Decapoda – Crabs, Shrimps & Lobsters

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General Introduction

Decapod crustaceans are among the most dominant and striking groups found in the benthic communities of the Chilean Fjord Region. Diversity is diminishing from the exposed coast towards the inner fjords. During the day intertidal species, like Hemigrapsus crenulatus and Petrolisthes laevigatus, can be found hidden under stones along the coast and in estuaries. Robust crabs, like Acanthocyclus albatrossis, are able to tolerate low salinities and can be observed in the low salinity layer of the fjords. In the dark and cold depths between seven and 40 m (the depths typical for a SCUBA dive) numerous and diverse decapods are found. Shrimps, such as the beautifully coloured Campylonotus vagans and Nauticaris magellanica, peer out of their holes or run around busily on sandy patches. Crab species, including Pilumnoides perlatus, Peltarion spinosulum and the impressively large Cancer edwardsi, are frequently seen. Hermit crabs, like the brightly coloured Propagurus gaudichaudi, can also be observed. The inachid, Eurypodius latreillei, sits on hydrozoans and other benthic animals with its chelipeds and first pereopods stretched out for food in a farcical way. More elusive decapods, such as the pinnotherids, are found hidden inside other organisms such as sea urchins and polychaete tubes. Large subantarctic deep water anomuran species, like Lithodes santolla and Paralomis granulosa, fill the diver with awe when seen at comparatively low depths in the fjords. Another anomuran, Munida subrugosa, sits between stones and rocks and swims away rapidly to a new hiding place if a diver approaches.

Systematics

The order Decapoda is divided into two suborders: the ancestral group, Dendrobranchiata (prawns), and the Pleocyemata (shrimps, true crabs, lobsters etc.). The two suborders are distinguished by their gill structure, which is branched in Dendrobranchiata (dendro: tree; branchia: gill) and has a lamellar structure in Pleocyemata. All taxa of Pleocyemata share a number of synapomorphic features, the most important of which is that the fertilised eggs are incubated by the females and remain stuck to the pleopods (Fig. 1) until the zoea larvae are ready to hatch. This character gave the group its name. The Pleocyemata are subdivided into seven infraorders: the Stenopodidea (Cleaner Shrimps), the Caridea (Shrimps, Coral Shrimps, Snapping Shrimps) (Fig. 1), the Astacidea (Freshwater Crayfish, True Lobsters, Reef Lobsters, Scampi), the Thalassinidea (Ghost Shrimps, Mud Shrimps, Sponge Shrimps), the Palinura (Flat Lobsters, Langoustines, Spiny Lobsters, Rock Lobsters, Lobsterettes, Slipper Lobsters), the Anomura (Hermit Crabs, King Crabs, Squat Lobsters, Porcelain Crabs, Mole Crabs) (Figs. 2a,b) and the Brachyura (True Crabs) (Figs.
For further information about Decapoda systematics and taxonomy, consult the “updated classification of the recent Crustacea” and “Systema Brachyurorum: Part 1. An annotated checklist of extant brachyuran crabs of the world” (Martin & Davis 2001; Ng et al. 2008).

**Morphology**
The decapod body is differentiated in two main sections (Fig. 1): (1) the cephalothorax, consisting of the fused head (cephalon) and trunk (thorax), and (2) the abdomen (pleon) (Fig. 2a). Appendages of the cephalothorax are the first and second antennae (antennule and antenna), all mouthparts (mandible, first and second maxilla, maxilliped one to three), and the thoracic appendages (five pairs of pereopods) (Fig. 2b). In many decapods the first pereopods have enlarged pincers (chelae) and are therefore called chelipeds (Brachyura). The cephalothorax is covered by a protective carapace, which is divided in the frontal, hepatic, gastric, cardiac, branchial and intestinal regions; further appendages are found on the seven-segmented pleon, with only six visible due to fusion of the last two segments. (Figs. 3a, 3b). Each somite carries a pair of biramous pleopods except the sixth. The first pair of pleopods can be modified in the male as gonopods (e.g. the petasma, only in Dendrobranchiata). The last pleopods are called uropods and together with the telson form the tail fan.

**Development**
The Dendrobranchiata have a holo-pelagic life cycle—all the developmental stages are free-living in the water column. The eggs are released into the water column, and the juveniles hatch as nauplius larva. After six molts and anamorphic growth (the development of new segments at the posterior part of the larva) the nauplius develops into the zoea larva. The zoea larvae of the Dendrobranchiata develop into the adult pelagically-living prawn, through several molts.

