

Figure 2.38. *Westwoodilla caecula*; A, Head, female; B, Gnathopod 1; C, Gnathopod 2; B and C, male (from Lincoln, 1979).

Family Pardaliscidae Boeck, 1871

Diagnosis (from Barnard and Karaman, 1991). Body laterally compressed. Coxae short. Accessory flagellum well developed. Molar absent, incisor and body of mandible flat, inner plates of maxillipeds short to barely visible.

Remarks. 18 genera, 63 species.

Key to the Pardaliscidae of the Santa Maria Basin

- 1A. Lateral cephalic lobe produced forward, acuminate; urosomite 1 with paired, small, mid-dorsal teeth *Nicippe tumida*
- 1B. Lateral cephalic lobe not produced forward; urosomite 1 without paired mid-dorsal teeth 2
- 2A. Urosomite 2 with long thin dorsal tooth; gnathopod 1 propodus excavate, with bundle of spines at proximal edge *Rhynohalicella halona*
- 2B. Urosomite 2 without dorsal tooth or tooth very small; gnathopod 1, propodus not excavate, without bundle of spines at proximal edge 3
- 3A. Urosome without teeth; gnathopods 1-2, article 6 as long as or much longer than article 5 4
- 3B. Urosome with teeth; gnathopods 1-2 article 6 much shorter than article 5 *Pardalisca* sp.

- 4A. Gnathopod dactyl with 1-2 inner teeth; rostrum short
 *Pardaliscella symmetrica/yaquina* complex⁴
- 4B. Gnathopod dactyl without inner teeth; rostrum long, narrow *Halicoides synopiae*

Halicoides Walker, 1896

Type Species. *Halicoides anomala* Walker, 1896.

Diagnosis (from Barnard and Karaman, 1991). Rostrum well developed. Eyes absent. Ratio of peduncular articles on antenna 1 = 13:5:4, base of primary flagellum inflated with callynophore in male only, article 1 of flagellum much longer than article 3 of peduncle, peduncle article 2 short. Accessory flagellum present (aberrant in holotype of type species, see Thurston, 1976). Mouthparts forming quadrate bundle below head. Upper lip rounded below. Mandibles symmetrical, incisors smooth, palp fully developed, article 3 about one third as long as 2. Inner lobes of lower lip coalesced, with raphus. Maxilla 1, palp not expanded apically. Maxilla 2 well developed, plates equal. Inner plates of maxilliped small, outer plates medium. Palp more than one and one-half times as long as medial edge of outer plate. Coxae 1-4 subquadrate, alike, even, broader than long. Gnathopods simple, slender, propodus of gnathopod 1 much longer than carpus, equal on gnathopod 2, carpus not lobate, dactyls normally claw-shaped, without inner teeth. Pereopods simple. Urosomal teeth absent. Telson elongate, deeply cleft.

Remarks. 10 species.

Halicoides synopiae (Barnard, 1962)

Figure 2.39

Pardisynopia synopiae Barnard, 1962b: 77-78, figures 3 and 4.

Material Examined. Santa Maria Basin, California, Phase II, Sta. PJ5, 152 m, October 1986, (1 specimen), Sta. R8, 90 m, January 1987, (1 specimen), Sta. R4, 92 m, October 1988, (1 specimen).

Description (modified from Barnard, 1962b). Female 5 mm. Eyes absent. Pereopod 6, article 2 with straight posterior edge, without a lobe at lower corner. Urosomite 1 with posteriorly directed dorsal tooth reaching almost to insertion of telson. Urosomite 2, posterior margin with a single long seta and with long, thin, dorsal tooth. Urosomite 3, epimeron with straight posterior edge and quadrate lower corner. Uropod 3, interramus with nodulose distomedial margin.

Type Specimen and Locality. AHF No. 5724, female, 5.0 mm. Station 4873, off Laguna Beach, 33°30'36"N, 117°47'58"W, bottom of green mud, 174 m.

Distribution and Habitat. Monterey Bay to Baja, California, 52-1748 m.

⁴ See remarks under *Pardaliscella symmetrica* and *P. yaquina*. Also note the description of *Princaxelia* sp A in the text, not included in this key.

