

## **Crabs and their relatives of British Columbia**

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### **SECTION MACRURA**

#### **Superfamily Thalassinidea**

##### *Key to Families*

1. Shrimp-like. Integument soft and pleura on abdomen large. Live in burrows.....Axiidae
1. Shrimp-like. Integument soft and pleura small. Live in burrows.....2
2. Rostrum distinct, ridged and setose. Eyestalks cylindrical and cornea terminal. Chelipeds subchelate and subequal.....Upogebiidae
2. Rostrum minute and smooth. Eyestalks flattened with mid-dorsal corneal pigment or cylindrical without dark pigment. Chelipeds chelate and unequal in size and shape.....Callianassidae

#### Family AXIIDAE

The thin-shelled shrimp-like animals in this family are all burrowers and are found from shallow subtidal habitats to great depths. Recently Pemberton, Risk and Buckley (1976) determined that one species found off Nova Scotia makes burrows more than 2.5 m into the substrate. Obviously in abyssal regions the collection of these animals under such circumstances is particularly haphazard. Thus the number of specimens obtained is few and often these are damaged. Four species of this family are known to occur in the waters off British Columbia. All have one or two small hollow knobs of apparently unknown function on the mid-dorsal ridge of the carapace. These species have been assigned to the genera *Axiopsis*, *Calastacus* and *Calocaris*. The definitions of these genera were made when few species had been studied and recent discoveries indicate that the criteria used are not satisfactory. New genera will have to be created and the taxonomy of the Family revised. It is important that any specimens obtained should be carefully preserved and placed in suitable research collections where they will be available for future study.

#### Family Axiidae

##### *Key to Species*

1. Eyes with dark pigment. Known from less than 200 m depth.....*Axiopsis spinulicauda*
1. Eyes without pigment. Known only from more than 200 m depth.....2
2. Rostrum slender with 2 teeth at base and no spines on dorsal carapace or telson.....*Calastacus stilirostris*
2. Rostrum flat and wide with lateral teeth. Spines on ridges of carapace and on telson.....3
3. 2 ridges with spines on carapace. Numerous small granules on carapace and some part of appendages.....*Calocaris investigatoris*
3. 5 ridges with spines on carapace; carapace surface smooth. Small spines on hand of chelipeds.....*Calocaris quinqueseriatus*

***Axiopsis spinulicauda*** (Rathbun 1902)\*

*Axius spinulicauda*

**Description** — Carapace surface smooth. Large, flattened, rostrum with toothed margins extends as a sharp ridge on either side of gastric area. A toothed ridge runs medially nearly to cervical groove. Between these 3 ridges are 2 shorter ones. A raised area protrudes in the centre of the posterior margin. Eyestalk stout with pigmented cornea. Antenna with long projections or “thorns” on second and third basal segments. Chelipeds unequal in size; palm of large cheliped of male subrectangular with margins cut into numerous teeth, as is the dactyl. Palm of large cheliped of female with slightly curved margins and long slender fingers. Small chelipeds with finely toothed, curved margins and smaller teeth. Walking legs slender, setose and subequal in length, and first one chelate. Abdomen smooth, stout and pleura broad with rounded margins. Tail fan with telson and distal margin strongly curved and longer than 6<sup>th</sup> segment and uropods. Telson with a tooth on mid-posterior margin. Rows of spines on distal surface of telson and on mid-ridges of uropods. Outer margins of uropods toothed. Paired pleopods on abdominal segments 1 - 5; uniramous on 1<sup>st</sup> and rest biramous and foliaceous with *appendix interna*. Male with *appendix masculina* as well on 2<sup>nd</sup> pleopod. Eggs are carried on all pleopods of the female.

**Colour** — Carapace translucent pink with coral rostrum and ridges with greenish tinge laterally. Antennules and antennae pale pink and white with yellowish flagella. Eyestalk translucent, cornea black. Chelipeds with shell-pink and white ischium and merus, coral red carpus and hand, and orange teeth. Walking legs pink, coral and white. Abdomen with pleopods and tail fan orange with patches of pale orange or pink.

**Habitat** — Burrowers in subtidal mud substrate especially in fjords.

**Size** — Carapace: male 33 mm, female 30 mm. Total length: male 90 mm, female 89 mm.

**Range** — Holberg Inlet, Quatsino Sound Vancouver Island, British Columbia, to off Bodega Head, California; from 59 - 256 m.

**Distribution in British Columbia** — Recorded from the fjords on the west coast of Vancouver Island and from Stuart Channel, Strait of Georgia.

***Calastacus stülirostris*** Faxon 1893

**Description** — carapace surface smooth. Rostrum long and narrow with stout teeth at base. A narrow ridge on anterior dorsal area. Eyestalk short with unpigmented globular cornea. Peduncle of antenna with long narrow projections or “thorns” on 2<sup>nd</sup> and 3<sup>rd</sup> segments and a long setose flagellum. Chelipeds large, subequal and with sharp marginal teeth, some spines on inner surface of palm and no gape between fingers, the tips of which are crossed. Walking legs slender, with smooth surfaces and setose, 1<sup>st</sup> shorter than others and chelate with fine spines on cutting surfaces. Abdomen relatively slender with well developed pleura with lateral margins slightly angled. Tail fan with telson subequal in length to uropods and much longer than 6<sup>th</sup> abdominal segment. Telson elongate rectangular with 2 unarmed ridges. Uropods with unarmed ridges and outer margins with teeth. Hermaphrodites, so gonopores on coxae of 3<sup>rd</sup> and 5<sup>th</sup> pereopods (2<sup>nd</sup> and 4<sup>th</sup> walking legs). Pleopods on 1<sup>st</sup> abdominal segment, uniramous and modified for copulation. 2<sup>nd</sup> to 5<sup>th</sup> pleopods biramous, slender and with *appendix interna* and long setae, particularly on base where bits of egg membrane may still be attached.

**Colour** — Unrecorded.

**Habitat** — Brown sand or rock.

**Size** — Carapace 22 mm; total length 52 mm.

**Range** — From southwestern British Columbia to Peru (16°S, 73°27'W); 700 to 1208 m.

**Distribution in British Columbia** — One record: September 1964, southwest of Vancouver Island (47°58'N, 125°47.2'W); from 924 m.

*Calocaris investigatoris* (Anderson 1896)

*Calastacus investigatoris*, *Calocaris* (*Calocaris*) *granulosus*

**Description** — Carapace surface covered with fine, sharp granules. A sharp, mid-dorsal ridge. Rostrum flat with teeth on margins which extend as ridges on gastric area. Cervical and branchial grooves. Eyestalk small and cornea without pigment. Antenna with short projections or “thorns” on 2<sup>nd</sup> and 3<sup>rd</sup> segments of peduncle. Chelipeds subequal, with fine marginal teeth, outer face of palm with 3 rows of granules. Fingers long and narrow with a gape proximally. Walking legs slender and setose, 1<sup>st</sup> chelate and shorter than others. Hermaphroditic so gonopores on coxae of 2<sup>nd</sup> and 4<sup>th</sup> walking legs. Abdomen long, setose with broad pleura which has grooves and knobs and lateral margins rounded. Tail fan with telson longer than uropods and twice as long as 6<sup>th</sup> abdominal segment. Two rows of fine spines converging proximally. Uropods with a few teeth on outer margins. Pleopods on 1<sup>st</sup> segment small and uniramous, modified for copulation. Pleopods on segments 2 to 5 biramous, slender, setose and with *appendix interna* only.

**Colour** — Carapace pale grey with white rostrum, crest, grooves and hollow tubercle. Coral of yolk of eggs in ovary visible through translucent carapace. Chelipeds and walking legs pale orange with white teeth and pale yellow setae. Ischium and merus lighter in colour than terminal segments. Abdomen pinkish orange, deepest ventrally and pleura white. Pleopods and tail fan pale pink. Antennules and antennae pale grey dorsally and orange ventrally. Eyestalk orange, deepest distally with translucent orange cornea.

**Habitat** — Abyssal mud.

**Size** — Carapace 25 mm; total length 60 mm.

**Range** — Arabian Sea. South of Sannak Islands, Aleutian Islands, Alaska, to San Diego, California; from 549 to 1733 m.

**Distribution in British Columbia** — Off Englefield Bay, Queen Charlotte Islands (53°01.5'N, 132°54.3'W); at 1069 m.

*Calocaris quinqueseriatus* (Rathbun 1902)

*Calastacus quineseriatus*

**Description** — Carapace smooth, cervical groove deep. Rostrum flattened, with toothed margins continuing as ridges on gastric area. Median ridge spined from mid rostrum to gastric area. These ridges are separated by 2 more short, spined ridges, making 5 in all. Eyestalk short and cornea without dark pigment. Antenna with relatively short projections or “thorns” on 2<sup>nd</sup> and 3<sup>rd</sup> segment of peduncle. Unequal, elongated chelipeds with toothed margins and surface of hands covered with numerous small sharp granules. A slight gape proximally between fingers of large cheliped but none on smaller. 1<sup>st</sup> walking leg short and chelate, with spines on posterior margin of ischium and merus. Others long and slender with setae terminally. Abdomen stout; pleura broad and lateral margins rounded. Tail fan with telson only slightly longer than 6<sup>th</sup> abdominal segment: lateral margins parallel and toothed, distal margin curved and with a median tooth. Two, spined ridges on telson and 1 on endopod of uropod. No pleopod on 1<sup>st</sup> abdominal segment. Slender biramous pleopods on 2<sup>nd</sup> to 5<sup>th</sup> segments with *appendix interna*. In male 2<sup>nd</sup> pleopod has an *appendix masculina* as well.

**Colour** — Unrecorded.

**Habitat** — Abyssal mud.

**Size** — Carapace 27 mm; total length 73 mm.

**Range** — Sea of Okhotsk, and off San Nicolas Island, California; 288 to 2200 m.

**Distribution in British Columbia** — Off Vancouver Island (50°54.3'N, 130°6'W); at 2200 m.

Family UPOGEBIIDAE

*Key to Species*

1. Third maxillipeds pediform. Walking legs with simple dactyls. Littoral and subtidal.....*Upogebia pugettensis*

The Genus *Upogebia* Leach 1814

Shrimp-like. Rostrum short, tridentate and setose. Chelipeds subequal and subchelate. Last walking leg chelate, rest simple. Eyestalk cylindrical and cornea terminal. Third maxillipeds pediform. First 2 pairs of pleopods different from last 3 which are foliaceous and have *appendices internae*.

***Upogebia pugettensis*** (Dana 1852)  
*Gebia pugettensis*, *G. californica*

Mud Shrimp

**Description** — Carapace with anterior dorsal area rough and setose with rest smooth and membranous. Chelipeds setose, stout with small thumb and stout dactyl. Walking legs stout, slightly compressed and setose. Abdomen with narrow pleura and pubescence on 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> segments. Male without pleopods on 1<sup>st</sup> segment. Large and foliaceous pleopods on segments 2 to 5. Female with uniramous pleopods on segment 1 and foliaceous on 2 to 5. All except the last pair serve to carry eggs. Telson wider than long.

**Colour** — Considerable variation in intensity and distribution of colour. Carapace with anterior part blue and brown, laterally grey or white with reticulations of blue, orange or yellow. Abdomen brown with blue and green reticulations. Tail fan with a symmetrical pattern of blue and green on sixth segment, bright yellow with blue ridges on uropods and telson orange margined with green. Pleopods orange. Chelipeds: ischium orange, merus and carpus yellow and blue with pale brown setae. Hand blue with tip of dactyl white. Eyestalk orange, cornea black.

**Habitat** — common in burrows in muddy sand, but are also found in most sheltered beaches as well, in sand or gravel, particularly under rocks where sufficient suitable material is available to construct semi-permanent burrows. Y-shaped burrows with several openings on the surface are made.

**Size** — Total length: male, 150 mm; female 105 mm.

**Range** — Valdez Narrows, Alaska (60°4'N, 146°40'W), to San Quentin Bay, Mexico; intertidal.

**Distribution in British Columbia** — Common in suitable habitats.

**Notes** — Of some economic importance due to burrowing activities. On certain types of oyster beds, young oysters can be smothered by the mud displaced by these animals. Also dykes designed to retain a layer of sea water may be riddled with burrows through which water drains at low tide.

Family CALLIANASSIDAE

*Key to Species*

1. Eyestalks flattened with small pigmented cornea mid-dorsal. Third maxillipeds operculiform. Littoral and subtidal.....2
1. Eyestalks cylindrical and with cornea unpigmented. Third maxillipeds pediform with semicircular dactyl. Abyssal.....*Callianopsis goniophthalma*
2. Large cheliped with sharp straight dorsal ridge on carpus. Small cheliped with carpus and merus subequal in width.....*Callianassa gigas*
2. Large cheliped with sharp dorsal ridge incurved laterally on carpus. Small cheliped with carpus wider than merus.....*Callianassa californiensis*

***Callianopsis goniophthalma*** (Rathbun 1901)

*Callianassa goniophthalma*

**Description** — Shrimp-like. Carapace smooth and membranous with a slight elevation on mid-dorsal margin. Rostrum small but distinct and sharp pointed. Antennules and antennae setose with long slender flagella. Eyestalk sub-oblong, with a small tooth, and cornea without dark pigment. Third maxillipeds pediform and dactyls semicircular. Chelipeds unlike and unequal in size. Larger cheliped much longer than carapace, with narrow merus with a ventral marginal tooth; carpus wide with slightly convex outer surface and hand with sharp margins and a gape between fingers of male but not of female. Small cheliped slender with subequal merus and carpus which are shorter than hand. 1<sup>st</sup> walking leg chelate, 2<sup>nd</sup> and 3<sup>rd</sup> with simple dactyls and last subchelate with a flared tip on dactyl. Abdomen more than twice as long as carapace, with narrow pleura and a sharp tooth on either side of 6<sup>th</sup> segment. Tail fan with sub-rectangular telson slightly shorter than uropods and no tooth on distal margin. 1<sup>st</sup> pair of pleopods of male are gonopods with the terminal part flat and boat-shaped, 2<sup>nd</sup> to 5<sup>th</sup> foliaceous. Female with 1<sup>st</sup> pair of pleopods biramous and slender, and 2<sup>nd</sup> to 5<sup>th</sup> foliaceous.

**Colour** — Unrecorded.

**Habitat** — Deep water, probably in burrows.

**Size** — Total length: male 130 mm, female 100 mm.

**Range** — Clarence Strait, Alaska, to off Harris Point, San Miguel Island, California; from 483 to 651 m.

**Distribution in British Columbia** — No known record but it undoubtedly occurs in British Columbia waters because it has been taken in Clarence Strait, northeast of Queen Charlotte Islands and from off the mouth of the Columbia River.

The Genus *Callianassa* Leach 1814

Shrimp-like. Rostrum small. Chelipeds unequal and chelate. 1<sup>st</sup> pair of walking legs small, equal and chelate, 2<sup>nd</sup> and last subchelate. Eyestalk flattened. Third maxillipeds operculiform. 1<sup>st</sup> two pairs of pleopods different from last 3 which have *appendices internae* and are foliaceous.

***Callianassa gigas*** Dana 1852

*Callianassa longimana*

Ghost Shrimp

**Description** — Adult males are easily distinguished from *C. californiensis* males, but immature males and females of the two species are alike and require careful comparison to separate. Adult male has unlike

chelipeds, one much larger than the other. The larger may be subequal in length to the entire animal. Dorsal and ventral margins of carpus and hand are relatively straight, the outer face with longitudinal groove ventrally, merus stout with large proximal ventral lobe. Large cheliped of female and immature male with hand longer than carpus, and merus with a large lobe near base. In both sexes small cheliped differs from *C. californiensis* in being proportionately more slender, with carpus and hand subequal. 1<sup>st</sup> walking leg chelate with palm wider than that of *C. californiensis*. 2<sup>nd</sup> to 4<sup>th</sup> walking legs similar but proportions slightly different. Pleopods as in *C. californiensis*.

**Colour** — carapace ivory, pale yellow and pink. Chelipeds ivory. Walking legs cream with red-gold setae. Abdomen flesh-coloured dorsally, ivory laterally and areas of pink, rose and yellow. Tail fan pink or yellow, pleopods yellow.

**Habitat** — Burrow in mud or sandy mud, low intertidal and subtidal.

**Size** — Total length: male 150 mm, female 106 mm.

**Range** — Tobey Point, and Dodge Cove, Digby Island, British Columbia (54°15'N, 130°20' W), to San Quentin Bay, Mexico; intertidal to 50 m.

**Distribution in British Columbia** — Few records, mainly off southern Vancouver Island and near Prince Rupert, probably due to difficulty of collection and identification.

*Callinassa californiensis* Dana 1854

Ghost Shrimp

**Description** — Surface smooth and membranous. Flattened eyestalk pointed and divergent with pigmented cornea mid-dorsally. Antennules and antennae with long, somewhat setose, flagella. Chelipeds unlike and unequal, the larger may be either left or right; surface glossy and compressed, with sharp margins, thin, and slightly curved dorsally. Merus relatively slender with a prominent lobe ventrally. In adult male large cheliped with carpus and hand subequal in length and breadth, but immature male and female with hand longer than carpus. Small hand of male and female has carpus longer than hand and fingers shorter than palm. 1<sup>st</sup> walking legs flattened, setose and chelate, 2<sup>nd</sup> also setose with triangular carpus, broad subrectangular propodus and small rounded dactyl. 3<sup>rd</sup> and 4<sup>th</sup> walking legs slender with tufts of stiff setae on propodus and dactyl; last leg chelate. Narrow pleura with pubescence on 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> segments. Male with vestigial pleopods on 1<sup>st</sup> abdominal segment and none on 2<sup>nd</sup>. Female with egg-carrying uniramous pleopods on 1<sup>st</sup> segment and biramous on 2<sup>nd</sup>. Pleopods 3 to 5 are foliaceous and used for backward propulsion. Tail fan with broad flat uropods and subrectangular telson, which is slightly longer than wide and has a tooth on midposterior margin.

**Colour** — Clear bright colours. Carapace and chelipeds mainly white with patches of yellow, orange, flesh-pink or rose. Walking legs pale pink. Abdomen pink, deep rose and some tinges of yellow. Pleopods white or cream and tail fan often yellow. Eyestalk orange with black cornea. Adult males usually with more white area than females.

**Habitat** — Live in burrows excavated in sand or sandy mud in high intertidal. In certain areas tremendous numbers may be found but these are much smaller in size than in areas where the numbers are less. High up on sandy beaches holes about 5 mm in diameter indicate the presence of these animals. Under the surface the burrow widens to about 20 mm and is smoothly plastered with mud and is usually vertical for perhaps 50 cm, then runs horizontal for some distance before rising to the surface again. It is difficult to excavate an entire burrow because the wet sand is so unstable. In highly populated areas collection is relatively simple but in areas where there are fewer and the animals larger and the burrows deeper, much and often fruitless digging is required.

**Size** — Total length: male 115 mm, female 120 mm.

**Range** — Mutiny Bay, Alaska, to San Diego, California; intertidal.

**Distribution in British Columbia** — Widespread on sandy beaches of Vancouver Island and the southern mainland. Usually where there is some protection from heavy surf.

## SECTION ANOMURA

### *Key to Families*

1. Crab-like. Abdomen bent under body. Last pair of walking legs small and hidden under edge of carapace.....2
1. Not crab-like. Abdomen may or may not be bent under body. Last pair of walking legs may or may not be small and hidden.....3
2. Abdomen asymmetrical without uropods.....Lithodidae
2. Abdomen symmetrical with uropods.....Porcellanidae
3. Tail fan modified for use as an anchor within hollow objects. Telson figured for each species. Abdomen usually soft and asymmetrical and not clearly segmented.....4
3. Tail fan not used as an anchor. Abdomen calcified and segmented.....6
4. Bases of third maxillipeds close together. Chelipeds alike and subequal.....Diogenidae
4. Bases of third maxillipeds separated. Chelipeds unlike and unequal.....5
5. No accessory teeth on *crista dentata* of ischium of third maxilliped. Paired pleopods on 1<sup>st</sup> and 2<sup>nd</sup> abdomen of male. Only left gonopore developed in female.....Parapaguridae
5. One or more accessory teeth on *crista dentata*. No paired pleopods on either sex. Paired gonopores in female.....Paguridae
6. Egg-shaped. No chelipeds. Uropods and telson elongate.....Hippidae
6. Somewhat lobster-shaped. Chelipeds elongate but uropods and telson short.....7
7. Telson with 1 or 2 sutures. Posterior half of abdomen bent under itself with telson tucked over last abdominal segment.....Chirostylidae
7. Telson with numerous sutures. Abdomen bent upon itself but telson not tucked under.....Galatheididae

### Family LITHODIDAE

#### *Key to Species*

1. Abdomen soft, not clearly segmented except near base.....2
1. Abdomen with calcified plates, segmented.....5
2. Surface of carapace and abdomen setose with clavate and capitate setae. Only upper margins of carpus and propodus of walking legs serrate.....3
2. Surface of carapace and abdomen with granules or setose



- spines. Walking legs, if serrate, are so on both upper and lower margins.....4
3. Rostrum broadly triangular with sharp tip. Frontal teeth subequal with tips curved toward each other. 3 longitudinal rows of spines on palm of right cheliped. Inner margins of last 2 segments of 3<sup>rd</sup> maxilliped not inflated.....*Hapalogaster grebnitzkii*
  3. Rostrum narrow with sharp tip. Outer frontal teeth narrow, straight, and longer than inner. 4 longitudinal rows of spines on palm of right cheliped. Inner margins of last 2 segments of 3<sup>rd</sup> maxilliped inflated.....*Hapalogaster mertensii*
  4. Surface of carapace and abdomen granular. Chelipeds with granulated knobs. Walking legs without serrate margins.....*Oedignathus inermis*
  4. Surface of carapace and abdomen spined. Chelipeds with many setose spines. Margins of walking legs serrate with setose spines.....*Acantholithodes hispidus*
  5. Carapace outline an equilateral triangle.....6
  5. Carapace outline not so.....7
  6. Legs with blunt protuberances and no conspicuous setae.....*Phyllolithodes papillosus*
  6. Legs with spines and many long, curved bristles.....*Rhinolithodes wosnessenskii*
  7. Carapace surface relatively smooth, with lateral expansions completely covering the appendages.....8
  7. Carapace surface not smooth and no lateral expansions entirely covering the appendages.....9
  8. Rostrum with lateral margins flared. Abdomen and chelipeds with smooth surfaces.....*Cryptolithodes sitchensis*
  8. Rostrum with lateral margins not flared. Ridges on abdomen and chelipeds with knobs on surface.....*Cryptolithodes typicus*
  9. Granular knobs on convex carapace and short, stout walking legs.....10
  9. No granular knobs on relatively flat carapace and long slender walking legs.....11
  10. When carpi of chelipeds and 1<sup>st</sup> walking legs are pressed close together the rounded surfaces form tubes or foramina. Spines on antennal scale on margins only.....*Lopholithodes foraminatus*
  10. No such foramina. Spines on antennal scale on dorsal surface as well as on margins.....*Lopholithodes mandtii*
  11. Carapace, chelipeds and walking legs scaled.....*Placetrion wosnessenskii*
  11. Carapace, chelipeds and walking legs spined.....12
  12. Abdomen with plates of calcified nodules on leathery surface.....13
  13. Dorsal surface of carapace with large and small spines. Walking legs flattened ad with serrate margins.....*Paralomis verrilli*
  13. Dorsal surface of carapace with small spines and granules.

