

The new species is dedicated to Sr. NIBALDO BAHAMONDE N., junior zoologist and general scientific assistant of the expedition, in appreciation of his efforts in securing the material on which it is based.

Pinnixa valdiviensis RATHBUN

(Figure 6)

Pinnotheres transversalis, CUNNINGHAM, 1871, p. 492. Not *P. transversalis* MILNE EDWARDS and LUCAS, 1842.

Pinnixa transversalis, MIERS, 1881, p. 70 (part: the CUNNINGHAM specimens). DOFLEIN and BALSS, 1912, p. 39. Not *Pinnotheres transversalis* MILNE EDWARDS and LUCAS, 1842.

Pinnixa valdiviensis RATHBUN, 1907, p. 45, pl. 3, figs. 2, 3, text fig. 1 (type locality, Corral prov. of Valdivia); 1910, p. 588; 1918, p. 154, pl. 33, figs. 1, 2, pl. 34, figs. 5, 6, text fig. 95. PORTER, 1909a, p. 247; 1909b, p. 35; 1911, p. 444.

Previous records:

Chile: Corral C. E. PORTER (RATHBUN, 1907); Eden Harbor, Smith Channel 'Hassler' (RATHBUN, 1918), Punta Arenas 'Nassau' (CUNNINGHAM), do R. MULACH (DOFLEIN and BALSS).

Material examined:

Lund University Chile Expedition

<i>St. M</i> 4.? 1♂. Orange coloured. Dead when found.	<i>St. M</i> 74.? 1♀, 1 young. From tubes of <i>Chaetopterus variopedatus</i> (RENIER).	<i>St. M</i> 150.? 1♀. <i>St. M</i> 163.? 1 young. [Too immature to be assigned with assurance to species.]
<i>St. M</i> 19.? 2♂.		
<i>St. M</i> 20.? 2♂, 1 young. Possibly living in tubes of a polychaet.	<i>St. M</i> 126. 1♂. Found at the shore. Probably from tubes of <i>Chaetopterus</i> .	

British Museum (Natural History)

Chile: Punta Arenas, Strait of Magellan, on sandy beach after severe gale, 'Nassau', 1 large ♂ [This specimen reported by CUNNINGHAM, above].

Hamburg Museum

Chile: Punta Arenas, Strait of Magellan; leg. R. MULACH, November, 1892; K 3306; 1♀. 1906; K 3304, 1♀ post-ov [This specimen reported by DOFLEIN and BALSS, above].
Punta Arenas, Strait of Magellan; leg. H. MUTSCHKE, 1908; K 3272, 1♂.
Punta Arenas, Strait of Magellan; leg. R. MULACH, July 1, 1919; K 5469; 3♀ (2 ov, 1 post-ov).

Munich Museum

Chile: Punta Arenas, shore; leg. W. MICHAELSEN, November, 1892; from Hamburg Museum, 1♀ [This specimen determined as *Pinnixa transversalis* by DOFLEIN and BALSS].

Paris Museum

Chile: Valparaíso; C. E. PORTER, collector, 1911; 1♂, 1♀.

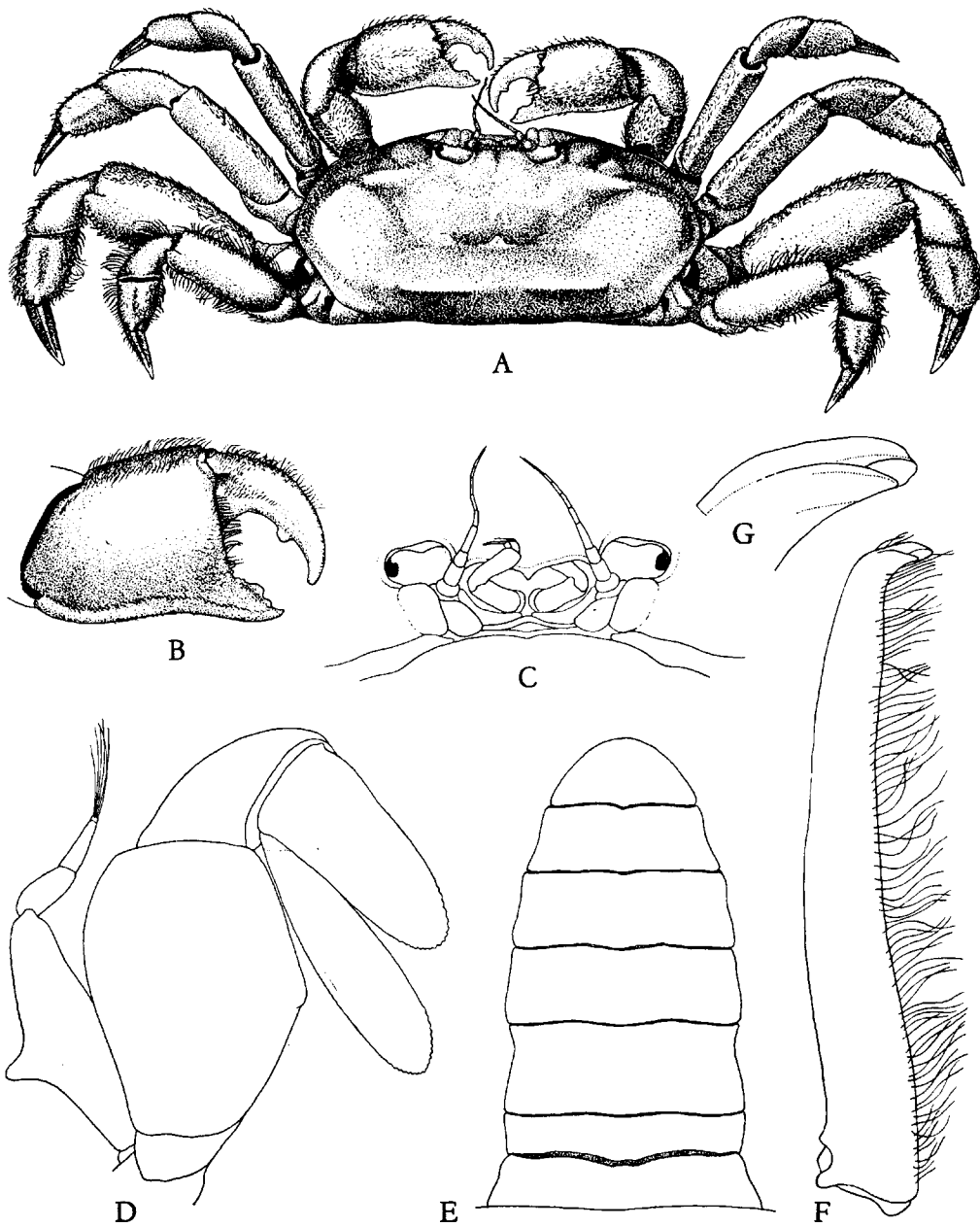


Fig. 6. *Pinnixa valdiviensis* RATHBUN, male, Paris Museum. A, dorsal view, $\times 2.5$; B, right chela, $\times 4.5$; C, frontal view, $\times 7$; D, right outer maxilliped, $\times 12.5$; E, abdomen, $\times 5$; F, first pleopod, $\times 12$; G, tip of same, $\times 51$.

United States National Museum

Peru: Chinchas Islands; R. C. MURPHY, collector, December 1, 1919; 1♂ (U.S.N.M. No. 54209).
 [This specimen determined by M. J. RATHBUN].

Chile: Corral, Valdivia Province; C. E. PORTER, collector; 1♂, cotype. (U.S.N.M. No. 32260).

Museum of Comparative Zoology

Chile: Eden Harbor, Smith Channel, Strait of Magellan, 'Hassler' Expedition, 1♂ (M.C.Z. No. 5740). [This specimen determined by M. J. RATHBUN].

Measurements: Of the Paris Museum male from Valparaíso: length of carapace 9.8 mm, width of carapace 22.3 mm, width of front 2.5 mm, of fronto-orbit 5.7 mm, length of cheliped (ischium-merus 6.8; carpus-manus 11.4) 18.2 mm, of chela 8.0 mm, of dactyl 4.5 mm, superior length of palm 4.4 mm, height of palm 4.4 mm, inferior length (including pollex) 7.4 mm, merus of third leg, length 9.5 mm, width 4.3 mm. Female specimen, length 9.5 mm, width 21.0 mm.

Of the British Museum male from Punta Arenas: length 13.8 mm, width 30.1 mm, width of front 3.5 mm, of fronto-orbit 7.6 mm, chela 10.8 mm, dactyl 6.7 mm, superior length of palm 7.3 mm, height of palm 6.5 mm, merus of third leg, length 13.3, width 6.2 mm.

Diagnosis: Two short cardiac ridges and a transverse hepatic ridge. Front widening anteriorly. Orbits broad, each wider than half the front. Chelae robust, internally pubescent; pollex short and deflexed, two teeth on prehensile edge; dactyl with a median tooth. Merus of external maxilliped broad, propodus and dactylus narrow. Merus of leg 3 less than half as wide as long; leg 4 not greatly reduced. Male abdomen one-third width of sternum, sixth segment shortened, sides concave. Male first pleopod stout, cylindrical, apically curved, tip corneous.

Range: From Chinchas Islands, Peru, as extended by the MURPHY specimen (U.S.N.M. No. 54209) above, to Punta Arenas [Magallanes], Strait of Magellan.

Remarks: On the strength of the inclusion by RATHBUN (1918, p. 154) of the 'Hassler' specimen from Eden Harbor, Smith Channel (M.C.Z. No. 5740) with type material of *Pinnixa valdiviensis* from Corral, Valdivia province, it has been possible to refer to her species also specimens from Punta Arenas, Strait of Magellan, previously reported as *P. transversalis* by CUNNINGHAM (1871), MIERS (1881), and by DOFLEIN and BALSS (1912), as well as to attribute to *P. valdiviensis* specimens from Valparaíso sent to the Paris Museum as *P. transversalis* by Dr. CARLOS E. PORTER in 1911. Whether the differences noted between the 3.2 mm male cotype (U.S.N.M. No. 32260), the Valparaíso specimens measured above, and the still larger Punta Arenas specimens, can be attributed entirely to growth can best be decided by someone having access to specimens of good size from Valdivia province. The female from Valparaíso shows the cardiac ridges; in this respect it differs from the female cotype from Valdivia province. The male first pleopods of Chinchas Islands, Valparaíso, and Punta Arenas specimens compare favorably with those of the 'Hassler' male from Eden Harbor, Smith Channel (M.C.Z. No. 5740).

With the exception of a young male from Bahía Herradura de Guayacán, *St. M 126*, which compares quite favorably with the male cotype (U.S.N.M. No. 32260), Lund

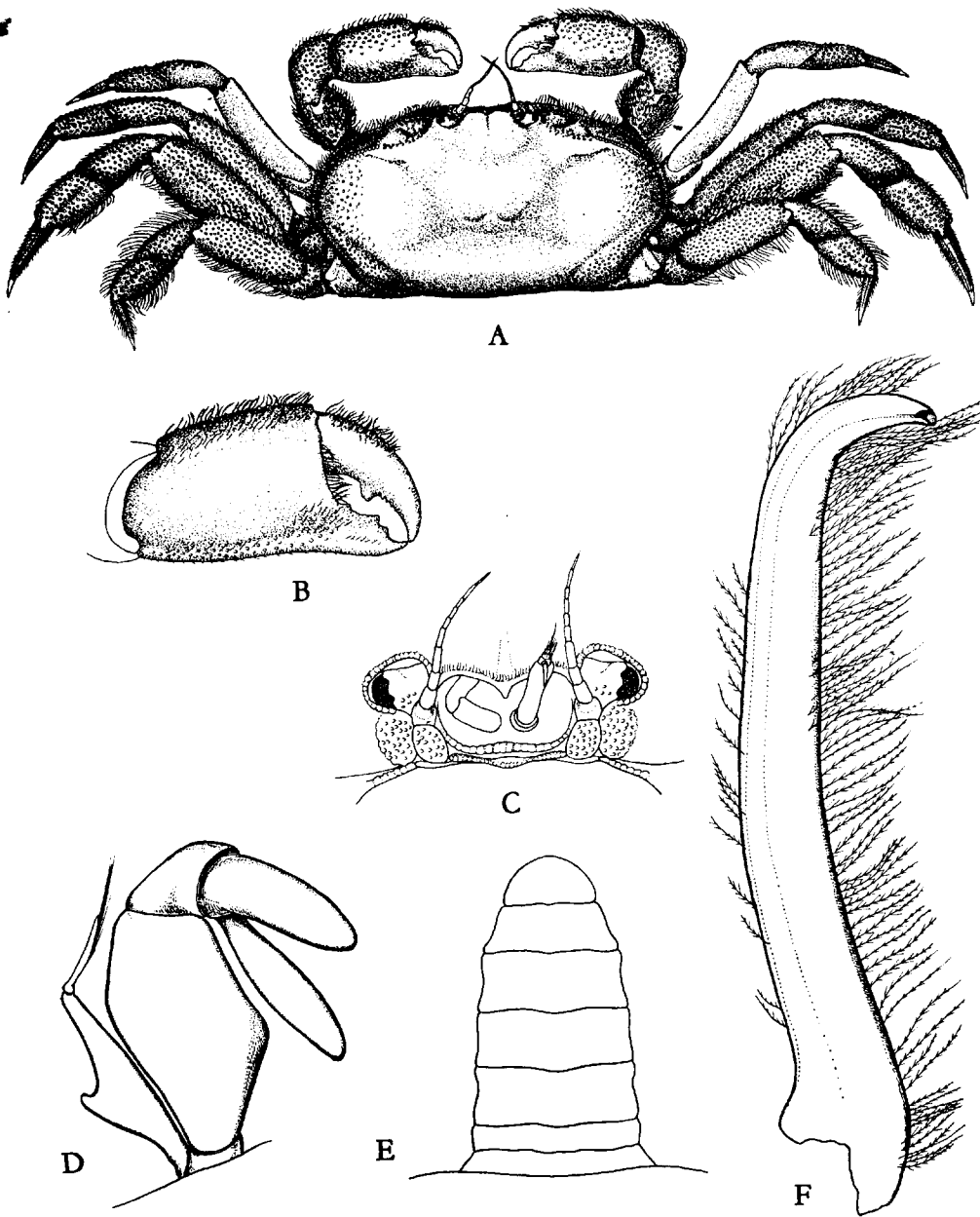


Fig. 7. *Pinnixa valdiviensis* RATHBUN (?), male, *St. M 19*. A, dorsal view, $\times 4$; B, right chela, $\times 8$; C, frontal view, $\times 10$; D, right outer maxilliped, $\times 17.5$; E, abdomen, $\times 6.6$; F, first pleopod, $\times 25$.

University Chile Expedition specimens have been referred to *Pinnixa valdiviensis* with a question mark. A male from Estero Huito, inner part, Golfo de Ancud, *St. M* 19, (Figure 7) here illustrates the points of difference noted between specimens from the vicinity of the Seno Reloncaví and larger specimens from Valparaíso or the Strait of Magellan. These include the less compressed cardiac ridges, the anteriorly narrowed front, the less broadened orbits, the more elongated chelae with the less deflexed pollex, the roughened merus of the cheliped, the increased granulation of the carapace and legs, and the slenderness of the legs, particularly those of the last two pair. These specimens were at first believed to represent a species distinct from *P. valdiviensis*, but the similarity of the male abdomen, male first pleopod, and external maxilliped argues strongly against this. Also, no ovigerous females are present among Lund University Expedition specimens, an indication that the accompanying males may not be fully matured. In uniting these specimens tentatively with RATHBUN's species it is the writer's belief that growth changes will be found to account for most of the discrepancies observed, with environmental differences accounting for the remainder.

Pinnixa chiloensis, new species

(Figure 8)

Type: Male holotype and three female paratypes (one ovigerous) from Lechagua, Bahía de Ancud, Chiloé, shore, in the tubes of the polychaet *Arenicola assimilis* EHLERS, var. *affinis* ASHWORTH, November 18, 1948, *St. M* 11. For additional specimens referable to this species, see Material examined below.

Measurements: Male holotype, length of carapace 6.1 mm, width of carapace 13.4 mm, width of front 1.5 mm, of fronto-orbit 3.5 mm, length of cheliped (ischium-merus 4.0; carpus-manus 4.5) 8.5 mm, of chela 4.0 mm, of dactyl 2.2 mm, height of palm 2.35 mm, superior length 2.2 mm, length of walking legs *ca.* 10.5, 12.0, 13.5, and 9.0 mm, respectively; merus of third leg: length 5.8 mm, width 3.1 mm. Female paratype: length of carapace 7.3 mm, width of carapace 15.6 mm.

Diagnosis: Cardiac ridge prominent, extends completely across carapace. No transverse crest across front. Margins of palm subparallel, pollex not deflexed nor shortened to a spine. Merus of leg 3 over half as broad as long, lower margin entire; dactylus of leg 4 overreaching merus of leg 3. Male first pleopod stout, abruptly angled, tip corneous.