The Pleocyemata undergo indirect development and have a pelago-benthic life cycle—the larvae are planktonic and the adults live on the ground. The fertilised eggs are carried on the female’s pleopods. Unlike in the Dendrobranchiata, the development of the nauplius occurs inside the egg, and the larvae do not hatch until they reach the zoea stage. The zoea larvae (Fig. 4) pass through several morphologically-different zoea stages. After a series of molts they develop into the first benthic
or pyriform; carapace regions well defined, convex; rostrum formed by basal spine and ≥1 pair of divergent, upwardly inclined, dorsal spines. Somites well-calcified, without membranous areas. Sternal region, located between pereopod 1, without longitudinal, medial groove. Chelipeds subequal; right stouter. Pereopods more or less elongate; pereopod 2 somewhat longer than pereopods 1 and 3.

**Taxonomic Key to Eastern Pacific *Paralomis* Species**  
(from Macpherson, 1992)

1) a) Entire dorsal surface covered with spines or spiniform tubercles ............................................................. 2  
   b) Dorsal carapace surface not entirely covered with spines, instead bearing numerous granules and, at most, a few scattered spines ............................................................................................................................................ 3

2) a) Entire dorsal carapace surface without spines, covered with acute tubercles of uniform size ... *P. chilensis*  
   b) Entire dorsal carapace surface covered with spines; gastric region with 1 central spine more developed than rest and 1 median spine in centre of each branchial region ........................................................................................................ *P. phrixa*

3) a) Gastric region with central spine .................................................................................................................. 4
   b) Gastric region without spines ......................................................................................................................... 5

4) a) Entire dorsal carapace surface verrucose, covered with prominent granules of approximately equal size ......  
   b) Dorsal carapace surface smooth, covered with small granules of different size ........................................... *P. verrilli*

5) a) External surface of pereopods without spines, having granules or tubercles ........................................... 6
   b) External surface of pereopods with row of spines ........................................................................................... 8

6) a) External surface of pereopods covered with tubercles .................................................................................... *P. tuberipes*
   b) External surface of pereopods covered with small granules ........................................................................ *P. granulosa*(p. 647)

7) a) Dorsal carapace surface covered by clustered granules .............................................................................. *P. diomedeae*
   b) Dorsal carapace surface covered by simple granules .................................................................................. *P. ottsae*

8) a) Branchial regions much more protuberant than cardiac region ................................................................. 9
   b) Branchial regions as protuberant as cardiac region ........................................................................................... 10

9) a) Ventral surface of basal spine of rostrum strongly spinulated ............................................................... *P. inca*
   b) Ventral surface of basal spine of rostrum unarmed or minutely spinulated ............................................ *P. papillata*

10) a) Carapace contour pyriform ...................................................................................................................... *P. aspera*
   b) Carapace contour pentagonal ...................................................................................................................... *P. phrixa*

**Infraorder Brachyura Latreille, 1802 (True Crabs, jaibas or pancoras cangrejos)**

Infraorder Brachyura with worldwide ~5,000 species is the largest and most diverse group within the Decapoda found in marine, freshwater and semi-terrestrial habitats. Chile: ~141 species in ~27 families. They are highly derived and well armoured decapods in that the body and the appendages are strongly modified compared to the ancestral shrimp-like decapod basic form (Fig. 3a, b). Carapace completely enclosing head and thorax, covering sternum; relatively small abdomen folded ventrally under thorax. Pereopod 1 forms chelipeds; antennae and antennules strongly reduced and short; uropods completely reduced. Form of abdomen usually revealing gender of crab; males with narrow abdomen; females with much wider one under which eggs are carried.

**Familia Inachidae MacLeay, 1838**

Carapace of subtriangular, subpyriform or subcircular shape, deprived of orbits. Eyestalks generally long, either non-retractile or if retractile then to sides of carapace or the present acute postorbital spine. Eyestalks not concealed. Basal antennal article usually long, slender and subcylindrical throughout its extent flattened or channelled ventrally, usually free distally. Pereiopods long and slender.

**Genus *Eurypodius* Guérin, 1825**

Carapace pyriform, moderately convex; dorsal side spinous or tuberculate; rostrum divided into 2 narrow pointed protrusions, antennae visible in dorsal view at sides of rostrum. With distinct postorbital spine, without preorbital spine. Eyestalks stout. Males with well-developed chelipeds; palms compressed or turgid. Females with smaller chelipeds. Pereiopods long, prehensile. Abdomen 7-segmented.
Campylonotus vagans

Phylum Arthropoda
Subphylum Crustacea
Class Malacostraca
Order Decapoda
**Nauticaris magellanica** (Milne Edwards, 1891)