- Walking legs quadrate with serrate margins.....*Paralomis multispina*
14. 2<sup>nd</sup> segment of abdomen composed of separated plates.....*Paralithodes camtschatica*
14. 2<sup>nd</sup> segment of abdomen composed of fused plates.....15
15. Large spines on carapace subequal in size. Rostrum stout with single or bifid tip and dorsal, lateral and ventral spines.....*Lithodes aequispina*
15. Large spines on carapace unequal in size. Rostrum elongate, slender, with bifurcate tips and lateral and ventral spines, but no dorsal.....*Lithodes couesi*

The Genus *Hapalogaster* Brandt 1850

Carapace and appendages somewhat flattened and pubescent with specialized setae. Right cheliped larger than left and both longer than walking legs. Abdomen soft, with some thin calcareous plates on the second segment and on the posterior segments of the male. The female has a group of larger plates on the lateral left side of the abdomen which serve as a type of brood pouch to protect the developing eggs.

*Hapalogaster grebnitzkii* Schalfeew 1892

**Description** — Carapace relatively flat, covered with short, soft, capitate setae as well as tufts of longer, stiff, clavate setae. Rostrum broadly triangular with a sharp tip and longer than orbital and antero-lateral teeth which are subequal in length with tips curved toward each other. Margin of carapace behind cervical groove cut into stout teeth, which decrease in size posteriorly. Abdomen setose. Eyestalk short and stout. Antennal base spined. Inner margin of last 2 segments of third maxilliped not inflated. Right cheliped stout with dactyl slightly more than half length of palm. Palm with 3 longitudinal rows of spines, the stout upper row being separated from the other 2 by a flat smooth surface. Fingers stout, spoon-shaped, with finely toothed margins. Ventrally mostly naked with an elongated membranous area at base of fixed finger. Smaller left cheliped similar but without membranous area. Walking legs flattened; all dorsal margins (except those of dactyls) are serrate with stout teeth as are the ventral margins of the meri. Chelipeds and walking legs setose, like the carapace, but with the addition of many long, soft setae on the outer margins.

**Colour** — Preserved specimen similar to *H. mertensii*. Colour of surface masked by light brown setae. Carapace red and orange; marginal spines with white tips. Branchial area pale blue-grey. Abdomen pale brown. Fingers of chelipeds red with yellow tips and white teeth. Walking legs with patches of red dorsally and orange ventrally, with dactyls red proximally and orange distally; claw dark brown. Antennal flagellum uniform brown. Sternum orange with some red spots.

**Habitat** — well adapted to secrete themselves between loose rocks and in rocky crevices.

**Size** — Carapace of male 23 x 24 mm.

**Range** — North Pacific Ocean from Sea of Japan to Alaska and south to the southeast side of Winter Inlet, Pears Island, British Columbia (54°58.7'N, 130°27.5'W); intertidal to 90 m. California records are not valid (Hart 1980).

**Distribution in British Columbia** — Known only from the above record.

*Hapalogaster mertensii* Brandt 1850  
Crab

Hairy

**Description** — Carapace relatively flat with soft capitate setae and elongate clavate setae and stiff bristles on tips of spines. Rostrum narrow, pointed, and longer than orbital. Antero-lateral teeth straight and

slender and much longer than orbital. Margin of carapace behind cervical groove cut into long slender teeth decreasing in size posteriorly. Antennal base spiny. Eyestalk long and slender. Inner margin of last 2 segments of 3<sup>rd</sup> maxilliped distinctly inflated. Right cheliped like that of *H. grebnitzkii* but usually has 4 longitudinal rows of spines on palm. Dactyl about ¾ length of palm. Walking legs also similar but marginal teeth longer and more slender and with stiff setae near tips of spines. Abdomen with narrow plates on 2<sup>nd</sup> segment.

**Colour** — Carapace brown and red, with a few white spots, and covered with pale yellowish tan or dark brown setae and bristles. Tips of fingers of chelipeds orange and teeth white; other surfaces like the carapace. Walking legs with a dark red band and 2 white band on the propodus. Dactyl red-brown and pale brown with black claw. Sternum red. Eyestalk pale brown; cornea black with orange flecks. Flagellum of antenna banded with wide brown sections and narrow translucent ones.

**Habitat** — Usually occur under loose rocks, especially when these are covered with seaweeds. The animals are adept at clinging tightly to the undersurface of rocks and squeezing into narrow crevices. Some are parasitized by the rhizocephalan *Briarosaccus temellus* which can be seen as an egg-filled sac attached to the ventral abdomen.

**Size** — Carapace: male 25 x 25 mm; female 22 x 24 mm.

**Range** — Atka, Aleutian Islands, to Puget Sound, Washington; intertidal to 55 m.

**Distribution in British Columbia** — Widespread in suitable habitats.

***Oedignathus inermis*** (Stimpson 1860)\*

*Hapalogaster inermis*, *Hapalogaster brandti*, *Oedignathus gilli*

**Description** — Carapace somewhat pear-shaped, with short triangular rostrum, and covered with blunt spines and soft setae. Eyestalk short and cone-shaped; cornea small. Chelipeds unequal in size, the larger covered with flat, wart-like masses of granules; fingers spoon-like. Smaller cheliped and walking legs setose with minute sharp granules. Walking legs subcylindrical with short stout dactyls, strong movable spines ventrally, and a strong curved claw. Abdomen soft with basal and terminal segments strengthened by flat calcareous plates.

**Colour** — Carapace grey-brown and white, with orange granules surrounding white, and with dark red setae and gold bristles. Colour often masked by mud. Large cheliped with ischium and merus blue-grey or tan with red-brown areas; carpus tan with blue-violet or white granules and flat blue granules laterally. Hand brownish with granules violet-blue and pale blue to white laterally; fingers violet and violet-blue granules with smooth tips tan. Small cheliped with ischium and merus white or tan, and a maroon network with a turquoise stripe. Carpus and hand brown with white-tipped orange knobs, red and gold setae, and fingers darker brown with orange tips and dark brown setae. Walking legs white or tan with maroon streaks, green, red and white setae; granular knobs chocolate brown with white tips; dactyl maroon deep yellow with black spines and claw. Eyestalk brown and white, with cornea black but covered with red film. Base of antenna red and brown; acicle orange and flagellum tan.

**Habitat** — Open coast in rocky crevices, abandoned sea urchin holes, under kelp holdfasts and between green anemones, such as *Anthopleura xanthogrammica*, and California mussels, *Mytilus californianus*.

**Size** — Carapace: male 30 x 25 mm; female 22 x 20 mm.

**Range** — Northwestern Pacific (Japan), Unalaska, Alaska, to Pacific Grove, California; intertidal to 15 m.

**Distribution in British Columbia** — Outer coasts of Queen Charlotte Islands and Vancouver Island. I have taken them as far east as China Beach on southern Vancouver Island, but the only record for the Strait

of Georgia is apparently Porlier Pass where they were found from 5 - 15 m (Neil McDaniel *pers. comm.* 1978).

***Acantholithodes hispidus*** (Stimpson 1860)  
*Dermaturus hispidus*

**Description** — Carapace somewhat pear-shaped; surface flattened and covered with numerous small spines dorsally and larger ones marginally. Chelipeds setose, with many spines both large and small; subequal in length but right usually much stouter than left. Walking legs stout, subequal in length to chelipeds and similarly armed. Abdomen short and broad, calcified anteriorly and bearing many small setose spines. Eyestalk small, cone-shaped and cornea oval.

**Colour** — Carapace varying shades of brown with opaque white areas. Spines dark red-brown, orange or white. Chelipeds greenish brown or chocolate with grey-blue bands; spines dark red, orange, white or mottled. Large hand orange with wine red fingers, white teeth and black tips. Walking legs similarly coloured and banded, with dactyl dark red-brown or chocolate; claw black. Eyestalk light brown with dark brown stripes; cornea orange with a black pigment spot.

**Habitat** — Rocky or muddy areas. Predator of shrimp and often caught in deep-water prawn traps.

**Size** — Carapace: male 62 x 64 mm; female 49 x 50 mm.

**Range** — Off Moorovskoy Bay, Alaska (Albatross Stn. 3319), to Monterey, California; intertidal to 135 m.

**Distribution in British Columbia** — Recorded mostly from the Strait of Georgia but probably widespread in localities where shrimp are abundant.

***Phyllolithodes papillosus*** Brandt 1849

**Description** — Carapace triangular, granulate with rounded, strawberry-like knobs, with 2 depressed areas on either side of cardiac region and with narrow, blunt, projections on lateral margins. Rostrum with a rounded crest terminating in 2 blunt horns and a large spine between eyes ventrally. Eyestalk short and spinulose; cornea slightly dilated. Acicle of antenna with 3 smooth spatulate processes. Chelipeds and walking legs subequal in length and covered with numerous long, flattened, granular, papillate projections, as well as smaller vermiform protuberances and tufts of setae on the hands. Dactyls of walking legs short with stout movable spines ventrally and curved claws.

**Colour** — Carapace muddy or greenish brown with dark red ridges and depressions and patches of white and yellow (posteriorly orange) and granules turquoise. Chelipeds dark brown with turquoise granules and papillae; hand reddish brown; fingers yellow distally; teeth white and tips dark; ventrally colours lighter and tinged with pink. Walking legs light brown with dark brown papillae; distal half of propodus white; dactyl with dark grey papillae on dark red and with pale orange band distally; claw dark red. Eyestalk blue-grey; cornea orange. Antennal flagellum orange. Abdomen light and dark red, dark brown, and white.

**Habitat** — Intertidal and subtidal on rocky areas.

**Size** — Carapace: male 90 x 90 mm; female 50 x 60 mm.

**Range** — Dutch Harbor, Unalaska, to San Miguel Island, California (34°00'45'55"N, 120°15'00"-16°30'W); intertidal to 183 m.

**Distribution in British Columbia** — Widespread in suitable areas.

***Rhinolithodes wosnessenskii*** Brandt 1849

**Description** — Carapace triangular with scattered granules and a deep semicircular depression surrounding a smooth rounded cardiac area; lateral margins are cut into triangular teeth. Rostrum short and blunt with lateral margins with upturned spined horn ventrally. Eyestalk long and slender, dorsally spined; cornea small. Acicle of antenna elongate and armed with long sharp spines. Chelipeds and walking legs subequal in length, covered with spines and long curved bristles and a membrane which swells on the distal half and under magnification looks like the finger of a glove. Fingers not spined. Dactyls of walking legs short with movable spines ventrally and a sharp, curved claw. Abdomen composed of close-fitting plates, covered with small granules and spines on margins.

**Colour** — Carapace light brown with base of rostrum orange, depressed area orange and white, granules white, light brown or maroon and lateral teeth white. Chelipeds white with orange, maroon and reddish brown patches with grey-green spines covered with dark red, fading to light brown, setae; hands grey with pink to white fingers with black tips. Walking legs white with maroon and grey spots, grey spines and reddish setae; propodus with proximal white band; dactyl dark to pale grey; claw black. Eyestalk pale brown with four stripes of dark brown; cornea grey-black. Antennal acicle with fine maroon stripes; flagellum brown. Abdomen brown, white and orange.

**Habitat** — Subtidal; on rocky or gravel bottoms.

**Size** — Carapace: male 59 x 64 mm; female 50 x 57 mm.

**Range** — Kodiak, Alaska, to Crescent City, California; from 6 to 73 m.

**Distribution in British Columbia** — Widespread but relatively rarely collected.

The Genus *Cryptolithodes* Brandt 1849

Carapace much wider than long, high in the middle and laterally produced into wide expansions so that appendages can be completely concealed. Fattened abdomen triangular and divided into plates, the whole fitting into a depression of the sternum.

***Cryptolithodes sitchensis*** Brandt 1953

Turtle or Umbrella Crab

**Description** — Carapace surface smooth and about 1 ½ times as wide as long in males, less in females; medially convex with central longitudinal crest; anterior margins undulated and expanded almost as far forward as rostrum which broadens distally. Eyestalk cone-shaped with small cornea. Antennal scale leaf-like. Chelipeds unequal in size, smooth, and with short setae on inner margins of fingers. Walking legs much compressed with sharp dorsal margins; dactyl short with ventral movable spines and sharp, curved claw. Abdomen of female wider than that of male.

**Colour** — Carapace with unusually broad range of colour; small individuals are often white or pale brown, and males of any size may be scarlet. Otherwise combinations of all shades of orange, pink, red-brown, green, grey purple and white occur. One colour may predominate or there may be a mixture with spots, streaks, or a pattern of finely etched, usually symmetrical, lines. Appendages and ventral surfaces mostly white. Chelipeds and walking legs usually have tinges of tan or brown. Eyestalk white; cornea black. Antennal flagellum banded in light and dark brown.

**Habitat** — Intertidal. Especially on wave-washed, seaweed-covered rocks in sheltered crevices, where rock surfaces are covered with colourful growths among which the crabs blend. The tendency to remain motionless also helps them to survive predation. Feed on calcareous algae, *Corallina*, *Calliarthron* and *Bossiella*.

**Size** — Carapace: male 65 x 90 mm; female 68 x 87 mm.

**Range** — Sitka, Alaska, to Point Loma, California; intertidal to 17 m.

**Distribution in British Columbia** — Common in cold-water areas of British Columbia, but I have no records from the Strait of Georgia.

*Cryptolithodes typicus* Brandt 1849

Butterfly Crab, Turtle Crab, Umbrella Crab

**Description** — Carapace surface slightly rugose; male more than twice as wide as long, female about 1 ½ times as wide as long; margins faintly scalloped; a median dorsal ridge and small knobs and elevations laterally. Rostrum sub-rectangular but narrowing distally and sloping downwards. Chelipeds unequal in size; hand broad and flattened, with many knobs and ridges. Abdomen only slightly asymmetrical and with small plates which have upturned edges. Antennal scales leaf-like. Eyestalk cone-shaped; cornea small. Capitate setae on appendages and ventral surfaces produce a somewhat velvet-like surface.

**Colour** — Carapace varies greatly; small individuals are usually white but larger ones have a tremendous range of colour, mostly brilliant. One colour may predominate or may be combined with others in mottled, streaked or pebbled patterns. Chelipeds and walking legs usually brown with white dorsal margins. Antennal flagellum usually banded in dark and light brown. Ventral surfaces light coloured with a few streaks or spots of bright colour.

**Habitat** — Subtidal or rarely low intertidal; in crevices or the base of eelgrass on rocky areas well hidden by seaweed. They blend well into the uneven, encrusted rocky habitat and do not move until touched. They eat calcareous algae as well as encrusting animals.

**Size** — Carapace: male 41 x 75 mm; female 49 x 80 mm.

**Range** — Amchitka Island, Alaska, to Santa Rosa Island, California (34°01'15" - 45°5'N, 120°00'14" - 30"W); intertidal to 45 m.

**Distribution in British Columbia** — Occur in both exposed and sheltered coasts.

#### The Genus *Lopholithodes* Brandt 1848

Carapace broader than long, convex above with granular knobs and rounded protuberances and a smooth, wart-like knob on either side of median gastric area. Anterior margins of branchial region extended to cover bases of walking legs. Antennal acicle triangular with marginal spines. The knobby chelipeds and walking legs fit together when folded, hence the common name Box Crab. Juveniles have proportionately larger and more prominent elevations on the dorsal surfaces.

*Lopholithodes forminatus* (Stimpson 1859)  
*Echinocerus foraminatus*

**Description** — Carapace convex; covered with small granules and spines on high points of dorsal surface and on margins. Rostrum a sharp upturned spine with several smaller spines crowded above the base. Eyestalk subequal in length to rostrum with small sharp spines on dorsal surface; cornea small and ventrally placed. Antennal acicle with upright spines on lateral margins only. Chelipeds and walking legs subequal in length with numerous granulated spines of tufts and setae on all exposed area. Chelipeds each with lateral extensions on inner dorsal margins of merus; carpus and propodus upcurved so that mouth parts are protected. On outer margin of each cheliped carpus a smooth deep semicircular sinus coincides with a

similar flatter structure on carpus of each 1<sup>st</sup> walking leg. When the appendages are pressed together a nearly circular hole, or foramin, results. Larger cheliped, with fingers armed with molar-like teeth for crushing; smaller cheliped has small sharp teeth for cutting; all fingers have corneous tips. Lateral surfaces of walking legs smooth so that they fit together tightly; dactyl short and relatively slender with granulated spines and a sharp claw. Abdomen with knob-covered plates.

**Colour** — Carapace red-brown with purplish tinge and white area, particularly in the depressions. Smooth, paired, knobs dark red. Chelipeds dorsally white, tan and mottled with red; fingers orange or red, tips white, as well as teeth, and corneous tips dark brown. Ventral surfaces mostly white with some patches of red and purple. Foramin white, lined with purple streaks. Walking legs white with red-brown dorsally; propodus with narrow band of white granules distally; dactyl red-brown and white distally, with brown claw. Eyestalk white ventrally, pale brown dorsally and reddish or white spines; cornea orange-brown. Antennal flagellum tan. Abdomen with violet patches and some red-brown nodules.

**Habitat** — Muddy bottom.

**Size** — Carapace: male 165 x 185 mm; female 145 x 175 mm.

**Range** — North of Banks Island, Hecate Strait, British Columbia (53°40'N, 130°30'W), to San Diego, California; intertidal to 547 m.

**Distribution in British Columbia** — Common in muddy areas; often caught by draggers.

*Lopholithodes mandtii* Brandt 1849

Box Crab

*Echinocercus cibarius*, *Ctenorhinus setimanus*

**Description** — Carapace covered with granules of different sizes, covering small knobs and blunt spines on the margins. Cone-shaped elevations over gastric, cardiac and branchial areas. Rostrum blunt spine bearing 3 knobs above the base. Eyestalk small, shorter than rostrum, covered with many needle-like spines; cornea small and ventrally placed. Antennal acicle with dorsal surface and lateral margins covered with smooth slender spines. Chelipeds each with extensions on inner dorsal margins of merus; carpus and propodus with upcurved spines so that the mouth parts are covered when chelipeds are withdrawn. The exposed areas are covered with large, granulated blunt spines and knobs. Teeth of larger hand, large and molar-like and those of smaller hand, small and numerous. Fingers with corneous ring at tip. Walking legs with lateral faces smooth, so that they fit closely together, and exposed areas are heavily armed like the chelipeds; dactyl short, with a strong claw. Abdomen composed of plates well armed with granulated knobs.

**Colour** — Carapace scarlet, violet or cobalt-blue, with high points and knobs orange. Some granules brown and the smooth knobs either side of gastric area are dark red. Chelipeds and walking legs yellow, orange, red and blue. Cutting teeth of chelipeds white and setae dark brown; tips of fingers black. Abdomen yellow, red and blue. Eyestalk red-brown with light spines; cornea orange or red. Antennal flagellum red and faintly banded.

**Habitat** — Usually subtidal rocky area. Sea Urchins are eaten. Has been observed feeding on sea anemones (Brent Cook, *pers. comm.*).

**Size** — Carapace: male 200 x 270 mm.

**Range** — Sitka, Alaska, to Monterey, California; intertidal to 137 m.

**Distribution in British Columbia** — Not uncommon but the activities of SCUBA divers have probably reduced the numbers of large individuals.

***Placetron wosnessenskii*** Schalfeew 1892\*

*Lepeopus forcipatus*

**Description** — Carapace flattened, wider posteriorly than long, covered with curved protuberances bordered anteriorly with short bristles and giving the impression of scales. Rostrum triangular and curved downward. Eyestalk short and protected by rostrum. Chelipeds slender, subequal and slightly shorter than walking legs, scaled, with forward-pointing sharp teeth on inner margin of merus and carpus. Hand with spoon-shaped fingers. Walking legs long and stout, scaled and dorsal margin of merus irregularly serrate with sharp teeth. Ventral distal propodus with needle-like movable spines; dactyl with a row of strong movable spines and curved sharp claws. Anterior dorsal part of abdomen flat with some thin calcareous plates which are scaled. The rest of the abdomen is rounded and soft except for a calcareous telson. In the female there is a calcified area on the left side supporting the pleopods.

**Colour** — Carapace medially red-brown and laterally grey with dark brown scales. Chelipeds with red-brown or orange scales and grey or turquoise teeth with white tips. Hand orange and tan with dark red-brown area on dorsal palm and some turquoise streaks on fingers. Walking legs: ischium red-brown; merus orange-brown with red-brown and turquoise bands distally and a small patch of scarlet at junction of carpus which is pale turquoise dorsally and orange ventrally with a dark red band medially; propodus similar but with two dark red bands, and a terminal orange band with black ventral spines; dactyl dark red to orange with spines and claw black. Calcified parts of abdomen light brown, the rest olive green. Eyestalk dark brown; cornea brick red. Antennal flagellum red.

**Habitat** — Subtidal in rocky areas. Very quick moving; therefore, rarely caught in dredges. SCUBA divers can chase them so more have been caught in recent years. Often associated with sea anemones, *Metridium senile*. The spines on the tips of the walking legs may be an adaptation to life in such a habitat.

**Size** — Carapace: male 61 x 72; female 50 x 53 mm.

**Range** — Aleutian Islands, Alaska, to Puget Sound, Washington; intertidal to 110 m.

**Distribution in British Columbia** — Widespread.

The Genus *Paralomis* White 1856

Carapace granular and/or spined. A stout spine on gastric area. Rostrum with 3 sharp projections. Walking legs either flattened or angular with rows of spines on margins. Abdomen on nodule-covered plates separated by membranous area. Usually abyssal.

***Paralomis verrilli*** (Benedict 1894)

*Pristopus verrilli*

**Description** — Carapace slightly longer than wide, with small granules and spines of varying sizes; large spines on elevated areas and lateral margins. Eyestalk stout with small granules and oval cornea ventrally. Antennal peduncle with slender spines. Chelipeds much shorter than walking legs, which are stout, somewhat flattened and margined, ventrally and dorsally, with rows of large spines with scattered small spines. Abdomen with small spines and may rod-shaped nodules.

**Colour** — Unrecorded but probably scarlet.

**Habitat** — Deep water.

**Size** — Carapace: male 112 x 102 mm.



**Range** — Sea of Okhotsk, to Cortez Bank, California; 1238 - 2379 m.

**Distribution in British Columbia** — West of Tasu Sound, Queen Charlotte Is. (52°40' - 55°N, 132°12' - 54°W); 1737 - 1829 m.