Description: Carapace transversely oblong, laterally narrowed, hard textured, smooth and punctate, the larger punctae arranged linearly along the major depressions and felted. A blunt transverse ridge extending the width of the carapace and compressed in the male into two short, acute crests separated by a space equal to the width of one of them. From the cardiac ridge the carapace slopes gently forward to the gastrocardiac trench; behind it the carapace descends abruptly to the straight posterior margin. A similar ridge extending forward along anterolateral margins to

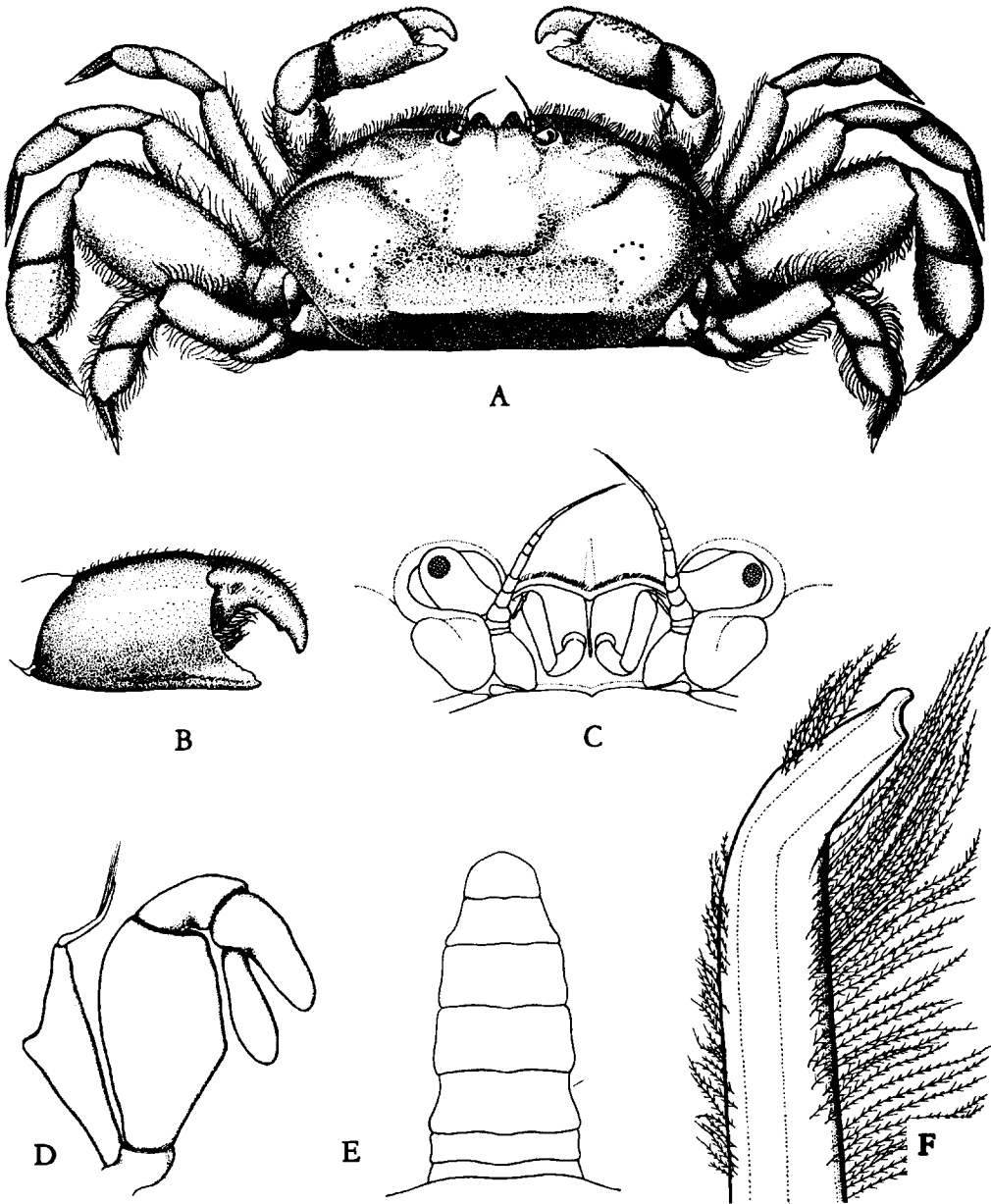


Fig. 8. *Pinnixa chiloensis*, male holotype, *St. M 11*. A, dorsal view, $\times 4.5$; B, right chela, $\times 7.5$; C, frontal view, $\times 12$; D, right outer maxilliped, $\times 18$; E, abdomen, $\times 5$; F, first pleopod, $\times 35$.

hepatic level, but not continuing to orbits or to front. Front advanced, truncate, bilobate, the lobes separated by a median furrow, margined, fringed, but lacking a transverse crest. Orbits large, more rounded than elongate, completely filled by eyes and eyestalks, inner margins inclined toward the longitudinal, outer margins toward the transverse.

Merus of external maxilliped elongate, outer margin rounded, inner margin obtusely angled; propodus narrow, nearly as long as dactylus; dactylus clavate, widening distally, and inserting on inner margin of propodus near base.

Chelae small in proportion to carapace and walking legs, compressed, a superior granular crest and a ridge parallel to lower margin, upper and lower margins of palm straight, subparallel, height of palm slightly greater than superior length, outer surface smooth and bare; pollex short, little deflexed, two teeth on upper margin; dactyl strongly curved downward, an abrupt median tooth; fingers gaping slightly when closed, tips not overlapping.

Dactyls of first three legs curving slightly inward at tips, dactyl of leg 4 with outer margin straight, inner margin convex. First leg slender, reaching mid-propodus of second; second leg with broader merus, reaching mid-propodus of third; third leg broadest, merus over half as wide, propodus fully as wide, as superior length, these segments conspicuously granulate beneath; fourth leg shorter, overreaching merus of third, which is not constricted distally, merus and propodus of leg 4 not conspicuously broadened. Margins of all legs hairy, the three terminal segments of the legs of the first two pair sparsely so.

Male abdomen occupying less than one third width of sternum, somites 3 and 6 with sides conspicuously concave, somites 6 and 7 shorter and of equal length. Male first pleopod stout, bent at an angle near end, tip corneous.

Female differing from male in having the transverse cardiac ridge uncrested and uninterrupted, and in having the manus widening distally, the pollex shorter, the dactylus more deflexed, and the digital tooth less prominent.

Material examined:

St. M 11. 1♂, 3♀. [The type series.] Lives in the tubes of the polychaet *Arenicola assimilis* EHLERS, var. *affinis* ASHWORTH.

St. M 26. 1♀ ov. [The same *Arenicola* species as the above was living at *St. M 26*].

Remarks: The proposed new species is allied to *Pinnixa patagoniensis* RATHBUN of the South Atlantic, but differs from it in the following particulars, according to Dr. F. A. CHACE, JR., who compared it with the small male paratype (U.S.N.M. No. 49248): the frontal, anterolateral, and posterior crests of the carapace are much blunter and less distinct; the submarginal ridge near the lower edge of the chela extends far back on the palm subparallel to the margin rather than diverging from the margin and disappearing before reaching the middle of the palm; the posterior margin of the merus of the third walking leg is evenly convex rather than deeply excavate and concave in the distal half, and the propodus of that leg much shorter and broader and not sharply bicarinate ventrally; and the male first pleopod, while

having the same general form, does not bend as abruptly, nor is the tip bilobate as in the paratype of *patagoniensis*. As compared with the figures of the male holotype (RATHBUN, 1918, pl. 30, figs. 1—3), the thumb is not noticeably deflexed, nor is it shortened to a spine, and there is no oblong tooth at the truncate distal end of the manus above the digital spine.

The host of the new *Pinnixa* species is *Arenicola assimilis* EHLERS, var. *affinis* ASHWORTH, as determined by Dr. G. P. WELLS, who defers an opinion on the validity of the variety pending further study. The host of *P. patagoniensis* is unknown.

Pinnaxodes HELLER, 1865

Pinnaxodes chilensis (MILNE EDWARDS)

(Figure 9)

Pinnotheres chilensis MILNE EDWARDS, 1837, p. 33 (type locality, shore of Valparaíso). MILNE EDWARDS and LUCAS, Atlas, 1842, pl. 10, figs. 2, 2a; 1844, p. 23. NICOLET, 1849, p. 155. SCHWABE, 1936, p. 125, figs. 1—6.

Fabia chilensis, DANA, 1852, p. 383.

Pinnaxodes hirtipes HELLER, 1865, p. 68, pl. 6, fig. 2 (type locality, Ecuador, in an *Echinus*). PORTER, 1909a, p. 248; 1909b, p. 36; 1911, p. 445.

Pinnaxodes chilensis, SMITH, 1869b, p. 246; 1870, p. 170. CANO, 1889, pp. 93, 99, 248. ORTMANN, 1894, p. 696, pl. 23, fig. 8. ADENSAMER, 1897, p. 107. LENZ, 1902, p. 764. PORTER, 1909a, p. 247; 1909b, p. 36; 1911, p. 444; 1936b, p. 152; 1936c, p. 338. RATHBUN, 1910, p. 587; 1918, p. 175, pl. 38, text fig. 111. DOFLEIN and BALSS, 1912, p. 39.

Pinnaxodes hirtipes?, RATHBUN, 1898b, p. 607, pl. 43, figs. 10, 11.

Pinaxodes chilensis, PORTER, 1906, p. 135.

Previous records:

Ecuador: Ecuador 'Novara' (HELLER).

Peru: Paita F. H. BRADLEY and J. ORTON (SMITH, 1870), Pacasmayo, 5—6 ft, W. H. JONES (RATHBUN, 1918), Callao F. H. BRADLEY (SMITH, 1870), Callao and San Lorenzo Island CHIERCHA (ORTMANN).

Chile: Tocopilla A. HRDLICKA (RATHBUN, 1918), Caldera C. E. PORTER (PORTER, 1909b), Coquimbo L. H. PLATE (LENZ), Los Vilos J. N. THOMAS (PORTER, 1906), Valparaíso (MILNE EDWARDS), do A. D'ORBIGNY and C. GAY (MILNE EDWARDS and LUCAS), do (NICOLET), do U. S. Expl. Exped. (DANA), Tumbes and Talcahuano L. H. PLATE (LENZ), Talcahuano C. E. PORTER (PORTER, 1909b), Puerto Montt F. LAU (DOFLEIN and BALSS), Chiloé Island 'Vettor Pisani' (CANO), do HOPKE (ADENSAMER), San Pedro, Chiloé Island 'Hassler' (RATHBUN, 1918), Chonos Archipelago 'Vettor Pisani' (CANO), Port Otway [Puerto Barroso] 'Albatross' (RATHBUN, 1898b).

Material examined:

Lund University Chile Expedition

<i>St. M 21</i> . 2♀. Parasite in the sea urchin <i>Loxechinus albus</i> (MOLINA).	Canal Chacao, Carelmapú, 41°45'S, 73°41'W, Jan. 1, 1949, 4 specimens from <i>Loxechinus albus</i> . Market purchase.	Seno Reloncaví, January 28, 1949, 8♀. From 12 <i>Loxechinus albus</i> . Market purchase.
<i>St. M 91</i> . 2♀. From <i>Loxechinus albus</i> . Lowest littoral.		

Hamburg Museum

- Chile: Junín, from sea urchins; leg. R. PAESSLER, March 16, 1903; K 3275, 2♀ ov.
 Iquique; leg. F. RINGE, date?; K 26317, 1♀ ov.
 Tocopilla, from a sea urchin; leg. R. PAESSLER, 1902; K 3797, 1♀ ov.
 Valparaíso, from *Strongylocentrotus gibbosus* AGASSIZ [= *Coenocentrotus gibbosus* (VALENCIENNES)]; leg. W. MICHAELSEN, 1893; K 3282, 2♀.
 Talcahuano, from sea urchins; leg. R. PAESSLER, 1902; K 3277, 3♀ ov.
 Coronel, from sea urchins; leg. R. PAESSLER, 1903; K 3276, 5♀ ov.
 Corral, Valdivia province, from *Strongylocentrotus gibbosus* AGASSIZ [= *Coenocentrotus gibbosus* (VALENCIENNES)]; leg. W. MICHAELSEN, [1893?]; K 3283, 1♀ ov.
 Puerto Montt, Llanquihue province; leg. F. LAU, 1900; K 3284, 1♀ ov. [This is the specimen reported by DOFLEIN and BALSS, above.]

Museum of Comparative Zoology

- Chile: Tocopilla, from *Loxechinus albus* (MOL.), WM. FORBES, collector, May, 1935, 1♂, 2♀ (M.C.Z. No. 10260).
 San Pedro, Chiloé Island, 'Hassler' Exped., 1♂ (M.C.Z. No. 5737) [identified by M. J. RATHBUN].

Range: From Ecuador, exact locality unknown, to Port Otway [Puerto Barroso], Chile. Galápagos Islands. To 1 fm.

Description of male: Carapace subquadrilateral, wider than long, convex, firm textured, and pitted, appearing to narrow behind, actually widest at level of third coxae. Front scarcely advanced beyond orbits, lobes truncate when seen from above but rounding downward toward epistome, a shallow median sulcus. Eystalks and eyes recessed in rimless orbits directed transversely or but slightly forward. Anterolateral margins arcuate, continuous with posterolateral, unrimmed, sides of carapace sloping steeply and obscured by shaggy hairs. Of the pits the four forming a cardiac square are most prominent, while of the less prominent, two occur in advance of the anterior cardiac pair, but set more closely together, two appear on each hepatic area in line with the almost non-existent lateral grooves, and one appears on each anterior branchial region. Palpus of external maxilliped large, propodus distally produced, dactylus clavate.

Chelipeds equal; carpus swollen, inner surface concave, hirsute; manus with superior margin slightly convex, inferior margin almost straight, height of palm equal to superior length; fingers little deflexed, equally broad at bases, dactyl with a larger and a smaller basal tooth; pollex with denticles proximally, cutting edges meeting without a gape, fingers pointed, incurving, tips crossing. Ambulatory legs long and slender, the first reaching the mid-propodus of the second, which is longest; the second but slightly overreaching the third; fourth leg shortest, reaching little beyond carpus of the third; propodi almost straight; dactyli slightly curved.

Male abdomen widest at middle of somite 3, sides of somites 4—5 straight, converging, somite 6 constricted at middle, somite 7 alate at base, tip rounded. Male first pleopod with a slight thickening at middle, straight nearly to tip, which is curved and bilobed.

Measurements: 'Hassler' Expedition male (M.C.Z. No. 5737): length 6.6 mm,

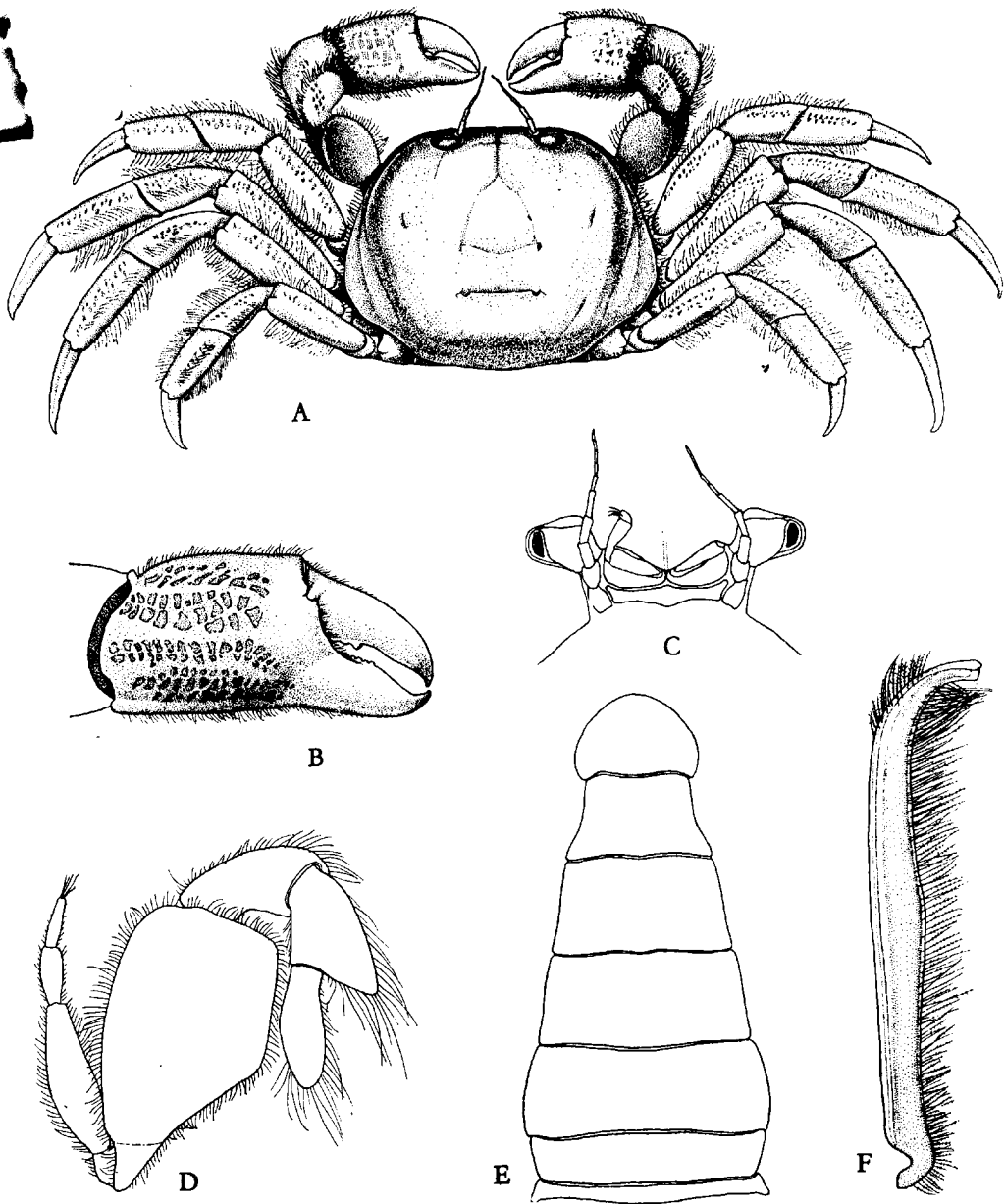


Fig. 9. *Pinnaxodes chilensis* (MILNE EDWARDS), male, M.C.Z. No. 5737. A, dorsal view, $\times 5.3$; B, right chela, $\times 10.5$; C, frontal view, $\times 10.5$; D, right outer maxilliped, $\times 26.3$; E, abdomen, $\times 10.5$; F, first pleopod, $\times 15.3$.

width 7.2 mm, frontal width 1.8 mm, fronto-orbital width 3.4 mm, length of chela 4.4 mm, length of dactyl 2.1 mm, height of palm 2.1 mm.

Remarks: Lund University Chile Expedition specimens, all post-ovigerous females, measure from 12.2 to 19.3 mm in length. Hamburg Museum specimens include ovigerous females measuring from 12.7 to 19.7 mm in length, a young female measuring 11.2×12.0 mm, and a post ovigerous female measuring 20.0×20.5 mm. The FRITZ LAU specimen from Puerto Montt shows most clearly the incomplete suture line between the ischium and merus of the external maxilliped said to characterize the genus. The free-living male of this commensal species is seldom observed.

Pinnaxodes silvestrii (NOBILI),

new combination

(Figures 10 and 11)

Pinnotheres silvestrii NOBILI, 1901a, p. 11 (type locality, San Vicente, Chile); 1902, p. 235.

Pinnaxodes meinerti RATHBUN, 1904b, p. 162 (type locality, Valparaíso); 1910, p. 587; 1918, p. 177, pl. 25, figs. 1—3; text fig. 112. PORTER, 1909a, p. 248; 1909b, p. 37; 1911, p. 446; 1936b, p. 152; 1936c, p. 338.

Pinnotheres silvestrii, PORTER, 1909a, p. 249; 1909b, p. 37; 1911, p. 446; 1936b, p. 152; 1936c, p. 338. RATHBUN, 1910, p. 587; 1918, p. 91.