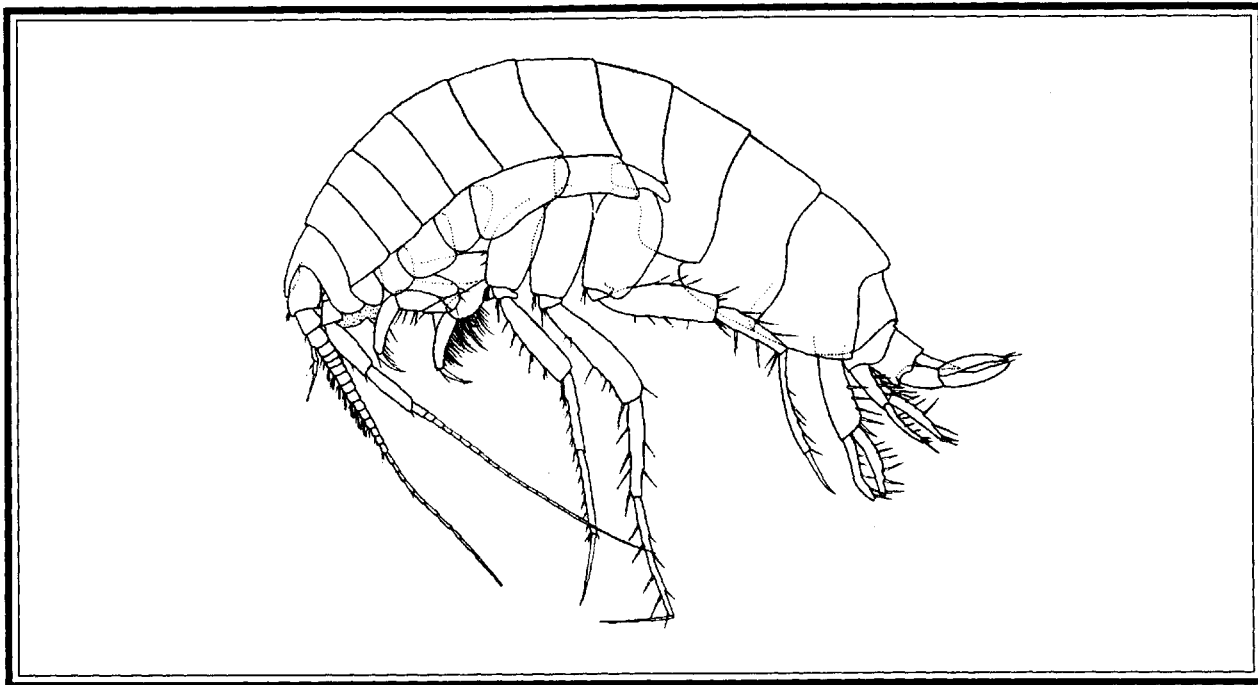


Figure 2.39. *Halicoides synopiae*, female (Barnard, 1962b).

Nicippe Bruzelius, 1859

Type Species. *Nicippe tumida* Bruzelius, 1859.

Diagnosis (from Barnard and Karaman, 1991). Rostrum small. Eyes present, weak pigment only. Ratio of peduncular articles on antenna 1 = 12:9:3, base of primary flagellum narrow, articulate, article 1 of flagellum scarcely longer than article 3 of peduncle, article 2 of peduncle short (elongate in male). Accessory flagellum present. Mouthparts forming quadrate bundle below head. Upper lip almost symmetrically incised. Mandibles asymmetrical, incisor on left weakly toothed, on right strongly toothed, palp fully developed. Inner lobes of lower lip coalesced. Maxilla 1, palp expanded apically. Maxilla 2 well developed, thin, plates equal. Both plates of maxilliped small. Palp almost 3 times as long as medial edge of outer plate. Coxae 1-4 subquadrate, alike, even, broader than long. Gnathopods weakly subchelate, stout, propodus of both gnathopods longer than carpus, carpus with long, broad, lobe, dactyls normally claw-shaped, without inner teeth. Pereopods simple. Urosomal teeth moderate to weak. Telson elongate, deeply cleft.

Remarks. 2 species.

Nicippe tumida Bruzelius, 1859

Figure 2.40

Nicippe tumida Bruzelius, 1859: 99.—Sars, 1895: 410-411, plate 144.—Barnard, 1959b: 39, figures 1 and 2.
—Lincoln, 1979: 394, figure 187.

Material Examined. Santa Maria Basin, California, Phase II, Sta. R4, 92 m, January and May 1987, (1 male, 1 female, 1 juvenile).