***Paralomis multispina*** (Benedict 1894)

*Leptolithodes multispinus*

**Description** — Carapace subequal in length and width, with convex areas; covered with small spines and nodules, and margined with larger, slender spines. There is also a large spine on the crest of the gastric area and on each branchial area. Eyestalk stout with small spines dorsally and oval cornea ventrally. Acicle of antenna with long slender spines. Chelipeds of juveniles subequal in length to walking legs and, in adults, shorter than walking legs. Right hand stout with swollen palm and armed with long slender spines. Walking legs slender and covered with many sharp spines in rows on ridges with flat area between, especially obvious on the carpi and propodi; dactyl short with sharp, curved claw.

**Colour** — Carapace scarlet with spines dark and nodules light. Chelipeds and walking legs scarlet with lighter-coloured spines and tips of fingers. Eyestalk scarlet; cornea black. Antennal flagellum scarlet.

**Habitat** — Deep sea mud.

**Size** — Carapace: male 80 x 78 mm.

**Range** — Shumagin Bank, Alaska, to San Diego, California; from 830 to 1665 m.

**Distribution in British Columbia** — West of Vancouver and Queen Charlotte Islands; from 951 to 1603 m.

***Paralithodes camtschatica*** (Tilesius 1815)

King Crab, Alaska King Crab

*Maja camtschatica*, *Lithodes spinosissimus*, *L. camtschatica*, *Paralithodes rostrifalcatus*

**Description** — Carapace subovate and surface covered with numerous conical spines. Rostrum with long, sharp-pointed tip, a median dorsal spine, usually bifid, and 2 small lateral spines. Chelipeds and walking legs also spined; chelipeds shorter than walking legs. Eyestalk short and stout with cornea mostly anterior and ventral. Acicle of antenna a slender spine. 2<sup>nd</sup> abdominal segment composed of 5 plates separated by distinct sutures. Young individuals have longer and sharper spines and the shape of the carapace is somewhat different but the number and location of the spines is the same.

**Colour** — Varies considerably according to size and whether or not moulting has been recent. Carapace of adults brownish red or purplish-red and cream or greenish-white. Spines mostly deeper in colour, with a light dorsal band and a dark tip. Chelipeds and walking legs cream with patches and streaks of red dorsally. Fingers with white teeth and dark tips. Dactyls of walking legs with lateral streaks of red and corneous dark claws. Ventral surface mostly light with some red patches and light-tipped red spines. Juveniles orange overall.

**Habitat** — Cold waters of the northern Pacific Ocean. Migrate to shallow water to mate in the spring. Young inhabit shallower water than adults, who may travel more than 100 miles in their lifetime.

**Size** — Carapace: male 227 x 283 mm; female 195 x 213 mm. Weight to 11 kg (24 lbs.) of which about 25% is meat.

**Range** — North Pacific Ocean from Japan to northern British Columbia; from 14 to 366 m. A tagged individual traveled 556 km (300 nautical miles) in 290 days. Can migrate 13 km (7 miles) per day.

**Distribution in British Columbia** — Northern British Columbia. Some spawning areas near the Queen Charlotte Islands and adjacent mainland.

**Note** — Two-year-old juveniles are gregarious and form aggregations composed of thousands of individuals who cling upon each other to form ball-shaped pods. Apparently this is done for protection against predators.

#### The Genus *Lithodes* Latreille 1806

Carapace subcircular, armed with stout spines. Rostrum elongate and spined. Cardiac region depressed. Chelipeds much shorter than walking legs. Median plate of second abdominal segment fused with lateral plates.

#### *Lithodes aequispina* Benedict 1894

*Lithodes aequispinus*, *Paralithodes longirostris*

**Description** — Carapace round with conical spines, longest marginally. Rostrum with spines: 2 dorsally, 4 laterally and 1 ventrally; tip may be bifid; subequal chelipeds shorter than walking legs, which are elongate and have sharp, broad-based spines on all surfaces. Eyestalk short and stout with cornea mostly ventral. Antennal acicle small and tipped with 2 or 3 sharp spines. 2<sup>nd</sup> segment of abdomen spined and entire.

**Colour** — Carapace reddish tan and dark red anteriorly. Spines with red base, a light band and dark brown tips. Chelipeds reddish tan and streaked with red-brown. Spines light, fingers orange and cutting teeth on finger of right hand white; those of left brown. Walking legs tan and light mahogany; dactyl with terminal bands orange and tips dark brown.

**Habitat** — Continental shelf.

**Size** — Carapace: male 187 x 195 mm.

**Range** — Japan, Sea of Okhotsk (northwest Pacific), and Bering Sea, to Ucluelet, Vancouver Island (48°45'N, 125°20'W), British Columbia; from 77 to 730 m.

**Distribution in British Columbia** — Records from the west coast of Vancouver Island and Queen Charlotte Sound.

#### *Lithodes cousi* Benedict 1894

**Description** — Carapace margined with sharp spines with smaller conical spines on dorsal area and on cheliped and walking legs. Rostrum with bifid tip and a pair of lateral spines. Subequal chelipeds shorter than walking legs. Eyestalk small; cornea terminal. Acicle of antenna small with slender spines. Abdomen not spined; 2<sup>nd</sup> segment composed of fused plates. Juveniles strikingly different due to the proportions of the body and length of spines.

**Colour** — Carapace rose pink with white grooves. Spines red with yellow tips and some small white granules. Chelipeds crimson with white joints; fingers with white teeth and yellow setae. Walking legs crimson with white spots and knobs at junctions; claws yellow with dark tips. Eyestalk red with pink band; cornea red-brown or black. Antennule crimson; flagella orange. Antenna base pink with red spines, the rest crimson, including flagellum. Juveniles scarlet.

**Habitat** — Dredged from mud or boulders in deep water.

**Size** — Carapace: male 105 x 81 mm.

**Range** — Bering Sea to off San Diego, California; from 258 to 1829 m.

**Distribution in British Columbia** — West of Vancouver Island, Tasu Sound, Engelfield Bay, Queen Charlotte Islands, and Dixon Entrance.

#### Family PORCELLANIDAE

##### *Key to Species*

1. Chelipeds subequal in size; broad, smooth and flat. Carpus elongated.....2
1. Chelipeds unequal in size; thick and rough surfaced. Carpus stout.....3
2. Carpus of cheliped with margins parallel and twice as long as wide. Meri of legs setose. Tip of third maxilliped blue.....*Petrolisthes eriomerus*
2. Carpus of cheliped widest proximally and less than twice as long as wide. Meri of legs not setose. Tip of third maxilliped red.....*Petrolisthes cinctipes*
3. Surface of hand rough, sparsely setose, with a large bare knob on median distal part. Telson of 5 plates.....*Pachycheles rudis*
3. Surface of hand uniformly granular and covered by a dense pubescence. Telson of 7 plates.....*Pachycheles pubescens*

#### The Genus *Petrolisthes* Stimpson 1858

Carapace round in outline, front prominent. Chelipeds large, subequal with hands broad and flattened. Walking legs somewhat flattened. Telson of 7 plates.

***Petrolisthes eriomerus*** Stimpson 1871\*

Flat-topped Crab, Porcellanid Crab

**Description** — Carapace with granules anteriorly, posterior area striated, and few, if any, setae. Chelipeds large and flat; carpus about twice as long as wide, with small rough granules, a median longitudinal crest and a serrate outer margin ending in a tooth distally. Large tuft of dense pubescence at base of finger. Walking legs with fine plumose and non-plumose setae scattered on surface in tufts. Male with a pair of gonopods on 2<sup>nd</sup> abdominal segment. Female with uniramous paired pleopods on segments 4 and 5.

**Colour** — Granules on carapace red-brown or white (giving a pebbled appearance) with blue tinges in the grooves and a blue and white “comma” on either side of cardiac region. Chelipeds with dark and light red granules with orange areas and blue-white patches at junctions of segments. Walking legs mahogany brown with 2 patches of yellow on merus, none on carpus, and a red and a yellow band proximally and a yellow distally on propodus with red, brown and yellow on dactyl and a dark brown claw. Abdomen red-brown and blue. Antennal flagellum greyish green. Outer maxillipeds red, brown and blue, with both surfaces of last 2 articles bright blue.

**Habitat** — Intertidal, under rocks.

**Size** — Carapace: male 19 x 19 mm; female 19 x 19 mm.

**Range** — Klokachef Island, Chichagof Island (57°25'N, 135°52'W), Alaska, to La Jolla, California; intertidal to 86 m.

**Distribution in British Columbia** — Common, but possibly less abundant where in competition with *P. cincipes* on outer coasts.

***Petrolisthes cincipes*** (Randall 1839)\*

*Porcellana cincipes*, *P. rupicola*, *Petrolisthes rupicolus*

**Description** — Carapace with fine granules and striae but no setae. Chelipeds large, flattened and finely granulate dorsally. Carpus 1½ to twice as long as wide, large tuft of soft setae ventrally at base of fingers. Walking legs with merus and carpus almost naked but propodus and dactyl with tufts of short setae. Male with paired gonopods on second segment of abdomen. Female with paired pleopods on segments 4 and 5.

**Colour** — Granules on carapace red or dark brown with blue areas and fine grey-blue striae laterally and a blue and white “comma” on either side of cardiac area. Cheliped granules dark brown, red-brown, red, yellow, blue or white forming patches and striations but giving an overall pebbled look. Walking legs dark brown with small blue patches; merus with yellow band distally; propodus with yellow median band; dactyl yellow with narrow brown band and light brown claw. Abdomen dark and light brown and blue. Outer maxilliped dark brown with last 2 articles scarlet. Eyestalk dark brown; cornea dark grey or black.

**Habitat** — Intertidal among rocks and in mussel beds on open coasts. It is often found higher up on the beach than *P. eriomerus*.

**Size** — Carapace: male 21 x 20 mm; female 24 x 24 mm.

**Range** — Welcome Harbour, Porcher Island (54°0.05'N, 130°40'W), British Columbia, to Santa Barbara and offshore islands, California; intertidal to 64 m.

**Distribution in British Columbia** — Common on outer coast east to Port Renfrew; no authenticated records for the Strait of Georgia.

#### The Genus *Pachycheles* Stimpson 1858

Carapace circular in outline with rounded front. Chelipeds large and stout, one larger than the other. Hand with fixed finger shorter than dactyl and carpus short and stout. Walking legs of moderate length and somewhat flattened. Telson of 5 or 7 plates. Pleopods of male may be reduced or lacking.

***Pachycheles rudis*** Stimpson 1858\*

**Description** — Carapace about as broad as long, convex with flat granules; front with short stiff setae. Chelipeds rugose and granular with a large granulated knob at base of fixed finger. Chelipeds and walking legs with setae, some of which are plumose. Telson of 5 plates. Male with a pair of gonopods on 2<sup>nd</sup> segment of abdomen. Female with paired uniramous pleopods on segments 3 to 5.

**Colour** — Carapace mottled and striated with grey, brown and white and some with blue granules; white “commas” on branchial region. Chelipeds greenish brown with grey and bluish granules. There is an orange spot at junction of carpus and propodus which is hidden when bent; fingers blue with white tips. Walking legs reticulated brown, grey and white; dactyls banded with dark grey and white; claws brown. Eyestalk dark grey; cornea black with red rim. Abdomen grey-green, tan and white with light median streak.

**Habitat** — Usually found intertidally under stones, in holdfasts of kelp or any well-protected area or crevice. Male and female cohabit.

**Size** — Carapace: male 19 x 19 mm; female 18.5 x 18.5 mm.

**Range** — Kodiak, Alaska, to Bahia de la Magdalena, Baja California, Mexico; intertidal to 29 m.

**Distribution in British Columbia** — Found on the open coast and, rarely, as far east as Victoria.

*Pachycheles pubescens* Holmes 1900\*

**Description** — Carapace convex and slightly broader than long; front masked by dense pubescence, longest medially. Chelipeds with granules nearly covered by dense pubescence and longer bristles. Telson of 7 plates. Male with paired gonopods on 2<sup>nd</sup> segment of abdomen. Female with paired uniramous pleopods on segments 3 to 5.

**Colour** — Carapace white, dappled with brown, grey and purple, with a blue and tan “comma” on each branchial area. Cheliped colour masked by mud-coloured pubescence; granules pale violet. Finger tips may be pink. Walking legs with merus blue and brown with variations in depth of colour which creates a banded appearance. Propodus and dactyl with distal white bands. Eyestalk dark brown and white; cornea red-brown with black centre.

**Habitat** — Rocky areas, occasionally intertidally but usually subtidally on exposed coast. Male and female cohabit.

**Size** — Carapace: male 18 x 18.5 mm; female 17 x 17.5 mm.

**Range** — Bush Rock, Huston Inlet, south side Skincuttle Inlet, Queen Charlotte Islands (52°18'N, 131°16.5'W), British Columbia, to Thurloe Head, Baja California, Mexico; intertidal to 55 m.

**Distribution in British Columbia** — Open coast and, rarely, as far east as Victoria.

**Superfamily PAGURIDEA**

Family DIOGENIDAE

*Key to Species*

1. Eyestalk about one half length of shield; antennal flagellum sparsely setose. Hands with more than half cutting surface composed of dark corneous teeth. Brood pouch of female narrow, sub-triangular in shape.....*Paguristes turgidus*
1. Eyestalk nearly as long as shield; antennal flagellum with two rows of long, dens, plumose setae. Hand with few dark corneous teeth. Brood pouch of female semi-rectangular..... *Paguristes ulreyi*

The Genus *Paguristes* Dana 1851

Chelipeds subequal. Bases of 3<sup>rd</sup> maxillipeds close together. Male with paired gonopods on 1<sup>st</sup> and 2<sup>nd</sup> abdominal segments. A brood pouch at base of 4<sup>th</sup> pleopod of female.

***Paguristes turgidus*** (Stimpson 1857)

*Clibanarius turgidus*, *Eupagurus turgidus*

**Description** — Crab spiny and setose with many sharp corneous-tipped spines. Antennal flagellum sparsely setose ventrally. Eyestalk slender and about ½ length of shield. Hand with dark corneous teeth on more than half of cutting surfaces. Brood pouch of female subtriangular.

**Colour** — Carapace shield rust-red and yellow, with lateral and posterior areas dark red with white streaks. Cheliped red-brown, pink, cream and white, with bases of spines cream and tips black. Cutting teeth white and corneous areas dark brown. Walking legs red-brown, white and cream and dactyls red to orange; claws black. Abdomen cream with red reticulations. Brood pouch translucent white, covering scarlet eggs. Antennal base white, with narrow wine-red stripe dorsally; flagellum dark red and pink. Antennal base orange with fine red spots; flagellum white with dark red stripe dorsally. Eyestalk opaque white with dark red stripes laterally and ventrally; scale red and orange with white tipped spines; cornea black with gold crescent.

**Habitat** — Mud, sand or gravel bottom; usually inhabit shells of sufficient size that the crab can withdraw completely.

**Size** — Shield length: male 17.7 mm; female 11.4 mm.

**Range** — Chukchi Sea (68°13.5'N, 166°35.8'W), northwest Pacific, to San Diego, California; from 5 to 465 m.

**Distribution in British Columbia** — Common in suitable habitat.

***Paguristes ulreyi*** Schmitt 1921

*Paguristes occator*

**Description** — Differs from *P. turgidus* by antennal flagellum being densely setose ventrally and sparsely dorsally, eyestalk proportionately long and more slender, nearly as long as shield and hand with dark corneous teeth only at tips of fingers. Brood pouch of female subrectangular.

**Colour** — Carapace red-brown with 3 irregular lighter stripes on shield and 1 on each branchial area. Chelipeds white with orange, light and dark red bands; fingers pink and white with black tips. Walking legs rust and white, with black claws. Abdomen mottled red and white. Antennule white with dark red streaks and flagellum red ventrally. Antenna pink and red base; flagellum dark red with light areas at joints and setae light coloured. Eyestalk white with dark red, almost black stripes dorso-laterally and ventrally; cornea black.

**Habitat** — Intertidally in rock crevices on exposed shores and subtidally in rocky and gravelled areas but in shallower water than *P. turgidus*.

**Size** — Shield length: male 12 mm; female 9.4 mm.

**Range** — Frederick Island (53°56'N, 133°08.3'W), British Columbia, to Baja California and Gulf of California, Mexico; intertidal to 157 m.

**Distribution in British Columbia** — Intertidally on the outer coast off Queen Charlotte Islands and subtidally off the outer coast of Vancouver Island.

Family PARAPAGURIDAE

*Key to Species*

1. Chelipeds covered with a dense pubescence which hide the small sharp granules on the surface. Found only in deep water.....*Parapagurus pilosimanus benedicti*

***Parapagurus pilosimanus benedicti*** de Saint Laurent 1972

**Description** — Carapace shield slightly wider than long. Eyestalk slender; eyescale may be bifid; cornea little dilated. Right cheliped much larger than left but shorter than walking legs and covered with a dense pubescence of long, soft setae which mask the numerous sharp spiny granules; hand long and wide with short stout fingers. Left cheliped slender, similarly armed with pubescence and sharp granules but fingers elongate. Walking legs long; merus laterally compressed and slender, curved dactyl much longer than other segments, the dorsal margins with short stiff setae which increase in length distally; claw small. Male with paired gonopods on 1<sup>st</sup> and 2<sup>nd</sup> segments of abdomen. Female with pleopods only on 2<sup>nd</sup> to 5<sup>th</sup> side of abdomen and 1 gonopore on the coxa of the left 3<sup>rd</sup> pereopod (2<sup>nd</sup> walking leg).

**Colour** — Carapace shield opaque, light orange, the sides deep red, posterior wine-red with an opaque, white elongated triangle in the cardiac area and whitish area on either side of this; pubescence white. Abdomen orange and wine-red. Right cheliped with cream pubescence; ischium orange; merus scarlet; carpus pale pink and white; hand white with ventral part of fingers pink. Left cheliped similar but fingers orange dorsally and ventrally. Walking legs orange and scarlet. Eyestalk orange and scarlet; cornea dark brown. Antennal flagellum orange.

**Habitat** — Deep water on mud bottom; shell often with attached anemones which are believed to emit phosphorescent light.

**Size** — Shield length: male 13.4 mm.

**Range** — Alaska to Gulf of Panama; from 415 to 2200 m.

**Distribution in British Columbia** — Known from six localities in deep water off the outer coast.

Family PAGURIDAE

*Key to Species*

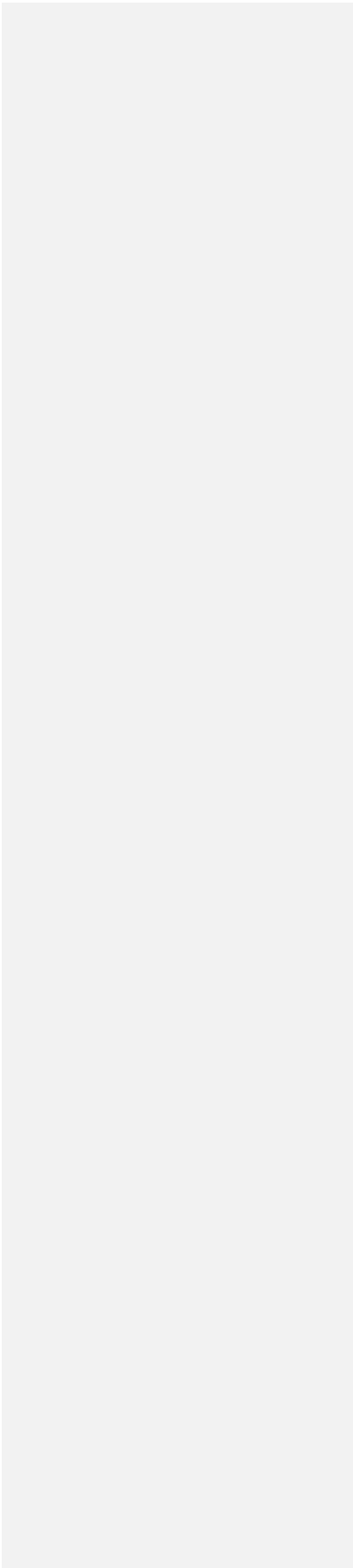
1. Carapace almost entirely calcified and spined dorsally.....*Labidochirus splendescens*
1. Carapace with only shield calcified, smooth and not spined.....2
2. Uropods symmetrical and abdomen not coiled.....3
2. Uropods asymmetrical and abdomen coiled.....4
3. Telson with median transverse constriction and cleft terminally. Small. Usually inhabit *Dentalium* shells.....*Orthopagurus minimus*
3. Telson with neither constriction nor cleft. Usually inhabit empty Sabellarid or Serpulid worm tubes. Small.....*Discorsopagurus schmitti*
4. Right cheliped with carpus and/or palm with outer margin a

flattened plate. Eyescales with raised margins.....	5
4. Right cheliped with a ridge or with outer margins of carpus and palm rounded. Eyescales without raised margins.....	7
5. Chelipeds with smooth surfaces; carpus produced laterally and wider than palm.....	6
5. Chelipeds finely granulate dorsally; large hand and carpus much flattened, with sharp lateral margins partly toothed.....	<i>Elassochirus tenuimanus</i>
6. Carpus of large cheliped with a row of small spines on the proximal central area.....	<i>Elassochirus cavimanus</i>
6. No such spines on carpus.....	<i>Elassochirus gilli</i>
7. Eyestalk short and stout; cornea elongate-oval (ovate). Dactyls of walking legs twisted and armed with a dense comb of short spines ventrally.....	8
7. Eyestalk short or long; cornea spherical. Dactyls of walking legs not twisted and ventral spines widely spaced.....	10
8. Hands with dorsal surface armed with many sharp spines and ventral surface smooth.....	<i>Pagurus armatus</i>
8. Hands with dorsal and ventral surfaces armed with round or pointed granules.....	9
9. Granules with one point. No groove on dactyl of walking legs. Dark red streaks near cutting surfaces of fingers.....	<i>Pagurus ochotensis</i>
9. Most granules with two points. Elongate groove on dactyl of walking legs. No dark red streaks near cutting surface of fingers.....	<i>Pagurus aleuticus</i>
10. Hands with flat and/or pointed granules on dorsal surface.....	11
10. Hands with spines or pointed granules on dorsal surface.....	15
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11. Shield little if any longer than wide.....	13
12. Carpus of right cheliped not swollen ventrally. Left cheliped about $\frac{3}{4}$ size of right; merus with serrate ventral margin.....	<i>Pagurus samuelis</i>
12. Carpus of right cheliped swollen ventrally. Left cheliped about $\frac{1}{2}$ size of right; merus with ventral margin not serrate.....	<i>Pagurus hemphilli</i>



13. Hands with flat granules evenly distributed over all surfaces.....	<i>Pagurus</i>
<i>granosimanus</i>	
13. Hands with flat or pointed granules, not evenly distributed and few, if any, on ventral surfaces.....	14
14. Rostrum large and sharp. Merus of large hand with small narrow teeth on distal margin.....	<i>Pagurus</i>
<i>hirsutiusculus</i>	
14. Rostrum small and rounded. Merus of large hand with large triangular teeth on distal margin.....	<i>Pagurus</i>
<i>beringanus</i>	
15. Dorsal surfaces of large hand with a broad raised triangle with apex at base of dactyl. Small hand with a double row of spines on central ridge; outer part of palm dilated. Eyestalk short and stout; cornea distinctly dilated.....	16
15. No such distinct broad raised triangle. Small hand rarely with central ridge and palm not dilated. Eyestalk long; cornea not dilated.....	18
16. Walking legs with dorsal margin of propodi serrate.....	<i>Pagurus tanneri</i>
16. Walking legs with dorsal margin of propodi not serrate or minutely so.....	17
17. Large hand with apex of triangle horn-shaped in profile.....	<i>Pagurus cornutus</i>
17. Large hand with apex of triangle rounded in profile.....	<i>Pagurus confragosus</i>
18. Hands with small spines and granules. Setae not conspic- uous.....	24
18. Hands with spines, usually large and with conspicuous tufts of setae.....	19
19. Dactyl and propod of walking legs subequal in length.....	20
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<i>caurinus</i>	
22. Dactyls of walking legs with stout movable spines ventrally.....	23
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<i>capillatus</i>	
23. Hands with sharp spines in clearly defined rows dorsally. Dorsal margin of propodus of right 1 <sup>st</sup> walking leg not serrate. Eyescale with one point. Antennal flagellum trans- lucent.....	<i>Pagurus</i>
<i>setosus</i>	
23. Hands with scattered small spines dorsally. Dorsal margin of propodus of right 1 <sup>st</sup> walking leg serrate. Eyescale usually multipointed. Antennal flagellum translucent with dark brown bands.....	<i>Pagurus</i>
<i>quaylei</i>	

- 24. Carpus of large cheliped relatively stout and widest distally  
Outer margin beaded with sharp spines.....*Pagurus dalli*
- 24. Carpus of large cheliped elongate, with sides subparallel.  
Outer margin not indicated by a beading of spines.....*Pagurus stevensae*



***Labidochirus splendescens*** (Owen 1839)

*Pagurus splendescens, Eupagurus splendescens*

**Description** — Carapace calcified throughout; shield wider than long, with a distinct rostrum and with some spiny ridges and spines dorsally, and sharp teeth laterally. Posterior part of carapace with scattered spines and ridges; mid-lateral margins of carapace serrate. Eyestalk short; large cornea spherical. Right cheliped slender and slightly longer than left and shorter than walking legs; setose with some marginal and dorsal spines as well as spined scales. Left cheliped similar but more slender with proportionately longer fingers. Walking legs setose, with marginal spines and spined scales on lateral faces; merus wide and laterally compressed; dactyl slender and slightly longer than propodus, with stiff setae on dorsal margin and small movable spines ventrally. 5<sup>th</sup> pereopod (last walking leg) without the usual strong rasp of setae found in most hermit crabs. Abdomen small with vestigial or no pleopods in the male.

