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PO Box 3300, South Brisbane 4101, Australia
Phone 06 7 3840 7555
Fax 06 7 3846 1226
Email qmlib@qm.qld.gov.au
Website www.qm.qld.gov.au

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The littoral and shallow-water barnacles (Crustacea: Cirripedia) of south-eastern Queensland

Diana S. JONES

The Western Australian Museum, 49 Kew Street, Welshpool, Western Australia 6106. Email: diana.jones@museum.wa.gov.au

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ABSTRACT

Seventy-four littoral and shallow-water (0–100 m) barnacle species from south-eastern Queensland are documented. Data from new collections of littoral and shallow-water barnacle species made during the February 2005 workshop, are combined with older SE Queensland barnacle collection data from Australian museums. South-eastern Queensland represents a transitional area between southern temperate and tropical zones and this transitional position is reflected in the composition of the barnacle fauna. The number of Australian endemic species (12) is relatively high, reflecting the influence of the southern fauna, but the fauna is dominated by species with Indo-west Pacific (25), cosmopolitan (22) and, to a lesser extent, Indo-Japanese (9) affinities, with Australasian (2), western Pacific (2) and Indo-Australasian (1) species minor components. One new species, *Arcalepas brucei* Jones & Morton, 2009, was collected during the Workshop. *Neonrosella* subgen. nov. is proposed to replace *Rosella* Ross & Perreault, 1999, which is preoccupied. □ *Cirripedia, Queensland, checklist, biogeography, littoral, shallow-water.*

First collections of Australian barnacles were made from temperate waters by the early French expeditions of discovery at the beginning of the 19th century. However, Darwin's monographs (1852; 1854) first documented the barnacles of temperate Australian waters (Jones 1991). Darwin (1854) made collections and records of barnacles from Moreton Bay, south-eastern Queensland, describing two new species, *Chthamalus antennatus* sp. nov. and *Austrobalanus imperator* sp. nov. (as *Balanus*). He also recorded *Tetraclita rosea* (Krauss, 1848), now placed in *Tesseropora*; *Platylepas bissexlobata* (de Blainville, 1824), now recognised as a synonym of *Platylepas hexastylus* (Fabricius, 1798), from a dugong, and the sponge barnacle, *Acasta sulcata* Lamarck, 1818.

During the late 19th and early part of the 20th century, knowledge of the Australian cirripede fauna was increased, often through investigations by various expeditions, and barnacles collected from south-eastern Queensland waters were again briefly detailed in some of their

reports. For example, *Austrobalanus imperator* (Hoek 1883; *Challenger* Expedition, 1873–1876; as *Balanus imperator* Darwin, 1854); *Amphibalanus amphitrite* (Weltner 1897; Hamburg Expedition, 1905; as *Balanus amphitrite* var. *communis* Darwin, 1854); and *Striatobalanus amaryllis* (Hoek 1907; 1913; *Siboga* Expedition 1899–1900, as *Balanus amaryllis* Darwin, 1854). In 1869, MacDonald described an 'apparently new genus of minute parasitic cirripede', *Paradolepas neptuni* (now recognized as *Octolasmis n. neptuni*), on the gills and respiratory appendages of the swimming crab *Portunus pelagicus* (as *Neptunus pelagicus* Linnaeus) in Moreton Bay.

Nineteen barnacle species from the rocky shores and islands of Queensland were listed by Endean *et al.* (1956a, 1956b), including nine from south-eastern Queensland waters: *Ibla cumingii* Darwin, 1852; *I. quadrialvis* (Cuvier, 1817); *Catophragmus polymerus* Darwin, 1854; *Chthamalus antennatus* Darwin, 1854; *Austrobalanus imperator* (Darwin, 1854); *Tetraclita purpurascens* (Wood, 1815); *Tessero-*

pora rosea (Krauss, 1848); *Striatobalanus amaryllis* (Darwin, 1854); and *Austromegabalanus nigrescens* (Lamarck, 1818).