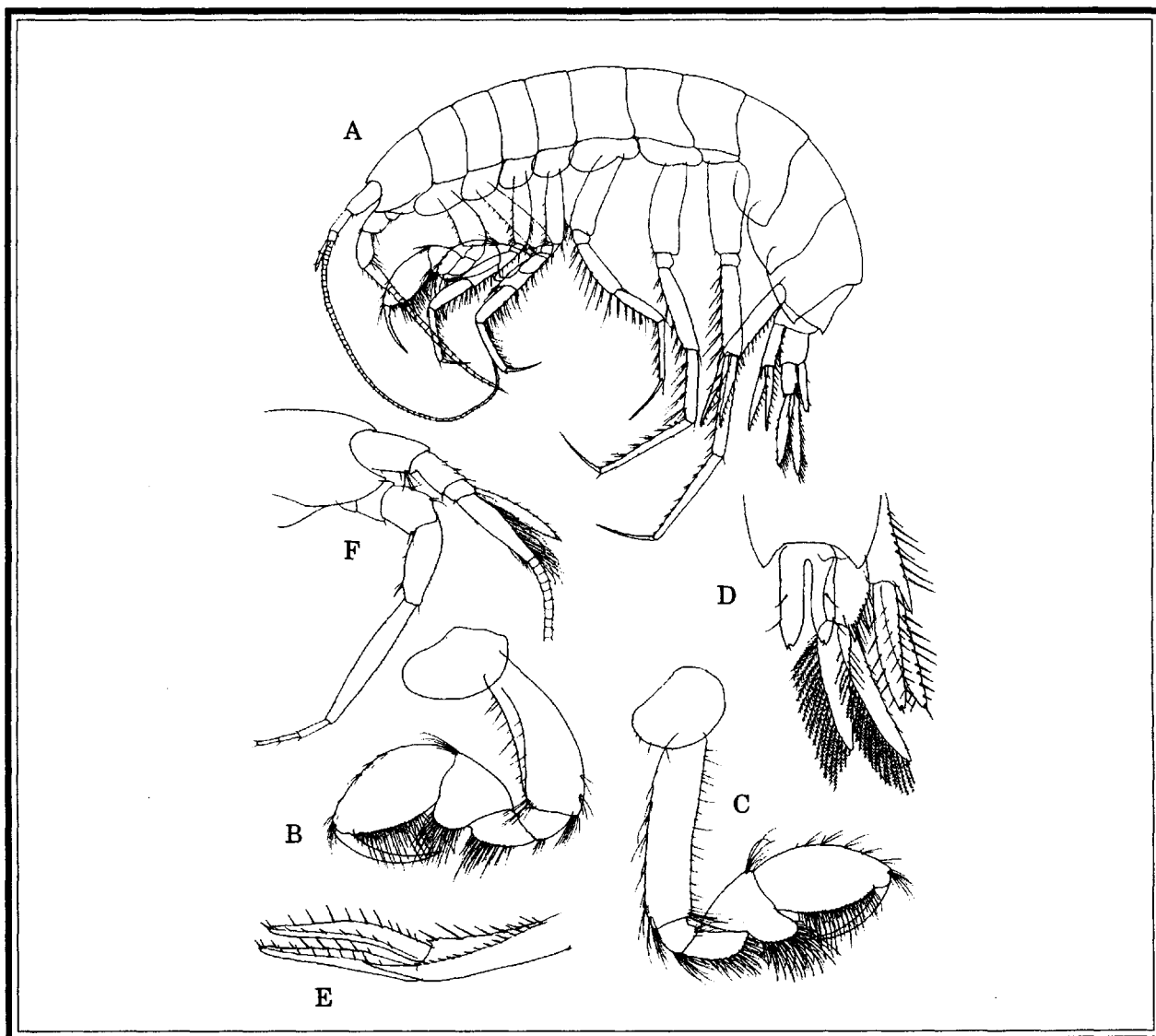


Figure 2.40. *Nicippe tumida*, female; A, Lateral view; B, Gnathopod 1; C, Gnathopod 2; D, Uropods 2-3, telson; E, Uropod 1; F, Head and antenna, male (from Lincoln, 1979).

Description. Both sexes 6.5-14.0 mm. Ommatidia scattered along lateral cephalic lobes. Urosomite 1 with paired mid-dorsal teeth. Telson narrow, nearly 3 times longer than broad, cleft almost to base and dilated at bottom.

Remarks. Barnard (1959b) includes *N. unidentata* K.H. Barnard, 1932 tentatively with the distribution records of *N. tumida* based on Enequist (1949), who suggests that it may represent phenotypic variation in the same species, however, Barnard did not synonymize the two. *N. unidentata* bears only 1 dorsal tooth on urosomite 1 and the telson is scarcely twice as long as broad, distinguishing it from *N. tumida*. There is a questionable record from the Mediterranean (Ledoyer, 1973), of 1 aberrant specimen. Our specimens agree well with published accounts for this species. Obviously identifiable features include, the 'tumid' (swollen) accessory flagellum and elongate primary flagellar article 1, antenna 1, furnished with a dense anterior tuft of setae in the male, and the dorsal bidentate tooth on urosomite 1. The accessory flagellum is not swollen in the female, but it is longer than the relatively short peduncular article.

Type Specimen and Locality. Christianiafjord, Norway.

Distribution and Habitat. Cosmopolitan. Atlantic from Davis Strait, west of Greenland into the Skagerrak and Barents Sea to South Africa; Pacific from Okhotsk and Japan Seas, California, 35-1369m (greatest depth near Iceland).

