously known range of the species. The present specimen fits the description by Chace (1940) very closely.

### Family OPLOPHORIDAE

#### Acanthephyra curtirostris

*Wood-Mason 1891*

**Distribution** — Caribbean region of Atlantic Ocean, east coast of Africa, Indo-Pacific region to Japan and the Hawaiian Islands, west coasts of North and South America, Peru to Vancouver Island, B.C.; 200-5000 m.

**Present collection** — 67 miles WSW of Cape Scott, Vancouver Island (50°56.4' N, 130°12.2' W), maximum depth 2178 m, September 11, 1964; *G. B. Reed* station 64-212; daytime tow on the bottom with shrimp otter trawl. One male, c.l. 16.3 mm, total length unobtainable due to damaged rostrum; rostral spines, 8/1.

**Remarks** — The general distribution was summarized from earlier published records (Chace 1937, 1940; Pearcy and Forss 1966). It is not unlikely that the specimen was captured while the trawl was being returned to the surface, and the same could apply to other records of oplophorids here.

#### Acanthephyra quadrispinosa

*Kemp 1939*

**Distribution** — South Atlantic Ocean, Indian Ocean, Indo-Pacific region, North Pacific Ocean to the open ocean off Japan, and Vancouver Island, B.C.; vertical distribution uncertain.

**Present collection** — *G. B. Reed* station 64-212 (details above). One female, c.l. 17.7 mm, t.l. 83 mm; rostral spines 12/4.

**Remarks** — Earlier records of the distribution of the species were taken from Kemp (1939). The tips of both branchiostegal spines are broken off but enough of the flared supporting carinae remain to permit, along with other characters, a definite identification.

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\(^2\)This net was 1200 20-cm meshes (stretched measure) in circumference, and graded through a series of mesh sizes to 2 cm in the codend.

\(^3\)The so-called Gulf of Mexico flat trawl, having headrope and footrope each 40 ft (12.2 m) in length, and a mesh size throughout of 38 mm.

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### Systellaspsis braueri

*(Balss 1914)*

**Distribution** — Atlantic Ocean, Bermuda to Georges Bank and Gulf of Guinea to Scotland; Indian Ocean; northeastern Pacific Ocean, Los Angeles to Vancouver Island; within 150 m of the surface and to 4000 m.

**Present collection** — 35 miles W × N of Estevan Point, Vancouver Island (49°19.0'N, 127°26.6'W), 1460 m. September 9, 1964; *G. B. Reed* station 64-197; daytime tow on the bottom with shrimp otter trawl. One male; c.l. 27.1 mm, t.l. 110 mm, rostral spines 12/2; *G. B. Reed* station 64-212 (details above). Three females; one, c.l. 15.6 mm and t.l. 67 mm; others, c.l. 14.8 and 20.3 mm, total lengths unobtainable due to damaged telsons and rostrum; rostral spines 9-12/2-3.

**Remarks** — According to Chace (1940), and Sivertsen and Holthuis (1956), this species is quite rare.

### Family HIPPOLYTIDAE

#### Eualus berkeleyorum n.sp.

**Material examined** — All 15 specimens examined were females. Table 1 lists details of capture and carapace lengths.

**Description** — Body moderately slender, little compressed. Integument thin, smooth. Rostrum fairly short, about 0.4 times carapace length, not reaching second segment of antennular peduncle; descending; upper limb wider than lower; spines 8-11/2-5, dorsal spines all much same size, closely and evenly spaced giving a serrated appearance, and larger than ventral; tip normally acute, rarely bifid or trifid. Carapace about 0.25 times total length; anterior high in profile (Fig. 1), and frontal margin rather sinusous (Fig. 2f).

Carapace spines: suborbital strong, pointed and slightly ascending; antennal strong with supporting carina; pterygostomian small, yet conspicuous.

Eye moderate in size, including cornea. Antennule: peduncle moderately long, second segment longer than third; stylolocerite strong and almost reaching end of basal segment; inner (lower) flagellum slightly longer than outer, both extending far beyond end of scaphocerite.