**Colour** — Shield with narrow white margins anteriorly and cream with brown reticulations; posteriorly red, yellow-brown and white. Chelipeds with bronze iridescence; ischium red and purplish red; merus with yellow, brown and purple patches and a distal purplish band with white-tipped spines; carpus red with brown spines; hand amethyst, with light-tipped purple-red spines; fixed finger deep purple with white tips and teeth; dactyl pink with red-purple stripe and white teeth. Walking legs with bronze or red-green iridescence; ischium etched in red with purple stripe; merus red, yellow and white with purplish spines; carpus red purple; propodus with stripes of purple, dark red and light with some fine yellow spots; dactyl violet, red and white; claw pale yellow. Eyestalk brown; cornea black with a film of white and red chromatophores. Antennal flagellum yellowish.

**Habitat** — Mud and sand. Inhabit small shells which barely cover the small abdomen and often are covered with hydractinia. An active species.

**Size** — Shield length: male 18 mm.

**Range** — Sea of Japan, Arctic Ocean, Chukchi and Bering seas, and Alaska to Puget Sound, Washington; from 16 to 412 m.

**Distribution in British Columbia** — Widespread but not abundant.

***Orthopagurus minimus*** (Holmes 1900)\*

*Pagurus minimus, Pylopagurus minimus*

**Description** — Shield slightly longer than wide and with a distinct rostrum. Eyestalk long and stout with slightly dilated cornea. Right cheliped subequal in length to walking legs and sparsely setose; merus with few, if any, spines but 2 teeth on distal margin; carpus subequal in width to merus, with a row of spines and scattered spiny granules dorsally; hand wider than carpus proximally and increasing in width distally, with spines dorsally on palm and both fingers, which are wide and flattened dorsally and margined with a tight row of sharp pointed curved teeth and cutting edges with strong calcareous teeth. Left cheliped small, slender and setose with few spines or granules; hand convex without serrate margins. Walking legs slender, setose with propodus and dactyl subequal in length and width; dactyl with strong spines ventrally and a sharp, curved claw. Abdomen straight with calcified plates dorsally; pleopods only on left side and symmetrical uropods and telson.

**Colour** — Carapace with shield reddish orange; rostrum pink, lateral areas dark red and wine-red. Abdomen straw-coloured with red spots dorsally; light red laterally. Tail fan red. Right cheliped with dark red ischium; merus and carpus straw-coloured with dark red spines and teeth. Hand wine-red with yellowish finger tips and white cutting teeth. Left cheliped straw-coloured with fine red spots. 1<sup>st</sup> and 2<sup>nd</sup> walking legs with red ischium; rest straw-coloured with a few red dots. 3<sup>rd</sup> and 4<sup>th</sup> walking legs red. Eyestalk wine-red straw-coloured with irregular opaque white bands; cornea semicircular with curved

bands of pale yellow and black. Antennule red and straw-coloured with opaque white bands. Antenna with red and white base; the rest straw-coloured. Small individuals often straw-coloured with little or no red.

**Habitat** — Usually inhabit Dentalium shells which they actively drag over the substrate of broken shell and gravel.

**Size** — Shield length: male 5.6 mm.

**Range** — Tartar Strait, East Sakhalin (northwest Pacific), and British Columbia to San Diego; from 11 to 64 m.

**Distribution in British Columbia** — Widespread but rarely collected.

*Discorsopagurus schmitti* (Stevens 1925)

*Pylopagurus schmitti*, *Orthopagurus schmitti*

**Description** — Carapace: shield slightly longer than wide. Eyestalk relatively long and stout; cornea a little dilated. Right cheliped setose and slightly longer than walking legs, with spines and granules scattered over surface, especially on carpus and hand; with inner margin of palm serrate with large, sharp teeth and outer margin with a row of spines. Left cheliped more slender but nearly as long as right; carpus and hand with spines and sharp granules. Walking legs slender and setose; dactyl shorter than propodus; claw curved and stout. Abdomen straight; uropods symmetrical; pleopods only on left side. Calcified plates indicate segmentation of abdomen.

**Colour** — Carapace: shield light brown and posterior brown with mottling of purplish red and grey. Chelipeds yellow with red-brown dappling; fingers dark brown laterally and scarlet and white dorsally. Walking legs: ischium red-brown; merus yellowish with proximal and distal bands of dappled red-brown, carpus yellow with red-brown dappling dorsally; propodus yellowish with narrow red-brown band proximally; dactyl with bands of red-brown, yellow and scarlet; claw yellow. Eyestalk greenish-brown proximally and blue-grey with red stripes distally; cornea black with some gold flecks. Antennal flagellum orange or scarlet and somewhat translucent.

**Habitat** — Usually occupies empty, encrusted, leathery tubes of the worm *Sabellaria cementarium*, in deep water, or empty calcareous tubes of *Serpula vermicularis*, in shallow water. Because these tubes are encrusting forms, the crabs are mostly sessile, but quite mobile when inhabiting a loose portion of tube.

**Size** — Shield length: male 4.5 mm.

**Range** — Northwestern Pacific; Hayward Strait, Sitka Sound, Alaska (57°20' 15"N, 135°50' 30"W), to Puget Sound, Washington; intertidal to 220 m.

**Distribution in British Columbia** — Widespread but easily missed.

#### The Genus *Elassochirus* Benedict 1892

Carapace: shield calcified, rest membranous. Maxillipeds widely separated at base. Right cheliped much larger than left. Eyescale subrectangular with deep median furrow. 4<sup>th</sup> pereopod (3<sup>rd</sup> walking leg) dactyl with specialized type A, P<sub>4</sub> structure (McLaughlin 1974).

*Elassochirus tenuimanus* (Dana 1851)

*Bernhardus tenuimanus*, *Eupagurus tenuimanus*, *Pagurus tenuimanus*

Comment [AD1]:

**Description** — Carapace: shield subequal in length and width. Eyestalk stout; cornea dilated. Right cheliped longer than walking legs; surface with numerous granules of varying sizes and margins with larger granules or teeth; merus short, triangular; carpus wide and slightly convex and palm even wider than carpus, with compressed dorso-ventral area with the upper margin of palm making a curved protuberance; fixed finger short and wide at base and finger longer and narrower with strong calcareous teeth. Left cheliped slender and much smaller than right, with fewer granules and teeth; hand with dorsal surface slightly convex with elevated beaded margins on palm and fixed finger; finger with a cutting edge of a tight row of short, stout, corneous setae. 1<sup>st</sup> and 2<sup>nd</sup> walking legs short and stout, with dorsal ridge of carpus and propodus serrate; dactyl with corneous spines and a stout claw.

**Colour** — Shield marbled with white and brown, the rest of the carapace with red, white and yellow. Right cheliped: ischium white with orange patches; merus with orange and greenish brown and 2 cobalt-blue patches, and an orange and yellow band distally and white marginal teeth; carpus greenish brown with white, orange-ringed, granules; hand light brown with light red streaks and white teeth. Left cheliped similar. 1<sup>st</sup> and 2<sup>nd</sup> walking legs: ischium orange and yellow; merus yellow with an orange streak dorsally, a large, cobalt-blue patch on each face, orange distally with red and white spines; carpus with 3 dark red stripes dorsally, a white stripe medially and yellow ventrally; propodus with 2 red stripes composed of a row of red spots, opaque white patch medially; dactyl cream with rows of dark red spots. Eyestalk; orange brown bands; cornea grey-green. Antennal flagellum orange to red-brown.

**Habitat** — Mud, sand, gravel, shell or mixture of these.

**Size** — Shield length: male 23.4 mm.

**Range** — Northwestern Pacific Ocean, Aleutian Islands, Alaska, to Puget Sound, Washington; intertidal to 388 m.

**Distribution in British Columbia** — Common in suitable habitat.

*Elassochirus cavimanus* (Miers 1879)

*Eupagurus cavimanus*, *Pagurus cavimanus*, *Pagurus munitus*

**Description** — Carapace: surface smooth, shield subequal in length and width. Eyestalk stout; cornea slightly inflated. Right cheliped subequal in length to walking legs and most surfaces smooth; merus short, triangular, with a few sharp granules near distal denticulate margin; carpus convex medially and produced laterally into flat “wings” on either side, inner and distal margins denticulate and a scattered row of small spines mid-dorsally; hand subrectangular with wide fingers; left hand oval with wide fixed finger. Walking legs compressed and slightly setose.

**Colour** — Carapace orange or scarlet. Right cheliped: merus and carpus violet with orange margins; hand pale orange or flesh coloured and violet; teeth white. Left cheliped similar except more violet on hand. Walking legs deep red or orange with distinct white polka dots, claw brown. Eyestalk orange; cornea black with yellow rings. Antennal flagellum translucent with a tinge of orange.

**Habitat** — Mud or sandy bottom.

**Size** — Shield length: male 21.1 mm.

**Range** — Japan and northwestern Pacific from the Bering Seas to Departure Bay, British Columbia, and Cobb Seamount (46°44'N, 130°47'W), off Washington; from 36 to 252 m.

**Distribution in British Columbia** — Only a few scattered records, mostly in the north.

***Elassochirus gilli*** (Benedict 1892)\*

*Eupagurus gilli*, *Pagurus gilli*

**Description** — Carapace: surface smooth; shield subequal in length and width. Eyestalk stout; cornea not inflated. Right cheliped surface smooth, subequal in length to walking legs; merus short and triangular, distal margin denticulate; carpus convex and produced laterally into flat “wings”, inner and distal margin serrate; hand with lateral margins parallel and fingers wide at base; left hand oval and fixed finger wide. Walking legs compressed and slightly setose.

**Colour** — Carapace: shield grey and brown with light anterior margin and pale yellow median stripe; posterior part brown and maroon with grey and cream stripes and dots. Abdomen maroon and cream. Right cheliped: ischium white and scarlet; merus scarlet with white dots distally; carpus scarlet and orange dorsally, and ventrally; hand orange with brown fingers bordered in white; teeth white, ventrally yellow. Left cheliped scarlet and orange only. Walking legs scarlet and orange with white spots at junctions of merus and propodus and rows of small white dots on lateral faces of propodus and dactylus; claw brown. Eyestalk red and brown with distal margins white; cornea black with gold flecks. Antennal flagellum scarlet.

**Habitat** — Rocky areas.

**Size** — Shield length: male 20.4 m.

**Range** — Northwestern Pacific Ocean, Bering Sea, Alaska, to Puget Sound, Washington; intertidal to 200 m.

**Distribution in British Columbia** — Fairly common in suitable habitat.

The Genus *Pagurus* Fabricius 1775

Hermit crabs with anterior carapace (shield) calcified and posterior mainly membranous. Third maxillipeds widely separated at base. Right cheliped larger than left. No paired pleopods on well-developed abdomen: pleopods on left side only. Uropods asymmetrical and adapted, with telson, to anchor animal within shell or other habitat.

***Pagurus armatus*** (Dana 1851)

*Berhardus armatus*, *Eupagurus armatus*, *Eupagurus ochotensis*, *Pagurus ochotensis*

**Description** — Carapace: shield broader than long. Eyestalk relatively short and stout; cornea dilated and ovate. Right cheliped stout, shorter than walking legs; carpus and hand covered with sharp spines which are larger on margins and less dense on ventral surfaces. Left cheliped similar, but slender. 1<sup>st</sup> and 2<sup>nd</sup> walking legs stout; merus compressed laterally, with spines and denticulated ridges; carpus and propodus with dorsal margins and serrate and small spines on faces; dactyl longer than merus and twisted with upper margin serrated and ridged and lower margin with close-set corneous spines; claw sharp and stout.

**Colour** — Carapace: shield with areas of white, brown, and shell pink laterally; posterior red, apricot and white. Chelipeds: ischium with brown bands; merus pink, brown and white with an orange band distally and margins and teeth dark brown; carpus light brown, yellow, white and blue areas with dark brown spines; palm pale yellow with dark brown spines medially and red marginally with fingers white or grey-blue with white tips and teeth. 1<sup>st</sup> and 2<sup>nd</sup> walking legs have ischium yellow and white; merus opaque white, tan, orange and mahogany with scattered dark brown spots; carpus yellow with dark spines, a narrow mahogany stripe on median posterior face and a white patch distally; propodus white, yellow, orange and a brown area with a mahogany stripe ventrally; dactyl white, orange and violet-blue with dark spines and 2

narrow brown stripes; claw yellow. Green or gold iridescence on surfaces of appendages. Eyestalk with red band at base, and opaque white and brown bands; cornea black. Antennal flagellum pale yellow.

**Habitat** — Sand, mud, shell or gravel.

**Size** — Shield length: male 19.6 mm.

**Range** — Unalaska, Alaska, to San Diego, California; intertidal to 146 m.

**Distribution in British Columbia** — Common in dredged material. May be taken intertidally in some areas during low night tides in winter.

***Pagurus ochotensis*** Brandt 1851

*Eupagurus ochotensis*, *Eupagurus alaskensis*, *Pagurus alaskensis*

**Description** — Carapace: shield broader than long. Eyestalk relatively short and stout; cornea dilated and ovate. Right cheliped stout and shorter than walking legs; carpus with spines mid-dorsally in two rows and marginally; hand with small spines or sharp granules and stronger spines marginally and ventrally. Left cheliped similar but smaller. 1<sup>st</sup> and 2<sup>nd</sup> walking legs stout; carpus and propodus with serrate dorsal margins; dactyl long, broad and twisted with serrate dorsal margins, 2 shallow sulci, and close-set corneous spines ventrally; claw sharp and stout.

**Colour** — Carapace: shield pink and maroon; lateral opaque yellow and posterior pink and scarlet marbled with maroon spots. Right cheliped with ischium white; merus white with pearly iridescence and maroon streaks and a terminal band; carpus grey or brown with dark grey spines, pink, green and bronze iridescence; hand white or flesh coloured with grey and brown spines and granules, a maroon streak from inner distal margin to near tip of fixed finger, and finger also with a maroon streak on cutting margin. Left cheliped similar but no prominent maroon streaks on hand. 1<sup>st</sup> and 2<sup>nd</sup> walking legs: ischium yellowish; merus gold, maroon and blue areas and green iridescence; carpus and propodus similar but with two maroon stripes in addition; dactyl with anterior face maroon, with wide blue stripes and posterior face with pale blue stripes. Eyestalk white with red spots and greenish yellow band distally; cornea black and greenish yellow. Antennal flagellum pinkish brown. Depth of colour varies with individuals.

**Habitat** — Mud or sand bottom.

**Size** — Shield length: male 27.7 mm.

**Range** — Northwestern Pacific and Pribilof Islands, Alaska, to off Point Arena, California; intertidal to 388 m.

**Distribution in British Columbia** — Common.

***Pagurus aleuticus*** (Benedict 1892)

*Eupagurus aleuticus*

**Description** — Carapace: shield subequal in length and width. Eyestalks relatively short and stout, with cornea dilated and ovate. Right cheliped stout, shorter than walking legs and with carpus and hand covered with spines and granules, outer margins serrate. Most of the spines are bifid (2 sharp points). Left cheliped slender. 1<sup>st</sup> and 2<sup>nd</sup> walking legs with serrate margins and dorsal rows of spines; dactyl long, stout and twisted with a longitudinal sulcus and with a row of close-set corneous spines ventrally and terminating in stout claw.

**Colour** — Carapace: shield red or brown with paler network; lateral yellowish with red dots; posterior red and yellow. Abdomen pink and yellow. Chelipeds pink, red or orange with red spines and some iridescence. 1<sup>st</sup> and 2<sup>nd</sup> walking legs iridescent pink with maroon streaks and dark spines; dactyl orange with a red stripe on outer face and dorsal groove dark red. Eyestalk white and tan; cornea black and greenish yellow. Antennal flagellum orange or tan.

**Habitat** — Mud and/or sand bottom.

**Size** — Shield length: male 28.1 mm.

**Range** — Northwestern Pacific from the Bering Sea to Eureka, California, (40°41'N, 127°31.7'W); from 15 to 435 m.

**Distribution in British Columbia** — Widespread in suitable areas and usually below 70 m.

*Pagurus samuelis* (Stimpson 1857)\*  
*Eupagurus samuelis*

**Description** — Carapace: shield longer than broad. Eyestalk stout; cornea not dilated. Right cheliped shorter than walking legs; carpus and hand with numerous granules and lateral margins beaded; outline of hand semi-oval. Left cheliped smaller than right with ventral margin of merus cut into strong teeth. 1<sup>st</sup> and 2<sup>nd</sup> walking legs stout and setose; dactyl slightly shorter than propodus and with stout movable spines ventrally; claw strong and curved. Propodus and dactyl of left 2<sup>nd</sup> walking leg (3<sup>rd</sup> pereopod) with spines and granules ventrally. This is also found in several other intertidal species and the function does not seem to be known. It may be useful for gripping rock faces.

**Colour** — Carapace mottled blue, brown and green or black with 5 opaque white stripes, the central 3 running from the rostrum to the posterior margin, the other 2 postero-laterally. Right cheliped with ischium olive green dorsally and blue ventrally; merus and carpus olive green with red granules; palm greenish brown with red and white-tipped granules; fingers blue to white with orange tips. Left cheliped similar but more orange on finger tips. 1<sup>st</sup> and 2<sup>nd</sup> walking legs olive green to brownish green with dark red striae and an irregular china blue band margined with a narrow red brown band; dactyl china blue with a thin red mid-lateral stripe on both faces and, on dorsal ridge, a patch of orange and of white terminally; claw dark. Eyestalk red brown and olive green with white band distally; cornea black with white flecks forming concentric circles. Antennal flagellum translucent red.

**Habitat** — High intertidal, often inhabiting black turban shells (*tegula funebris*) and sharing the same habitat as the living gastropods.

**Size** — Shield length: male 8 mm.

**Range** — Nootka Sound (49°45'N, 126°50'W), British Columbia, to northwest Baja California, Mexico; high intertidal. Not Japan.

**Distribution in British Columbia** — Known only from Nootka Sound to Port Renfrew.

*Pagurus hemphilli* (Benedict 1892)\*  
*Eupagurus hemphilli*

**Description** — Carapace: shield distinctly longer than wide. Eyestalk long and slender, cornea slightly dilated. Right cheliped much larger than left, finely granulate with some teeth on distal margins of merus and carpus; carpus laterally compressed and inflated ventrally; hand, oval with a beading of granules on the



margins; left hand much smaller than right and laterally compressed. 1<sup>st</sup> and 2<sup>nd</sup> walking legs subequal in length to right cheliped, stout and serrate on dorsal margins of carpus and propodus.

**Colour** — Carapace: shield greenish brown; rest purple and blue with white dots. Abdomen pale purple, blue, pink and white. Right cheliped red and dark purple-red; hand dark greenish brown with pale blue granules; fingers red with blue granules; tips of fingers yellow and teeth white. Left cheliped similar but hand red and finger tips scarlet and yellow. Walking legs dark red with blue-white granules, distal half of dactyl orange and scarlet with dark brown claw. Eyestalk brown to cream; cornea black with gold semicircles. Antennal flagellum scarlet. Juveniles without the deep red colour and walking legs white with varying amounts of red proximally but dactyls have orange tips.

**Habitat** — Low intertidal and subtidal on open coast among seaweed covered rocks.

**Size** — Shield length: male 9.8 mm.

**Range** — Klokachef Island (57°25'N, 135°52'W), Alaska, to south of San Miguel Island, California (34°01'N, 120°24'W); intertidal to 50 m.

**Distribution in British Columbia** — Only on open coasts.

***Pagurus granosimanus*** (Stimpson 1858)

*Eupagurus granosimanus*

**Description** — Carapace: shield slightly longer than broad. Eyestalk relatively long; cornea slightly dilated. Chelipeds stout; merus with small granules, spines and tufts of short setae; carpus and hand subequal in length with numerous flat-topped granules on both dorsal and ventral surfaces. 1<sup>st</sup> and 2<sup>nd</sup> walking legs stout, about equal in length to right cheliped and with scattered granules and short setae; dactyl slightly longer than propodus.