Pardalisca Krøyer, 1842

Type Species. *Pardalisca cuspidata* Krøyer, 1842.

Diagnosis (from Barnard and Karaman, 1991). Rostrum small. Eyes present or absent. Ratio of peduncular articles on antenna 1 = 11:8:3 down to 11:5:3, base of primary flagellum in female narrow, articulate, in male callynophore present, flagellum article 1 much longer than peduncle article 3 of male, shorter in female, peduncle article 2 short. Accessory flagellum present. Mouthparts forming quadrate bundle below head. Upper lip grossly and asymmetrically incised below. Mandibles asymmetrical, incisor on left weakly toothed, on right strongly toothed, palp fully developed. Inner lobes of lower lip separate. Maxilla 1 palp expanded apically. Maxilla 2 well developed, thin, plates equal. Inner plates of maxilliped small to obsolescent, outer plates large. Palp just as long as medial edge of outer plate. Coxae 1-4 quadrate, similar, even, scarcely broader than long. Gnathopods simple, slender, but carpus stout, not lobate, propodus of both gnathopods much shorter and thinner than carpus. Dactyls either stubby or claw-shaped, with many inner teeth. Pereopods simple. Urosomal teeth strong. Telson elongate, deeply cleft.

Remarks. 9 species.

Pardalisca sp.

Figure 2.41

Pardalisca sp. Barnard, 1967: 124-126, Figure 59-60.

Material Examined. Santa Maria Basin, California, Phase I, Sta. 55, 590 m, September 1984, (2 specimens).

Description. Female 8.8 mm. Eyes absent. Gnathopod 1, carpus barely twice as long as propodus. Urosomal carinae very small.

Remarks. Our specimens most closely resemble *P. tenuipes* Sars, 1895 in the pereopods, telson, and gnathopods, however they differ in lacking eyes, and the urosome, epimera and cephalic lobe are as figured for Barnard's (1967) *Pardalisca* sp., also reported from deep water.

Type Specimen and Locality. Female, 8.8 mm. Station 7229, 27 54'25" N, 115 40'00" W, 1720-1748 m, Cedros Trench, Baja California.

Distribution and Habitat. Santa Maria Basin, California and Cedros Trench, Baja California, 590-1748 m.

Pardaliscella Sars, 1895.

Type Species. *Pardalisca boeckii* Malm, 1871.

Diagnosis (from Barnard and Karaman, 1991). Rostrum small. Eyes absent. Ratio of peduncular articles on antenna 1 = 24:14:17, base of primary flagellum narrow, with weak callynophore, article 1 of flagellum longer than article 3 of peduncle, article 2 peduncle short. Accessory flagellum present. Mouthparts forming quadrate bundle below head. Upper lip even of asymmetrically incised. Mandibles asymmetrical,