In a review of all intertidal species of the family Chthamalidae known from Australian shores, Pope (1965) documented five species from south-eastern Queensland waters: *Catophragmus polymerus* Darwin, 1854 (now in Catophragmidae), *Caudoeuraphia caudata* Pilsbry, 1916 (as *Chthamalus caudatus*), *Microeuraphia withersi* Pilsbry, 1916 (as *Chthamalus withersi*), *Chthamalus antennatus* Darwin, 1854 and *C. malayensis* Pilsbry, 1916.

Stephenson *et al.* (1970: 492) recorded three species, *Smilium peronii* (Quoy & Gaimard, 1834), *Striatobalanus amaryllis* (Darwin, 1854) and *Amphibalanus amphitrite* (Darwin, 1854), in a survey of the macrobenthos of Moreton Bay. Seventeen barnacle species associated with turtles in southern Queensland were recorded by Monroe & Limpus (1979), including three new species, *Platylepas coriacea* sp. nov., *Stomatolepas eretmochelys* sp. nov. and *Tubicinella* [now *Chelolepas*] *cheloniae* sp. nov. Monroe (1981) discussed shell morphology, growth and function and their bearing on subfamily classification in the Coronulidae. Various ecological studies in southern Queensland have also documented distributions of intertidal barnacles (e.g. Coates & McKillup 1995; Coates 1998).

In 1990, the shallow and deep-water barnacle faunas of Australia were documented for the first time, from museum holdings and literature records (Jones *et al.* 1990). Twelve littoral, three neustonic, 29 sublittoral (to 200 m) and four deep-water (> 200 m) cirripede species were identified as occurring along the coast of central eastern Australia (northern NSW and south-eastern Queensland).

The present report amalgamates the results of Jones *et al.* (1990) with records of shallow water barnacles collected during the 13th International Marine Biological Workshop held at the Moreton Bay Research Station and Study Centre, North Stradbroke Island, Queensland (2005), plus more recent cirripede additions in collections of Australian museums, to produce a checklist of the littoral and shallow water barnacle species of the waters of south-eastern Queensland (latitudes 23°S and above).

METHODS AND MATERIALS

Specimens were collected at low tide by hand from a wide variety of habitats (e.g. rocks, mangrove trees, hard substrata and animate hosts). Subtidal samples were collected by SCUBA or by dredging.

Cirripedes contained in the collections of the Queensland Museum and other Australian museums, were reviewed for records from south-eastern Queensland. Museum acronyms are: AM, Australian Museum, Sydney; NMV, Museum Victoria, Melbourne; NTM, Museum and Art Gallery of the Northern Territory, Darwin; QM, Queensland Museum, Brisbane; SAM, South Australian Museum, Adelaide; WAM, Western Australian Museum, Perth.

The general arrangement of taxa follows Newman (1996). Genera are listed alphabetically within families, and species alphabetically within genera. Primary synonyms and some key secondary literature are included.

Abbreviations used in the text are as follows: GAB, Great Australian Bight; GBR, Great Barrier Reef, Queensland; NSW, New South Wales; NT, Northern Territory; Qld, Queensland; SA, South Australia; Tas., Tasmania; Vic., Victoria; WA, Western Australia.

SYSTEMATICS

Subclass CIRRIPEDIA Burmeister, 1834
Superorder THORACICA Darwin, 1854
Order IBLIFORMES Buckeridge &
Newman, 2006

Suborder IBLOMORPHA Newman, 1987
Family IBLIDAE Leach, 1825

Ibla Leach, 1825

Ibla cumingii Darwin, 1852

Ibla cumingii Darwin, 1852: 183, pl. 4 fig. 8, pl. 5 figs 1–8, pl. 10 figs 4, 11.