**Colour** — Carapace: shield white with brown and green marbling; sides of carapace reddish brown with blue dots; posterior kelp brown with longitudinal rows of cream dots. Chelipeds kelp brown with pale blue granules, some of which have white tips. 1<sup>st</sup> and 2<sup>nd</sup> walking legs kelp brown, darkest dorsally, with pale blue granules; tip of dactyl red brown, claw greenish brown. Eyestalk dark kelp brown; eyescale edged with cream; cornea black with silver flecks. Antennal flagellum translucent tan to red.

**Habitat** — Intertidal in rocky and graveled areas. Often congregate in tide pools where they tolerate fairly high water temperatures. Usually inhabit large heavy shells, such as *Thais*, into which the animal can withdraw completely.

**Size** — Shield length: male 9.6 mm.

**Range** — Unalaska, Alaska, to Ensenada, Mexico; intertidal to 36 m.

**Distribution in British Columbia** — Common intertidally.

***Pagurus hirsutiusculus*** (Dana 1851)

*Bernhardus hirsutiusculus*, *Eupagurus hirsutiusculus*

**Description** — Carapace: shield broader than long. Eyestalk short and stout; cornea not dilated. Right cheliped stout, shorter than walking legs; merus and carpus setose and with granules, spines and striae; hand slightly convex, sparsely setose and with many small granules. Proportions and shape of cheliped changes with growth. Left cheliped similar but smaller than right. 1<sup>st</sup> and 2<sup>nd</sup> walking legs setose; dactyl slender, subequal in length to propodus; claw curved.

**Colour** — Carapace: shield dark brown masked by light brown setae; posterior grey-green with dark brown streaks and striations. Right cheliped: ischium light brown, merus dirty white with striae of dark and light brown; carpus greenish brown, hand light grey-brown with dirty white fingers. Left cheliped brown, blue-grey, greenish-brown with white band distally on merus; hand red-brown with tan or orange tips. 1<sup>st</sup> and 2<sup>nd</sup> walking legs: ischium light brown or bluish; merus dark brown medially, white and/or blue; carpus light brown with dark brown streaks and a distal white patch with narrow red margin; dactyl greenish or red-brown with a blue area proximally and a red stripe on each lateral face, dorsal ridge brown; ventral moveable spines and claw dark brown. Eyestalk grey with dark brown streaks; cornea black with concentric golf rings. Antennal flagellum kelp brown with a gold dot on every other segment, proximally, to every 6<sup>th</sup>, distally. Juveniles with much less intense colour and more white than adults.

**Habitat** — High intertidal. Small individuals occur in great numbers in upper zone tidepools, despite high temperature and salinity, where they hide among tufts of calcareous algae. All stages very agile and have a tendency to use small light shells which are readily abandoned when in full flight from predators.

**Size** — Shield length: male 9.8 mm.

**Range** — Northwestern Pacific and Pribilof Islands, Alaska, to southern California; intertidal to 110 m.

**Distribution in British Columbia** — Ubiquitous intertidally.

*Pagurus beringanus* (Benedict 1892)\*

*Eupagurus beringanus*, *E. newcombei*, *Pagurus newcombei*

**Description** — Carapace: shield subequal in length and width. Eyestalk long and slender. Right cheliped long and stout, slightly shorter than walking legs; merus with upper surface convex, some linear striations, large distal marginal teeth dorsally and 2 large knobs ventrally; carpus long, convex with rows of large granules and spines; hand convex with ridges and many granules, spines and serrate margins. Left cheliped much smaller. 1<sup>st</sup> and 2<sup>nd</sup> walking legs stout and setose; merus laterally compressed.

**Colour** — Carapace: shield pale grey with marbling of dark grey, red yellow and tan with red dots and front margins scarlet; posterior carapace and abdomen marbled with grey, brown and purple, red and white dots. Chelipeds: ischium white and orange; merus greenish brown, with red striae and a scarlet band on distal margin, ventrally white, blue and yellow with orange knobs; carpus greenish-brown with orange spines and tubercles; hand greenish-brown fading to white on fingers, sharp granules with white tips, scarlet at base and tips of fingers with corneous tips brown and teeth white. 1<sup>st</sup> and 2<sup>nd</sup> walking legs: ischium grey with red and opaque white patches; merus pale greenish brown with red spots and distal bands of red and scarlet; carpus and propodus grey green to white with dark red spots, scarlet patch terminally on propodus; dactyl with 2 dark red bands separated by white, with red dots; claw dark. Eyestalk translucent with red laterally. Juveniles and small individuals not as highly coloured as adults with white, pale green, and grey and orange granules and red or yellow bands on merus of chelipeds and on propodus of walking legs.

**Habitat** — In rocky areas intertidally where water is cold and, subtidally, where temperatures are higher. Prefers a large, heavy shell within which the animal can withdraw completely. Tends to congregate in large numbers in shaded rock crevices at low tide.

**Size** — Shield length: male 15.5 mm.

**Range** — Bering Sea and Aleutian Islands, Alaska, to Monterey, California; intertidal to 364 m.

**Distribution in British Columbia** — Common intertidally in cold-water areas such as the Juan de Fuca Strait, but not so in the warmer waters of the Strait of Georgia.

***Pagurus tanneri*** (Benedict 1892)

*Eupagurus tanneri*

**Description** — Carapace: shield subequal in length and width. Eyestalk short and stout; cornea dilated. Right cheliped stout, slightly shorter than walking legs; merus setose; carpus with small spines on dorsal surface and serrate and setose margins; hand spiny with a raised triangular ridge and base less than half the width of the palm; apex reaches level of base of finger. Left cheliped smaller and slender, with hand slightly swollen on left side, and a curved raised ridge margined with 2 rows of spines on palm; fingers elongate. 1<sup>st</sup> and 2<sup>nd</sup> walking legs slender; carpi and propodi dorsally serrate; dactyl with stiff setae on dorsal margins and minute spines on ventral margin; claw small, sharp.

**Colour** — Carapace: shield red, orange, yellow and white dappled; laterally red with white reticulations; posterior red and orange with pale yellow dots. Abdomen with red, pink, orange and white areas. Chelipeds with white spines and granules; ischium orange; merus pink to orange; carpus pink to orange with some yellow striae; palm yellowish, with pink depressions; fingers orange with yellow teeth. 1<sup>st</sup> and 2<sup>nd</sup> walking legs red, orange and pink in patches; dactyl orange with red setae. Eyestalk orange with white tip distally; eyescales orange with white margins; cornea black with gold flecks. Antennal flagellum scarlet.

**Habitat** — Boulders in deep water.

**Size** — Shield length: male 18.1 mm.

**Range** — Bering Sea and Unalaska, Alaska to off San Simeon Bay, California; 91 to 1372 m.

**Distribution in British Columbia** — La Perouse Bank and west of Clayoquot Sound, Vancouver Island.

***Pagurus cornutus*** (Benedict 1892)

*Eupagurus cornutus*

**Description** — Carapace: shield subequal in length and width. Eyestalk short and stout; cornea distinctly dilated. Right cheliped stout, somewhat setose and shorter than walking legs; merus with toothed margin distally; carpus with serrate margins and a few spines dorsally; hand granulate with serrate margins, a few spines on dorsal surface and a large triangular, horn-shaped ridge with base about ½ width of palm and apex past level of base of finger. Left cheliped stout, with hand swollen on left side and a narrow spined ridge running from the middle of the base of the palm to the middle of the fixed finger which has a curved tip. 1<sup>st</sup> and 2<sup>nd</sup> walking legs setose, stout with serrate margins on carpi of 1<sup>st</sup> legs and right 2<sup>nd</sup> leg; dactyls with stiff setae on dorsal margins and movable spines on ventral margins; claw sharp.

**Colour** — Carapace: shield orange and pink with pale yellow median streak which continues to mid-posterior part of carapace; rest red with some white patches. Abdomen pink and yellow. Chelipeds: ischium red; merus orange with cream striae and spines, white marginal teeth; carpus red to orange with yellow spines; palm orange medially and pink marginally with yellow spines; fingers pink with yellow tips and white teeth. Walking legs deep and pale red; merus with pink band distally; dactyl mostly pale; claw translucent. Eyestalk orange with light spots; eyescales orange with pale borders; cornea black with silver “stars”. Antennal flagellum pale translucent orange.

**Habitat** — Mud or sand in deep water.

**Size** — Shield length: male 18.7 mm.

**Range** — Northwestern Pacific and Bering Sea to Oregon (46°02'N, 124°43.7'W); 160 to 830 m.

**Distribution in British Columbia** — Queen Charlotte Sound, Dixon Entrance and off Barkley Sound.

***Pagurus confragosus*** (Benedict 1892)

*Eupagurus confragosus*

**Description** — Carapace: shield subequal in length and width. Eyestalk short and stout; cornea dilated. Right cheliped stout, setose and shorter than walking legs; merus setose; carpus with small spines on dorsal surface and with serrate margins; hand spined and with a raised triangular ridge whose base is about 2/3 width of palm and apex past level of base of finger. Left cheliped slender with rows of spines on carpus; hand with palm greatly inflated on outer side of a convex ridge and with a row of large spines on right side and small ones on left, extending from base of hand nearly to middle of fingers. 1<sup>st</sup> and 2<sup>nd</sup> walking legs stout; carpi serrate marginally on 1<sup>st</sup> legs; dactyls with stiff setae on dorsal margin, and small movable spines ventrally; claws small.

**Colour** — Carapace white with pink and red mottling. Abdomen cream and white with red mottling. Chelipeds red and white blotched proximally; carpus white with bright red splotches and spines; hand pink and fingers with white cutting surfaces. Walking legs with ischium pink, red and white; merus and carpus red, white and pale tan; propodus with bright red bands proximally and distally and with lighter colour between; dactyl red with a fine lateral stripe proximally, pink medially and orange distally. Eyestalk pink with white stripe and red patches; cornea black with fold flecks. Depth of colour varies in individuals.

**Habitat** — Rocky, mud, sand or gravel.

**Size** — Shield length: male 20.2 mm.

**Range** — Bristol Bay, Alaska, to Columbia River mouth, Oregon; 55 to 435 m.

**Distribution in British Columbia** — Not common but widespread.

***Pagurus* sp.**

**Description** — Carapace: shield longer than wide. Eyestalk long; cornea not dilated; eyescales with 1 to 3 sharp-pointed marginal teeth. Right cheliped shorter than walking legs with rows of stout spines on dorsal surface of palm and fingers and serrate margins; carpus with inner margin serrate and smaller spines dorsally; merus with ventral margin serrate. Left cheliped shorter and more slender than right and fingers proportionately longer; similarly spined. Walking legs long and no serrate margins. All appendages with scattered tufts of setae.

**Colour** — Brilliant. Shield orange and scarlet, dark red, and white spots; rest of carapace reticulated dark red with rows of small white dots. Abdomen yellow or red with blue tinges. Both chelipeds have merus and carpus dark red with patches of intense violet margined with crimson on both faces; palm orange with dark red network and white spots; fingers orange. 1<sup>st</sup> and 2<sup>nd</sup> walking legs: merus reddish orange with stripes of violet or bluish white margined with crimson on both faces; carpus, propodus and dactyl orange with similar bluish white stripes. These stripes do not completely fade when preserved and are useful diagnostically. Eyestalk translucent with scarlet bands and patches and white bases. Antennules with bands of red, white and blue.

**Habitat** — Sand or gravel and broken shell.

**Size** — Shield length: male 3.3 mm.

**Range** — Queen Charlotte Sound (51°45'N, 128°05'W), British Columbia, to border of California and Mexico; 6 to 109 m.

**Distribution in British Columbia** — Queen Charlotte Sound and outer coast of Vancouver Island south to Barkley Sound.

*Pagurus kenerlyi* (Stimpson 1864)  
*Eupagurus kenerlyi*

**Description** — Carapace: shield longer than wide. Eyestalk long and slender; cornea may be slightly dilated. Right cheliped subequal to walking legs, setose, with tufts of bristles longer than spines but not concealing them; carpus with spines on surface but inner lateral margin serrate with large corneous-tipped teeth which increase in size and number distally; palm and fingers heavily spined. Left cheliped smaller, with rows of stout spines. 1<sup>st</sup> and 2<sup>nd</sup> walking legs setose, relatively short and stout; carpi of 1<sup>st</sup> pair of legs serrate.

**Colour** — Carapace: shield orange, dark red, brown and yellow marbled, laterally brown and cream, posteriorly bright and dark red, and white with yellow dots at base of tufts of setae. Abdomen red, yellow, brown and white marbled. Chelipeds: ischium tan and white; merus dark to light red and tan, with white spots and a white band distally; carpus with some dark red setae and large blue or white spines with dark corneous tips, or with a red band; palm dark red and tan with large pale blue or white, dark-tipped spines; fingers orange with white cutting teeth. 1<sup>st</sup> and 2<sup>nd</sup> walking legs red and tan with white patches forming irregular bands; claws dark. Eyestalk kelp brown; cornea black with gold flecks. Antennal flagellum with alternate uneven bands of dark brown or maroon separated by narrower translucent bands.

**Habitat** — Rarely intertidal; subtidal on rocky areas, gravel, sand or mud.

**Size** — Shield length: male 19.2 mm.

**Range** — Aleutian Islands, Alaska, to Puget Sound, Washington; intertidal to 274 m.

**Distribution in British Columbia** — Widely distributed.

*Pagurus caurinus* Hart 1971\*  
*Pagurus setosus*

**Description** — Carapace: shield subequal in length and width; lateral areas covered with long soft setae. Eyestalk long, slender and medially constricted; cornea slightly dilated. Right cheliped nearly as long as walking legs, setose, with tufts of long setae; merus with small granules dorsally and 1 or 2 knobs ventrally; carpus slightly convex dorsally and armed with small spines and a serrate inner margin; hand longer than subequal merus and carpus, with about 7 rows of sharp spines and serrated margins. Left cheliped smaller but similar to right. 1<sup>st</sup> and 2<sup>nd</sup> walking legs stout and setose, only 1<sup>st</sup> right leg with dorsal margin of carpus serrate; claw stout and curved.

**Colour** — Carapace light grey and cream with longitudinal purple stripes, each with a row of light dots, and laterally marbled with red-brown. Abdomen purple and grey. Chelipeds each with merus brown and grey and a dull white or yellowish distal band; carpus grey-green and red-brown with spines grey-based and orange-tipped and finger tips orange-red. 1<sup>st</sup> and 2<sup>nd</sup> walking legs: merus red-brown with an irregular yellowish-white band margined distally with orange; carpus brown with grey spots and inner face yellowish; propodus with narrow white band, a wide red-brown band, a grey spotted band and an opaque white band; dactyl red-brown with grey spots becoming orange near tip; claw translucent brown. Eyestalk light with greenish brown bands; cornea black and yellow. Antennal flagellum orange. Colour somewhat masked by long, tan setae.

**Habitat** — Intertidal in cold water on outer coast but rarely so in warmer waters. Rocky areas, and sand, mud or gravel.

**Size** — Shield length: male 7 mm.

**Range** — South of Comfort Cove, Port Gravina (60°43'N, 146°7'W), Alaska, to Los Angeles breakwater, San Pedro, California; intertidal to 126 m.

**Distribution in British Columbia** — Common but probably overlooked because of small size.

***Pagurus capillatus*** (Benedict 1892)

*Eupagurus capillatus*, *Pagurus setosus*

**Description** — Carapace: shield nearly as broad as long. Eyestalk slender and long; cornea slightly dilated. Surface spines on chelipeds are hidden by a dense covering of long, soft plumose setae; merus with a few small spines and tufts of long setae, distal margin with numerous small teeth; carpus setose with inner margin serrated with larger spines than those scattered over dorsal surface and outer margin; palm and fingers with setae covering many rows of spines. Hand of adult male proportionately longer than that of female. Left cheliped relatively small and slender with long fingers. 1<sup>st</sup> and 2<sup>nd</sup> walking legs slender and setose, with carpi, of 1<sup>st</sup> legs only, serrate on dorsal margins; dactyl long and slender, with minute movable spines on ventral margin; claw stout.

**Colour** — Carapace: shield cream with mottled red, brown, green, and cream mid-dorsally and laterally; posterior pink and brown. Abdomen pale pink with brown spots. Chelipeds: merus white with irregular bands of rose and brown; carpus white with apricot spines, brown and red mottled; hand light brown and fingers with apricot tips. Walking legs: ischium pink, red and yellow spotted merus irregularly banded in red and brown; carpus and propodus each with two bands; dactyl greenish yellow. Eyestalk with a rose stripe on outer face and brown on inner; cornea black with gold flecks. Antennal flagellum translucent. Colour patterns difficult to see due to adherence of mud particles to the plumose setae.

**Habitat** — Muddy areas.

**Size** — Shield length: male 19.8 mm.

**Range** — Northwestern Pacific, Chukchi Sea, Bering Sea to off Santa Cruz, California; from 4 to 439 m.

**Distribution in British Columbia** — Common on muddy bottoms.

***Pagurus setosus*** (Benedict 1892)

*Eupagurus setosus*

**Description** — Carapace: shield subequal in length and width. Eyestalk stout, with cornea little dilated. Right cheliped setose, shorter than walking legs; merus with a few tufts of long setae; carpus with tufts of long setae encircling the large, curved corneous spines on inner margin; hand dorsally slightly convex with many spines ranging in size from minute to large, setose; fingers wide. Left cheliped similar but slender and almost as long as right. 1<sup>st</sup> and 2<sup>nd</sup> walking legs with tufts of long setae on margins, with only the dorsal margin of the carpus of right 1<sup>st</sup> leg serrate; dactyl longer than propodus, with stout movable spines ventrally; claw strong.

**Colour** — Carapace mottled red, white and brown. Abdomen red and white marbled and with white dots. Chelipeds: ischium pink; merus pink with red and white dots medially; carpus pink with proximal and medial red bands and opaque white dots; palm pink with a few red flecks; fingers orange with white

calcareous and brown corneous teeth. Mud-coloured setae obscure much of the colour. Walking legs: ischium pink; merus mottled light and dark red, distally banded and with scattered white dots; carpus bands of red and white, or mottled red and white; propodus with narrow bands of mottled red, of wide bands of white, and of red mottled and of narrow white bands; dactyl yellow to red with small white dots medially; claw brown. Eyestalk red, white and tan with translucent dots; cornea black with gold flecks. Antennal flagellum translucent yellow.

**Habitat** — Rocks, mud or sand.

**Size** — Shield length: male 13.1 mm.

**Range** — Kodiak, Alaska, to off Santa Cruz Island, California; from 9 to 487 m.

**Distribution in British Columbia** — Widespread but not in great numbers.

*Pagurus quaylei* Hart 1971

**Description** — Carapace: shield subequal in length and width. Eyestalk elongate; cornea slightly dilated; eyescale with 1 to 5 sharp-pointed marginal teeth. Right cheliped stout and shorter than walking legs, setose; merus with 1 or more large knobs ventrally; carpus with small spines dorsally and larger spines on inner distal margin; hand somewhat convex with numerous sharp spines in irregular rows, longitudinally, and largest spines on mid-dorsal palm; fingers short. Left cheliped, long and slender, setose and spinulose; long fingers with combs of short corneous setae on cutting surface, gaping and touching only at tips. 1<sup>st</sup> and 2<sup>nd</sup> walking legs long and slender with dense tufts of long setae, 1<sup>st</sup> legs with serrate margins dorsally on carpi and propodi; dactyls elongate; claws slender, curved. Dactyl of left 2<sup>nd</sup> leg may be armed with numerous spines and tubercles.

**Colour** — Carapace: shield dark red and brown, with yellow and pink reticulations medially; laterally dark brown with light spots; posteriorly pinkish brown with light blue spots. Right cheliped: ischium with patches of brown; merus dark brown with light spots and a white or pale brown band distally; carpus mottled grey or greenish-brown with grey spots and spines; palm greenish-brown with grey and white spines; fingers mainly white. Left cheliped similar except that distal part of carpus is white and there is some grey-blue on distal part of hand. Walking legs: ischium with a few patches of brown; merus with a band of red-brown, grey and, distally, pinkish white; carpus grey to white with irregular red-brown stripes on outer surface; propodus grey with 4 red-brown stripes on outer face, 1 on inner face and a yellowish white band distally; dactyl with dark grey patch proximally, a short red-brown stripe dorsally and a thin red stripe on each lateral face; claw brown. Eyestalk pale brown with red, brown and white dots; cornea black overlaid with silver except for 2 circular bands. Antennal flagellum translucent but irregularly banded with dark brown. Opaque white dots can be seen on living translucent sections.

**Habitat** — Gravel or sand in shallow water.

**Size** — Shield length: male 4.3 mm.

**Range** — Point Cuerdo, San Fernando Island, Alaska (55°29'N, 130°19'W), to San Quentin Bay, Baja California, Mexico; intertidal to 97 m.

**Distribution in British Columbia** — Outer coast.

*Pagurus dalli* (Benedict 1892)  
*Eupagurus dalli*

**Description** — Carapace: shield subequal in length and width. Eyestalk slender; cornea slightly dilated. Right cheliped with short setae, slender, and subequal in length to walking legs; merus short; carpus

increases in width distally and both lateral margins are marked by a row of spines, dorsal surface with small spines and granules; hand slender, margin serrated and spines on dorsal surface. Left cheliped with spined median ridge on carpus, palm and fixed finger. 1<sup>st</sup> and 2<sup>nd</sup> walking legs stout; carpi serrate dorsally; dactyls long; claws sharp.

**Colour** — Carapace: shield network of white, tan, mahogany and red with an anterior margin scarlet; rest of carapace and abdomen cream, white, yellow purple and red. Chelipeds: ischium white with fine red streaks; merus yellow-brown marbled with dark red granules and marginal teeth with a narrow white band distally; carpus and palm light brown or orange with grey or white, red tipped spines; fingers mostly orange with white spines. 1<sup>st</sup> and 2<sup>nd</sup> walking legs: ischium, flesh with fine network of red; merus, flesh with patches of red or yellow and opaque white distally; carpus mostly dark red with yellow patches; propodus purplish red and yellow; dactyl purplish-red proximally, then yellow and red; claw green. Eyestalk white with yellow brown band proximally and distally, a row of red dots dorsally; cornea black. Antennal flagellum red brown and white dorsally.

**Habitat** — Gravel, sand or mud bottoms.

**Size** — Shield length: male 11.9 mm.

**Range** — Bering Sea to Oregon; intertidal to 276 m.

**Distribution in British Columbia** — Widespread but not abundant.

*Pagurus stevensae* Hart 1971

*Pagurus brandti*

**Description** — Carapace: shield slightly longer than wide in large individuals and subequal in small. Eyestalk long and slender; cornea slightly dilated. Right cheliped long, slender and subequal or slightly shorter than walking legs, surfaces with short setae and numerous small spines; merus with tufts of short setae and a few spines; carpus elongate with subparallel margins, inner margin with several rows of large, corneous-tipped spines, outer margin with small spines but not in clearly defined rows; palm slender with inner margin relatively straight, outer curved and both armed with strong corneous-tipped spines, dorsal surface with numerous spines and an elongated inverted V-shaped spiny ridge medially; fingers with broad flat teeth and short, corneous, rasping type setae. Left cheliped long and slender; carpus with 2 rows of spines mid-dorsally; palm with a row of spines which alternate in direction of tips and which reaches to middle of fixed finger, cutting surface of finger with comb of rasping type of setae. 1<sup>st</sup> and 2<sup>nd</sup> walking legs long and slender, laterally compressed, with tufts of short stiff setae, ventral margin of meri and dorsal margin of carpi of 1<sup>st</sup> legs serrate; dactyls with claws long and sharp.