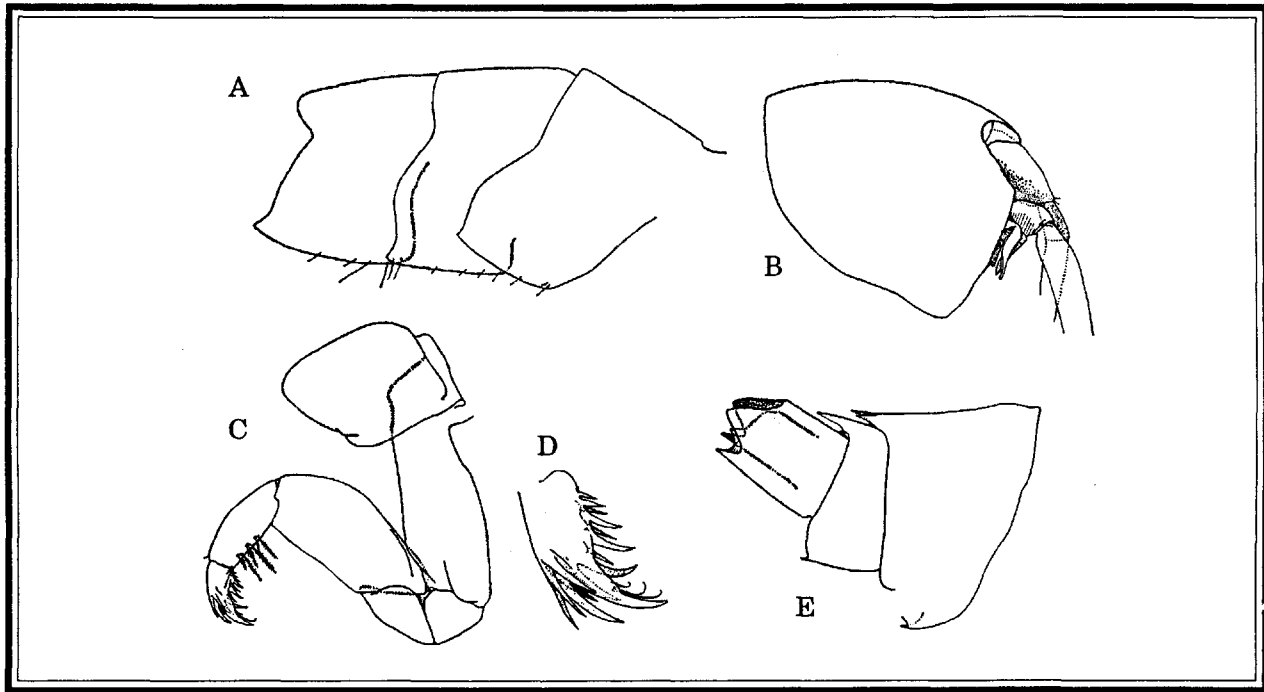


Figure 2.41. *Pardaliscia* sp., female, 8.8 mm; A, Epimera 1-3; B, Head; C, Gnathopod 1; D, Close-up of gnathopod 1 dactyl showing serrations; E, Urosomites 1-3 (Barnard, 1967).

incisor on left smooth, weakly toothed, on right strongly toothed, palp fully developed, thin plates equal. Inner plates of maxilliped small, outer plates medium. Palp about 1.5x as long as medial edge of outer plate. Coxae 1-4 subquadrate, even broader than long. Gnathopods simple, moderately stout, propodus of both gnathopods about as long as carpus. Carpus not lobate, dactyls normally claw-shaped, with 1-2 inner teeth. Pereopods simple. Urosomal dorsal teeth absent. Telson scarcely elongate, partly cleft.

Remarks. 6 species.

***Pardaliscella symmetrica* Barnard, 1959**

Figure 2.42

Pardaliscella symmetrica Barnard, 1959b: 41-42, figure 4.

Material Examined. Reported from this study, but not supported by collections.

Description (from Barnard, 1959b). Female 5 mm. Inner plate of maxilla 1 represented by a small bump bearing an apical seta. Antenna 1 slightly longer than antenna 2. Epimeron 3 with sharp posteroventral tooth at corner. Telson cleft less than 50 percent of its length.

Remarks. The description of *P. symmetrica* is incomplete. This species is closely allied with *P. yaquina* Barnard, 1971 and upon detailed examination of the types, may prove to be the same species. We received 1 small juvenile from the study area, which was inadequate for species confirmation.

Type Specimen and Locality. AHF No. 5715, female, 5 mm. Station 4873, off Newport, California, 33°30'36"N, 117°47'58"W, green silt, 174 m.

Distribution and Habitat. Oregon to southern California, 92-1749 m.

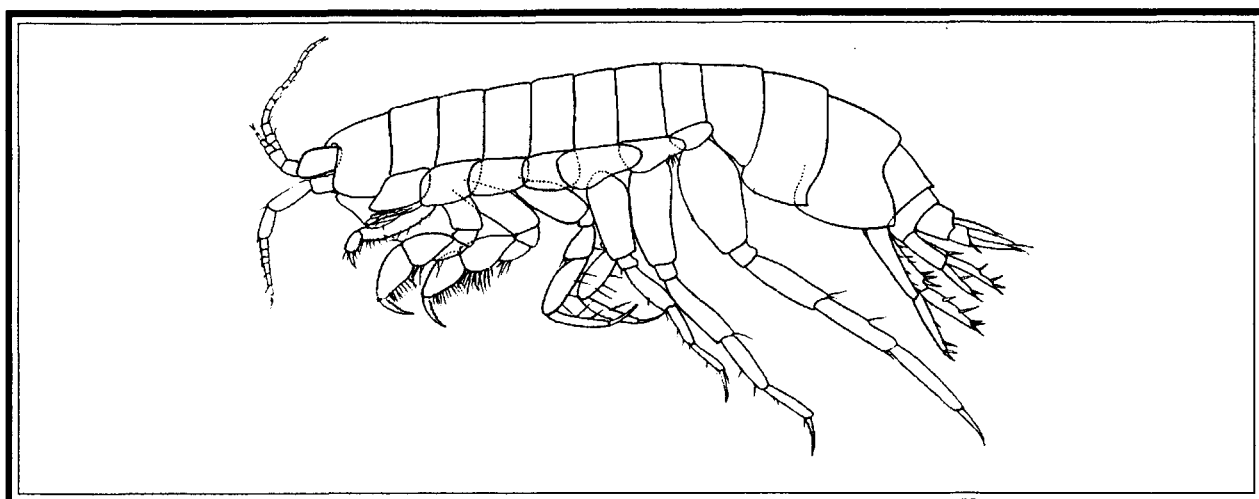


Figure 2.42. *Pardaliscella symmetrica*, male, 3 mm; Lateral view (from Barnard, 1959).