Previous records:

Chile: Valparaíso KRØYER (RATHBUN, 1904b), Talcahuano 'Hassler' (RATHBUN, 1918) [these two as *Pinnaxodes meinerti*], San Vicente F. SILVESTRI (NOBILI, 1901a), Bay of Talcahuano (PORTER, 1909a, presumably a repetition of the NOBILI record).

Material examined:

Lund University Chile Expedition

St. M 121. 1 young ♂. The holothurian *Eucyclus chilensis* (SEMPER) (det. F. JENSENIUS MADSEN) was obtained at this station but it can not be stated with certainty whether the crab was living in this species as no notes indicating this are at hand.

St. M 123. 1♀ ov. From the cloaca of a holothurian, probably *Eucyclus chilensis* (the host has unfortunately been lost).

Turin Museum

Chile: San Vicente, F. SILVESTRI, collector, 1♀, type of *Pinnotheres silvestrii* NOBILI.

Museum of Comparative Zoology

Chile: Talcahuano, 1872, Hassler, 1♂, 1♀ (M.C.Z. No. 10994), determined by F. A. CHACE, JR., as *Pinnaxodes meinerti* RATHBUN.

Range: From Valparaíso to Bay of Talcahuano, Chile.

Remarks: Through the courtesy of Dr. LUCIA ROSSI of the Turin Museum it has been possible to examine the unique 14×16 mm holotype of *Pinnotheres silvestrii* NOBILI, a female, and to compare with it a set of sketches of the holotype of *Pinnaxodes meinerti* RATHBUN, a male, kindly provided by Dr. TORBEN WOLFF of the Copenhagen Museum. In addition Dr. ELISABETH DEICHMANN has supplied a pair

of specimens collected by the 'Hassler' at the same locality as a female specimen (M.C.Z. No. 5760) seen by RATHBUN and ascribed by her to *P. meinerti*. Allowing for the difference in sex of the respective holotypes, it is the opinion of the writer that they represent a single species, with NOBILI's name having priority, but correctly assigned by RATHBUN to *Pinnaxodes*. The fusion of the ischium and merus of the outer maxilliped is essentially complete, although a superficial line of demarkation remains on the external surface.

The small male from Pta. Liles, just W of Bahía San Vicente (*St. M 121*), NOBILI's type locality, measured 3.2×3.6 mm. It differs from the holotype of *Pinnaxodes meinerti*, a 6.8 mm male, and from the larger 'Hassler' male (M.C.Z. No. 10994) in having the lateral margins not only thickened but rimmed, the rim broken into a lobe at the hepatic level as prominent as one of the frontal lobes. The abdomen is even more slender. Although the pleopod is not well developed, the identification was made firm by correspondence of the outer maxilliped and the unmistakable channelled finger tips.

Pinnotherelia MILNE EDWARDS and LUCAS, 1843

Pinnotherelia laevigata MILNE EDWARDS and LUCAS

Pinnotherelia laevigata MILNE EDWARDS and LUCAS, 1843, Atlas, pl. 11, figs. 1, 1a—e; 1844, p. 25 (type locality, shores of Chile). NICOLET, 1849, p. 158. MILNE EDWARDS, 1853, p. 221. CANO, 1889, pp. 93, 98, 247. PORTER, 1909a, p. 246; 1909b, p. 34; 1911, p. 442; 1936b, p. 153; 1936c, p. 338. RATHBUN, 1910, pp. 546, 588, pl. 51, fig. 3; 1918, p. 181, pl. 39, figs. 1—3, pl. 40, figs. 1, 2, text fig. 115.

Cyclograpsus (?) *gnatherion* KINAHAN, 1857, p. 343 (type localities, Chinchas Islands and Callao, Peru).

Previous records:

Peru: Callao J. R. KINAHAN (KINAHAN), do R. E. COKER (RATHBUN, 1910), San Lorenzo Island U. S. Expl. Exped. (RATHBUN, 1918), Chinchas Islands J. R. KINAHAN (KINAHAN).

Chile: Shores of Chile FONTAINES (MILNE EDWARDS and LUCAS), do (NICOLET), Bay of Talcahuano (PORTER, 1936b), Bay of Arauco (PORTER, 1909a), Porto [Punta?] Arenas, "Canali Patagonici" 'Vettor Pisani' (CANO, 1889).

Material examined:

Hamburg Museum

Peru: Callao; leg. R. PAESSLER, 1886; K 15081, 3♂.

Callao; leg. H. REHBERG, 1894; K 4461, 3♂.

West coast of South America; leg. E. KRAUSE, 1903; K 4500, 1♂.

Range: From Callao, Peru, to Punta Arenas, Strait of Magellan. Occurs also at Marquesas Islands, in the south central Pacific.

Remarks: Hamburg Museum males measure from 6.7 to 9.7 mm in length; females are not represented. This remarkable species, which resembles a *Cyclo-*

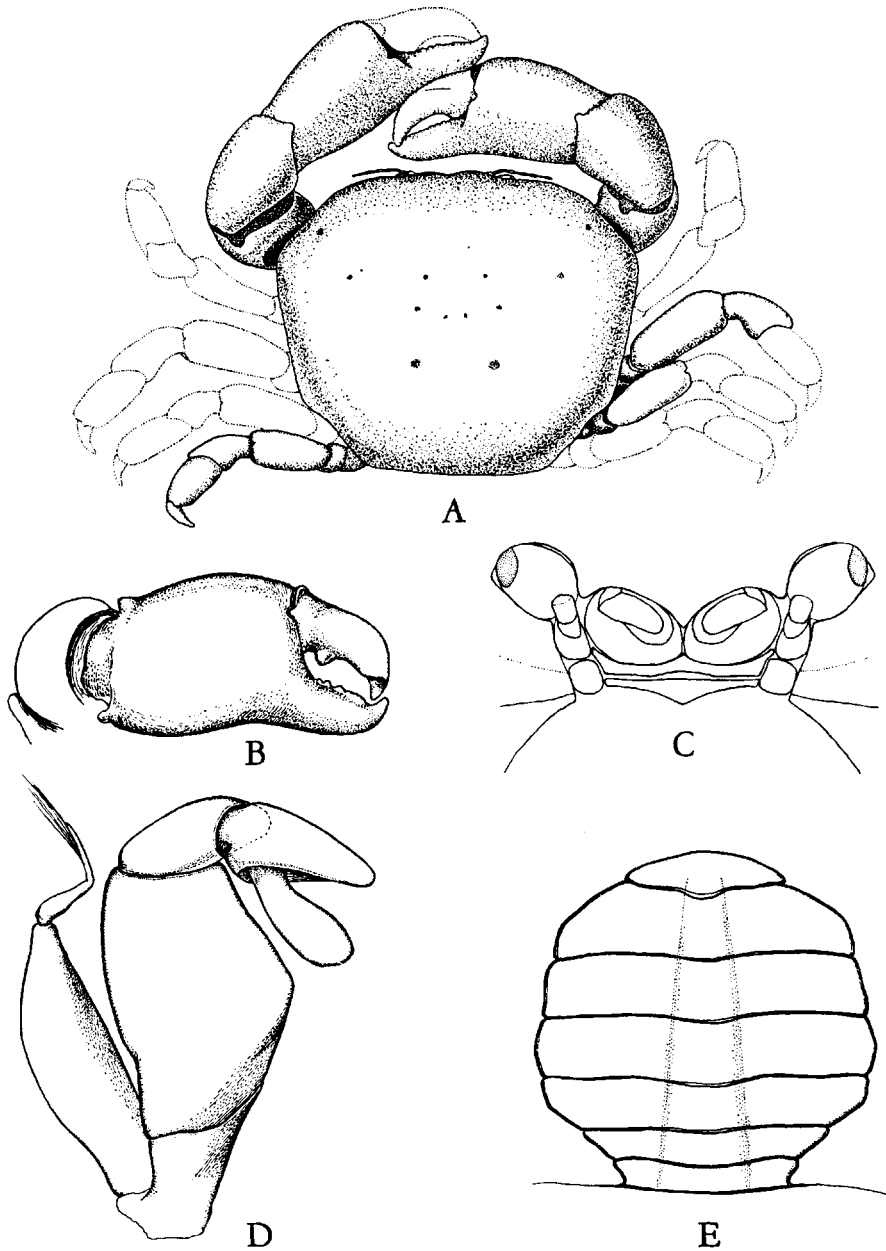


Fig. 10. *Pinnaxodes silvestrii* (NOBILI), female holotype, Turin Museum. A, dorsal view, $\times 3.5$ (in order to show the inner surface, the disjointed right chela has been rotated outwardly farther than its normal articulation with the carpus would permit. The detachment of all legs from the carapace casts doubt on the correctness of the sequence here shown.) B, right chela, $\times 4.6$; C, frontal view, $\times 10.4$; D, right outer maxilliped, $\times 18.6$ (the prominent line between the ischium and merus is deceiving, as an examination of the under surface shows fusion of the two segments to be complete); E, abdomen, $\times 2.9$ (the reconstruction from many fragments fails to show normal convexity, which would tend to impart a more circular outline to the whole).

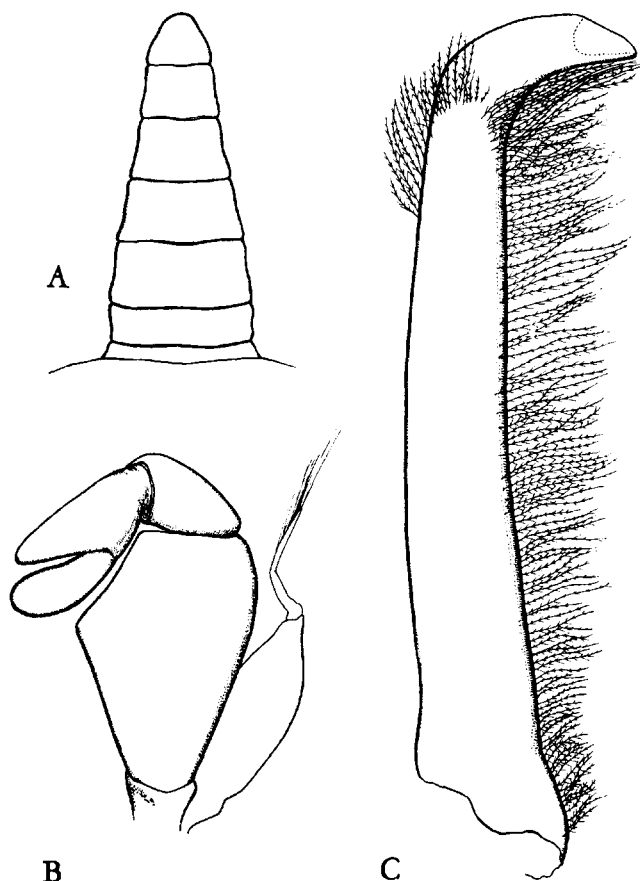


Fig. 11. *Pinnaxodes silvestrii* (NOBILI), male, M.C.Z. No. 10994. A, abdomen, $\times 6$; B, left outer maxilliped, $\times 21$; C, first pleopod, $\times 25$.

grapsus sufficiently to have deceived KINAHAN, is one of the important links between the Chilean and Polynesian faunas.

Species erroneously reported from Chile

Pinnotheres globosum JACQUINOT, 1852, Atlas, pl. 5, figs. 21—26; 1853, p. 58.

CANO (1889, pp. 98, 247) referred to this species a specimen from Porto [Puerto] Lagunas, Patagonia. Since the type locality is Singapore, and since CANO failed to describe his Chilean specimens, confirmation of his record is needed. (Cf. RATHBUN, 1918, p. 65, footnote.)

Species *incertae sedis*

Leucosia pacifica POEPPIG, 1836, p. 140, pl. 4, fig. 3.

This species, which has Talcahuano as its type locality, is a pinnotherid rather than a leucosid, according to RATHBUN (1937, p. 183, footnote). In an earlier work RATHBUN (1910, p. 613) listed it as a possible synonym of *Cyclograpsus cinereus* DANA.

CHILEAN PINNOTHERIDS AND THEIR HOSTS

Commensal	Host	Authority
MOLLUSCA - GASTROPODA		
<i>Pinnotheres politus</i> (SMITH)	<i>Calyptraea</i> , sp. <i>Calyptraea</i>	LENZ THORSON
MOLLUSCA - PELECYPODA		
	In bivalves, probably <i>Mytilus algosus</i> GOULD	SMITH
	On mussels, with <i>Crepidula [dilitata]</i> LAMARCK]	COKER
ECHINODERMATA - ECHINOIDEA		
<i>Pinnotheres bipunctatus</i> NICOLET	Probably in sea urchins	NICOLET
<i>Pinnaxodes chilensis</i> (MILNE EDWARDS)	In "erizos" In an <i>Echinus</i> <i>Caenocentrotus gibbosus</i> (VALENCIENNES) (as <i>Euryechinus imbecillus</i> VERRILL)	NICOLET DANA SMITH
	<i>Loxechinus albus</i> (MOLINA)	LENZ
	<i>Tetrapygyus niger</i> (MOLINA) [as <i>Arbacia nigra</i> (MOLINA)]	LENZ
ECHINODERMATA - HOLOTHURIOIDEA		
<i>Pinnaxodes silvestrii</i> (NOBILI)	<i>Eucyclus chilensis</i> (SEMPER)	MADSEN
ANNELIDA - POLYCHAETA		
<i>Pinnixa transversalis</i> (MILNE EDWARDS and LUCAS)	<i>Chaetopterus</i> , sp. <i>Chaetopterus variopedatus</i> (RENIER)	COKER WESENBURG-LUND
<i>Pinnixa valdiviensis</i> RATHBUN?	<i>Chaetopterus variopedatus</i> (RENIER)	WESENBURG-LUND
<i>Pinnixa bahamondei</i> , n. sp.	<i>Chaetopterus variopedatus</i> (RENIER)	WESENBURG-LUND
<i>Pinnixa chiloensis</i> , n. sp.	<i>Arenicola assimilis</i> EHLERS, var. <i>affinis</i> ASHWORTH	WELLS

Family Gecarcinidae

Species erroneously reported from Chile

Cardisoma crassum SMITH, 1870, p. 144, pl. 5.

The reported occurrence of this species in Chile is based upon the inclusion of "Chili" in the distribution of the genus as given by ALCOCK (1900, p. 445), and the statement by RATHBUN (1918, p. 346) that, if this be correct, it is probably *C. crassum* that is found there. The species ranges from San José, Lower California, Mexico, to the mouth of the Tumbes River, Peru.

Ucides occidentalis (ORTMANN), 1897, p. 336 [new name for *Uca laevis* MILNE EDWARDS, 1854].

The source of the Valparaíso (?) record given by RATHBUN (1910, p. 550) has not been found. The species ranges from Lower California to Las Vacas, near Capon, Peru.

Family Grapsidae

Grapsus LAMARCK, 1801*Grapsus grapsus* (LINNAEUS)

Restricted synonymy:

- Pagurus maculatus* CATESBY, 1743, p. 36, pl. 36, fig. 1.
Cancer grapsus LINNAEUS, 1758, p. 630 (type locality, America and Ascension Island).
Grapsus pictus LATREILLE, 1803, p. 69 (type locality, "les îles de l'amérique méridionale").
 MILNE EDWARDS and LUCAS, 1844, p. 28. NICOLET, 1849, p. 166. DANA, 1852, p. 336; Atlas, 1855, pl. 21, fig. 1. PORTER, 1899, p. 180.
Grapsus (Goniopsis) pictus, DE HAAN, 1835, p. 33.
 ?*Grapsus strigosus*, POEPPIG, 1836, p. 136. NICOLET, 1849, p. 167. KINAHAN, 1857, p. 340. RATHBUN, 1910, p. 588. Not *Cancer strigosus* HERBST, 1799.
Grapsus maculatus MILNE EDWARDS, 1853, p. 167, pl. 6, figs. 1—1n (type locality, Antilles). CANO, 1889, pp. 100, 236.
Grapsus webbi MILNE EDWARDS, 1853, p. 167 (type locality, Canary Islands).
Grapsus ornatus MILNE EDWARDS, 1853, p. 168 (type locality, Chile).
Grapsus altifrons STIMPSON, 1860, p. 230 (type locality, Cape San Lucas).
Grapsus grapsus, IVES, 1891, p. 190. ORTMANN, 1894, p. 703. PORTER, 1903, p. 150; 1905, p. 31; 1925, p. 318; 1936b, p. 153; 1936c, p. 338; 1937, p. 21; 1940a, p. 146; 1940b, p. 312; 1941, p. 459. RATHBUN, 1910, pp. 547, 588, pl. 42, fig. 1; 1918, p. 227, pls. 53, 54, text fig. 135.

Previous records:

- Peru: Pescadores Islands R. E. COKER (RATHBUN, 1910), Ancon 'Vettor Pisani' (CANO), Gulf of Ancon REISS (ORTMANN), Callao 'Bonite' (MILNE EDWARDS and LUCAS), do 'Vettor Pisani' (CANO), do R. E. COKER (RATHBUN, 1910), ? do U. S. Expl. Exped. (RATHBUN, 1918), San Lorenzo [Island] U. S. Expl. Exped. (DANA), do W. H. JONES (RATHBUN, 1918), Chinchas Islands J. R. KINAHAN (KINAHAN), Chinchas Islands and Mollendo R. E. COKER (RATHBUN, 1910).
 Chile: "Chile" (NICOLET), Antofagasta Province J. HERRERA (PORTER, 1940a), Bahía de Taltal A. CAPDEVILLE (PORTER, 1925), Caldera E. GIGOUX (PORTER, 1899), Coquimbo F. T. DELFIN (PORTER, 1903), Valparaíso U. S. Expl. Exped. (DANA), do ACKERMANN (ORTMANN), Juan Fernandez Island F. T. DELFIN, J. SCHEID (PORTER, 1905), Bay of Talcahuano E. POEPPIG (POEPPIG), do (PORTER, 1936b).

Material examined:

Lund University Chile Expedition

Paita, Peru; I. VIGELAND, collector, January 15, 1949; 2♂, 1♀.

Range: From San Benito Islands, Lower California, Mexico, to Bay of Talcahuano, Chile, including the Revilla Gigedos, Galápagos, and Juan Fernandez Islands. In the Atlantic from South Florida to Pernambuco [Recife], Brazil, including Bermuda, the Azores, and Ascension Island. A subspecies inhabits the Indo-Pacific.

Remarks: Since *Grapsus grapsus* is a stenothermal, warmth-limited animal, its occurrence on the Chilean mainland as far south as Valparaíso must be attributed to exceptional circumstances. Particularly does the Talcahuano locality, recorded by POEPPIG under an obscure synonym, require confirmation.