**Colour** — Carapace: shield and posterior part white with red and tan reticulations; lateral areas yellow. Abdomen also white with red and tan reticulations. Chelipeds pinkish brown with dark red spines and scattered small red dots; fingers pink. Walking legs red-brown with light area and scattered red dots; propodus with dark stripe dorsally and ventrally; dactyl with proximal red-brown band and red or orange stripes dorsally, ventrally and mid-laterally with interrupted rows of small red spots on upper, outer face. Eyestalk pale orange with interrupted red stripes; cornea black with flecks of green and yellow. Antennal flagellum red, translucent.

**Habitat** — Mud, sand or gravel bottom; often occupy shell covered with living sponge, *Suberites ficus*, which ultimately dissolves the calcium carbonate of the shell. But the cavity is retained and increases in size with the growth of the crab.

**Size** — Shield length: male 11 mm.

**Range** — Akun Bay, Akun Island, Bering Sea, to Puget Sound, Washington; 13 to 198 m.



**Distribution in British Columbia** — Widespread but uncommon except for juveniles which are sometimes found in swarms in June and July.

### Superfamily Hippidea

Family Hippidae

#### *Key to Species*

1. Pereiopods flattened and modified for digging. Antennal flagella long and featherlike and hidden in mouth parts when not in use.....*Emerita analoga*

*Emerita analoga* (Stimpson 1857)  
*Hippa analoga*

*Sand or Mole Crab*

**Description** — Egg-shaped. Carapace marked on anterior half with fine transverse striations; front tridentate. Eyestalk long and slender with a small, terminal cornea. Antennules slender and setose. Antennal flagella long and robust with double rows of plumose setae which are hidden beneath mouth parts except when animal actively feeding. First 4 pairs of pereiopods greatly modified and used for digging. They are heavily bristled, flattened and curved and not chelate. 5<sup>th</sup> pereipod slender and chelate and used for cleaning as in other Anomura. Abdominal segments decrease in size posteriorly; telson large and arrow-head shaped. Uropods well developed but pleopods only in females; three pairs.

**Colour** — Carapace greenish or steel grey dorsally with fine cross stripes of lighter colour, or pink, anteriorly; posteriorly two white dots on light coloured mid-dorsal with pale pink laterally. First pereipod shell pink and white; the rest mostly pink with some pale iridescence. Abdomen grey with 6<sup>th</sup> segment and telson white, with two pink stripes.

**Habitat** — Sandy beaches with heavy surf. These crabs bury themselves backwards in sand quickly to avoid being swept away by surf or current. On wet sand they move backwards leaving a typical track. They feed when almost completely submerged, by unfurling the net made by the antennal flagella which filters plankton from the sea water.

**Size** — Carapace: male 22 mm; female 35 mm.

**Range** — Records from Karluk, Kodiak Island, Alaska, Wickaninnish Bay, Vancouver Island, and Kalalock Beach, Washington. All these appear to be individuals of a temporary invasion by planktonic larvae drifting north. They are not found regularly in these localities. Permanent colonies are found from Oregon to Mexico, and from Peru, Chile and Argentina; intertidal.

**Distribution in British Columbia** — In the sand of Wickaninnish Bay, Vancouver Island, between 1958 and 1960, there were many individuals, but in 1961 I found only one large cast shell and I know of no record since. Old-time residents in the area tell of earlier invasions.

**Notes** — This species occurs in tremendous numbers in southern numbers and is harvested for fish bait. Despite considerable research done by a number of people, the life history of this interesting species is still not at all clear.

### Superfamily Galatheidea

Family CHIROSTYLIDAE

*Key to Species*

1. Rostrum spiniform. Carapace and elongate chelipeds and walking legs with numerous slender spines..... *Chirostylus* sp.

***Chirostylus*** sp.

**Description** — Carapace subequal in length and width, lateral margins curved, surface covered with sharp spines which decrease in size posteriorly. Rostrum styliiform. Chelipeds very long and slender with rows of sharp slender spines on all parts except fingers. Slender spined walking legs about ¾ length of chelipeds. Spines on abdominal segments 1, 2 and 6 and on pleural margins. Eyestalk short and pigmented; cornea not dilated.

**Colour** — Carapace: anterior bluish pink, laterally pale pink and white; posterior white. Spines orange. Chelipeds orange with white palms and fingers. Walking legs orange becoming paler on dactyls. Antennules, antennae and eyestalk orange; cornea black.

**Habitat** — Abyssal muddy sand.

**Size** — Carapace: female 19 x 17 mm.

**Range** — Southwestern Vancouver Island (48°13'N, 126°18.5'W), to west of the Columbia River mouth, Washington; from 914 to 951 m.

**Distribution in British Columbia** — As above, from 951 m.

Family GALATHEIDAE

*Key to Species*

1. Rostrum spine-like. Eyes pigmented.....*Munida quadrispina* composite
1. Rostrum triangular. Eyes without pigment.....*Munidopsis quadrata*

The Genus *Munida* Leach 1829

Carapace sub-rectangular, convex, a few paired spines and lateral margins spined; surface rugose with fringes of short stiff setae. Rostrum long, slender and styliiform, with a large spine (supraorbital) on either side of base. Chelipeds elongate and slender. Eyes large, well pigmented and dilated distally. May have rows of small spines on some abdominal segments.

***Munida quadrispina*** Benedict 1902  
Lobster

Squat

**Description** — Carapace longer than wide. 6 spines on gastric area; 4 in one line, and 1 on each side of the ridge near the hepatic region. 8 to 10 marginal spines. Rostrum long and compressed and minutely spined. Chelipeds with numerous spines and narrow fingers. Walking legs compressed and armed with short spines. Abdomen ridged but not spined except for minute spines on tail fan. Males with paired uniramous gonopods on 1<sup>st</sup> and 2<sup>nd</sup> abdominal segments. Female with small paired pleopods on segments 2 to 5.

**Colour** — Carapace and abdomen red-brown overall, ventrally lighter or white; ridges red with grooves white, and blue spots in cervical groove. Chelipeds with red spines; fingers red with distinct white tips. Walking legs with irregular light bands. Tail fan light coloured.

**Habitat** — Rocky areas, gravel, mud and sponge beds. They are predators on other crustacea and can do considerable damage in shrimp traps.

**Size** — Length 35 mm; large specimens, up to 67 mm, often taken in fjords, are probably an undescribed species.

**Range** — Sitka, Alaska, to Los Coronados Islands, Mexico; from 22 to 1463 m.

**Distribution in British Columbia** — Type locality is Albatross Station 2878, off Cape Beale; 121 m. Widespread. A careful study of material at hand will probably reveal undescribed species.

#### The Genus *Munidopsis* Whiteaves 1874

Carapace more or less quadrilateral and relatively flat. Strongly calcified and usually rugose, spinose and tuberculate. Rostrum well developed, without large spines (superorbital) at base. Cornea of eyes opaque, without pigment. Abdominal segments often with spines or tubercles.

#### *Munidopsis quadrata* Faxon 1893

**Description** — Carapace nearly rectangular, with numerous granules. Rostrum triangular. Chelipeds long, with spines, granules and short setae; fingers flattened, shorter than palm and rounded terminally. Walking legs short, with scattered granules; propodus subequal to merus in length; dactyl with spined ventral margins and curved tip. Abdomen with granular patches, a median blunt tooth on 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> segments. Tail fan with telson composed of 9 plates. Male with paired gonopods on abdominal segments 1 and 2. Female with paired pleopods on segments 3 to 5. A few disproportionately large eggs are carried, indicating repression of the planktonic phase in development.

**Colour** — Carapace pinkish-tan with grooves white. Rostrum pink and white. Chelipeds white with faint tan areas and distal half of finger opaque white; ventrally, basis orange and ischium pink. Walking legs white and pale tan. Abdomen pinkish tan with white, medially; tips of spines and tubercles may be white. Tail fan translucent. Eyestalk pinkish tan; cornea bright orange internally and covered with a translucent white film.

**Habitat** — Mud and sand.

**Size** — Carapace: male 15.5 x 9 mm; female 13 x 8 mm. Total length: male 29 mm.

**Range** — Off Englefield Bay, Queen Charlotte Island (53°1.5'N, 132°54.3'W), British Columbia, to Tres Marias Islands, Mexico; from 86 to 1572 m.

**Distribution in British Columbia** — Off Englefield Bay, Queen Charlotte Islands, and SW of La Perouse Bank.

## SECTION BRACHYURA

### Subsections Oxystomata and Brachygnatha

## Superfamilies Oxyrhyncha and Brachyrhyncha

### Key to Families

1. Margins of mouth parts taper narrowly towards front; triangular in outline.....Calappidae
1. Margins of mouth parts do not taper in front; square in outline.....2
2. Carapace with front produced into sharp-pointed, paired horns and rostrum; may be partly or completely fused medially. Eyes not usually enclosed in orbits.....Majidae
2. Carapace with front not produced into a rostrum. Eyes usually enclosed in orbits.....3
3. Front margin of carapace usually cut into teeth between eyes and on lateral margins.....4
3. Front margin not cut into teeth between eyes and rarely on lateral margins.....6
4. Carapace with uneven number of teeth between eyes; 6 or more teeth on lateral margin of carapace. Abdomen of male with 7 segments.....5
4. Carapace with median notch on margin between eyes; 3 teeth or more on lateral margin. Abdomen of male with 5 segments.....Xanthidae
5. Carapace pentagonal with several spines on each marginal tooth. Surfaces covered with stiff club-shaped setae.....Atelecyclidae
5. Carapace broadly oval with no more than 1 spine on each tooth. Setae, if present, soft.....Cancriidae
6. Carapace subrectangular with distinct teeth on lateral margins.....Grapsidae
7. Carapace oval or round without teeth on lateral margins. Commensal or parasitic.....Pinnotheridae

### Family CALAPPIDAE

#### Key to Species

1. Carapace oval with sharp-pointed projections on either side. Chelipeds compressed laterally and fingers meet vertically.....*Mursia gaudichaudi*

*Mursia gaudichaudi* (Milne Edwards 1837)

**Description** — Carapace finely granulate with symmetrical pattern of granulate knobs; lateral margins cut into numerous small teeth anterior to large sharp protuberance on either side. Chelipeds large and laterally

compressed; hand with various sharp protuberances, granulate knobs and blunt teeth on dorsal margin and a granulated horizontal ridge on ventral outer face; fingers meet vertically. Right hand with a large basal cutting tooth on each finger. Blunt knobs on sternum adjacent to attachment of chelipeds. Walking legs compressed laterally, long and slender with narrow ridged dactyl. Eyestalk stout; cornea oval. First abdominal segment with a sharp horizontal ridge.

**Colour** — (Dead) Carapace white or pale yellow with numerous red granules which coalesce on outer margins, on small elevations and on the large lateral spines, to form darker red area; areas where granules are scarce or missing are white and some of these areas form a symmetrical pattern of centre of carapace. Chelipeds white, with red and pink patches and orange on inner surface of hand; outer ventral part, including crest and fixed finger are white; dactyl also white with some red spots on base. Walking legs red, pink and white with small red granules and area of pearly opalescence; claw light brown. Abdomen pink and white.

**Habitat** — Subtidal areas of sand, mud or broken shell.

**Size** — Carapace: male 76.2 x 79 mm (width between tips of lateral spines); female 38 x 65 mm.

**Range** — Leonard Island ground, Tofino area, Vancouver Island, British Columbia (48°58'N, 126°10'W), to Talcahuano, Chile; 37 to 399 m.

**Distribution in British Columbia** — One male, as above, is apparently the only record north of southern Oregon. It was taken in a shrimp net tow.

#### Family MAJIDAE

##### *Key to Species*

1. Body and appendages distinctly setose. Walking legs slender.....2
1. Body and appendages with a few coarse and/or hooked setae.....3
2. Rostral horns long, thin and parallel. Eyestalk long and thin.....*Oregonia gracilis*
2. Rostral horns short and divergent. Eyestalk short and stout.....*Oregonia bifurca*
3. Rostral horns long and divergent. Walking legs long, thin and rounded.....*Chorilia longipes*
3. Rostral horns short but may be wide and flattened. Walking legs relatively short and stout or, if long, laterally flattened.....4
4. Surface of carapace smooth with hooked stiff setae to which material may be attached for camouflage.....5
4. Surface of carapace granular and/or spiny.....8
5. Carapace wider than long; outline shape of a maple leaf.....*Mimulus foliatus*
5. Carapace not wider than long; 2 large lobes or teeth on either side.....6
6. Carapace with distinct constrictions between teeth on outer margins.....7
6. Carapace subrectangular with faint constrictions between

- teeth on margins.....*Pugettia producta*
7. Longitudinal groove on ischium and exopodite of third maxilliped. Dorsal crest on merus of chelipeds.....*Pugettia gracilis*
7. Neither groove nor crest.....*Pugettia richii*
8. Carapace triangular or lyre-shaped. Walking legs short and rounded.....9
8. Carapace sub-circular. Walking legs long and compressed laterally.....10
9. Carapace triangular. Rostral horns wide with rounded lateral margins.....*Scyra acutifrons*
9. Carapace lyre-shaped. Rostral horns narrow with slightly curved lateral margins. Base of antenna with smooth round knob.....*Hyas lyratus*
10. Carapace with a few spines on anterior lateral margin. Meri of walking legs decrease in width distally. Branchial areas little dilated.....*Chionoecetes bairdi*
10. Carapace with many large spines dorsally and on lateral margins. Meri of walking legs with margins parallel. Branchial areas dilated.....11
11. Rows of large spines on dorsal carapace form a U. Deep groove mid-dorsally between branchial areas.....*Chionoecetes tanneri*
11. Rows of large spines on dorsal carapace form a V. Shallow groove mid-dorsally between branchial areas.....*Chionoecetes angulatus*

#### The Genus *Oregonia* Dana 1851

Carapace subtriangular or suboblong, convex and tuberculate. Large spine behind eye (postorbital). Chelipeds elongate and walking legs slender.

***Oregonia gracilis*** Dana 1851

Decorator

Crab

*Oregonia hirta*, *O. longimana*

**Description** — Carapace subtriangular with numerous knobs with hooked setae or stiff bristles and slender elongate rostral horns. Chelipeds of mature male longer than walking legs, of female, shorter. Walking legs long and slender with numerous hooked setae and stiff bristles. Eyestalk slender, subequal in length to postorbital spines which are lanceolate and point forward; cornea spherical.

**Colour** — Carapace light brown or white with tan patches, masked by curved, brown hooked setae and bristles to which many dead or living objects are attached. Chelipeds white, mottled with light brown; finger pink or orange distally. Walking legs brown, deeper dorsally. Abdomen and sternum pale brown with some orange. Eyestalk grey and white; cornea red-brown.

**Habitat** — Intertidal in dense seaweed. Common in deeper water, in muddy, pebbled or rocky locations.

**Size** — Carapace: male 65.7 x 39 mm; female 45 x 33 mm.

**Range** — Japan and Bering Sea, south to Monterey Bay, California; intertidal to 436 m.

**Distribution in British Columbia** — Common

**Notes** — Adult males and female are sufficiently different in appearance that they were originally considered to be different species: *O. gracilis* and *O. hirta*.

***Oregonia bifurca*** Rathbun 1902

**Description** — Carapace setose, finely granulate and spiny and wider, anteriorly, than *O. gracilis*. Short divergent rostral horns. Eyestalk short, not reaching tips of triangular forward pointing post-orbital spines. Chelipeds of male only slightly longer than walking legs; of female slightly shorter. All pereopods setose.

**Colour** — Carapace deep pink with red patches; rostrum and post-orbital spines red. Chelipeds pink and brown with red on inner distal part of palm; fingers brown with red stripe on proximal half of both faces; teeth white. Walking legs brown with red stripes and patches ventrally; claw pale yellow. Antennule and antennae crimson; flagella translucent. Outer maxilliped crimson and brown. Eyestalk pale brown; cornea black.

**Habitat** — Deep water, green mud, broken shell, grey sand.

**Size** — Carapace: male 33.7 x 22.7 mm; female 29 x 20.6 mm.

**Range** — Sea of Okhotsk, northwestern Pacific Ocean, to off mouth of Columbia River, Washington; 494 to 1463 m.

**Distribution in British Columbia** — One record off Englefield Bay, Queen Charlotte Islands (53°2'N, 132°51.8'W), at 1204 m.

**Notes** — The small size and deep-water habitat results in this species being rarely collected or recognized.

***Chorilia longipes*** Dana 1851

*Hyastenus longipes*

**Description** — Carapace pear-shaped, inflated, knobby and spined. Rostrum of two long cylindrical horns diverging from base. Preocular spine prominent. Eyestalk short; cornea rounded. Walking legs long, smooth and cylindrical; 1<sup>st</sup> longer than cheliped.

**Colour** — Carapace white with orange spines; rostrum orange. Chelipeds orange-red with deepest colour on spines and ridges; finger scarlet with white band and white tips. Walking legs red with white bands: 2 on merus 1 on carpus and 1 on propodus.

**Habitat** — Subtidal and deep water, on sand, mud, shell, gravel and rocky areas.

**Size** — Carapace: male 55 x 45 mm; female 54 x 40 mm.

**Range** — Japan; Shumagin Bank and Kodiak, Alaska, to Cortez Bank, Mexico; from 22 to 1190 m.

**Distribution in British Columbia** — Common.

***Mimulus foliatus*** Stimpson 1890

*Pugettia foliata*

**Description** — Carapace flat, smooth, pentagonal, with margins laminate and winglike. Shape of carapace like a maple leaf. Rostrum short and bifid. Chelipeds stout and 1<sup>st</sup> pair of walking legs much longer than others.

**Colour** — Considerable variation in colour and patterns. Carapace may be a combination of kelp brown, tan, pink, white, dove grey, light to dark brown, maroon, or red, and frequently with a broad white V medially. Chelipeds also vary in colour. Walking legs banded usually with white and tan.

**Habitat** — Intertidal, among rocks; often encrusted with bryozoans and other such forms.

**Size** — Carapace: male 35 x 39 mm; female 29 x 32.4 mm.

**Range** — Unalaska, Alaska, to Port Arguello, Santa Cruz and Santa Rosa Islands, California; intertidal to 128 m.

**Distribution in British Columbia** — Only on open coast of Vancouver Island (as far east as Sooke) and Queen Charlotte Islands.

***Pugettia producta*** (Randall 1839)

Crab

*Epiplatys productus*

Kelp

**Description** — Carapace roughly quadrilateral, surface smooth with two large teeth on each lateral margin and with small preocular and post-ocular spines. Rostrum bifid with concave inner margins and hooked setae on dorsal surface of base and a few patches of small stubby setae. Hand smooth and palm slightly swollen; cutting teeth without any gape in female and immature male. In adult male, cheliped large and palm swollen with some gape between teeth. Walking legs subcylindrical, stout, and with strong curved claws with spines on ventral margins.

**Colour** — Carapace and dorsal surface of chelipeds and walking legs mainly kelp brown. Ventrally, chelipeds with some dark red on merus and palm with fingers red and scarlet with yellowish teeth. Walking legs with some dark red and yellow ventrally; dactyls greenish-brown and light brown; claws dark brown. Abdomen, with patches of deep yellow and light brown on sternum and outer maxillipeds; epistome brown with teeth and ridges red, scarlet or yellow, varying amount of dark red ventrally. Young kelp crabs are brown without the bright colours of adults.

**Habitat** — Among seaweed, especially bull kelp (*Nereocystis*). Adults often on piles under wharves.

**Size** — Carapace: male 107 x 93 mm; female 92 x 78 mm.

**Range** — Prince of Wales Island (55°26'N, 133°18'W), Alaska, to Asuncion Point, Mexico; intertidal to 73 m.

**Distribution in British Columbia** — Common.

**Notes** — Carapace may be covered with barnacles in large specimens, but usually no organic matter is attached to hooked setae, in contrast to the camouflaging activities of *P. gracilis* and *P. richii*.

***Pugettia gracilis*** Dana 1851\*



*Pugettia lordii*

**Description** — Carapace with hepatic area greatly expanded. Ischium of outer maxillipeds and palp each with a longitudinal groove. Mature male with large cheliped; merus and carpus with 3 or 4 longitudinal sharp ridges; palm large and swollen.

**Colour** — Carapace, chelipeds and walking legs may be blue, brownish-green, kelp brown, red, pink, orange or opaque white in various combinations. Abdomen usually brown with 6<sup>th</sup> segment and telson white. Fingers dark grey or blue with orange tips and teeth.

**Habitat** — Common among eelgrass, kelp and encrusting algae in intertidal and subtidal. Carapace “decorated” with bits of algae and other objects.

**Size** — Carapace: male 53 x 34 mm; female 35 x 28 mm.

**Range** — Aleutian Islands, Alaska, to Monterey Bay, California; intertidal to 140 m.

**Distribution in British Columbia** — Common intertidally particularly in sheltered waters. On outer coasts *P. richii* seems to be the dominant form although *P. gracilis* is present.

**Notes** — The dark grey fingers and orange tips and teeth serve to distinguish living *P. gracilis* from *P. richii* which has violet or reddish fingers and white tips and teeth.

*Pugettia richii* Dana 1851

*Pugettia richii*

**Description** — Carapace with hepatic area less expanded than *P. gracilis* and marginal projections narrower. No sharp ridges on merus of cheliped. Ischium and palp of outer maxilliped smooth.

**Colour** — Carapace purplish red with violet patches and white knobs. Chelipeds purplish red, yellow and white, particularly ventrally; palm with inner face pale brown and white; outer purple-brown and white; fingers pale violet with red streaks; teeth white. Walking legs red-brown, with a dirty white band medially on each segment; ventrally mostly white and violet. Antennules and antennae violet, white and brown. Eyestalk violet and white; cornea black with gold flecks.

**Habitat** — Common intertidally on open coast amongst algae and eelgrass. Often decorated with coralline algae, bryozoans, etc.