Antenna: scaphocerite oblong, lamella exceeding spine (Fig. 2b); flagellum exceeds total length. Mandible: palp of two segments, incisor process having 3 teeth; molar process with large irregular surface (Fig. 2a). Third maxilliped: stout, extending considerably beyond scaphocerite; having about 10 spines on distal end (Fig. 2e); with epipod, and long exopod. Pereiopods: I, stout, shorter than third maxilliped, all segments much same length, chelate (Fig. 2d), with epipod; II, slender, about 1.5 times length of I, carpus with 7 segments, chelate, with epipod; III, slender, merus having 1 or 2 spines, dactylus as in IV; III-V, all about equal in length, and longer than II.
<table>
<thead>
<tr>
<th>Vessel</th>
<th>No. female specimens</th>
<th>Carapace length (mm)</th>
<th>Date</th>
<th>Geographic location</th>
<th>Depth (m)</th>
<th>Gear</th>
<th>Vessel</th>
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<tbody>
<tr>
<td>Investigator No. 1</td>
<td>4</td>
<td>6, 8, 8.8, 8.9, 9.5, 9.8</td>
<td>Dec. 3, 1963</td>
<td>Off Gabriola Is., 49°09.0'N</td>
<td>210</td>
<td>Shrimp, otter trawl</td>
<td>A. P. Knight</td>
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<td></td>
<td>2</td>
<td>7.4, 7.6</td>
<td>Dec. 11, 1963</td>
<td>Off Bowen Is., 49°18.4'N</td>
<td>88-89</td>
<td></td>
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<tr>
<td></td>
<td>1</td>
<td>5.8</td>
<td>Oct. 23, 1968</td>
<td>Off Denman Is., 49°36.7'W</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>6.9</td>
<td>May 22, 1969</td>
<td>Strait of Georgia, 123°32.6'W</td>
<td>161-163</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>7.1</td>
<td>Aug. 3, 1964</td>
<td>Off Comox Bar, 49°38.6'W</td>
<td>48-49</td>
<td></td>
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<tr>
<td></td>
<td>1</td>
<td>6.5, 7.2</td>
<td>Aug. 3, 1964</td>
<td>Chatham Sound, 130°30.7'W</td>
<td>88-90</td>
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<tr>
<td>G. B. Reed</td>
<td>3</td>
<td>8.0</td>
<td>Sept. 11, 1968</td>
<td>Off La Perouse Bank, 126°31.0'W (station 68-47)</td>
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<td></td>
<td>1</td>
<td>7.3</td>
<td>Sept. 11, 1968</td>
<td>Off La Perouse Bank, 126°20.2'W (station 68-49)</td>
<td>88-90</td>
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Table 1. Eualus berkeleyorum n.sp. Material examined.

*aHolotype.*
Abdomen: median dorsal margin of third somite strongly produced posteriorly; fifth somite with small recessed spine on postero-lateral margin; pleura of first to fourth somites rounded, fifth with postero-ventral portion projected; sixth somite somewhat longer than fifth, and shorter than telson. Telson with 3 pairs of lateral spines, and posterior margin broadly rounded, almost truncate, bearing 3 pairs of spines that decrease slightly in length from the inner to outer pair. Inner uropod longer than outer, and both extend beyond telson (Fig. 2e).

Colour: background white to cream; red to orange patches on rostrum, frontal, branchial, and postero-dorsal margins of carapace; also on peduncle of antenna, third maxillipeds, and first pereiopod; and saddlelike bands of the same colour on the abdominal somites.

Size: carapace lengths of females 5.0-9.8 mm; total lengths 23-38 mm.

**Range and habitat** — British Columbia coast, Vancouver Island to Chatham Sound; 73-384 m (40-210 fath). One specimen (G. B. Reed station 68-47) was captured on a rock and sand bottom, and all others on soft mud. There is a tendency (Table 1) for larger individuals to inhabit deeper water.

**Types** — The holotype is a female, c.l. 8.8 mm, and t.l. 34 mm, collected in the Strait of Georgia (49°09.0'N, 123°32.6'W). It is deposited in the National Museum of Canada (NMC 15316) with one paratype (NMC 15317). The U.S. National Museum, Washington, D.C., and the Rijksmuseum van Natuurlijke Historie, Leiden, have specimens.

**Remarks** — The new species belongs to the genus *Eualus* Thallwitz, 1892, with its main characters: the carpus of the second pereiopod with seven segments; exopod on the third maxilliped; and a mandibular palp of two segments (Holthuis 1947). Within the genus, it fits with *E. avinus* (Rathbun 1899), *E. pusiolus* (Kroyer 1841), and *E. herdmani* (Walker 1898) into a group having in common epipods on the first three pereiopods and a relatively short rostrum. *Eualus berkeleyorum* differs from the others by the descending rostrum with eight or more
closely spaced dorsal teeth; telson with the distal end broadly rounded; absence of a spine on the pleuron of the fourth abdominal somite. Another, even more, unique character is the sinuous frontal margin of the carapace in *E. berkeleyorum*.

One specimen, c.l. 5.0 mm, from near Comox Bar, 73 m (Table 1), was parasitized by the abdominal bopyrid isopod, *Hemiarthrus abdominalis* (Kroyer).

Another female, c.l. 6.9 mm, from the same locality, captured on May 22, 1969, had a few eyed eggs attached to pleopods.

**Acknowledgments**

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