?*Pardaliscella yaquina* Barnard, 1971

Figure 2.43

?*Pardaliscella yaquina* Barnard, 1971: 60-63, figure 39.

Material Examined. Santa Maria Basin, California, Sta. PJ15, 155 m, (1 specimen), Sta. R3, 409 m, October 1986, (1 specimen), Sta. PJ1, 145 m, May 1987, (1 specimen).

Description (modified from Barnard, 1971). Urosomite 1 and 2 each with very small mid-dorsal tooth. Pleonal epimera 1-3 with sharp posteroventral tooth, largest on epimeron 2. Uropods stubby, stout. Telson cleft about 60 percent of length.

Remarks. Only urosomite 1 was produced into a weak triangular, mid-dorsal process, in our specimens. See remarks on *P. symmetrica*.

Type Specimen and Locality. Holotype female, 3.3 mm. Station 11, 44°38.6'N, 125°50.0'W, 400 m.

Distribution and Habitat. Oregon to southern California, 145-409 m.

Princaxelia Dahl, 1959

Type Species. *Princaxelia stephensi* Dahl, 1959, original designation.

Diagnosis (from Barnard and Karaman, 1991). Rostrum small. Eyes present. Ratio of peduncular articles on antenna 1=9:5:2, base of primary flagellum with callynophore in male, article 1 of flagellum much longer than article 3 of peduncle, article 2 of peduncle short. Accessory flagellum present. Mouthparts forming quadrate bundle below head. Upper lip weakly and asymmetrically incised. Mandibles slightly asymmetrical, incisor on left almost smooth, on right weakly toothed, palp fully developed. Inner lobes of lower lip coalesced. Maxilla 1, palp expanded apically. Maxilla 2 well developed, plates equal. Inner lobes of lower lip coalesced. Inner plates of maxilliped small, outer plates large; palp more than 3 times as long as medial edge of outer plate. Coxae 1-4 quadrate, alike, even, broader than long. Gnathopods simple, stout,