The Lund University specimens from Peru, all immature, measured: males, 16.4 and 18.0 mm; female, 21.4 mm.

Geograpsus STIMPSON, 1858*Geograpsus lividus* (MILNE EDWARDS)

Restricted synonymy:

- Grapsus lividus* MILNE EDWARDS, 1837, p. 85 (type locality, Antilles). DANA, 1852, p. 340; 1855, Atlas, pl. 21, figs. 5a—c.
Grapsus brevipes MILNE EDWARDS, 1853, p. 170 (type locality, unknown).
Geograpsus lividus, STIMPSON, 1860, p. 230. KINGSLEY, 1880d, p. 195. CANO, 1889, pp. 100, 237. RATHBUN, 1910, p. 588; 1918, p. 232, pl. 55. PORTER, 1937, p. 21.
Geograpsus occidentalis STIMPSON, 1860, p. 230 (type locality, Cape San Lucas).
Orthograpsus hillii KINGSLEY, 1880d, p. 194 (type locality, West Indies and Key West, Florida).

Previous records:

- Peru: Callao 'Vettor Pisani' (CANO), San Lorenzo Island U. S. Expl. Exped. (DANA), do W. H. JONES (RATHBUN, 1918).
 Chile: "Chile" F. E. GUÉRIN (KINGSLEY).

Material examined:

Lund University Chile Expedition

St. M 133. 1♀. Sparse among stones in upper part of tidal belt and above. Black.

Hamburg Museum

Chile: Caleta Coloso; leg. R. PAESSLER, July 20, 1914; K 26318, 1♀.

Range: From La Paz, Lower California, Mexico, to Caleta Coloso, Chile, including Clipperton and Galápagos Islands. Hawaii. In the Atlantic from Indian Key, Florida, to the state of São Paulo, Brazil.

Remarks: The single female taken by the Lund University Chile Expedition in the harbor at Iquique measured 17.4 mm in length. One cheliped and one leg are detached. The female collected by Captain PAESSLER at Caleta Coloso measured 20.8 mm in length and 26.1 mm in breadth. These are the first specific locality records for Chile for the species.

Leptograpsus MILNE EDWARDS, 1853*Leptograpsus variegatus* (FABRICIUS)

Restricted synonymy:

- Cancer variegatus* FABRICIUS, 1793, p. 450 (type locality, "in Americae meridionalis Insulis").
Grapsus variegatus, LATREILLE, 1803, p. 71. MILNE EDWARDS and LUCAS, 1844, p. 27. NICOLET, 1849, p. 167.
Grapsus personatus LAMARCK, 1818, p. 249 (type locality, New Holland).
Grapsus strigilatus WHITE, 1842, p. 78 (type locality, New Zealand).
Grapsus planifrons DANA, 1851a, p. 249 (type locality, Valparaíso); 1852, p. 338; 1855, Atlas, pl. 21, figs. 3a—e. MILNE EDWARDS, 1853, p. 172. CUNNINGHAM, 1871, p. 493.
Leptograpsus verreauxi MILNE EDWARDS, 1853, p. 172 (type locality, Australia).
Leptograpsus ansoni MILNE EDWARDS, 1853, p. 172 (type locality, Juan Fernandez Island).
 DE MAN, 1890, p. 84.

Leptograpsus gayi MILNE EDWARDS, 1853, p. 172 (type locality, Chile).

Leptograpsus variegatus, MILNE EDWARDS, 1853, p. 172. KINGSLEY, 1880d, p. 196. MIERS, 1886, p. 257. CANO, 1889, pp. 100, 238. ORTMANN, 1894, p. 707. MURRAY, 1895, p. 1120. DOFLEIN, 1899, p. 188. LENZ, 1902, p. 765. PORTER, 1903, p. 150; 1905, p. 29; 1906, p. 135, pl. 12; 1925, p. 318; 1937, p. 23, text fig. 1. RATHBUN, 1910, pp. 547, 588, pl. 45, fig. 2; 1918, p. 234, pl. 56.

Leptograpsus planifrons, CANO, 1889, pp. 92, 99, 238.

Previous records:

Peru: Payta 'Vettor Pisani' (CANO), Callao 'Bonite' (MILNE EDWARDS and LUCAS), do 'Vettor Pisani' (CANO), do U. S. Expl. Exped. (DANA, 1852), Chinchas Islands Copenhagen Museum (RATHBUN, 1918), Mollendo R. E. COKER (RATHBUN, 1910).

Chile: "Chile" (NICOLET), do (MILNE EDWARDS), do Wilkes Exped. (KINGSLEY), do GILLIS and do C. E. PORTER (RATHBUN, 1918), Cavancha L. H. PLATE (LENZ), Cobija Copenhagen Museum (RATHBUN, 1918), Antofagasta H. R. H. PRINCESS THERESE OF BAVARIA (DOFLEIN), do J. N. ROSE (RATHBUN, 1918), Bahía de Taltal A. CAPDEVILLE (PORTER, 1925), Bay of Coquimbo 'Nassau' (CUNNINGHAM), Herradura F. T. DELFIN (PORTER, 1903), ?Los Vilos C. E. PORTER (PORTER, 1906), Valparaíso U. S. Expl. Exped. (DANA, 1851a), do 'Challenger' (MIERS), do 'Vettor Pisani' (CANO), do Mus. Godeffroy (ORTMANN), Juan Fernandez Island (MILNE EDWARDS), do L. H. PLATE (LENZ), Bahía Cumberland, Juan Fernandez Island F. T. DELFIN, and do J. SCHEID (PORTER, 1905), Easter Island [Isla Pascua] (PORTER, 1937).

Material examined:

Lund University Chile Expedition

- | | | |
|--|---|--|
| <i>St. M 123.</i> 3♂, 2♀ (1 ov). In crevices in the rocks. | <i>St. M 127.</i> 1♀. Middle part of tidal belt. | <i>St. M 134.</i> 2♂, 1♀. Red. Common in rock crevices. |
| <i>St. M 124.</i> 3♂, 2♀. In a rock-pool and under stones, in the littoral, exposed. | <i>St. M 131.</i> 1♂, 2♀. 2 young. | <i>St. M 135.</i> 2♂, 6♀. In rock crevices, in a rockpool around high water level, and in middle part of tidal belt. |
| <i>St. M 125.</i> 5♂, 6♀, plus two detached chelipeds. In quiet waters between boulders, middle part of the littoral, to above high water level. | <i>St. M 133.</i> 2♂, 3 young. Sparse among stones, upper part of tidal belt and above. | <i>St. M 158.</i> 6♂, 4♀ (2 ov). |

Hamburg Museum

Chile: Caleta Coloso; leg. R. PAESSLER, July 20, 1914; K 5274, 1♂, 2♀.

Taltal; leg. R. PAESSLER, December 18, 1889; K 3743, 2♂.

Range: From Paita, Peru, to Valparaíso, Chile, including Juan Fernandez and Easter Island. Occurs also in the western Atlantic at Pernambuco [Recife], Brazil, and in the western Pacific at Shanghai and in the Antipodes.

Remarks: The 53 specimens from nine Lund University Chile Expedition localities include males of from 9.2 to 59.4 mm, non-ovigerous females of from 9.6 to 47.5 mm, and ovigerous females of from 20.3 to 36.4 mm, together with young of from 5.7 to 7.2 mm in length. The largest male measures 59.4 × 67.0 mm, the largest female, 47.5 × 54.0 mm. Ovigerous females were taken at Montemar between mid-September and mid-October, and at Tocopilla between January 5 and 8. Collected exclusively ashore, the species was reported both in rocky crevices around high water level and in quiet waters between boulders in the lower part of the littoral.

Pachygrapsus RANDALL, 1840*Pachygrapsus pubescens* HELLER

Pachygrapsus pubescens HELLER, 1865, p. 45, pl. 4, fig. 4 (type locality, Chile). RATHBUN, 1910, p. 589; 1918, p. 252, pl. 160, fig. 1. PORTER, 1937, p. 23.

Previous records:

Chile: "Chile" 'Novara' (HELLER).

Material examined: None.

Range: Known only from the type locality above.

Remarks: This species has not been collected again since the type, which is located in the Vienna Museum.

Planes BOWDICH, 1825*Planes cyaneus* DANA

Restricted synonymy:

Cancer cantonensis LINNAEUS, 1747, p. 137, pl. 1, figs. 1a—b.

Grapsus pusillus, DE HAAN, 1835, p. 59, pl. 16, fig. 2. Not *Cancer pusillus* FABRICIUS, 1775.

Nautilograpsus minutus, MILNE EDWARDS and LUCAS, 1844, p. 28. NICOLET, 1849, p. 168.

JACQUINOT, 1853, p. 78. Not *Cancer minutus* LINNAEUS, 1758.

Planes cyaneus DANA, 1851a, p. 250 (type locality, Pacific Ocean, 28° N. × 174° E.); 1852, p. 347; 1855, Atlas, pl. 22, fig. 1. CHACE, 1951, p. 88 and synonymy.

Nautilograpsus angustatus STIMPSON, 1858, p. 103 (type locality, Pacific Ocean, 34° N. × 155° E.).

Planes minutus, MIERS, 1876, p. 39. RATHBUN, 1910, p. 589; 1918, p. 253, pl. 63. DOFLEIN and BALSS, 1912, p. 39. BALSS, 1924, p. 336. Not *Cancer minutus* LINNAEUS, 1758.

Nautilograpsus pusillus, DE MAN, 1879, p. 69. Not *Cancer pusillus* FABRICIUS, 1775.

Previous records:

Peru: Callao 'Bonite' (MILNE EDWARDS and LUCAS).

Chile: Bay of Valparaíso (NICOLET), Masatierra, Juan Fernandez Islands K. BÄCKSTRÖM (BALSS), off Juan Fernandez Islands W. L. SCHMITT and 40 miles E. of Juan Fernandez Island U. S. Fish. Miss. in Chile (CHACE, 1951), Smith Channel R. PAESSLER (DOFLEIN and BALSS), Port Famine, Strait of Magellan Paris Museum (JACQUINOT).

Material examined:

Hamburg Museum

Chile: Lat. 20° S., Long. 73° W.; leg. H. NISSEN, 1901; K 4006, 1♂, 1♀, 1 young.

Lat. 20° S., Long. 75° W.; leg. H. NISSEN, 1901; K 4068, 1♂, 2♀ ov.

Juan Fernandez Island; leg. C. BOCK, February, 1923; K 26807, 1♂, 3♀.

Smyth Channel; leg. R. PAESSLER, 1887; K 4011, 1♀ ov.

[This is the specimen reported by DOFLEIN and BALSS, above.]

Range: From Humboldt Bay, California, to Port Famine, Strait of Magellan. Widely distributed throughout the Central Pacific.

Remarks: The single male in the Juan Fernandez Island series measured 6.6 mm, the ovigerous females from 8.7 to 9.1 mm in length. The H. NISSEN specimens (K 4068) are of exceptional size, the male measuring 22.8 × 22.5 mm and the larger of

the two ovigerous females 22.5×22.0 mm. They were taken from a tortoise-shell sea turtle in the open ocean west of Pisagua. For a complete review of the oceanic crabs of the genera *Planes* and *Pachygrapsus* the reader is referred to CHACE (1951).

Cyrtograpsus DANA, 1851

Cyrtograpsus angulatus DANA

Cyrtograpsus angulatus DANA, 1851a, p. 250 (type locality, Río Negro, Patagonia); 1852, p. 352; 1855, Atlas, pl. 22, figs. 6a—c. RATHBUN, 1910, p. 589; 1918, p. 261, pl. 65, pl. 159, figs. 7, 8. PORTER, 1936b, p. 153; 1936c, p. 338; 1937, p. 23.

Cyrtograpsus cirripes SMITH, 1869c, p. 11, pl. 1, fig. 3 (type locality, Rio de Janeiro).

Previous records:

Peru: San Lorenzo Island H. E. AMES (RATHBUN, 1910, 1918).

Chile: Bay of Talcahuano (PORTER, 1936b).

Material examined: None.

Range: From San Lorenzo Island, Peru, to Bay of Talcahuano, Chile. In the Atlantic from Rio de Janeiro, Brazil, to Río Negro, Argentina.

Remarks: This species is said by RATHBUN (1918, p. 262) to be found "from Rio de Janeiro, Brazil, southward to Patagonia, thence northward on the Pacific coast to Peru." However, records for Chile south of Talcahuano are lacking. A divided range may present taxonomic difficulties, but it seems preferable to implying continuity of range where such continuity cannot be shown to exist.

Hemigrapsus DANA, 1851

Hemigrapsus crenulatus (MILNE EDWARDS)

Restricted synonymy:

Cyclograpsus crenulatus MILNE EDWARDS, 1837, p. 80 (type locality, "habite?").

Trichodactylus granarius NICOLET, 1849, p. 151, crust. pl. 1, figs. 3, 3a—c (type locality, Chile).

CUNNINGHAM, 1871, p. 492.

Hemigrapsus crenulatus, DANA, 1852, p. 349; 1855, Atlas, pl. 22, figs. 3a—d. RATHBUN, 1898b, p. 604; 1910, p. 589; 1918, p. 266, pl. 68. PORTER, 1936b, p. 153; 1936c, p. 338; 1937, p. 23.

Trichodactylus granulatus [for *granarius*], MILNE EDWARDS, 1853, p. 216.

Lobograpsus crenulatus, A. MILNE EDWARDS, 1869b, p. 173.

?*Heterograpsus barbimanus*, CANO, 1889, pp. 93, 99, 243. Not *H. barbimanus* HELLER, 1865.

Heterograpsus sanguineus, LENZ, 1902, p. 765. Not *H. sanguineus* (MILNE EDWARDS) = *Grapsus sanguineus* DE HAAN, 1835.

Previous records:

Chile: "Chile" (NICOLET), Cavancha L. H. PLATE (RATHBUN, 1918), Talcahuano (PORTER, 1936b), Lota 'Albatross' (RATHBUN, 1898b), "Puerto Montt bei Calbuco" L. H. PLATE (LENZ), Chiloé Island 'Vettor Pisani' (CANO), do 'Hassler' (RATHBUN, 1918), Ancud 'Nassau' (CUNNINGHAM), Port Laguna [Puerto Lagunas] 'Nassau' (CUNNINGHAM), Port Otway [Puerto Barroso]

'Albatross' (RATHBUN, 1898b), N. of Darwin Channel, Chonos Archipelago 'Nassau' (CUNNINGHAM).

Material examined:

Lund University Chile Expedition

- | | | |
|--|--|---|
| <i>St. M</i> 3. 1♂, 32♀ (16 ov).
Very common under stones
in middle part of tidal belt. | <i>St. M</i> 31. 4♂, 8♀. Common
among Balanida, <i>Elminius</i>
<i>kingii</i> . | <i>St. M</i> 50. 1♂, 1♀.
<i>St. M</i> 59. 52♂, 66♀. Black. At
all levels in the tidal belt. |
| <i>St. M</i> 7. 1♂, 2♀ ov. | <i>St. M</i> 33. 1♂, under stone. | <i>St. M</i> 76. 2♂, 2♀. Black. |
| <i>St. M</i> 8. 3♂, 1♀. | <i>St. M</i> 37. 53♂, 32♀. Black-
green-brown. Common in
the lower and middle part | <i>St. M</i> 82. 4 young. |
| <i>St. M</i> 10. 2♂. Grey. In rock
pools. Sparse. | of the littoral under stones,
sparse in upper part. Rath-
er lively. | <i>St. M</i> 90. 8♂, 4♀, 1 young.
Grey. |
| <i>St. M</i> 11. 1♀, under stone. | | <i>St. M</i> 91. 9♂, 3♀. Grey. |
| <i>St. M</i> 13. 11♂, 4♀ (1 ov).
Grey-brown. | | |
| <i>St. M</i> 30. 11♂, 12♀ (5 ov), 6
young. Common in holes
in sand. Some specimens
captured among Balanida,
<i>Elminius kingii</i> , on piles. | | |

Hamburg Museum

- Chile: Talcahuano, shore; leg. R. PAESSLER, 1902; K 4112, 2♂, 2♀ (1 ov).
Coronel; leg. P. BRUNST, 1902; K 3816, 3♀.
Coronel; leg. R. PAESSLER, April 4, 1903; K 3811, 4♂, 1♀.
Corral; leg. A. GASSMANN, 1895; K 3815, 1♂; K 4116, 2♂.
Corral, 4 fms; leg. R. PAESSLER, 1902; K 4117, 1♂, 1♀.
Corral; leg. R. PAESSLER, August 5, 1904; K 3810, 2♀.

Range: From Cavancha to north of Darwin Channel, Chonos Archipelago, Chile. The species also occurs in New Zealand. To 11 m, as recorded below.

Remarks: Some 355 specimens of this abundant shore crab were collected from 16 Lund University Expedition localities. Included are males of from 7.3 to 34.6 mm, non-ovigerous females from 6.4 to 24.6 mm, ovigerous females from 8.8 to 22.3 mm, and young from minute size to 4.0 (♀) and 5.6 (♂) mm in length, at which size sex is readily determinable. The largest male measures 34.6 × 40.0 mm; the largest female is a 25.2 mm specimen in the Hamburg Museum collection. At Punta Pilluco in the Seno Reloncaví, 16 of 30 females collected in the November 10—29 period were ovigerous, while no egg-bearing females were taken in the January-April period. At Bahía Ralún in the Estero Reloncaví, three of 10 females collected on January 5 bore ova, while no egg-bearing females were taken during the balance of the January-April period. By March 31 minute young were encountered. Two ovigerous females were taken in the Golfo de Quetalmahué on November 17.

Although collected predominantly ashore under stones or on pilings, *Hemigrapsus crenulatus* was dredged three times in depths of 0—6, 2—5, and 11 m. The sand holes at *St. M* 30 led to long communicating tubes, 10—15 cm in depth. The color of specimens from *St. M* 3 was reported as variable, grey-brown, blue-grey or olive brown with some lighter parts. The protuberances of the carapace were often blue-black, the parts in between brown. The claws and underside were white.

Through the courtesy of Professor L. R. RICHARDSON of Victoria College, Wellington, it has been possible to examine specimens (3♂, 1♀) of this species from New Zealand. Only minute differences, such as amount of granulation and acuteness of anterolateral teeth, are discernible. This is the more remarkable considering the vast distance that separates the two populations. The male first pleopods correspond in detail.

Aratus MILNE EDWARDS, 1853

Aratus pisoni (MILNE EDWARDS)

Restricted synonymy:

Sesarma pisonii MILNE EDWARDS, 1837, p. 76, pl. 19, figs. 4, 5 (type locality, Antilles).