**Size** — Carapace: male 48.7 x 32.6 mm; female 33 x 26.5 mm.

**Range** — Prince of Wales Island (54°43'N, 132°17'W), Alaska, to San Geronimo Island, Mexico; intertidal to 97 m.

**Distribution in British Columbia** — Outer coasts.

*Scyra acutifrons* Dana 1851\*

Crab

Sharp-nosed

**Description** — Carapace somewhat triangular and thick with grooves, knobs and lumps symmetrically arranged. Rostrum of two horns, wide and flattened with divergent tips. Hooked setae on carapace, seldom used for decoration, but the surface is often encrusted by a growth of bryozoa, hydroids and sponges. Chelipeds large in mature male with numerous blunt knobs on ischium, merus and carpus, in rows on margins and scattered in between. Hand elongate, with sharp dorsal and ventral ridges; fingers slender with

gape; dactyl with small teeth distally and 1 large tooth medially. Walking legs short and relatively stout, with short, stiff, club-shaped setae; dactyl about ½ the length of propodus. Abdomen of male narrow with 3 flat knobs per segment; telson smooth and triangular. Eyes small. Antennae short, flat and hidden under rostrum.

**Colour** — Often masked by encrusting growths. Carapace usually bluish white with blue-tipped, brown granules. A mature male may be deep red, brown or purple-brown. Chelipeds brown with blue or red granules; palm brown to orange; fingers orange red or pink; teeth white. Walking legs irregularly banded with dark and light brown; dactyl reddish; claw yellow. Antennal peduncle striped with light and dark brown, flagella orange. Antennal peduncle white and flagellum red. Eyestalk grey; cornea opalescent pink with black pigment spot.

**Habitat** — Rocky shores and loose rocks.

**Size** — Carapace: male 55 x 45 mm; female 41.2 x 30 mm.

**Range** — Japan; Kodiak, Alaska, to San Carlos Point, Mexico; intertidal to 220 m.

**Distribution in British Columbia** — Common.

*Hyas lyratus* Dana 1851

*Sayas lyratus*

**Description** — Carapace sub-lyrate in shape; fine granules over surface which is somewhat inflated medially and on branchial areas; elevations have rows of larger knobs. Carapace and appendages with numerous hooked setae dorsally. Rostrum flattened, bifid and horns separated by narrow fissure. Eyestalk with tubercle on anterior surface. Base of antenna with large rounded knob on distal part. Chelipeds of mature males stout and longer than walking legs; those of females and immature males, shorter. Walking legs slender and cylindrical, decreasing slightly in length posteriorly.

**Colour** — Carapace mud-brown with orange median stripe and white in grooves. Rostrum white and orange. Chelipeds white, brown and orange; fingers white with orange streaks; teeth and tips white. Walking legs white, orange and brown; claws tan. Antennules and antennae grey-brown with base of antennular flagella and antennal flagellum scarlet. Eyestalks brown and white; cornea yellowish with black slit.

**Habitat** — Mud, sand and rocks. Often masked with encrusting algae and invertebrates.

**Size** — Carapace: male 105 x 80 mm; female 63 x 46 mm.

**Range** — Bering Sea to Puget Sound, Washington, 9 to 640 m.

**Distribution in British Columbia** — Widely distributed.

**Notes** — *Hyas coarctatus aleutaceus* Brand is found in the waters of Arctic Alaska but is easily distinguished from *H. lyratus* because of the distinctive knob on the base of the antenna of the latter.

The Genus *Chionoecetes* Kroyer 1838

Carapace about as long as wide. Rostrum short with 2 flat triangular horns. Eyes large, in shallow orbits. Chelipeds much shorter than walking legs; fingers long and narrow. Walking legs compressed.

***Chionoecetes bairdi*** Rathbun 1924

*Chionoecetes opilio* (British Columbia records), *C. tanneri*

**Description** — Carapace slightly wider than long with spines on anterior lateral margins; branchial areas slightly dilated but surface relatively flat with granular knobs forming a symmetrical pattern. Chelipeds short with small spines and granules; palm swollen and elongate; fingers with cutting surfaces of many small sharp teeth. Walking legs with merus inflated and margins with many small spines; carpus also spined.

**Colour** — Carapace greenish-brown with red granules and lateral spines orange, shell-pink and cream ventrally. Chelipeds with gold iridescence, pinkish brown dorsally with maroon spines; ventrally pink; fingers white with red stripes and orange at base. Walking legs brown, white, shell-pink and orange with red stripes dorsally; dactyls reddish. Eystalk mud-brown and pink; cornea reddish with black pigment.

**Habitat** — Mud; usually in less than 200 m.

**Size** — Carapace; male 121 x 139.4 mm; female 74 x 81 mm.

**Range** — Southeastern Bering Sea, to Winchester Bay (43°34'N, 124°36.1'W), Oregon; from 6 to 474 m.

**Distribution in British Columbia** — In fjords and other muddy channels.

**Notes** — An arctic species, *C. opilio*, is found in shallow water in Bering Strait and around the Aleutian Islands. It differs from *C. bairdi* mainly in having length and width subequal in the carapace, which is also less spiny.

***Chionoecetes tanneri*** 1893

Tanner

Crab

**Description** — Carapace slightly wider than long; surface spinulose; margins armed with spines which are largest mid-laterally. Branchial areas dilated and separated medially by a deep depression; the rows of spines on each branchial area form a U with the curve at the outer margin and marked by 2 large spines. Hands of mature males with dilated palms. Walking legs compressed and have rows of sharp spines; meri slightly dilated.

**Colour** — Carapace scarlet, with some orange, pink and white in immatures. Chelipeds orange with scarlet spines; finger tips light pink with white cutting teeth. Walking legs scarlet with yellow-brown claws. Abdomen light orange or brownish. Antennules, antennae and eystalks scarlet; cornea chocolate brown.

**Habitat** — Deep water, green mud, fine sand, rocks.

**Size** — Carapace: male 167 x 185 mm; female 119.2 x 114.8 mm.

**Range** — East of Kamtchatka, northwest Pacific Ocean, to off Cortez Bank, Mexico; 29 to 1944 m.

**Distribution in British Columbia** — West of the continental shelf from 458 to 1784 m.

**Notes** — Extensive studies have been made on *C. tanneri* off the mouth of the Columbia River by W. T. Pereyra and others. A dense population was found in deep water.

***Chionoecetes angulatus*** Rathbun 1925

*Chionoecetes tanneri*

**Description** — Carapace slightly wider than long, surface finely pubescent with numerous spines and granules; lateral margins armed with large spines and posterior with granules. There are two rows of spines on each branchial area which meet to form a V at an angle of about 45°; the junction is marked with a stout spine on the lateral margin. Branchial area dilated but interbranchial space little depressed. Walking legs compressed with rows of sharp spines; meri slightly dilated proximally.

**Colour** — Adults scarlet; juveniles white.

**Habitat** — Deep water, soft bottom, mud, sand or ooze.

**Size** — Carapace: male 135 x 152 mm.

**Range** — Sea of Okhotsk and Bering Sea to Oregon, (43°01'N); from 90 to 2974 m.

**Distribution in British Columbia** — West of continental shelf from 1069 to 2430 m.

**Notes** — Easily confused with *C. tanneri* but usually caught in deeper water.

Family XANTHIDAE

*Key to Species*

1. Carpi of chelipeds with irregular knob and granules. Bilobed ridge on carpi of walking legs. Subtidal.....*Lophopanopeus bellus diegensis*
1. Carpi of chelipeds smooth or wrinkled. No bilobed ridge on carpi of walking legs. Littoral.....*Lophopanopeus bellus bellus*

The Genus *Lophopanopeus* Rathbun 1898

Carapace hexagonal; front divided by small median notch; antero-lateral margin with 3 subequal teeth. Carpus of cheliped longer than wide. Walking legs stout with crests, especially on carpus. In male 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> segments of abdomen coalesced making abdomen 5-jointed. Rathbun (1930) lists 10, apparently different, species of *Lophopanopeus* from the west coast of North America. Menzies (1948) did a revision and reduced this number to three, two of which have two subspecies.

*Lophopanopeus bellus diegensis* Rathbun 1900

*Lophopanopeus diegensis*

**Description** — Carapace surface with fine granules on margins and ridges. Cheliped stout with many knobs and granules on the outer surfaces. Dorsally carpus of each walking leg has 2 prominent naked crests; propodus may have 1. Carpus, propodus and dactyl of walking legs short, dense pubescence.

**Colour** — Carapace mud-coloured with small white patches, and orange on median depressions. Chelipeds light brown, orange and white, with orange and maroon knobs; palm white, orange and maroon; fingers black. Ventrally white with a few pale orange spots. Peduncle of antennules banded with dark brown and yellow or orange. Eyestalk brown; cornea with black and yellow pigment.

**Habitat** — Littoral in California; subtidal in northern waters, in sand, mud or gravel.

**Size** — Carapace: male 21.8 x 25 mm.

**Range** — Prince William Sound, Alaska, to San Diego, California; intertidal to 135 m.

**Distribution in British Columbia** — Widespread, but seldom collected; from 9 to 135 m.

*Lophopanopeus bellus bellus* (Stimpson 1860)

Black-clawed

Crab

*Xantho bella*, *Lophoxanthus bellus*

**Description** — Carapace surface relatively smooth with a few small granules on flat elevations. Chelipeds stout with smooth surfaces; carpus may be slightly rugose. Walking legs stout with slight crest on dorsal margin of carpus. Some scattered setae and areas of short dense pubescence.

**Colour** — Variable. Carapace and chelipeds a mixture of various shades of brown, violet, purple, grey and white; fingers black with white teeth and sometimes with pink tips. Walking legs may appear to be somewhat banded with dark and light colouring. Ventrally light coloured. Peduncle of antennules banded light and dark. Eyestalk brown and white; cornea black.

**Habitat** — Intertidally under rocks in mud or gravel.

**Size** — Carapace: male 23 x 34.2 mm; female 15 x 22 mm.

**Range** — Resurrection Bay (59°56'N, 149°19'W), Alaska, to Point Sur, California; intertidal to 80 m.

**Distribution in British Columbia** — Common intertidally.

#### Family ATELECYCLIDAE

##### *Key to Species*

1. Antennal flagella long and setose. Cheliped spiny and short.  
Walking legs long, stout and subequal.....*Telmessus*  
*cheiragonus*

*Telmessus cheiragonus* (Tilesius 1815)\*

Horse or Helmet

Crab

*Cancer cheiragonus*, *Telmessus serratus*

**Description** — Carapace broader than long and subpentagonal; all surfaces covered with minute spiny granules, stout club-shaped setae, and/or longer bristles on all margins and pereopods; divided into 4 teeth; lateral margin with large triangular teeth, spined on anterior margin. Chelipeds short and spiny, with right larger than left and with more and larger teeth on cutting surfaces. Walking legs compressed laterally and 1<sup>st</sup> and 4<sup>th</sup> slightly shorter than others.

**Colour** — Carapace yellow with brownish or greenish area; lateral margins scarlet and depressions light coloured. Chelipeds yellow with scarlet streaks and spots; fingers dark brown with a bright yellow spot; teeth grey. Walking legs yellow and brown with dark and light brown setae. Eyestalk greenish brown; cornea black.

**Habitat** — Usually subtidal, on sandy or muddy tideflats, among eelgrass or algae. During breeding season, in early spring, they may be found intertidally on rocks covered with algae.

**Size** — Carapace: male 83.5 x 97 mm; female 83 x 102 mm.

**Range** — Siberia; Japan; and Bering Sea to California; intertidal to 110 m.

**Distribution in British Columbia** — Common in suitable areas.

**Notes** — Well camouflaged and quick moving so that not seen often when alive. During the breeding season they moult and great numbers of the cast shells may form windrows on certain beaches. An allied species, *Erimacrus isenbeckii* is found in northern Pacific Ocean waters and used for canning and sold under the name of Snow Crab.

#### Family CANCRIDAE

##### *Key to Species*

1. Fingers of chelipeds with tips dark coloured.....2
1. Fingers of chelipeds not dark coloured.....4
2. Surface of carapace relatively smooth; front of 5 subequal teeth.....*Cancer productus*
2. Surface of carapace not smooth; front of 5 unequal teeth.....3
3. Surface of carapace setose and granules small. Cheliped with spines on dorsal margin of finger.....*Cancer branneri*
3. Surface of carapace not setose and granules large. Cheliped without spines on dorsal margin of finger.....*Cancer oregonensis*
4. Chelipeds with numerous teeth on upper margins of hand. Walking legs with setose margins and wide flat dactyls. Tip of telson of male rounded.....*Cancer magister*
4. Chelipeds with few teeth on upper margins of hand. Walking legs with naked margins and slender pointed dactyls. Tip of telson of male pointed.....*Cancer gracilis*

#### The Genus *Cancer* Linnaeus 1758

Carapace broadly oval; front with uneven number of teeth. Antennules fold back longitudinally. Antennal flagellum short and usually setose. Eyestalk short.

***Cancer productus*** Randall 1839

Crab

*Platycarcinus productus*, *Cancer perlatus*

Red Rock

**Description** — Front with 5 subequal teeth. Carapace surface uneven and slightly convex; antero-lateral teeth shallow, rounded and become more acute posteriorly with only one obscure postero-lateral tooth. Chelipeds stout, rugose; fingers dark coloured. Walking legs with dactyls fringed with short stiff setae.

**Colour** — Carapace dark red with white or red granules on yellow spots on elevations; front dark brown with white or pink granules. Chelipeds white, tan, orange dark red and purple-red; fingers and teeth tan, tips blue grey or black. Ventrally, white with patches of orange and red with bluish granules. Eyestalk white with irregular red bands; cornea black with gold flecks. Juveniles with carapace varicoloured, often symmetrically striped in dark and light colours.

**Habitat** — Rocky shores, hidden under rocks or partly buried under gravel or mud.

**Size** — Carapace: male 103 x 180 mm; female 81 x 158 mm.

**Range** — Kodiak, Alaska, to Laguna Beach, California; intertidal to 79 m.

**Distribution in British Columbia** — Widespread and common.

***Cancer branneri*** Rathbun 1926

*Cancer gibbosulus*

**Description** — Carapace with granular surface, setose and uneven; antero-lateral margin cut into pointed teeth and postero-lateral with one tooth; margins meet at a distinct angle. Chelipeds setose covering rows of sharp spines; finger tips dark coloured. Walking legs setose; dactyl long and slender.

**Colour** — Considerable variation. Carapace yellow, tan, dark red, violet, grey, black and opaque white with varying combinations and symmetrical patterns. Chelipeds white and tan with red bands; palm yellowish and orange with violet spines; fingers white and brown with distal half black. Walking leg: meri white with two orange bands; the rest mostly red and lighter areas; claws yellow. Ventrally white.

**Habitat** — Mud, sand, gravel or shell bottoms.

**Size** — Carapace: male 49 x 58 mm; female 35 x 52 mm.

**Range** — Granite Cove, Port Althorp, Alaska, to Santa Catalina Islands, California; intertidal to 179 m.

**Distribution in British Columbia** — Common on outer coasts subtidally.

**Notes** — Rathbun (1926) found *C. gibbosulus* from Japan to be distinct from those of North America, which are *C. branneri*.

***Cancer oregonensis*** (Dana 1852)

*Trichocera oregonensis, Trichocarcinus oregonensis, T. walkeri*

**Description** — Carapace margins rounded, not clearly defined into anterior and posterior like other species of *Cancer*; margins toothed; surface finely granular, with knobs and grooves in symmetrical patterns. Chelipeds stout; fingers almost entirely dark coloured. Walking legs relatively slender and setose with stout dactyls. At least 3 variants may be found: the common form has marginal teeth on the carapace closely set and points curved. In the second form the teeth are flattened and joined laterally and the surface of the carapace has wart-like knobs. A third form has narrow teeth that are curved, pointed and separate and the surface of the carapace has numerous raised granulate surfaces.

**Colour** — Carapace mostly red-brown with grey granules and white patches. Chelipeds white with orange, flesh and pale grey granules; fingers black. Walking legs white with red spots and a web of purple, tan and flesh with grey; claws yellow. Abdomen white. Eyestalk white or flesh with light brown knobs; cornea grey with black centre.

**Habitat** — Intertidally in rocky areas under loose rocks or in hidden crevices under kelp holdfasts where their movements apparently make a “cave” from which they do not escape due to normal increase in size. Unoccupied holes in sandstone, originally made by sea urchins, and empty barnacle shells are also occupied. When these crabs cut burrows in styrofoam floats they can cause a serious reduction in the efficiency of floatation.

**Size** — Carapace: male 36 x 49.5 mm; female 31 x 42 mm.

**Range** — Bering Sea, to Santa Barbara, California; intertidal to 436 m.

**Distribution in British Columbia** — Common to 125 m.

*Cancer magister* Dana 1852  
Crab

Commercial Crab, Dungeness Crab, Pacific

**Description** — Surface of carapace uneven, finely granular and slightly convex, with sharp teeth on antero-lateral margin, no teeth on postero-lateral margin. Pterygostomian area covered with a dense pubescence which apparently serves to prevent sand from covering the gills when the crab has buried itself for protection from predators. Chelipeds spiny and palm with dorsal margin toothed as is the finger; fingers light coloured. Walking legs broad and flat, last pair with propodus and dactyl particularly so.

**Colour** — Carapace brownish with pink or tan granules on ridges and ivory in grooved depressions, forming a symmetrical pattern; marginal granules ivory. Chelipeds with violet, dark brown, white and ivory granules on exposed areas and white on unexposed areas; fingers and cutting surfaces white. Walking legs ivory with pale brown, violet and tan streaks. Abdomen ivory. Eyestalk white with violet base; cornea black.

**Habitat** — Sand bottoms in which the crab may bury itself leaving only eyes, antennules and antennae visible. Water for respiration is drawn into the gill cavity and the pubescence prevents the sand from entering the branchial cavity. These crabs move very quickly, running on the tips of the walking legs and almost swimming as a result of the vibrations of the last pair of legs. They may also be found in muddy areas, but sand and eelgrass seem to be the preferred habitat.

**Size** — Carapace: male 160 x 230 mm; female 120 x 170 mm.

**Range** — Tanaga Island, Aleutian Islands, Alaska, to Magdalena Bay, Mexico; intertidal to 179 m.

**Distribution in British Columbia** — Widespread in suitable areas.

*Cancer gracilis* Dana 1852

**Description** — Carapace surface more convex than *Cancer magister* and finely granulated; front with 5 teeth, the central smallest; has sharp antero-lateral teeth and one small postero-lateral tooth on margins. Pterygostomian area pubescent. Chelipeds with marginal pointed projections, two blunt teeth on dorsal ridge and fingers subequal, with small teeth on dorsal finger and both fingers light coloured. Walking legs slender; dactyls cylindrical; claw sharp.

**Colour** — Carapace light purplish or red-brown with some cream-coloured granules; margins outlined with cream except posteriorly where they are beaded with purplish-brown. Cheliped: ischium white; merus with orange and brown spots; carpus and palm with outer face whitish with purple and inner faces violet; fingers white with purple-brown, violet and orange. Walking legs white with red-brown and violet streaks; claw orange. Eyestalk white with purple brown streak; cornea white with black crescent.

**Size** — Carapace: male 65 x 115; female 60 x 87 mm.

**Range** — Prince William Sound (60°46'N, 146°31'W), Alaska, to San Sebastian Viscaïno Bay, Mexico; intertidal to 143 m.



**Distribution in British Columbia** — Common in muddy areas.

**Notes** — These crabs may eat up to 25% of newly settled oyster spat in oyster farms. Floating rafts for spat collection will thwart this activity. (D. B. Quayle, *pers. comm.*). They have been observed breaking the shells and then eating barnacles (Brent Cook, *pers. comm.*).

#### Family GRAPSIDAE

##### *Key to Species*

1. Meri of walking legs swollen and flattened. Can swim.  
Males without any pubescence on palms. Oceanic crabs.....2
1. Meri of walking legs not so. Cannot swim. Males with  
pubescence on palms. Shore crabs.....3
2. Carapace length subequal to width and lateral margins  
smoothly curved. Minute teeth on ventral margin of hand.....*Planes cyaneus*
2. Carapace length less than width and lateral margins straight.  
No teeth on ventral margin of hand.....*Planes marinus*
3. Notch on margin in front between eyes. Walking legs setose.....*Hemigrapsus oregonensis*
3. No notch on margin of front between eyes. Walking legs  
naked.....*Hemigrapsus nudus*

##### The Genus *Planes* Leach 1825

Oceanic or pelagic crabs. Carapace smooth, subquadrate or suborbicular, with a small notch or tooth on lateral margin. Chelipeds smooth with palm somewhat inflated. Walking legs broad and modified for swimming, with rows of stiff, swimming setae.

***Planes cyaneus*** Dana 1852

*Planes minutus*, *Nautilograpsus minutus*

**Description** — Carapace subequal in length and width; lateral margins curved; front depressed slightly and faintly striated laterally. Chelipeds with fixed finger bent downwards. Walking legs flattened with naked merus much dilated; carpus, propodus and dactyl not dilated but with dense rows of swimming setae.

**Colour** — Variable; dark blue (cyaneus), blue grey, light to chocolate brown and white; dorsal surfaces may be of one colour, or the carapace, chelipeds and walking legs may be a mixture with mottled patterns and spots. Ventral surface pale brown, blue or white.

**Habitat** — Pelagic; on drifting debris, Japanese fishing floats, wood, green turtles, by-the-wind-sailor, *Verella*, and kelp.

**Size** — Carapace: male 25 x 25 mm; female 26 x 26 mm.

**Range** — Eastern Pacific, Indian and South Atlantic Oceans (St. Helena Island); pelagic but occasionally found washed up on beach.

**Distribution in British Columbia** — On Japanese glass floats in the Juan de Fuca Strait.

**Notes** — Until Chase (1951) published a revision of the genus, there was considerable confusion in identification; therefore early records are suspect.

***Planes marinus*** Rathbun 1914

*Pachygrapsus marinus*

**Description** — Carapace wider than long; lateral margins straight; lateral areas distinctly striate. Cheliped with fixed finger not bent downwards. Walking legs flattened; merus naked and dilated; carpus, propodus and dactyl not dilated but with dense rows of swimming setae.

**Colour** — Variable, especially in intensity. Carapace bright red-brown mottled, with dark striations, or chocolate-brown or light grey with pink tinge anteriorly. Cheliped grey with pink on merus and carpus. Walking legs somewhat banded with light and dark grey or shades of brown. Ventrally light brown.

**Habitat** — Pelagic; on floating objects such as fishing floats, buoys and Japanese mines.

**Size** — Carapace: male 17.6 x 19.9 mm; female 15 x 16.5 mm.

**Range** — Eastern Pacific Ocean, New Zealand and South Atlantic Ocean (St. Helena Island); pelagic but maybe occasionally washed ashore.

**Distribution in British Columbia** — Two records of specimens found on Japanese glass floats; one, 200 miles west of Vancouver Island; the other 20 miles west of Uclulet, Vancouver Island.

The Genus *Hemigrapsus* Dana 1851

Carapace subquadrate, slightly shorter than wide, antero-lateral margins toothed. Chelipeds stout with a patch of pubescence on inner side of hand of males. Walking legs stout and of moderate length.