**Common name:** Magellan shrimp; Camaroncito  
**Synonymy:** *H. consobrinus* Milne Edwards, 1891; *Nauticaris marionis chilensis* Doflein & Balss, 1912.  
**Description:** Small; maximum size 40 mm. Transparent; carapace with characteristic red longitudinal bands; abdomen with transversal bands. Carapace smooth; rostrum straight, dorsal margin with 7–8 regularly spaced spines (first 2 or 3 posterior to orbit), ventral margin with 1 or 2 teeth. Scaphocerite very slender, reaching far beyond rostrum. Pereopods 1 and 2 with chelae at tips. Pereopod 2 with carpus divided into 14–16 joints. Pleon smooth, composed of 6 somites; somites 1–3 with broadly rounded epimeral; somites 4 and 5 with epimeral terminating in sharp point. Telson with 2 pairs of spines on dorsal surface.  
**Possibility for confusion:** None. *N. magellanica* is the only species of the genus inhabiting the southern part of South America.  
**Habitat:** Mostly hard substrates like gravel and rocks; also sandy bottoms and holdfasts of kelp (e.g. *Macrocystis* sp.).  
**Depth:** 5–100 m.  
**Abundance:** Common.  
**Distribution:** SW Atlantic (Falkland Islands); SE Pacific (PP–CPZ); Strait of Magellan.  
**Chile:** 20°S–54°S.  
**Biology:** Ovigerous females were observed in the months October to July. The eggs are numerous and reach 0.35–0.5 mm Ø. Larval development through 9 zoea stages and 1 decapodit stage. All *Campylonotidae* species are protandric hermaphrodites.  
**Main references:** Holthuis (1957); Wehrtmann & Albornoz (1998).
**Pilumnoides perlatus** (Poeppig, 1836)

**Common name:** Garnet crab; Cangrejo granate  
**Synonymy:** Pilumnoides danai Kinahan, 1857.  
**Description:** Medium size; carapace length to 25 mm. Dorsal side reddish-brown with whitish patches. (juveniles with various colours between dark pink and reddish-brown); dactyli of chelipeds whitish with light purple areas. Carapace slightly broader than long, rotund; surfaces granulate or tuberculate; lateral margins armed with prominent, acute teeth. Median front tooth variable in shape, either entire or faintly bi-lobed, overreaching adjacent pair of lateral teeth in length. Orbit <2x as wide as deep in dorsal view. Cheliped with lower half of palm with tubercles arranged in rows; upper edge of palm trilobate. **Possibility for confusion:** None. *P. perlatus* is the only representative of this genus in Chile.  
**Habitat:** On hard substrates; on kelp-holdfasts, on bivalve colonies and among ascidians (*Pyura chilensis*).  
**Depth:** Low intertidal–40 m.  
**Abundance:** Frequent.  
**Distribution:** NE Atlantic (Ireland; English Channel, England); Caribbean Sea (Tobago Islands; Panama); SE Pacific (Peru; PP–CPZ); Strait of Magellan. **Chile:** 18°S–54°S.  
**Biology:** Ovigerous females were found from June to November. Larval development through 5 zoea and 1 megalopa stage.  
**Main references:** Rathbun (1930); Garth (1957).

**Acanthocyclus albatrossis** Rathbun, 1898

**Common name:** Fringy arm wrestler crab; Cangrejo a franjas pulseando  
**Description:** Medium size; carapace length to 26.2 mm. Carapace surface dark brown; pereopods brighter; propodi whitish; dactyli of chelipeds whitish with light purple areas. Carapace slightly broader than long, rotund; surfaces granulate or tuberculate; lateral margins armed with prominent, acute teeth. Median front tooth variable in shape, either entire or faintly bi-lobed, overreaching adjacent pair of lateral teeth in length. Orbit <2x as wide as deep in dorsal view. Chelipeds stout, very unequal. Pereopods with pilose upper margins; dactyli long, slightly curved. **Possibility for confusion:** None. From Chile 2 other Acanthocyclus species are described, which occur further north (*A. gayi*: 18°S–37°S and *A. hassleri*: 18°S–39°S) (see also key on p. 632).  
**Habitat:** Rocks and other hard substrate.  
**Depth:** Intertidal–15 m.  
**Abundance:** Abundant.  
**Distribution:** SW Atlantic (Falkland Islands); SE Pacific (PP–SPZ); Strait of Magellan; Tierra del Fuego. **Chile:** 36°S–56°S.  
**Biology:** Nocturnal species. During daytime hides under stones and other sheltered places; at night feeds on sessile invertebrates (e.g. mussels, barnacles). Ovigerous females were observed in the months November to April. Larval development through 4 zoea stages and 1 megalopa stage.  
**Main references:** Rathbun (1930); Campodónico & Guzmán (1973).
Acanthocyclus albatrossis