Aratus pisonii, MILNE EDWARDS, 1853, p. 187. RATHBUN, 1918, p. 323, pl. 96. GARTH, 1948, p. 57.

Aratus pisoni, RATHBUN, 1910, pp. 548, 590, pl. 50, fig. 4. DOFLEIN and BALSS, 1912, p. 39.

Previous records:

Peru: Near Capon R. E. COKER (RATHBUN, 1910).

Chile: Chacabuco, Smith Channel R. PAESSLER and H. PETERSEN (DOFLEIN and BALSS). [Note: Chacabuco is on Seno Aiséen of Canal Moraleda, not Canal Smyth.]

Material examined:

Hamburg Museum

Peru: Mollendo; leg. SCHILLING, date? (ded. R. PAESSLER, 1902); K 4385, 1♂.

Chile: Chacabuco [not Smith Channel]; leg. R. PAESSLER and H. PETERSEN, date?; K 4384, 1 young ♂, 2♀. [These specimens reported by DOFLEIN and BALSS, above.]

West coast of South America: leg. E. KRAUSE, date? (ded. 1903); K 4255, 1 young ♀.

Range: From Tenacatita, Mexico, as extended above to Mollendo, Peru. Extralimital: Chacabuco, Chile. In the Atlantic from Tampa and Miami, Florida, to São Paulo, Brazil.

Remarks: The range of *Aratus pisoni* is mangrove-limited elsewhere, and it would be exceptional if this were not true on the South American west coast. One must conclude, therefore, either that mangroves occur in isolated favorable localities far south of their normally expected range, or that the Chacabuco, and perhaps even the Mollendo specimens are incorrectly labeled as to locality. Confirmation of the Chilean occurrence of the mangrove crab is much to be desired.

Cyclograpsus MILNE EDWARDS, 1837

Cyclograpsus cinereus DANA

Cyclograpsus cinereus DANA, 1851a, p. 251 (type locality, "ad oras Chilenses"); 1852, p. 360; 1855, Atlas, pl. 23, figs. 3a—d. CUNNINGHAM, 1871, p. 493. RATHBUN, 1910, p. 590; 1918, p. 327, pl. 98. PORTER, 1925, p. 318; 1936b, p. 153; 1936c, p. 338; 1937, p. 23.

Cyclograpsus eydouxi MILNE EDWARDS, 1853, p. 198. Not *Grapsus eydouxi* MILNE EDWARDS, 1853.

Cyclograpsus punctatus, KINAHAN, 1857, p. 342. Not *C. punctatus* MILNE EDWARDS, 1837.

Previous records:

Panama: Panama M.C.Z. (RATHBUN, 1910, 1918).

Peru: Ancon 'Vettor Pisani' (CANO), Callao J. R. KINAHAN (KINAHAN), San Lorenzo Island W. H. JONES, and do H. E. AMES (RATHBUN, 1918), Chinchas Islands Copenhagen Museum (RATHBUN, 1918).

Chile: Taltal A. CAPDEVILLE (PORTER, 1925), Valparaíso U. S. Expl. Exped. (DANA), do (RATHBUN, 1918), Talcahuano (PORTER, 1936), Lota, Bay of Arauco 'Nassau' (CUNNINGHAM), "Iquique to Calbuco" (PORTER, 1925).

Material examined:

Lund University Chile Expedition

<i>St. M 22.</i> 11♂, 13♀ (2 ov). Brown.	<i>St. M 120.</i> 19♂, 30♀ (23 ov), 2 young. Brown. Very	<i>St. M 123.</i> 1♀.
<i>St. M 37.</i> 53♂, 84♀ (1 ov). Brown, rather lively. Under stones in the middle and upper part of the tidal belt. Very common locally.	common in upper part of the tidal belt.	<i>St. M 125.</i> 15♂, 12♀ (4 ov). Brown. Above high water level.
<i>St. M 59.</i> 51♂, 47♀, 5 young. Brown. In middle and upper part of the tidal belt.	<i>St. M 121.</i> 2♂, 2♀ (1 ov). In the upper part of the tidal belt.	<i>St. M 126.</i> 2♂, 1♀. Rather common above high tide level.
<i>St. M 90.</i> 9♂, 10♀. Brown. In the upper part of the tidal belt.	<i>St. M 122.</i> 26♂, 21♀ (8 ov). Brown. Common under stones in upper part of tidal belt. Common near high tide level, but lives to about 1 m above.	<i>St. M 133.</i> 26♂, 24♀ (13 ov), 4 young. Brown. Common among stones in upper part of tidal belt and above.
<i>St. M 91.</i> 1♂, 2♀. Brown. Fairly common in upper part of the tidal belt.		<i>St. M 135.</i> 3♂, 1♀ ov. Rock-pool, above high water level.

Hamburg Museum

Chile: Caleta Buena, shore; leg. R. PAESSLER, 1902; K 3984, 1♀.
Caleta Buena, shore; leg. R. PAESSLER, November 17, 1909; K 4476, 3♂, 9♀ (1 ov).
Caleta Buena, shore; leg. R. PAESSLER, August 6, 1911; K 4477, 5♂, 2♀.
Iquique, shore; leg. R. PAESSLER, 1902; K 4503, 5♂, 8♀ (5 ov).
Tocopilla, shore; leg. R. PAESSLER, 1902; K 4480, 5♂, 3♀ (2 ov).
Tocopilla, shore; leg. R. PAESSLER, 1904; K 4479, 2♂, 3♀ (2 ov).
Mejillones del Sur, shore; leg. R. PAESSLER, June 12, 1912; K 4470, 3♂, 7♀ (3 ov).
Antofagasta, shore; leg. R. PAESSLER, 1904; K 4478, 1♂, 4♀ (2 ov).
Antofagasta, shore; leg. R. PAESSLER, November 8, 1913; K 6769, 1♀.
San Vicente at Talcahuano; leg. R. PAESSLER, December 8, 1909; K 4481, 1♂, 11♀ ov.
Chile; leg. A. PLAGEMANN, 1909; K 15085, 1♂.

Range: From Ancon, Peru, to Calbuco, Chile. Extralimital: Panama.

Remarks: The extensive Lund University Chile Expedition series numbers 472 specimens from 13 localities. Size range of adult specimens, as shown by selected samples of breeding populations from widely separated localities, are as follows:

<i>Locality</i>	<i>Latitude</i>	<i>Date</i>	<i>Number</i>	<i>Sex</i>	<i>Size Range</i>
Iquique	20° S	July 2	25	♂	4.2— 7.5 mm
			21	♀	4.0— 8.2
			(13)	ov ♀	6.0— 8.2
Herradura	30° S	June 22	15	♂	5.8— 9.5
			12	♀	5.7— 9.1
			(4)	ov ♀	7.9— 9.8

Locality	Latitude	Date	Number	Sex	Size Range
Lota	37° S	June 10	23	♂	5.3—11.0
			15	♀	5.5—11.6
			(4)	ov ♀	8.4—11.6
San Vicente	37° S	June 8	16	♂	5.4—13.5
			26	♀	5.5—13.7
			(20)	ov ♀	8.3—13.7
Punta Pilluco	41° S	Jan-Apr	11	♂	5.7—12.7
			26	♀	7.7—14.0

In the above table the increase in size with increasing Latitude is at once apparent. Minimum size of young is 2.0 mm at Iquique, 2.9 mm at San Vicente, and 3.5 mm at Punta Pilluco in the Seno Reloncaví. Oviparous females were encountered in the Golfo de Ancud on December 16, in the Seno Reloncaví from January to April, in Bahía San Vicente on June 8 and 9, in the Bahía de Lota on June 10, at Herradura on June 22, and at Iquique on July 2—5. Hamburg Museum records add Caleta Buena on November 17, San Vicente on December 8, and Mejillones del Sur on June 12. The latter records are from different years.

Through the kindness of Mr. JACQUES FOREST of the Paris Museum it has been possible to examine a specimen of *Cyclograpsus eydouxi* MILNE EDWARDS determined by E. L. BOUVIER and compared with specimens collected by EYDOUX and by FONTAINES and identified by H. and/or A. MILNE EDWARDS. It proves to be identical with DANA's species. *C. eydouxi* should not be confused with *Grapsus eydouxi* MILNE EDWARDS, a synonym of *Pachygrapsus crassipes* RANDALL.

Cyclograpsus punctatus MILNE EDWARDS

Restricted synonymy:

Cyclograpsus punctatus MILNE EDWARDS, 1837, p. 78 (type locality, Indian Ocean). LENZ, 1902, p. 766. PORTER, 1906, p. 136, text fig. 17; 1937, p. 23. RATHBUN, 1910, p. 590; 1918, p. 328, pl. 99, text fig. 153.

Gnathochasmus barbatus MACLEAY, 1838, p. 65, pl. 3 (type locality, South Africa).

Sesarma barbata, KRAUSS, 1843, p. 45, pl. 3, figs. 3a—c.

Cyclograpsus minutus JACQUINOT, 1852, Atlas, Crust., pl. 6, figs. 8, H; 1853, p. 75 (type locality, Talcahuano [sic], Chile). NOBILI, 1901a, p. 13; 1902, p. 237.

Previous records:

Chile: Los Vilos J. N. THOMAS and Valparaíso C. E. PORTER (PORTER, 1906), Juan Fernandez Island L. H. PLATE (LENZ), Talcahuano Paris Museum (JACQUINOT), San Vicente F. SILVESTRI (NOBILI, 1901a).

Material examined:

Hamburg Museum

Chile: Juan Fernandez Island; leg. C. Bock, February, 1923; K 5884, 5♂, 4♀, 3 young.

Range: From Los Vilos to San Vicente, Chile, including Juan Fernandez Island. Occurs also in South Africa, the Indian Ocean, and at Hong Kong.

Remarks: The Juan Fernandez Island specimens measured: males, 7.5 to 10.0 mm; females, 5.9 to 13.4 mm; young, from 4.4 mm in length. The largest specimen, the 13.4 mm female, measured 16.7 mm in width.

Mr. JACQUES FOREST writes that there is a dry, mutilated specimen in the Paris Museum collection labeled "*Cyclograpsus minutus* — Chili" that he thinks may be the type of JACQUINOT's species. Since it lacks all legs except the right cheliped, it is not possible to examine the meral teeth that distinguish *C. punctatus* from the preceding *C. cinereus*.

Plagusia LATREILLE, 1804

Plagusia immaculata LAMARCK

Restricted synonymy:

Plagusia immaculata LAMARCK, 1818, p. 247 (type locality, "la Méditerranée? Je la crois de l'Océan Indien"). RATHBUN, 1918, p. 335, pl. 103. GARTH, 1948, p. 57.

Plagusia tuberculata, RATHBUN, 1898b, p. 605; 1910, p. 590. DOFLEIN and BALSS, 1912, p. 39. Not *P. tuberculata* LAMARCK, 1818.

Previous records:

Chile: Chacabuco, Smith Channel PETERSEN (DOFLEIN and BALSS). [Note: Chacabuco is on Seno Aisén of Canal Moraleda, not Canal Smyth.]

Material examined:

Hamburg Museum

Chile: Chacabuco, Smyth Channel; leg. R. PAESSLER and H. PETERSEN; K 4353, 2♂, immature.

Range: From Punta Arenas, Costa Rica, to Santa Elena Bay, Ecuador. Extra-limital: Chacabuco, Chile. Indo-Pacific.

Remarks: The Hamburg Museum specimens examined are believed to be the same ones earlier reported by DOFLEIN and BALSS (1912) under the name of *Plagusia tuberculata*. The identification has been cut off the top of the original label, which now reads only "FRANZ DOFLEIN determ.," while a separate label in another hand gives the name of *Plagusia immaculata*. HOLTHUIS (1952, p. 55) reports that the DOFLEIN and BALSS specimens were reviewed by BALSS in 1934, and in the interim RATHBUN (1918) had come to a different conclusion with respect to the correct name to be assigned to the common eastern Pacific species. Thus, with the exception of a single record from Cape San Lucas (STIMPSON, 1860, p. 231), *P. tuberculata* may be regarded as a western Pacific form.

Plagusia chabrus (LINNAEUS)

Restricted synonymy:

Cancer chabrus LINNAEUS, 1758, p. 628 (type locality, "in Oceano Indico").

Plagusia capensis DE HAAN, 1835, p. 58 (type locality, Cape of Good Hope).

Plagusia tomentosa MILNE EDWARDS, 1837, p. 92 (type locality, Cape of Good Hope and Chile). NICOLET, 1849, p. 170.
Plagusia chabrus, WHITE, 1846a, p. 497. LENZ, 1902, p. 767. PORTER, 1903, p. 150; 1905, p. 29; 1906, p. 137; 1925, p. 318, pl. 8; 1937, p. 23, pl. 4. RATHBUN, 1910, p. 591; 1918, p. 336, pl. 104.
Plagusia gaimardi MILNE EDWARDS, 1853, p. 178 (type locality, Tongatabu).

Previous records:

Chile: "Chile" Paris Museum (MILNE EDWARDS), do (NICOLET), Bahía de Taltal A. CAPDEVILLE (PORTER, 1925), Coquimbo F. T. DELFIN (PORTER, 1903), Los Vilos J. N. THOMAS (PORTER, 1906), Juan Fernandez Island L. H. PLATE (LENZ), do F. T. DELFIN (PORTER, 1905).

Material examined: None.

Range: From Bay of Taltal to Los Vilos, Chile; Juan Fernandez Island. Occurs also off South Africa, South Australia, Tasmania, New Zealand, and in the Tonga or Friendly Islands.

Remarks: Writers who have treated the species recently, including BARNARD (1950, p. 136, fig. 26, a—f) from the South African standpoint, TWEEDIE (1941, p. 22, fig. 8) from the Tasmanian, and CHILTON and BENNETT (1929, p. 774) from the New Zealandian, although disagreeing on which name to apply, are in accord in granting it circum-subantarctic distribution. In the absence of specimen material the writer is not in a position to determine the relationship of the Chilean form to the South African, nor to the Tasmanian, which was illustrated by RATHBUN (1918, pl. 104) in lieu of an American specimen. TESCH (1918, p. 129, footnote 2) states that he felt sure of DE HAAN's *Plagusia capensis*, whereas he was in doubt about LINNAEUS'S *Cancer chabrus*, which he gives with a query. Without prejudice to the nomenclatorial question involved, it seems less confusing to follow the synonymy of RATHBUN.

Species erroneously reported from Chile

Grapsus strigosus (HERBST)

DANA (1852, p. 338) described a mature male specimen, carapace length 2 inches, carapace breadth 2 inches, 2 lines, which he attributed to Valparaiso, Chile. Some of the characters mentioned are indeed those of *G. strigosus* rather than *G. pictus* (a synonym of *G. grapsus*), particularly the shorter epistome and the tridentate distal lower border of the merus of the last pair of walking legs. Moreover, his figure of the maxilliped (1885, Atlas, pl. 21, fig. 2) approaches that of *G. strigosus* rather than *G. grapsus*, according to S. K. Banerjee (*in litteris*), who is familiar with both forms. In view of the fact DANA recognized both species and differentiated between them correctly, it is probable that he had the Indo-West Pacific species before him, and that a transposition label was responsible for his attributing it to Chile. This is not true of POEPPIG (1836, p. 136), whose material was of definite Chilean origin and must therefore be considered *G. grapsus*.

Pachygrapsus crassipes RANDALL, 1839, p. 127.

Records of the occurrence of this temperate North American species in Chilean waters are based upon the type locality "Chili" given for *Grapsus eydouxi* MILNE EDWARDS (1853, p. 170), a synonym of *Pachygrapsus crassipes* RANDALL. That this locality is in error is the opinion of

HIATT (1948, p. 137), who cites correspondence with Dr. CARLOS E. PORTER establishing the non-occurrence of *P. crassipes* on Latin American shores.

Percnon gibbesi (MILNE EDWARDS), 1853, p. 180.

In a footnote PORTER (1937, p. 23) states that he has not seen *P. gibbesi*, said by RATHBUN (1918, p. 337) to occur in Chile. Under the name *Percnon planissimum* the species was earlier reported by RATHBUN (1910, p. 591) as ranging from Cape San Lucas to Chile. The source of this record is not known.

Family Ocypodidae

Ocypode WEBER, 1795

Ocypode occidentalis STIMPSON

Restricted synonymy:

Ocypoda occidentalis STIMPSON, 1860, p. 229 (type locality, Cape San Lucas).

Ocypoda gaudichaudi?, LOCKINGTON, 1877b, p. 145. Not *Ocypode gaudichaudi* MILNE EDWARDS and LUCAS, 1843.

Ocypoda kuhlii, var. *occidentalis*, MIERS, 1882, p. 386.

?*Ocypoda urvillei*, DOFLEIN, 1899, p. 189. Probably not *Ocypode urvillei* MILNE EDWARDS, 1837 [= *O. ceratophthalma* (Pallas), 1772].

Ocypode occidentalis, RATHBUN, 1910, p. 591; 1918, p. 372, pl. 129, figs. 2, 3. CRANE, 1941b, p. 308, pl. 2, fig. 5, text figs. 3, 4E, F, 5A, C, E, G, 6A, C, 7A, B.

Previous records:

Peru: Ancon G. KEIFFER (RATHBUN, 1918), ?Mollendo H.R.H. PRINCESS THERESE OF BAVARIA (DOFLEIN).

Material examined:

Hamburg Museum

Chile: Iquique; leg. F. BEUMER, May, 1913; K 6811, 1 young.

Range: From Turtle Bay, Lower California, Mexico, as extended above to Iquique, Chile.

Remarks: Since the young of *Ocypode* under .7 mm are said by CRANE (1941, p. 298) to be superficially indistinguishable as to species, the 6.1 mm specimen above would be insufficient evidence on which to base the occurrence of *O. occidentalis* in northern Chile were it not for the reliable means of identification provided by the relative proportions of the ischium of the third maxilliped. In a key provided by the same author (*Op. cit.*, p. 299), the breadth of this segment in *O. occidentalis* is said to be from 58 to 69 per cent of its length, while in *O. gaudichaudi* the corresponding proportion is from 77 to 85 per cent. The measurements of the ischium of the Iquique specimen, breadth 0.9 mm, length 1.3 mm, give a percentage figure of 69, thus clearly identifying it as *O. occidentalis*.

It should be noted that while DOFLEIN distinguished two species from among young *Ocypode* at Mollendo, one of which RATHBUN (1918, p. 372, footnote) considered to be *O. occidentalis*, KOEPCKE and KOEPCKE (1953, p. 7) have not found

this species in the course of extensive field work on *O. gaudichaudi* in Peru. Confirmation of the occurrence of *O. occidentalis* in this portion of its range by the finding of adult specimens, which are nocturnal, is highly desirable.