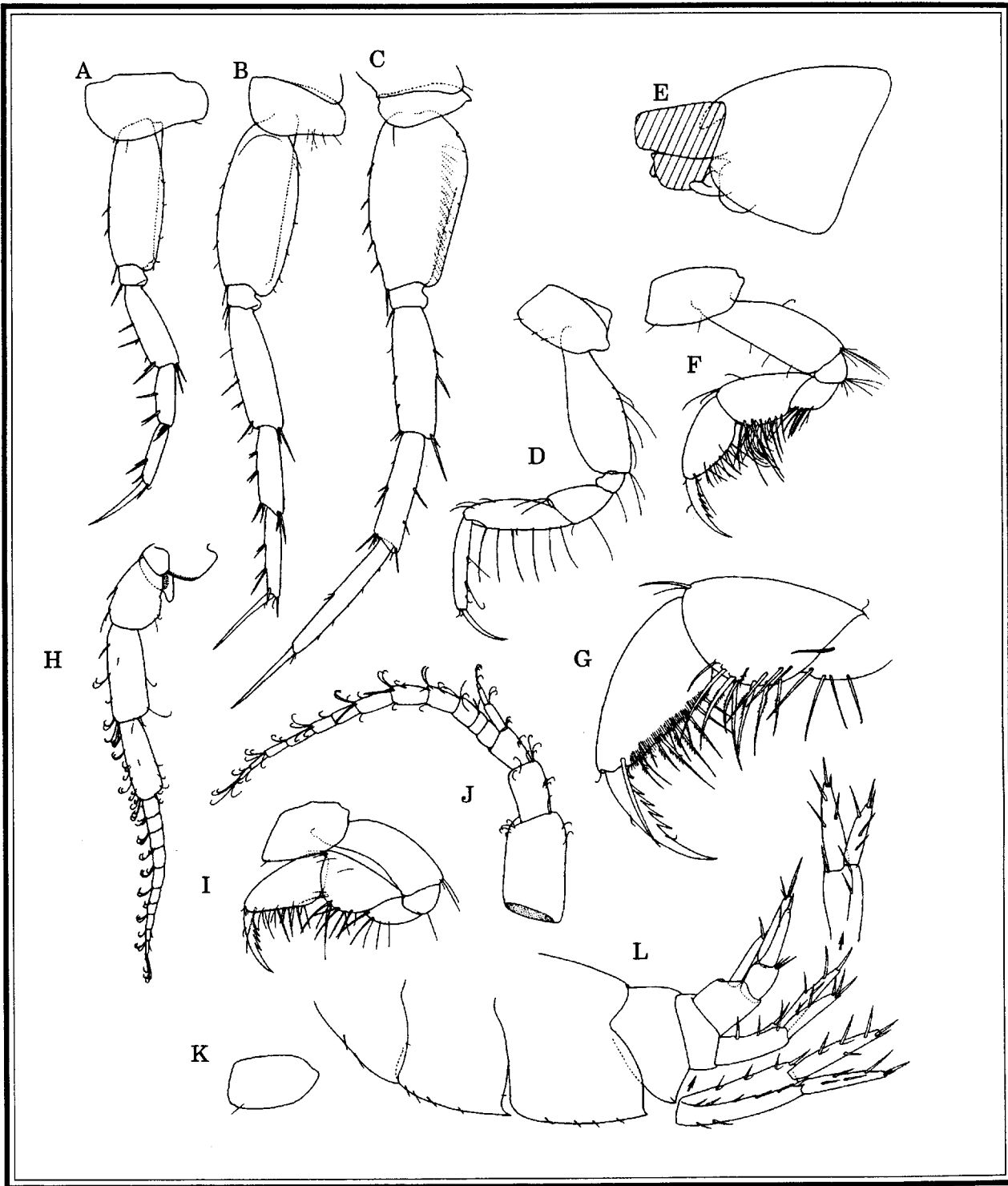


Figure 2.43. *Pardaliscella ?yaquina*, female, 3.3 mm; A, Pereopod 5; B, Pereopod 6; C, Pereopod 7; D, Pereopod 4; E, Head; F, Gnathopod 2; G, Gnathopod 2, close-up of dactyl; H, Antenna 2; I, Gnathopod 1; J, Antenna 1; K, Telson; L, Epimera 2 and 3, urosomites with close-ups of uropods (from Barnard, 1971).

article 6 of both gnathopods much shorter and narrower than article 5, carpus with broad, shallow lobe, dactyls normally claw-shaped, without inner teeth. Pereopods simple. Urosomal teeth strong. Telson elongate, deeply cleft.

Remarks. 3 species.

Princaxelia sp. A

Material Examined. Santa Maria Basin, California, Phase I, Sta. 63, 930 m, (3 specimens).

Description. Dorso-ventrally flattened. Antenna 1, article 1 flat and wide. Coxae very short. Gnathopod 1 and 2 similar, carpus inflated, almost twice as wide as propodus. Uropods elongate. Uropods 1 and 2 lanceolate, sparsely spinose along outer edge of peduncle and outer ramus. Uropod 3 not ornamented, rami lanceolate, foliose. Telson not tapering from base.

Remarks. The material we examined was limited to 3 specimens and was in poor condition, therefore we are hesitant to give this a new species designation or include it in the key. Two of the species in this genus have Pacific distributions, but have not been recorded as far east or north as California. Our specimens do not appear to be any of the currently described species.

Distribution and Habitat. Santa Maria Basin, California, 930 m.

Rhynohalicella Karaman, 1974

Type Species. *Halicella halona* Barnard, 1971.

Diagnosis (from Barnard and Karaman, 1991). Rostrum well developed. Eyes absent. Ratio of peduncular articles on antenna 1 = 30:10:9, base of primary flagellum with callynophore, article 1 of flagellum much longer than article 3 of peduncle, article 2 of peduncle short. Accessory flagellum present. Mouthparts styliform, forming conical bundle below head. Upper lip evenly incised. Mandibles symmetrical, incisors smooth, palp represented by tubercle with 2 setae. Inner lobes of lower lip separate. Maxilla 1, palp not expanded apically. Maxilla 2 represented by single elongate plate. Inner plates of maxilliped absent. Outer plates large. Maxilliped palp only as long as medial edge of outer plate. Coxae 1-4 softly subtriangular or trapezoidal, weakly diverse, broader than long. Gnathopods simple, of medium stoutness, propodus of gnathopod 1 much longer than carpus, carpus with short, broad, shallow lobe. Gnathopod 2 simple, carpus elongate and more broadly lobate, dactyls normally claw-shaped, without inner teeth. Pereopods simple. Urosomal teeth strong. Telson elongate, deeply cleft.

Remarks. monotypic genus.

Rhynohalicella halona (Barnard, 1971)

Figure 2.44

Halicella halona Barnard, 1971: 56-60, figures 35-37.

Rhynohalicella halona: Karaman, 1974: 33.

Material Examined. Santa Maria Basin, California, Phase II, Sta. R3, 409 m, October 1988, (2 specimens).