***Hemigrapsus oregonensis*** (Dana 1851)\*

Green Shore

Crab

*Pseudograpsus oregonensis*, *Brachynotus oregonensis*

**Description** — Carapace surface somewhat uneven; front with two lobes; antero-lateral margin almost straight and cut into 2 teeth which are more prominent than those of *H. nudus*; there is an impressed H medially. Chelipeds smooth, stout and with long fingers irregularly toothed. Walking legs with setose margins.

**Colour** — Great variation; patterns resemble pebbles, among which these animals are often found. Commonly carapace grey-green with dots and patches of light grey and brown with a narrow white, or light-coloured marginal band and white crescents posteriorly. White ventrally. Chelipeds white with green and brown areas; fingers light brown with green streaks. Walking legs cream and green with dark brown or purplish pigment spots forming indistinct bands; dactyl light with 5 rows of dark seta. Eyestalk cream and grey with small dark brown dots; cornea black with silver flecks.

**Habitat** — Littoral and perhaps slightly lower intertidally than *H. nudus*; under rocks on muddy beaches, in short burrows on tide flats and muddy lagoon margins. They tolerate considerable brackish or fresh water and even short periods out of water.

**Size** — Carapace: male 36 x 49.5 mm; female 31 x 42 mm.

**Range** — Resurrection Bay (60°0'N, 149°17'W), Alaska, to Gulf of California, Mexico; intertidal.

**Distribution in British Columbia** — Common.

***Hemigrapsus nudus*** (Dana 1851)\*

Purple Shore

Crab

*Pseudograpsus nudus, Heterograpsus nudus, Brachynotus nudus*

**Description** — Carapace surface relatively flat and slightly convex anteriorly with a median H-shaped depression. Chelipeds smooth, stout; fingers long and irregularly toothed. Walking legs somewhat flattened, smooth stout and naked.

**Colour** — Variable, especially in small individuals. Large males usually dark purplish red on the surface of the carapace and with pink or yellow granules in a symmetrical pattern of spots; narrow margins reddish with pale violet granules and yellowish streak posteriorly. Chelipeds reddish with purple splotches; palm violet with reddish spots; fingers violet to white and yellow ventrally, and pubescence pale brown. Walking legs dark purple with some red and yellow patches on joints; claw tan. Ventrally lighter. Eyestalk white, red and brown; cornea black. Occasionally one finds an olive green and yellow male.

**Habitat** — Upper intertidal, under rocks and gravel.

**Size** — Carapace: male 48 x 56.2 mm; female 28 x 34 mm.

**Range** — Yakobi Island (57°57'N, 135°23'W), Lisianski Strait, Alaska, to Turtle Bay, Mexico; intertidal.

**Distribution in British Columbia** — Common.

Family PINNOTHERIDAE

*Key to Species*

1. Carapace little, if any, wider than long. Last legs subequal in length to others.....2
1. Carapace distinctly wider than long. Last legs shorter than others.....6
2. Carapace hard.....3
2. Carapace soft.....4
3. Antero-lateral margins of carapace densely setose. Middle legs with fringe of plumose setae. Males and females free-living, or within the mantle cavity of a bivalve mollusc. Dactyls of walking legs strongly curved.....*Fabia subquadrata*
3. Not densely setose nor with swimming fringes. Live in ghost or mud shrimp burrows. Dactyls of walking legs slightly curved.....*Scleroplax granulata*
4. Longitudinal grooves running posteriorly from eye orbit. Second walking leg longest; dactyl distinctly curved. Females and immature males living within the mantle cavity of bivalve molluscs. Dactyls of walking legs strongly curved.....*Fabia subquadrata*
4. No longitudinal grooves. Last walking leg longest or subequal to first. Dactyls straight or nearly so.....5
5. Dactyls of last legs subequal to others. Two small knobs on

- cardiac region. Live inside ascidians.....*Pinnotheres taylori*
5. Dactyls of last legs longer than those of other legs. No knobs on carapace. Live inside ascidians.....*Pinnotheres pugettensis*
6. Dactyls of walking legs with corneous tips strongly curved.....7
6. Dactyls of walking legs with corneous tips straight or nearly so.....8
7. Outer margin of eye orbit rounded. Male with tooth on finger of hand and a gape when closed; female without tooth or gape. Live inside clams.....*Pinnixa faba*
7. Outer margin of eye orbit angled. Male and female without tooth on finger of hand and no gape when closed. Live inside clams.....*Pinnixa littoralis*
8. Propodi of last 3 pairs of walking legs much wider and longer than dactyls. Fingers subequal in length and width and a central tooth on both. Live in terebellid worm tubes.....*Pinnixa tubicola*
8. Propodi of walking legs not so. Finger longer than fixed finger.....9
9. Carapace with antero-lateral margin slightly granular laterally. No tooth on finger. No granules on carapace or appendages; margined with long plumose setae. Live in burrows of lug worm, *Abarenicola*.....*Pinnixa eburna*
9. Carapace with antero-lateral margin granulate. A central tooth on finger. Carapace and appendages granulate and margined with short stiff setae.....10
10. Carapace surface uneven. Hand with palm increasing in width distally. Fixed finger of male may be deflexed. 2 sharp ridges on cardiac area; curved in male and straight in female. Live in burrows of echiurid worms or free mud.....*Pinnixa occidentalis*
10. Carapace surface smooth. Hand with palm not increasing in width distally. Fixed finger on male not deflexed. No sharp ridges on cardiac area. Live under rocks in muddy area or are commensal in ghost shrimp burrows, or with a cucumber, *Leptosynapta*, in muddy sand.....*Pinnixa schmitti*

***Fabia subquadrata*** (Dana 1851)\*

*Raphnotus subquadrata*, *Pinnotheres concharum*, *Cryptophrys concharum*

**Description** — Carapace smooth, soft or hard, depending on stage of development; immatures are soft, with membranous, unpigmented subquadrate carapace without longitudinal grooves posterior to eye orbits; ovigerous females are similar but do have the longitudinal grooves and a transverse groove between the eyes. Chelipeds and walking legs are subcylindrical and sparsely setose; dactyls have curved claws. Males and females metamorphose to a hard stage very unlike the soft stages. The females integument is calcified and the carapace smooth and subpentagonal with anterior margins densely pubescent, covering sulci and front projections. Chelipeds with patches of dense pubescence and tips of fingers crossed. Walking legs flattened, margins pubescent, with long rows of plumose swimming setae.

**Colour** — Soft stages: carapace translucent creamy white with frontal area slightly more opaque. In adult females the orange yolks of eggs in the ovaries may be seen through the integument. Cheliped opaque creamy white with yellow tinged fingers. Walking legs creamy white with yellow setae. Eystalk translucent white; cornea scarlet with gold flecks. Hard stage: carapace opaque white with anterior areas

mainly tan, and scarlet reticulations on cardiac and branchial areas. Pubescence a light tan. Chelipeds white with yellow and pale orange; carpus and fingers a bright orange with pale grey pubescence. Walking legs yellow with orange; claw brown and setae grey. Antennule, antennae and eyestalk orange; cornea black.

**Habitat** — Commensal or parasitic in bivalve molluscs; only one crab per host. Hard stages also free swimming with plankton.

**Size** — Carapace: male 7 x 7.3 mm; female 17 x 22 mm.

**Range** — Akutan Pass, Alaska, to San Diego, California; intertidal to 220 m.

**Distribution in British Columbia** — Common in the mussel *Modiolus modiolus*, intertidally and dredged, but also found in *Mytilus californianus*, *M. edulis*, *Tresus capax*, *Mya arenaria*, *Astarte compacta*, *Cardita ventricosa*, *Crenella columbia*, and *Kellia* spp.

**Notes** — Pearce (1966) studied the biology of *Fabia subquadrata* from the waters of the San Juan Archipelago, Washington. The juvenile crabs settle to the bottom, after a free-swimming, plankton existence, and enter a molluscan host. There they develop a membranous integument and moult at least seven times. Then a dramatic change takes place when the next moult produces the hard stage described above. These crabs can swim well and apparently swarm and copulate in the early summer. The males are believed to die soon after but the females enter new hosts, moult and produce the soft stage again and lay eggs which are fertilized by the stored sperm. The hard stages were not recognized as the immature females and the males of *Fabia subquadrata* until 1928, more than 75 years after the mature female had been described. Because these crabs are given protection, take food and cause injury the gills of their host their sharp claws, they should be considered parasitic rather than harmless commensals, as some other pea crabs are.

***Scleroplax granulata*** Rathbun 1893\*

*Scleroplax granulatus*

**Description** — Carapace hard, convex, a little wider than long and smooth or finely granulate; lateral margins a smooth curve and there is a granulate ridge anteriorly. Chelipeds of female and immature male short and slender, with subequal fingers, small flattened cutting teeth and sharp tips. Cheliped of adult male stout, with swollen palm and fixed finger short and toothed; curved finger meshes with fixed finger. Walking legs subequal in length and tips of dactyls slightly curved.

**Colour** — Carapace white with a symmetrical pattern of dove or brownish grey; a narrow white, or light grey, band on all outer margins of carapace. Chelipeds white with grey or brown reticulations; fingers white. Walking legs white with grey and brown reticulations, becoming darker on distal part of merus and propodus; carpus and dactyl white so that appendage appears banded. Most segments have brownish dorsal and ventral margins. Eyestalk grey; cornea red with gold flecks.

**Habitat** — Commensal in burrows of *Upogebia*, *Callianassa*, and *Urechis*.

**Size** — Carapace: male 7 x 11.5 mm; female 7.75 x 12.9 mm.

**Range** — Welcome Harbour (54°05'N, 130°40'W), Porcher Island, British Columbia, to Ensenada, Mexico; intertidal to 55 m.

**Distribution in British Columbia** — Common on Vancouver Island beaches but few northern records, probably because these active crabs are inconspicuous on the sandy or muddy habitat.

Adult females larger than males. Carapace poorly calcified, convex dorsally and elliptical. Front narrow and deflexed. Chelipeds short and stout. Walking legs subequal and relatively short. Abdomen may be broader than carapace and convex in female. Males and young females may have calcified carapace, be less convex, and front may be more produced. They can swim using fringes of plumose setae on walking legs. Abdomen narrow with 7 segments.

***Pinnotheres taylori*** Rathbun 1918

**Description** — Carapace of both sexes subequal in length and width; there may be a pair of small tubercles on median cardiac area. First and last walking legs subequal and shorter than subequal 2<sup>nd</sup> and 3<sup>rd</sup>. males covered by a short fine pubescence which is particularly dense on anterior margins of carapace and on all margins of appendages. Walking legs also have fringes of plumose swimming setae on the dorsal and ventral margins of carpus, propodus and dactyl.

**Colour** — Carapace of female yellow-brown integument and setae. Chelipeds of female yellow brown with brown reticulations. Male with red pubescence; fingers orange and tips white. Walking legs yellow with brown reticulations; dactyl bright yellow. Eystalk yellowish; cornea red with gold centre.

**Habitat** — Commensal in transparent ascidians *Corella willmeriana*, *Ascidia ceratodes* and *A. paratropa*; males much more active than females.

**Size** — Carapace: male 4.6 x 4.8; female 7.2 x 7.5 mm.

**Range** — Quatsino Sound (50°30.4'N, 127°43.1'W), Vancouver Island, British Columbia, to Puget Sound, Washington; from 11 to 64 m.

**Distribution in British Columbia** — Recorded only from the southern part of British Columbia; possibly because it has been overlooked by collectors.

***Pinnotheres pugettensis*** Holmes 1900

**Description** — Carapace of female sub-pentagonal. Walking legs increase in length posteriorly with fringes of plumose setae on last 3 pairs. Dactyl of last leg much longer than others. The male has yet to be described.

**Colour** — Female carapace pinkish-purple with white overcast and yellowish sides, or light brown with fine dark brown dendritic chromatophores. Chelipeds straw-coloured and opaque white; palm pale yellow and light brown reticulations on outer face; fingers pale brown with white tips and teeth. Walking legs mostly straw-coloured but with some brown reticulations on white of last leg. Eystalk yellowish; cornea red flecked with silver.

**Habitat** — Commensal in ascidians *Halocynthia hilgendorfi igaboja*, *Ascidia paratropa*, *Tethya aurantium* and the purple-hinged scallop, *Hinnites giganteus*.

**Size** — Carapace: female 12.5 x 13 mm.

**Range** — Spider Anchorage (51°45'N, 128°05'W), British Columbia, to Puget Sound, Washington; from 6 to 64 m.

**Distribution in British Columbia** — The only records are from the Strait of Georgia and Spider Anchorage.

### The Genus *Pinnixa* White 1846

Carapace much wider than long and may be hard or membranous; front narrow with a median groove. Eyestalk very short; cornea rounded. Third maxilliped with dactyl joined near base of propodus. 3<sup>rd</sup> walking leg longest and 4<sup>th</sup> shortest. Most species live as commensals within the body or in the tube of the host animal.

#### *Pinnixa faba* (Dana 1851)\*

Pea

Crab

*Pinnothera faba*, *Pinnotheres faba*

**Description** — *Male*: carapace firm and nearly twice as wide as long; cheliped with gape between fingers and only tips meet; may have a small tooth on finger. *Female*: carapace soft and oval; cheliped with fingers not gaping. Both sexes with rounded eye orbitals and 3<sup>rd</sup> walking legs with merus about twice as long as wide; dactyls of all walking legs strongly curved.

**Colour** — Carapace of male bright tan with median and lateral patches of opaque ivory, light tan marbled with dark grey. Chelipeds white, light brown and orange with some fine bright tan spotting; palm white with pale orange and some grey, fingers white. Walking legs bright tan with lighter patches; claws translucent. Eyestalk tan; cornea black with gold or silver flecks. Female similar but overall colour less intense and ivory rather than white.

**Habitat** — In young stages found within many molluscs but a pair of adults is found only in one of the horse clams, *Tresus* (formerly *Schizotherus*) *capax* where the individuals mature. Immature individuals have been recorded in various clams: *Macoma nasuta*, *M. inquinata*, *M. secta*, *Mya arenaria*, *Saxidomus giganteus*, *Clinocardium nutalli*, *Serripes groenlandicus*, *Entodesma saxicola*, *Gari californica*, *Tapes haponica*, *Solen sicarius* and *siliqua patula*. I have also found very young crabs in the sea cucumber *Cucumaria piperata* and the limpet *Notoacmea scutum*.

**Size** — Carapace: male 10 x 17.5 mm; female 16 x 25 mm.

**Range** — Prince of Wales Island, Alaska, to Newport (Beach) Bay, California; intertidal.

**Distribution in British Columbia** — Widespread.

#### *Pinnixa littoralis* Holmes 1894

Pea

Crab

**Description** — *Male*: carapace firm and about twice as wide as long. Cheliped with gape between fingers. *Female*: carapace soft and oval. Cheliped with gaping fingers. Both sexes with outer margin of eye orbits pointed laterally. Merus of 3<sup>rd</sup> walking legs slightly less than twice as long as wide; dactyls of all walking legs strongly curved and sharply pointed.

**Colour** — Carapace of male opaque white with grey and brown marbled patches. Cheliped white with light grey and brown spots and fingers white. Walking legs white with light grey dots and streaks of tan; dactyl white; claw translucent. Eyestalk white with brown tinge; cornea black with silver flecks. Carapace of female with symmetrical patches of pale or grey or marbled with brown. Cheliped white with some fine streaks of tan on palm. Walking legs white with pale grey and orange spots. 3<sup>rd</sup> walking legs with a yellow brown band on merus. Eyestalk white; cornea dark brown.

**Habitat** — Similar to *P. faba* but young may also be found in *Protothaca staminea*, *Panope generosa*, and *Ostrea lurida*.

**Size** — Carapace: male 10 x 18 mm; female 16 x 27 mm.

**Range** — Prince William Sound (60°33'N, 145°48'W), Alaska, to San Diego, California; intertidal to 91 m.

**Distribution in British Columbia** — Widespread but less common than *P. faba*.

**Notes** — *P. littoralis*, like *P. faba*, matures only in the mantle cavity of *Tresus capax* despite records in the literature to the contrary. This confusion has been caused by misidentification of the host. A pair of adult crabs, plus varying numbers of young and immature crabs are usually present in each clam. Pearce (1966: 579) considers the presence of the visceral fold or 'skirt' important in the relationship of crab host.

*Pinnixa tubicola* Holmes 1894\*

**Description** — Male carapace smooth and hard and twice as wide as long. Abdomen wide and telson wider than long and distally curved. Female carapace smooth and hard and 2 ½ times as wide as long. In both sexes the chelipeds are stout, with median teeth on fingers and the tips curved. Walking legs flattened laterally and last three with propodi much wider than dactyls.

**Colour** — Carapace patterned symmetrically in light and dark brown, grey and opaque white. Chelipeds white with patches of brown, red or orange; fingers and teeth white distally. Walking legs white with dark brown streaks and reticulated areas; margins of joints white banded; claws light coloured. Eyestalk ivory; cornea red with gold flecks.

**Habitat** — Commensal in parchment-like tubes of terebellid worms. In British Columbia *Eupolyornia heterobranchia* is often attached to the undersides of rocks intertidally and broken shells and gravel are stuck to the outside of the tube. A pair of these crabs frequently share the worm's tube.

**Size** — Carapace: male 4.5 x 10 mm; female 6 x 15 mm.

**Range** — Prince Rupert, British Columbia, to San Diego, California; intertidal to 57 m.

**Distribution in British Columbia** — Widespread but often missed in general collecting.

*Pinnixa eburna* Wells 1928\*

*Pinnixa eburnea*

**Description** — Both sexes with a hard smooth oval carapace with setose margins, an inconspicuous antero-lateral ridge which may be slightly granular on lateral margin, and a curved depression between gastric and cardiac areas. Walking legs and chelipeds margined with plumose setae. Walking legs slender, flattened; dactyls styliform. Mature males have swollen palms with a short, wide fixed finger; finger curved so that the tip crosses over the fixed finger and leaves a slight gape between. Females and immature males have slightly swollen palms with long fixed finger with curved tip; finger elongate and curved with a sharp tip which meshes with fixed finger and leaves no gape. The cutting surfaces are margined with a row of small stiff setae.

**Colour** — Carapace with a symmetrical dappled pattern of dark brown or black, red-brown and greenish-brown on white and ivory or yellow. There is a light border on all margins but the posterior. Chelipeds and walking legs pale yellow with patches of greenish-brown, making legs look banded. Patches are reticulated especially on carpus and propodus. Dorsally and ventrally legs are bordered with a narrow translucent area. Antennule, antenna and eyestalk yellow with black streaks; cornea black with gold flecks. Sternum and abdomen yellow or ivory with a few black specks. Considerable variation in depth of colour between individuals.



**Habitat** — Commensal in burrows of lug worms *Abarenicola claparedii vagabunda* and *A. c. oceanica*. Active when free in water but not when in exposed burrow. May be able to swim to some extent. Difficult to collect because the lug worm burrow is in loose sand or sandy mud and disintegrates easily. The crabs stay close to the worm; therefore, if the sand surrounding the worm is washed through a fine sieve the crabs may be captured. Small *P. schmitti* may occur in the top layers of muddy areas and can be confused with *P. eburna* until examined under magnification.

**Size** — Carapace: male 3.5 x 6.5 mm; female 3.5 x 8 mm.

**Range** — Masset, Queen Charlotte Islands, British Columbia, to False Bay, San Juan Island, Puget Sound, Washington; intertidal.

**Distribution in British Columbia** — Probably present where the host occurs but seldom collected unless searched for specifically.

***Pinnixa occidentalis*** Rathbun 1893  
*Pinnixa californiensis*

**Description** — Carapace narrows laterally and, in both sexes, the surface is firm and uneven. There is an acute transverse crest on cardiac area with curves on the male and relatively straight on the female. Anterior margins of carapace and the appendages are setose which is denser in small individuals than in large. Antero-lateral and pterygostomian margins granulate. Walking legs stout and elongate with numerous minute granules especially on dorsal and ventral margins. Merus of 3<sup>rd</sup> walking leg 2 ½ to 3 ½ times as long as wide; dactyls straight with granulate ridges. Cheliped of mature male with palm slightly widened distally with small granules dorsally and ventrally; fixed finger short and deflexed, with one large central tooth and small side teeth; finger curved and usually with a sharp central tooth; gape when closed. Cheliped of female with longer fixed finger than male and finger similar but less curved.

**Colour** — Mud and setae mask the colouring. Freshly moulted specimens have the carapace tan with some white areas in a symmetrical pattern. Chelipeds and walking legs white with small patches of tan on either side of junction between merus and carpus. Cornea of eye dark red. Ventral surfaces white.

**Habitat** — Commensal in tubes of unsegmented coelomate worms, (Phylum Echiura). In the northern localities this is *Echiurus echiurus alaskanus* but they may be found also free in mud.

**Size** — Carapace: male 9.5 x 19.5 mm; female 10.5 x 20.5 mm.

**Range** — Iliuliuk Harbour, Unalaska, to Magdalena Bay, Mexico; intertidal to 436 m.

**Distribution in British Columbia** — Dredged off Vancouver Island and found intertidally where the host occurs in northern British Columbia; collected at Welcome Harbour, Porcher Island and Digby Island.

**Notes** — Distribution records of *P. occidentalis* in the literature are suspect because there are other deep-water *Pinnixa* which resemble them but differ in that they mature at a smaller size and are less setose or granular. They are also usually a brighter colour, often scarlet. The body proportions are difficult to compare because of size differences. Until these apparently undescribed species can be identified it seems wise to treat *P. occidentalis* as a key member of a group of allied species.

***Pinnixa schmitti*** Rathbun 1918

**Description** — Carapace hard, smooth, about twice as wide as long and with a granular ridge on anterior lateral margins. Chelipeds of adult male robust; palm with a few granules; short fingers with small or no

teeth. Chelipeds of female and immature male slender; palm granulate; fingers subequal cutting surfaces with small teeth and tips crossed. 3<sup>rd</sup> walking leg relatively stout and long, setose with granular margins on merus and propodus. Other walking legs slender and setose; dactyl slightly curved. Abdomen of male with a semicircular telson.

**Colour** — Colour often masked by muddy setae or stained by rust or sulphurous mud. In recently moulted specimens the carapace and dorsal surfaces of walking legs are blue-grey, black and white mottled; the margins are light coloured, especially posteriorly. Chelipeds white with fine black dendritic chromatophores dorsally; the palm, especially in the male, is mostly white, as are the ventral surfaces. Eyestalk brown; cornea black with gold flecks.

**Habitat** — Under rocks in mud or around worm tubes, in burrows of *Callianassa* and *Upogebia*, in sand with *Leptosynapta clarkii* (sea cucumber) and with *Amphiodia urtica* (burrowing brittle star).

**Size** — Carapace: male 5.5 x 10 mm; female 6.8 x 12.5 mm.

**Range** — Port Levasheff, Unalaska, to Morro Bay, California; intertidal to 146 m.

**Distribution in British Columbia** — Ubiquitous; small individuals common but large have been collected only in northern waters.