Ocypode gaudichaudi MILNE EDWARDS and LUCAS

Restricted synonymy:

- Ocypoda gaudichaudii* MILNE EDWARDS and LUCAS, 1843, Atlas, pl. 11, figs. 4, 4a—b; 1844, p. 26 (type locality, shores of Chile). NICOLET, 1849, p. 163. DANA, 1852, p. 329. MILNE EDWARDS, 1852, p. 142. CANO, 1889, pp. 91, 99, 100, 230. DOFLEIN, 1899, p. 189.
- Ocypoda gaudichaudi*, KINGSLEY, 1880c, p. 181. MIERS, 1882, p. 383, pl. 17, figs. 6, 6a. LENZ, 1902, p. 767. PORTER, 1903, p. 150.
- Ocypode gaudichaudii*, RATHBUN, 1904a, p. 190; 1910, pp. 550, 591, pl. 43, fig. 2; 1918, p. 373, pl. 129, fig. 1, pl. 130, fig. 1. CRANE, 1941b, p. 299, pl. 1, fig. 1, pl. 2, figs. 3, 4, text figs. 2, 4A, B, C, D, 5B, D, F, H, 6B, D, 7E, F. KOEPCKE and KOEPCKE, 1953, p. 1, figs. 1, 5A, 6E, F, 7A, B, C, 9, 12, 13, 14.
- Ocypode gaudichaudi*, PORTER, 1913a, p. 314, pl. 12, figs. 3, 3a, 3b; 1917b, p. 154, pl. 9—A; 1940a, p. 146; 1940b, p. 312; 1941, p. 459.

Previous records:

- Peru: Las Vacas, near Capon, Lobos de Tierra [Islands], Chimbote, and Ancon R. E. COKER (RATHBUN, 1910); Ancon and Callao 'Vettor Pisani' (CANO), Callao (MILNE EDWARDS), Mollendo H. R. H. PRINCESS THERESE OF BAVARIA (DOFLEIN).
- Chile: Shores of Chile GAUDICHAUD and FONTAINES (MILNE EDWARDS and LUCAS), Chile (NICOLET), do F. E. GUÉRIN (KINGSLEY), do HENNAH (MIERS), Iquique and Cavancha L. H. PLATE (LENZ), Antofagasta Province J. HERRERA (PORTER, 1940a), Caldera E. GIGOUX and Coquimbo F. T. DELFIN (PORTER, 1903), Quintero F. T. DELFIN (PORTER, 1913a), Valparaíso U. S. Expl. Exped. (DANA), do M. C. Z. (RATHBUN, 1918).

Material examined:

Lund University Chile Expedition

St. M 134. 2♂, 2♀. Extremely common on sandy beach.

Hamburg Museum

- Peru: Chimbote; leg. B. JANSEN, 1906; K 2926, 3 young.
Mollendo; leg. R. PAESSLER, November 13, 1909; K 2944, 1♂.
- Chile: Arica; leg. R. PAESSLER, 1902; K 2925, 5 young.
Iquique, shore; leg. R. PAESSLER, 1896; K 2945, 1 young.
West coast of South America; leg. E. KRAUSE, 1903; K 2947, 1 young.

Range: From Gulf of Fonseca, El Salvador, to Valparaíso, Chile. Galápagos Islands.

Remarks: The short series collected by the Lund University Chile Expedition at Iquique contains only one specimen of any size, a female measuring 28.0 mm long and 35.3 mm wide. Young males measure 12.5 and 12.7 mm, and a young female 15.0 mm in length. The young are mottled and resemble to a remarkable degree the salt-and-pepper sand grains found in the bottle with them. The Hamburg Museum series from Chimbote contains young of 7.7, 11.1, and 14.0 mm, of which

all but the smallest show the ocular style. The series from Arica contains young of from 6.6 to 12.0 mm, of which the largest, a female, shows the style. Of the Hamburg Museum specimens only the 17.4 mm male from Mollendo shows both the clipped fingers and the stalked eyes that distinguish the adults of this species from those of the preceding *Ocypode occidentalis*.

Uca LEACH, 1814

Uca insignis (MILNE EDWARDS)

?*Ocypoda nigra* MOLINA, 1810, p. 187.

Acanthoplax insignis MILNE EDWARDS, 1852, p. 151, pl. 4, fig. 23 (type locality, Chile); 1854, p. 162, pl. 11, figs. 1—16.

Gelasimus (Acanthoplax) excellens GERSTAECKER, 1856, p. 138 (type locality, Veragua, Panama).

Gelasimus armatus SMITH, 1870, p. 123, pl. 2, fig. 5, pl. 3, figs. 4—4d, male (type locality, Gulf of Fonseca).

Gelasimus ornatus SMITH, 1870, p. 125, pl. 2, figs. 9—9a, pl. 3, figs. 5—5c, female (type locality, west coast of Central America).

Gelasimus insignis, SMITH, 1870, p. 126.

Uca insignis, RATHBUN, 1910, pp. 551, 592, pl. 43, fig. 1; 1918, p. 385, pl. 161, figs. 5—15. PORTER, 1913a, p. 317; 1917b, p. 158, text fig. 10. CRANE, 1941a, p. 173, text fig. 5.

Previous records:

Peru: Salt marshes back of Chulliyache, on Bay of Sechura R. E. COKER (RATHBUN, 1910).

Chile: "Chile" Paris Museum (MILNE EDWARDS).

Material examined: None.

Range: From Gulf of Fonseca, El Salvador, to Chile (exact locality unknown).

Remarks: Molina's name, the black *Ocypoda*, might be applied with equal justification to *Uca princeps* (SMITH, 1870), particularly in view of the fact that neither species has been taken in recent years further south than Sechura Bay, Peru. Confirmation of the Chilean record of MILNE EDWARDS is needed.

Uca macrodactyla (MILNE EDWARDS and LUCAS)

Gelasimus macrodactylus MILNE EDWARDS and LUCAS, 1843, Atlas, pl. 11, figs. 3, 3a; 1844, p. 27 (type locality, shores of Valparaíso). NICOLET, 1849, p. 165.

Gelasimus annulipes, KINGSLEY, 1880b, p. 148 (part: the Valparaíso locality). Not *G. annulipes* MILNE EDWARDS, 1837.

Uca macrodactyla, NOBILI, 1901b, p. 49. PORTER, 1913a, p. 316, pl. 2, figs. 1, 1a; 1917b, p. 158, pl. 9—B. CRANE, 1941a, p. 178, text figs. 4G, 5.

Uca macrodactylus, RATHBUN, 1910, p. 592; 1918, p. 404, pl. 143.

Previous records:

Chile: Quintero C. E. PORTER (PORTER, 1913a), shores of Valparaíso A. D'ORBIGNY (MILNE EDWARDS and LUCAS).

Material examined: None from Chile. The species is represented in the collection of the Allan Hancock Foundation by specimens from Colombia.

Range: From Guaymas, Mexico, to Valparaíso, Chile. Galápagos Islands.

Remarks: PORTER's record from Quintero, above, would appear to provide confirmation of the continued existence of the species in the environs of Valparaíso, the type locality.

Uca stenodactyla (MILNE EDWARDS and LUCAS)

Gelasimus stenodactylus MILNE EDWARDS and LUCAS, 1843, Atlas, pl. 11, figs. 2, 2a; 1844, p. 26 (type locality, shores of Valparaíso). NICOLET, 1849, p. 165. KINGSLEY, 1880b, p. 154.

Gelasimus gibbosus SMITH, 1870, p. 140, pl. 2, fig. 11, pl. 4, fig. 8 (type locality, Gulf of Fonseca). *Uca stenodactyla*, ORTMANN, 1897, p. 356 (part: the Gulf of Fonseca and Valparaíso localities).

PORTER, 1913a, p. 315, pl. 2, figs. 2, 2a; 1917b, p. 157, pl. 9—C. CRANE, 1941a, p. 195, pl. 4, fig. 15, pl. 5, fig. 21, pl. 6, fig. 28, pl. 9, figs. 41, 42, text figs. 4Q, 5.

Uca gibbosa, HOLMES, 1900, p. 77.

Uca stenodactylus, RATHBUN, 1910, p. 592; 1918, p. 416 (part: not pl. 152, fig. 3; not pl. 153).

Previous records:

Chile: Shores of Valparaíso A. D'ORBIGNY (MILNE EDWARDS and LUCAS), Bay of Valparaíso (NICOLET), Valparaíso, Quintero, and Algarrobo C. E. PORTER (PORTER, 1913a).

Material examined: None.

Range: From Gulf of Fonseca, El Salvador, to Valparaíso, Chile.

Remarks: As with the preceding species, the records of Dr. CARLOS E. PORTER from Quintero and Algarrobo would appear to substantiate the continued existence of *Uca stenodactyla* in the same general area as that from which it was originally described.

Euplax MILNE EDWARDS, 1852

Euplax leptophthalma MILNE EDWARDS

Euplax leptophthalma MILNE EDWARDS, 1852, p. 160 (type locality, Chile). RATHBUN, 1910, p. 593; 1918, p. 424. PORTER, 1913a, p. 317; 1917b, p. 159.

Previous records:

Chile: "Chile" Paris Museum (MILNE EDWARDS).

Material examined: None.

Range: Known only from the type locality above. The genus is widely distributed throughout the Indo-Pacific, including Australia.

Remarks: *Euplax leptophthalma* is one of a very few Chilean species not seen by either Dr. M. J. RATHBUN or Dr. C. E. PORTER.

Summary

At present 101 species of Crustacea Decapoda Brachyura have been or are currently reported from Chile. Of this number from 27 to 32, depending on the criteria applied, should be excluded from the presently recognized fauna, since the records on which their Chilean occurrence depends have been shown to be erroneous or are at best doubtful. These include 16 species with non-Chilean type localities, of which *Portunus pelagicus* (LINNAEUS) and *Grapsus strigosus* are Indo-Pacific, *Pinnotheres globosum* JACQUINOT Oriental, *Pseudothelphusa dentata* (LATREILLE) tropical west Atlantic, *Libinia spinosa* MILNE EDWARDS south Atlantic, *Cancer oregonensis* (DANA) and *Pachygrapsus crassipes* RANDALL north Pacific, *Mithrax* (*Mithrax*) *belli* GERSTAECKER and *Mithrax* (*Mithraculus*) *nodosus* BELL Galápagan, *Pseudothelphusa chilensis* (MILNE EDWARDS and LUCAS) Peruvian, and *Hepatus kossmanni* NEUMANN, *Eriphia squamata* STIMPSON, *Cardisoma crassum* SMITH, *Ucides occidentalis* (ORTMANN), *Aratus pisoni* (MILNE EDWARDS), and *Percnon gibbesi* (MILNE EDWARDS) Panamic species occurring south to Peru. Included also are 16 species having either "Chile" or, in two cases, Valparaíso as their purported type locality, of which *Ozius rugosus* MILNE EDWARDS and LUCAS [a synonym of *Lydia tenax* (RÜPPELL)] is west Indian Ocean, *Atelecyclus chilensis* MILNE EDWARDS is east Atlantic, *Potamon* (*Geothelphusa*) *chilensis* (HELLER) and *Pachygrapsus pubescens* HELLER are not only non-Chilean, but probably non-American as well, *Chionoecetes chilensis* STREETS [a synonym of *C. opilio* (O. FABRICIUS)] is boreal Pacific, *Leucippa pentagona* MILNE EDWARDS, *Epialtus bituberculatus* MILNE EDWARDS, and *Libinia subspinosa* STREETS (a synonym of *L. dubia* MILNE EDWARDS) are west Atlantic, with *Panopeus convexus* A. MILNE EDWARDS a possible synonym of the Atlantic *P. occidentalis* SAUSSURE, *Leptodius lobatus* A. MILNE EDWARDS (a synonym of *L. cooksoni* MIERS) and *Eriphia granulosa* A. MILNE EDWARDS are Galápagos Islands endemics, *Persephona orbiculata* BELL, *Portunus* (*Portunus*) *asper* (A. MILNE EDWARDS), *Heteractaea lunata* (MILNE EDWARDS and LUCAS), *Panopeus chilensis* MILNE EDWARDS and LUCAS, and *Uca insignis* MILNE EDWARDS are Panamic species not presently found south of Ecuador or Peru. In general, species known to occur in remote areas are treated as erroneously reported from Chile, while species occupying contiguous territory are retained as tentative members of the Chilean fauna pending confirmation of doubtful early records. Five of these are included in the following discussion.

Of the remaining 74 species that constitute the restricted fauna, one, *Trichodactylus* (*Trichodactylus*) *fluvialilis* (LATREILLE), inhabits fresh water, three, *Eurypodius*

longirostris MIERS, *Libidoclaea granaria* MILNE EDWARDS and LUCAS, and *L. smithi* MIERS, are deep sea, while four, *Euphyllax dowi* STIMPSON, *Planes cyaneus* DANA, *Plagusia chabrus* (LINNAEUS), and *P. immaculata* LAMARCK, are pelagic. The 66 littoral species may be divided into four groups according to their geographical distribution. Species belonging to the Antiboreal region as defined by EKMAN (1953, p. 214), six in number, are *Halicarcinus planatus* (FABRICIUS), *Acanthocyclus albatrossis* RATHBUN, *Corystoides chilensis* MILNE EDWARDS and LUCAS, *Pinnotheres bipunctatus* NICOLET, *Pinnixa chiloensis* and *P. bahamondei*, new species. Species restricted to the Peruvian-North Chilean region (42° S to from 4° to 6° N Latitude), 14 in number, are **Hepatus chiliensis* MILNE EDWARDS, *Taliepus marginatus* (BELL), *Microphrys weddelli* MILNE EDWARDS, *Acanthocyclus gayi* MILNE EDWARDS and LUCAS, *A. hassleri* RATHBUN, *Bellia picta* MILNE EDWARDS, *Cancer porteri* RATHBUN, **Paraxanthus barbiger* (POEPPIG), *Platyxanthus orbignyi* (MILNE EDWARDS and LUCAS), *P. cokeri* RATHBUN, *Pinnaxodes silvestrii* (NOBILI), *Cyrtoplax angulatus* DANA (also Atlantic), *Cyclograpsus cinereus* DANA, and **C. punctatus* MILNE EDWARDS. Panamic species having their southern limit within these confines, 19 in number, are *Persephona orbicularis* BELL (if Chilean), *Mursia gaudichaudi* (MILNE EDWARDS), *Stenorynchus debilis* (SMITH), *Acanthonyx petiveri* MILNE EDWARDS, *Portunus (Portunus) asper* (A. MILNE EDWARDS) (if Chilean), *Callinectes arcuatus* ORDWAY, **C. toxotes* ORDWAY, *Heteractaea lunata* (MILNE EDWARDS) (if Chilean), *Cycloxanthops sexdecimdentatus* (MILNE EDWARDS and LUCAS), *Metopocarcinus truncatus* STIMPSON, *Panopeus chilensis* MILNE EDWARDS and LUCAS (if Chilean), *Pinnixa transversalis* (MILNE EDWARDS and LUCAS), **Grapsus grapsus* (LINNAEUS), *Geograpsus lividus* (MILNE EDWARDS), **Leptograpsus variegatus* (FABRICIUS), *Ocypode occidentalis* STIMPSON, *O. gaudichaudi* MILNE EDWARDS and LUCAS, *Uca macrodactyla* (MILNE EDWARDS and LUCAS), and *U. stenodactyla* (MILNE EDWARDS and LUCAS). Species common to both regions, 20 in number, are *Inachoides microrhynchus* MILNE EDWARDS and LUCAS, *Eurypodius latreillei* GUÉRIN, **Taliepus dentatus* (MILNE EDWARDS), *Pisoides edwardsi* (BELL), *Gomezia serrata* DANA, *Pseudocorystes sicarius* (POEPPIG), **Ovalipes punctatus* (DE HAAN), *Peltarion spinosulum* (WHITE), *Cancer edwardsi* BELL, *C. plebejus* POEPPIG, *C. polyodon* POEPPIG, **Gaudichaudia gaudichaudi* (MILNE EDWARDS), **Homalaspis plana* (MILNE EDWARDS), **Eurypanopeus crenatus* (MILNE EDWARDS and LUCAS), *Pilumnoides perlatus* (POEPPIG), *Pinnotheres politus* (SMITH), *Pinnixa valdiviensis* RATHBUN, *Pinnaxodes chilensis* (MILNE EDWARDS), *Pinnotherelia laevigata* MILNE EDWARDS and LUCAS, and *Hemigrapsus crenulatus* (MILNE EDWARDS). Occurring also in Juan Fernandez Islands are the species marked with an asterisk above, plus four endemic species: *Paromola rathbuni* PORTER, *Paramithrax baekstroemi* BALSS, *Nectocarcinus bullatus* BALSS (included for the first time in a work on American crustaceans), and *Cycloxanthops bocki*, new species. Insufficiently known to place geographically are three species, *Leurocyclus tuberculatus* (MILNE EDWARDS and LUCAS), *Euplax leptophthalma* MILNE EDWARDS, and "*Leucosia*" *pacifica* POEPPIG (a pinnotherid).

Common to the South Atlantic via the Strait of Magellan are ten species: *Eury-*

podius latreillei GUÉRIN, *Leurocyclus tuberculosus* (MILNE EDWARDS and LUCAS), *Libidoclaea granaria* MILNE EDWARDS and LUCAS, *Halicarcinus planatus* (FABRICIUS), *Gomeza serrata* DANA, *Peltarion spinosulum* (WHITE), *Acanthocyclus albatrossis* RATHBUN, *Corystoides chilensis* MILNE EDWARDS and LUCAS, *Leptograpsus variegatus* (FABRICIUS), and *Cyrtograpsus angulatus* DANA. Excluding pelagic species of circum-polar distribution, three species, *Hemigrapsus crenulatus* (MILNE EDWARDS), *Halicarcinus planatus* (FABRICIUS), and *Leptograpsus variegatus* (FABRICIUS) are common to New Zealand, the latter species to Australia as well. *Cancer novae-zealandiae* (JACQUINOT) appears to be a derivative of the Chilean *C. plebejus* POEPPIG. Juan Fernandez Islands species with western Pacific ties are *Paramithrax baeckstroemi* BALSS, *Nectocarcinus bullatus* BALSS, and *Cycloxanthops bocki*, new species.