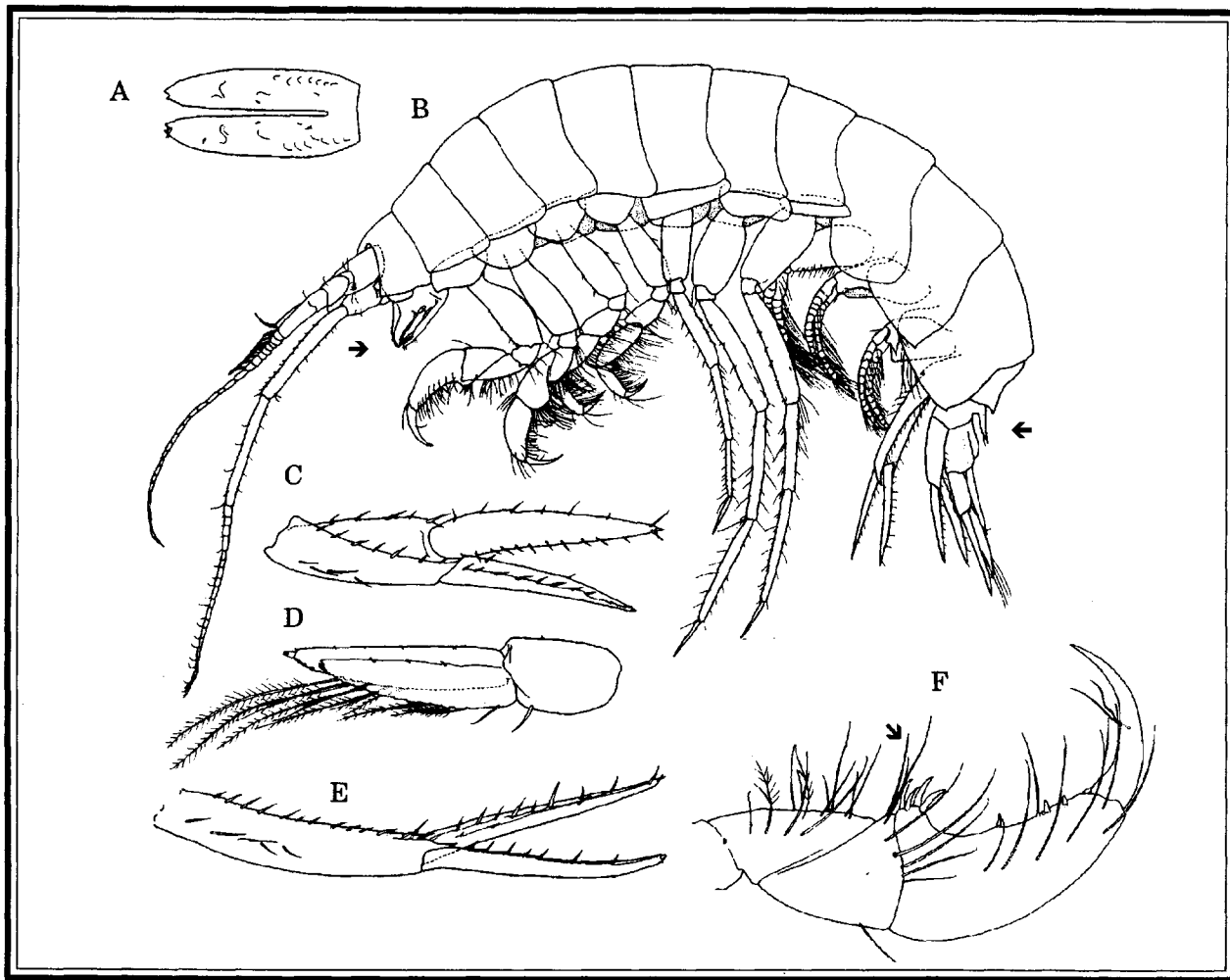


Figure 2.44. *Rhynohalicella halona*, male, 5.6 mm; A, Telson; B, Lateral view (note the quadrate bundle forming the mouthparts and the dorsal spine on urosomite 2); C, Uropod 2; D, Uropod 3; E, Uropod 1; F, Gnathopod 1 (note the proximal spinose protrusion) (from Barnard, 1971).

Description (from Barnard, 1971). Male 5.6 mm. See diagnosis of the genus. Mandibular palp vestigial. Maxilla 1 with small, conical, 1-articulate palp. Posterior margin of gnathopod 1, propodus deeply excavate and defined by proximal spinose protrusion. Epimeron 1 posteroventrally rounded, epimera 2-3 with weak posteroventral tooth. Urosomite 2 with posteriorly directed tooth reaching almost to insertion of telson. Urosomite 3, with weak mid-dorsal tooth. Telson elongate, cleft three-quarters of its length.

Remarks. This study yields the first documented records from California waters.

Type Specimen and Locality. USNM No. 127128, male, 5.6 mm. Station 21, 44°39.1'N, 124°36.3'W, 200 m.

Distribution and Habitat. Oregon and southern California, 200-409 m.