The collection assembled by the Lund University Chile Expedition contains 35 species from Chile, plus two Chilean species collected in Peru. Of these *Pinnixa bahamondei* and *P. chiloensis* are new to science, as is the male of *Pinnotheres politus* (SMITH). Material borrowed from the Hamburg Museum contains an additional 13 species, including *Cycloxanthops bocki*, a new species from Juan Fernandez Island, and the first Chilean specimens known of *Platyxanthus cokeri* RATHBUN and *Ocypode occidentalis* STIMPSON. The holotype of *Pinnotheres silvestrii* NOBILI, borrowed from the Turin Museum, proves to be a *Pinnaxodes* species, with *P. meinerti* RATHBUN a junior synonym. Specimens previously reported on by CUNNINGHAM and by MIERS and loaned by the London Museum and specimens reported on by DOFLEIN and BALSS and loaned by the Hamburg Museum make possible the further clarification of the confused synonymy of *Acanthocyclus gayi* MILNE EDWARDS and LUCAS and *A. albatrossis* RATHBUN, and of *Pinnixa transversalis* MILNE EDWARDS and LUCAS and *P. valdiviensis* RATHBUN.

Inclusion of Hamburg and United States National Museum specimens makes it possible to declare *Leptodius tridentatus* LENZ a synonym of *Gaudichaudia gaudichaudi* (MILNE EDWARDS) and to record extensions of range for the following seven species: of *Peltarion spinosulum* (WHITE) from Valparaíso north to Junín; of *Acanthocyclus hassleri* RATHBUN (excluding a questionable record from Panama) from Cavancha north to Alacrán Island, near Arica; of *Platyxanthus cokeri* RATHBUN from Pisco, Peru, south to Caleta Buena, Chile; of *Paraxanthus barbiger* (POEPPIG) from the Andalien River mouth south to Isla Pullinque, Golfo de Quetalmahué; of *Pinnixa valdiviensis* RATHBUN from Corral north to Chinchas Islands, Peru; and of *Ocypode occidentalis* STIMPSON from ?Mollendo, Peru, south to Iquique, Chile. The southern limit of *Geograpsus lividus* (MILNE EDWARDS) is refined from "Chile" only to Caleta Caloso, Chile. Bathymetric ranges of *Libidoclaea granaria* MILNE EDWARDS and LUCAS and of *Peltarion spinosulum* (WHITE) are increased, the former being taken in shallower, the latter in deeper water than heretofore.

The completeness of the habitat data provided by Dr. DAHL and Prof. BRATTSTRÖM makes it possible to determine the optimum conditions for growth and development for several intertidal species, the season at which ripe eggs are carried by *Eurypanopeus crenatus* (MILNE EDWARDS and LUCAS), *Pilumnoides perlatus* (POEP-

FIG), *Leptograpsus variegatus* (FABRICIUS), *Hemigrapsus crenulatus* (MILNE EDWARDS), and *Cyclograpsus cinereus* DANA, and the time at which the first adult stages appear for *Taliepus dentatus* (MILNE EDWARDS), *Hemigrapsus crenulatus* (MILNE EDWARDS), and *Cyclograpsus cinereus* DANA. Reduced size of ovigerous females of marine species from brackish or nearly fresh water is shown for *Eurypodius latreillei* GUÉRIN and *Acanthocyclus albatrossis* RATHBUN at Bahía Ralún, Estero Reloncaví. A cline for relative length to width of carapace for *A. albatrossis* is shown to be correlated with Latitude, and hence with temperature. Equatorial submergence, or its opposite, polar emergence, is shown by *Halicarcinus planatus* (FABRICIUS), while increasing average size of populations with increasing Latitude is shown by *H. planatus* and *Cyclograpsus cinereus* DANA.

The system of cross-reference used in the field makes it possible to list the following non-crustacean associates of Chilean crabs as determined by specialists: of epizooites, the ascidians, sponges, and bryozoans of *Eurypodius latreillei* GUÉRIN, the sponge of *Pisoides edwardsi* (BELL), the Spirorbis of *Cancer polyodon* POEPPIG, the bryozoan of *Homalaspis plana* (MILNE EDWARDS); of commensals, the anemone of *Hepatus chilien-sis* MILNE EDWARDS; of parasites, the rhizocephalid (as yet undetermined) of *Paraxanthus barbiger* (POEPPIG); of hosts of commensal crabs: the molluscan host of *Pinnotheres politus* (SMITH), and the annelidan hosts of ?*Pinnixa valdiviensis* RATHBUN, *P. bahamondei* and *P. chiloensis*, new species.

All species hitherto recorded from Chile are fully treated as to synonymy, with some restriction as to extra-Chilean distribution. Descriptions are given only in the Pinnotheridae, where diagnoses, line drawings of all species (except *Pinnotheres bipunctatus* NOBILI), and a key to Chilean members of the genus *Pinnixa* are presented.

Resumen

Ciento y una son las especies de Crustáceos (Decapoda Brachyura) que, hasta ahora, son o han sido citados de Chile. De éstas, de 27 a 32 podrían ser eliminadas, según el criterio que se aplique, pues la mención de algunas es, sin duda, errónea y para otras su presencia en Chile es francamente dudosa. Entre las primeras, dadas erróneamente como halladas en Chile, citaremos las 16 siguientes: *Portunus pelagicus* (LINNAEUS) y *Grapsus strigosus* (HERBST) del Indopacífico; *Pinnotheres globosum* JACQUINOT, oriental; *Pseudothelphusa dentata* (LATREILLE), del Atlántico oeste tropical; *Libinia spinosa* MILNE EDWARDS del Atlántico Sur; *Cancer oregonensis* (DANA) y *Pachygrapsus crassipes* RANDALL del Pacífico Norte; *Mithrax* (*Mithrax*) *belli* GERSTAECKER y *Mithrax* (*Mithraculus*) *nodosus* BELL de Galápagos; *Pseudothelphusa chilensis* (MILNE EDWARDS y LUCAS), peruana y *Hepatus kossmanni* NEUMANN, *Eriphia squamata* STIMPSON, *Cardisoma crassum* SMITH, *Ucides occidentalis* (ORTMANN), *Aratus pisoni* (MILNE EDWARDS) y *Percnon gibbesi* (MILNE EDWARDS) que son especies panameñas, cuya distribución se extiende por el Sur hasta Perú. También se citan como de "Chile" y en dos de ellas como de "Valparaíso" 16 especies más, que son: *Ozius rugosus* MILNE EDWARDS y LUCAS [un sinónimo de *Lydia tenax* (RÜPPELL)] que es del Oeste del Océano Indico; *Atelecyclus chilensis* MILNE EDWARDS, del Este del Atlántico; *Potamon* (*Geothelphusa*) *chilensis* (HELLER) y *Pachygrapsus pubescens* HELLER que no solamente no son chilenas, sino probablemente tampoco americanas; así como *Chionoecetes chilensis* STREETS [un sinónimo de *C. opilio* (O. FABRICIUS)] que es del Pacífico boreal; *Leucippa pentagona* MILNE EDWARDS, *Epiplatys bituberculatus* MILNE EDWARDS y *Libinia subspinosa* STREETS (sinónimo de *L. dubia* MILNE EDWARDS) que son del Atlántico oeste; *Panopeus convexus* A. MILNE EDWARDS, probable sinónimo de *P. occidentalis* SAUSSURE, del Atlántico, *Leptodius lobatus* A. MILNE EDWARDS (sinónimo de *L. cooksoni* MIERS) y *Eriphia granulosa* A. MILNE EDWARDS que son endémicos de las Islas Galápagos; *Persephona orbiculata* BELL, *Portunus* (*Portunus*) *asper* (A. MILNE EDWARDS), *Heteractaea lunata* (MILNE EDWARDS y LUCAS), *Panopeus chilensis* MILNE EDWARDS y LUCAS y *Uca insignis* MILNE EDWARDS, especies panameñas no encontradas hasta la fecha al Sur del Ecuador o del Perú. En general, consideramos como no existentes en Chile, aquellas especies que se sabe viven en áreas muy lejanas y provisionalmente se admitiran como componentes de la fauna chilena, aquellas que positivamente se sabe viven en territorios contiguos, pendientes, no obstante de que nuevos hallazgos lo confirmen. Cinco de estas especies están incluídas en la discusión que sigue.

De las 74 especies que constituyen la fauna así restringida, una, *Trichodactylus* (*Trichodactylus*) *fluviatilis* (LATREILLE) es de agua dulce; tres, *Eurypodius longirostris* MIERS, *Libidoclaea granaria* MILNE EDWARDS y LUCAS y *L. smithi* MIERS son de aguas profundas, mientras que otras cuatro *Euphylax dowi* STIMPSON, *Planes cyaneus* DANA, *Plagusia chabrus* (LINNAEUS) y *P. immaculata* LAMARCK, son pelágicas. Las 66 especies litorales que quedan pueden ser divididas en cuatro grupos, de acuerdo con su distribución geográfica. Especies que pertenecen a la Región Antiboreal, tal como la define EKMAN (1953, p. 214), en número de seis: *Halicarcinus planatus* (FABRICIUS), *Acanthocyclus albatrossis* RATHBUN, *Corystoides chilensis* MILNE EDWARDS y LUCAS, *Pinnotheres bipunctatus* NICOLET, *Pinnixa chiloensis* y *P. bahamondei* nuevas especies. Catorce especies pertenecientes a la Región Peruana — Norte de Chile (42° S a 4° o 6° de Latitud N.): **Hepatus chiliensis* MILNE EDWARDS, *Taliepus marginatus* (BELL), *Microphrys weddelli* MILNE EDWARDS, *Acanthocyclus gayi* MILNE EDWARDS y LUCAS, *A. hassleri* RATHBUN, *Bellia picta* MILNE EDWARDS, *Cancer porteri* RATHBUN, **Paraxanthus barbiger* (POEPPIG), *Platyxanthus orbigny* (MILNE EDWARDS y LUCAS), *P. cokeri* RATHBUN, *Pinnaxodes silvestrii* (NOBILI), *Cyrtoplax angulatus* DANA (se encuentra también en el Atlántico), **Cyclograpsus cinereus* DANA y **C. punctatus* MILNE EDWARDS. El tercer grupo lo constituyen 19 especies panameñas cuyo límite Sur de distribución se extiende hasta esta región: *Persephona orbicularis* BELL (si verdaderamente ha sido encontrada en Chile), *Mursia gaudichaudi* (MILNE EDWARDS), *Stenorynchus debilis* (SMITH), *Acanthonyx petiveri* MILNE EDWARDS, *Portunus* (*Portunus*) *asper* (A. MILNE EDWARDS), (si realmente ha sido capturada en Chile), *Callinectes arcuatus* ORDWAY, **C. toxotes* ORDWAY, *Heteractaea lunata* (MILNE EDWARDS) (si es chilena), *Cycloxanthops sexdecimdentatus* (MILNE EDWARDS y LUCAS), *Metopocarcinus truncatus* STIMPSON, *Panopeus chilensis* MILNE EDWARDS y LUCAS (si realmente es chilena), *Pinnixa transversalis* (MILNE EDWARDS y LUCAS), **Grapsus grapsus* (LINNAEUS), *Geograpsus lividus* (MILNE EDWARDS), **Leptograpsus variegatus* (FABRICIUS), *Ocypoda occidentalis* STIMPSON, *O. gaudichaudi* MILNE EDWARDS y LUCAS, *Uca macrodactyla* (MILNE EDWARDS y LUCAS) y *U. stenodactyla* (MILNE EDWARDS y LUCAS). Veinte especies son comunes a ambas regiones: *Inachoides microrhynchus* MILNE EDWARDS y LUCAS, *Eurypodius latreillei* GUÉRIN, **Taliepus dentatus* (MILNE EDWARDS), *Pisoides edwardsi* (BELL), *Gomeza serrata* DANA, *Pseudocorystes sicarius* (POEPPIG), **Ovalipes punctatus* (DE HAAN), *Peltarion spinosulum* (WHITE), *Cancer edwardsi* BELL, *C. plebejus* POEPPIG, *C. polyodon* POEPPIG, **Gaudichaudia gaudichaudi* (MILNE EDWARDS), **Homalaspis plana* (MILNE EDWARDS), **Eurypanopeus crenatus* (MILNE EDWARDS y LUCAS), *Pilumnoides perlatus* (POEPPIG), *Pinnotheres politus* (SMITH), *Pinnixa valdiviense* RATHBUN, *Pinnaxodes chilensis* (MILNE EDWARDS), *Pinnotherelia laevigata* MILNE EDWARDS y LUCAS y *Hemigrapsus crenulatus* (MILNE EDWARDS). En los párrafos anteriores, las especies marcadas con asterisco (*), se encuentran también en Juan Fernández; en estas islas se encuentran los cuatro endemismos siguientes: *Paromola rathbuni* PORTER, *Paramithrax baeckstroemi* BALSS, *Nectocarcinus bullatus* BALSS (citado por primera vez en un trabajo sobre Crustáceos americanos) y

Cycloxanthops bocki, nueva especie. Hay también tres especies cuya localidad geográfica no está bien conocida: *Leurocyclus tuberculatus* (MILNE EDWARDS y LUCAS), *Euplax leptophthalma* MILNE EDWARDS y el pinnotérico *Leucosia pacifica* POEPPIG.

Comunes con el Atlántico Sur, vía Estrecho de Magallanes, hay 10 especies: *Eurypodius latreillei* GUÉRIN, *Leurocyclus tuberculatus* (MILNE EDWARDS y LUCAS), *Libidoclaea granaria* MILNE EDWARDS y LUCAS, *Halicarcinus planatus* (FABRICIUS), *Gomezia serrata* DANA, *Peltarion spinosulum* (WHITE), *Acanthocyclus albatrossis* RATHBUN, *Corystoides chilensis* MILNE EDWARDS y LUCAS, *Leptograpsus variegatus* (FABRICIUS) y *Cyrtograpsus angulatus* DANA. Excluyendo las especies pelágicas de distribución circumpolar, tres especies son comunes con Nueva Zelanda: *Hemigrapsus crenulatus* (MILNE EDWARDS), *Halicarcinus planatus* (FABRICIUS) y *Leptograpsus variegatus* (FABRICIUS), especie esta última, que es también australiana. *Cancer novae-zealandiae* (JACQUINOT) parece ser un derivado de la especie chilena *C. plebejus* POEPPIG. *Paramithrax baeckstroemi* BALSS, *Nectocarcinus bullatus* BALSS y *Cycloxanthops bocki*, nueva especie, son especies de las Islas de Juan Fernández relacionadas con las del Pacífico Oeste.

La colección reunida por la Expedición de la Universidad de Lund a Chile contiene 35 especies de esta nación, mas dos chilenas recolectadas en el Perú. *Pinnixa bahamondei* y *P. chiloensis* son nuevas para la ciencia, así como el macho de *Pinnotheres politus* (SMITH). El material proporcionado por el Museo de Hamburgo contiene 13 especies más, entre las que se encuentran los primeros ejemplares chilenos conocidos de *Platyxanthus cokeri* RATHBUN y *Ocypode occidentalis* STIMPSON, como también una nueva especie de las Islas de Juan Fernández, *Cycloxanthops bocki*. El holotipo de *Pinnotheres silvestrii* NOBILI, recibido en préstamo del Museo de Turín, no pertenece a éste Género sino al de *Pinnaxodes*; *P. meinerti*, descrito posteriormente, es sinónimo de *silvestrii*. El estudio de ejemplares del Museo de Londres, citados por CUNNINGHAM y MIERS y el de otros, prestados por el Museo de Hamburgo y citados con anterioridad por DOFLEIN y BALSS, ha permitido poner en claro la confusa sinonimia de *Acanthocyclus gayi* MILNE EDWARDS y LUCAS y *A. albatrossis* RATHBUN y de *Pinnixa transversalis* MILNE EDWARDS y LUCAS y *P. valdiviensis* RATHBUN.

La revisión de los ejemplares del Museo de Hamburgo y del Museo Nacional de los Estados Unidos de Norteamérica hizo posible considerar a *Leptodius tridentatus* LENZ como sinónimo de *Gaudichaudia gaudichaudi* (MILNE EDWARDS) y ampliar la distribución geográfica de las siete especies siguientes: *Peltarion spinosulum* (WHITE) desde Valparaíso, hacia el Norte, hasta Junín; *Acanthocyclus hassleri* RATHBUN (prescindiendo de un dato dudoso de Panamá) desde Cavancha hacia el Norte a Isla Alacrán, cerca de Arica; de *Platyxanthus cokeri* RATHBUN desde Pisco, Perú, hacia el Sur hasta Caleta Buena en Chile; de *Paraxanthus barbiger* POEPPIG desde la desembocadura del Río Andalien hacia el Sur hasta la Isla Pullinque en el Golfo de Quetalmahúe (Chiloé); de *Pinnixa valdiviensis* RATHBUN desde Corral hacia el Norte hasta las Islas Chinchas en Perú y de *Ocypode occidentalis* STIMPSON desde ?Mollendo, Perú, hacia el Sur hasta Iquique en Chile. El límite Sur de *Geograpsus lividus* (MILNE

EDWARDS) está indicado desde Chile solamente a Caleta Caloso, Chile. Se ha ampliado también, la distribución batimétrica de *Libidoclaea granaria* MILNE EDWARDS y LUCAS y de *Peltarion spinosulum* (WHITE), habiéndose recogido el primero a menores profundidades y el segundo a mayor que las que se habían señalado hasta la fecha.

Los numerosísimos y muy completos datos sobre el habitat tomados por el Dr. DAHL y por el Prof. BRATTSTRÖM, han hecho posible determinar las condiciones óptimas de crecimiento y de desarrollo de varias especies de la zona intercotidal; la estación en la cual llevan huevos maduros las hembras de *Eurypanopeus crenatus* (MILNE EDWARDS y LUCAS), *Pilumnoides perlatus* (POEPPIG), *Leptograpsus variegatus* (FABRICIUS), *Hemigrapsus crenulatus* (MILNE EDWARDS) y *Cyclograpsus cinereus* DANA y la determinación de la época en que aparecen los primeros estados adultos en *Taliopus dentatus* (MILNE EDWARDS), *Hemigrapsus crenulatus* (MILNE EDWARDS) y *Cyclograpsus cinereus* DANA. El tamaño reducido de las hembras ovígeras de las especies marinas en aguas salobres o agua casi dulce se demuestra en *Eurypodius latreillei* GUÉRIN y *Acanthocyclus albatrossis* RATHBUN en Bahía Ralún, Estero de Reloncaví. Una clíne para la longitud relativa, en relación con el ancho del caparazón para *A. albatrossis* demostró estar relacionada con la latitud y en consecuencia con la temperatura. La submersión ecuatorial, o su opuesto, emergencia polar, se manifiesta en *Halicarcinus planatus* (FABRICIUS), mientras que el aumento del término medio del tamaño de la población con el incremento de la latitud se muestra en *H. planatus* y *Cyclograpsus cinereus* DANA.

El sistema de referencias usado en el trabajo sobre el terreno ha hecho posible hacer una lista de los diversos animales, no crustáceos, asociados con los cangrejos, (o "jaibas") de Chile y determinados por especialistas: los epizooitos, ascidias, esponjas y briozoos de *Eurypodius latreillei* GUÉRIN, la esponja de *Pisoides edwardsi* (BELL), el espirorbis de *Cancer polyodon* POEPPIG, el briozoo de *Homalaspis plana* (MILNE EDWARDS); entre los comensales, la actinia de *Hepatus chiliensis* (MILNE EDWARDS); de los parásitos, el rizocefárido (aun no determinado) de *Paraxanthus barbiger* (POEPPIG); de entre los huéspedes de los cangrejos o jaibas comensales, el molusco huésped de *Pinnotheres politus* (SMITH) y los anélidos huéspedes de *Pinnixa valdiviensis* RATHBUN, *P. bahamondei* y *P. chiloensis*, nuevas especies.

Se da la sinonimia de todas las especies que aquí se citan de Chile, haciendo sólo alguna salvedad en cuanto a la distribución extra chilena. Se describen, únicamente, los Pinnotheridae, con diagnosis y diseños de todas las especies (excepto *Pinnotheres bipunctatus* NOBILI) y se da una clave para la diferenciación de las especies chilenas del género *Pinnixa*.

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Appendix A

The Carcinological Works of Dr. CARLOS E. PORTER,
Compiled by Dr. FRANCISCO RIVEROS-ZUÑIGA
(An asterisk denotes titles cited in the text)

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Appendix B

The Second Edition Names of Abbe G. I. MOLINA

The second edition of MOLINA's "Saggio sulla Storia Naturale del Chili" (Bologna, 1810) contains nine names of Decapoda Anomura and Brachyura that do not appear in the first edition (Bologna, 1782). Since seven of these appear not to have originated with MOLINA, and since none of them can be applied unequivocally to any presently recognized Chilean species, it has been considered best to treat them in this supplementary manner. The following conclusions, with the exception of the first, are tentative. The assistance of Dr. L. B. HOLTHUIS is gratefully acknowledged.

1. Although MOLINA gives no synonymy, the origin of his 1810 names is thought to be as follows:
 - a. *Hippa adactyla* dates directly from FABRICIUS, 1787.
 - b. *Albunea scabra*, *Portunus lancifer*, *P. defensor*, and *Calappa tuberculata* date from WEBER, 1795, and were applied, respectively, to *Hippa scabra*, *Cancer lancifer*, *C. defensor*, and *C. tuberculatus* of FABRICIUS, 1787. The latter is both a homonym and a synonym of *C. tuberculatus* HERBST, 1785, which in turn is a synonym of *C. hepaticus* LINNAEUS, 1758.
 - c. *Portunus armatus* dates from FABRICIUS, 1798, and was applied to *Cancer armatus* FABRICIUS, 1787.
 - d. *Maja ursus* dates from BOSC, 1801, and was applied to *Cancer ursus* FABRICIUS, 1787.
 - e. *Ocypoda nigra* and *Cancer ranym* are new and, like the 1782 names, valid provided the species can be recognized from MOLINA's descriptions.
2. The FABRICIUS, 1787, names (1 a-d, above) were given to Indo-Pacific species collected on Captain COOK's first voyage by Sir JOSEPH BANKS, probably in Tahiti, and are incorrectly applied by MOLINA to Chilean species. (The alternate assumption, that these MOLINA, 1810, names are new, results in the conclusion that, as homonyms of the earlier FABRICIUS names, they are invalid.)
3. *Ocypoda nigra*, al. *heterochelos* is a *Uca* species, more probably either *U. macrodactylus* (MILNE EDWARDS and LUCAS, 1843) or *U. insignis* (MILNE EDWARDS, 1852), both of which have Chilean type localities, than *U. princeps* SMITH (1870), the present-day Pacific analogue of the Atlantic *U. heterochelos* (LAMARCK, 1801), which comes no further south than Peru.
4. *Cancer ranym*, al. *xaiva* may well be *Tailepus marginatus* (BELL), if indeed *Cancer xaiva* MOLINA, 1782, be *Tailepus dentatus* (MILNE EDWARDS), as suggested by PHILIPPI (1894) and by RATHBUN (1910, 1925). However, it is not necessary that two forms thought by MOLINA to be closely related be so considered in the present system of classification, for in MOLINA's day fewer species were known.
5. Supplementary information concerning *Cancer setosus* MOLINA, 1872, indicates that it is not *C. polyodon* POEPPIG, as suggested by PHILIPPI (1894) and by RATHBUN (1910), nor any *Cancer* species, but a majid crab, possibly the Peruvian *Libinia rostrata* BELL.

Appendix C

Hamburg Museum Collectors of Chilean Decapoda Brachyura,
Compiled from Data provided by Dr. A. PANNING

Name	Active Period	Occupation	Firm
BEUMER, F.	1913—1914		
BOCK, CHARLES	1923	Mining Engineer	
BRÄKENHJELM, MAX	1897—1902	Ship's Captain	
BRÜCK	1845—1865	Ship's Captain	Godeffroy & Son
BRUNST, P.	1902—1903	Ship's Captain	Hamburg-American
DELFIN, F. T.	1892—1896	Medical Doctor	
GASSMANN, A.	1895—1896	Medical Doctor	Kosmos
HILGER	1889	Medical Doctor	Kosmos
JANSEN, BLEIKE	1899—1906	Ship's Captain	Kosmos
KOPHAMEL, F. C. M.	1887—1889	Ship's Captain	M. G. Amsinck
KRAUSE, E.	1900—1911	Ship's Captain	Kosmos
KÖPKE, A.	1903—1914	Steward	Kosmos
LAU, FRITZ	1899—1903	Chief Engineer	Kosmos
LEIBFARTH, E.	1894	Ship's Captain	
LORENZEN, W.	1913—1914	Ship's Officer	
MAY, C. W.	1894	Ship's Officer	
MEYER, ENRIQUE	1907	Guano Co. employee	
MICHAELSEN, WILHELM	1892—1893	Curator Vermes	Hamburg Museum
MÖVIUS	1840—1860	Surgeon (Barber)	
MULACH, ROBERT	1903—1914	Resident, Punta Arenas	
MUTSCHKE, H.	1906—1907	Resident, Punta Arenas	
NISSEN, H.	1901	Ship's Captain	
OESTMANN, J.	1910—1912	Ship's Officer	Kosmos
OHLENDORFF, WALTER VON	1896—1897	Guano Importer	
PAESSLER, RICHARD	1886—1920	Ship's Captain	Kosmos
PIENING, H.	1927—1937	Ship's Captain	F. Laeisz
PÖHL, CARL A.	1862—1870	Ship's Captain	A. J. Hertz
PLAGEMANN, A.	1909—1910	Doctor and resident, Valparaiso	
PETERSEN, H.	1888—1889	Ship's Captain	Kosmos
REHBERG, H.	1894	Medical Doctor	Kosmos
RINGE, C. H. F.	1879—1885	Ship's Captain	M. G. Amsinck
ROLIN, E.	1903—1912	Ship's Captain	Hamburg-American
SCHILLING	1902	(through Paessler)	
SCHÜTT	1912	Ship's Captain	Kosmos
SCHMIDT, TH.	1912	Purser	Kosmos
SCHWABE, G. H.	1938	Zoologist and resident, Concepción	
STABEN, W.	1896	Ship's Officer	
SUXDORF, W.	1899—1901	Ship's Officer	Kosmos

Contents

Introduction	3
Historical Resumé	3
Composition of the Chilean Fauna	3
Importance of the Lund University Collection	4
Zoogeographical Considerations	5
Method of Treatment	6
Acknowledgments	8
List of Stations at which Decapoda Brachyura were Collected by the Lund University Chile Expedition, 1948—1949	10
Systematic Account	15
Tribe Brachyura	15
Subtribe Dromiacea	15
Superfamily Thelxiopeidea	15
Family Thelxiopeidae	15
Subtribe Oxystomata	15
Family Leucosiidae	15
Family Calappidae	16
Subtribe Brachygnatha	18
Superfamily Oxyrhyncha	18
Family Majidae	18
Family Hymenosomidae	32
Superfamily Brachyrhyncha	33
Family Euryalidae	33
Family Portunidae	35
Family Potamonidae	39
Family Atelecyclidae	40
Family Cancridae	48
Family Xanthidae	52
Family Pinnotheridae	67
Family Gecarcinidae	92
Family Grapsidae	93
Family Ocypodidae	104
Summary	108
Resumen en Español	112
Literature Cited	116
Appendix A — The Carcinological Works of Dr. Carlos E. Porter, compiled by Dr. Francisco Riveros — Zuñiga	126
Appendix B — The Second Edition Names of Abbe G. I. Molina	128
Appendix C — Hamburg Museum Collectors of Chilean Decapoda Brachyura	129
Plates	131

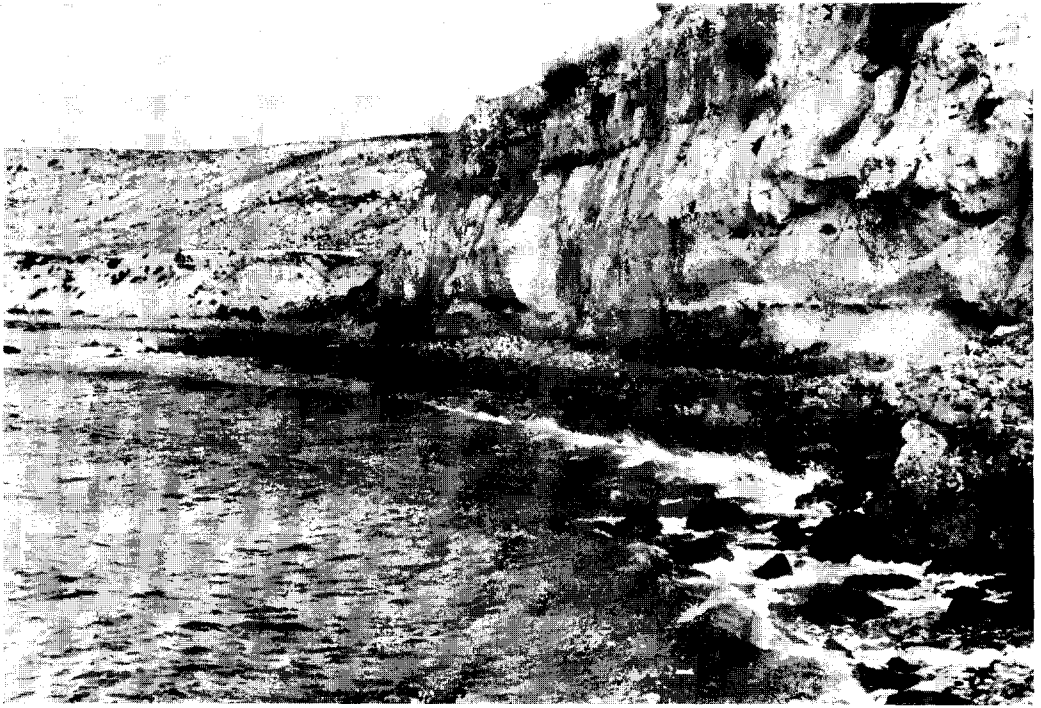
Tryckt den 10 oktober 1957.



A. *St. M 31*. Bahía Ralún, Estero Reloncavi. Here lived *Hemigrapsus crenulatus* (MILNE EDWARDS) among barnacles, *Elminius kingii* GRAY, in almost fresh water.



B. *St. M 82*. Bahía Sotomó, Estero Reloncavi. In a situation similar to the above (A), *Hemigrapsus crenulatus* (MILNE EDWARDS) was found living among *Elminius kingii* GRAY, while *Acanthocyclus albatrossis* RATHBUN occurred at a little lower level than the actual sea level in the photograph.



A. *St. M 125*. Bahía Herradura de Guayacán, SW corner, NW of Herradura. At the water level or above lived *Petrolisthes laevigatus* (GUÉRIN), *Cyclograpsus cinereus* DANA, and *Leptograpsus variegatus* (FABRICIUS).



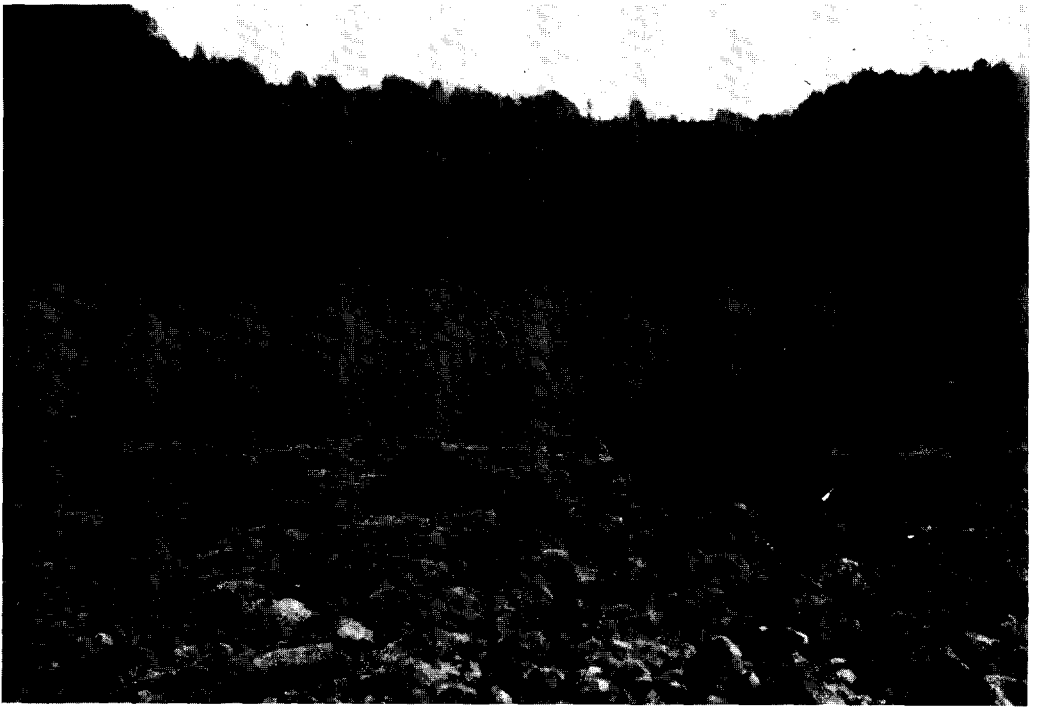
B. *St. M 126*. Bahía Herradura de Guayacán. At both sides of the big stone *Emerita analoga* (STIMPSON) lived in small holes in the sand, *Hepatus chiliensis* MILNE EDWARDS burrowed into the sand, and *Cyclograpsus cinereus* DANA lived above high tide level. Also a young of *Cancer polyodon* POEPPIG was found at this station.



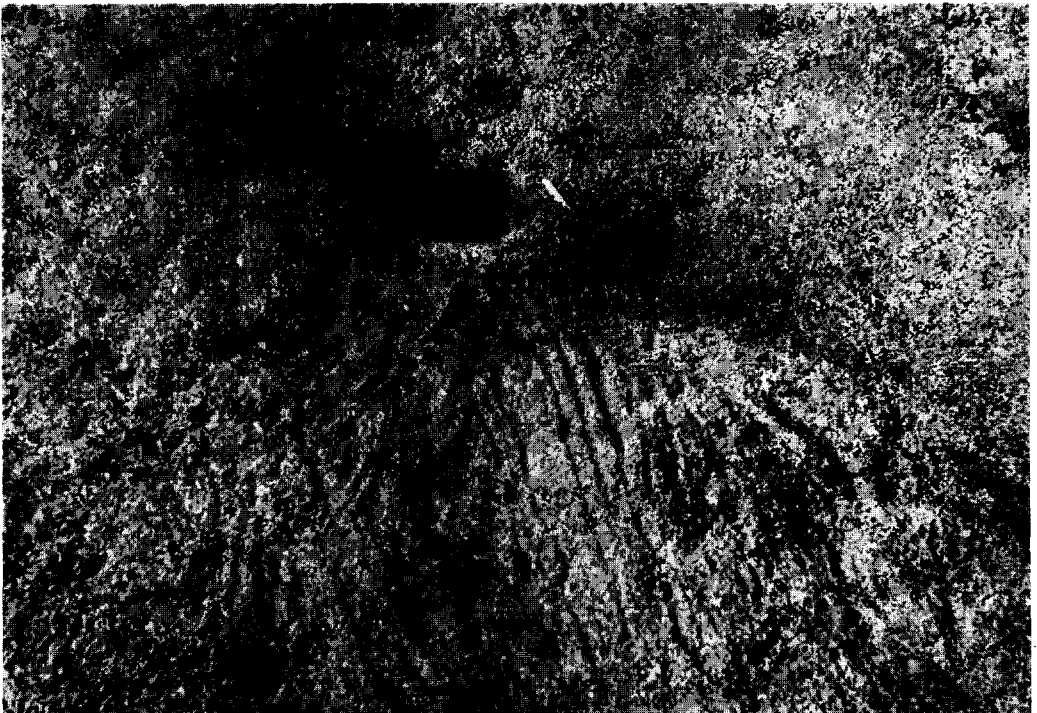
A. *St. M 10*. Punta El Morro, Bahía de Ancud. Here were found *Petrolisthes laevigatus* (GUÉRIN) and *Taliepus dentatus* (MILNE EDWARDS). Note heavy growth of seaweed.



B. *St. M 91*. Ensenada de Guatral, SW of Punta Guatral, Seno Reloncaví. Highest part of shore at high tide. At the water line lived *Hemigrapsus crenulatus* (MILNE EDWARDS) and *Cyclograpsus cinereus* DANA.



A. *St. M 91*. Ensenada de Guatral, SW of Punta Guatral, Seno Reloncaví. In the lowest part were found *Cancer edwardsi* BELL, *Pinnaxodes chilensis* (MILNE EDWARDS) in sea urchins, *Loxechinus albus* (MOLINA), and *Pinnixa bahamondei* in *Chaetopterus* tubes. In the higher part were found *Acanthocyclus albatrossis* RATHBUN, *Hemigrapsus crenulatus* (MILNE EDWARDS), and *Cyclograpsus cinereus* DANA, while at both levels *Halicarcinus planatus* (FABRICIUS) occurred.



B. *St. M 134*. Punta Negra, N. of Iquique. Entrance to sand burrow of ghost crab, *Ocypode gaudichaudi* MILNE EDWARDS and LUCAS.