Material Examined. AM-P19306, Wreck Pt, S Yeppoon (23°09'S, 150°46'E); AM-P19307, S end of Curtis I., Port Curtis (23°38'S, 151°10'E); AM-P19308, Bustard Head, Port Curtis (24°01'S, 151°46'E); AM-P19312, Wreck Pt, Cooe Bay, nr Yeppoon (23°09'S, 150°46'E); AM-P23577, Heron I. (23°27'S, 151°55'E); SAM-Tc11478, Moreton Bay (27°15'S, 153°15'E), from buoy; WAM-C19267, Cooe Bay (23°08'S, 150°45'E).

Remarks. Nilsson-Cantell (1930: 5) recorded the species at the Pisang Islands, to the south-west of New Guinea and to the north of Australia,

but Endean *et al.* (1956a: 106) published the first record of the occurrence of *Ibla cumingi* in Australia, from material collected in tropical Queensland (from Point Vernon northward). Jones *et al.* (1990: 7) further extended the distribution of the species in northern Australian waters, from WA through the NT to tropical Queensland. The present contribution confirms the presence of the species in Moreton Bay from material contained in the collections of the SAM. This represents the most southern record of *I. cumingi* in eastern Australia.

Distribution. WA (NW), NT, Qld (SE); Indo-west Pacific.

Habitat. Littoral, MTL-LWN; in shady rock crevices, on reefs and coastal rocks; semi to full wave exposure.

Ibla quadrivalvis (Cuvier, 1817)

Anatifa quadrivalvis Cuvier, 1817: pl. 1 figs 15, 16.
Ibla quadrivalvis – Darwin, 1852: 203, pl. 4 fig. 9.

Material Examined. None; literature records only.

Remarks. This Australian endemic species was originally described by Cuvier (1817) from material collected by *Astrolabe* at Princess Royal Harbour (Albany), WA, and Darwin (1852: 204) recorded the species from WA, SA and NSW. The species has been recorded from Queensland waters by Endean *et al.* (1956a: 106; common from Currumbin southward) and Jones *et al.* (1990: 7; WA across southern Australia to SE Qld). Additional southern Australian records are those of Hoek (1883: 32; SA); Weltner (1897: 251; van Diemensland [= Tas.]); Gruvel (1905: 148; WA, southern Australia); Hiro (1936b: 215; Madagascar, Australia, New Zealand, Fiji); Krüger (1914: 435; WA); Broch (1922: 262; NSW); Nilsson-Cantell (1938: 8; south coast of Australia); Pope (1943: 240; NSW); Dakin *et al.* (1948: 216; NSW); Guiler (1950: 179; 1951b: 63; 1952: 20; Tas.); Dakin *et al.* (1953: 207; SE Australia); Wisely & Blick (1964: 166; NSW); Anderson (1965: 2; NSW); Daniel (1972: 180; S coast of Australia); Underwood (1977: 25; NSW); Marine Research Group of Victoria (1984: 104; southern WA, Tas., Vic., NSW); Jones (1990b: 344; 2003: 498; WA to NSW) and Jones *et al.* (1990: 7; WA, across southern Australia to SE Qld); Buckeridge & Newman (2006: 5; Madagascar, Australia, New Zealand).

Distribution. WA (S), SA, Vic., Tas., NSW, Qld (SE); Indo-Australasian.

Habitat. MTL to LWN; often associated with *Galeolaria* spp, mussels and barnacles.

Order LEPADIFORMES Buckeridge & Newman, 2006

Suborder HETERALEPDOMORPHA Newman, 1987

Family HETERALEPADIDAE Nilsson-Cantell, 1921

Heteralepas Pilsbry, 1907

Heteralepas adiposa Zevina, 1982

Heteralepas adiposa Zevina, 1982: 120, fig. 107.

Material Examined. AM-P40887, E Moreton I. (27°11'S, 153°24'E).

Remarks. This species was first reported from Australia by Jones *et al.* (1990: 6) from SE Queensland.

Distribution. SE Qld; West Pacific Ocean.

Habitat. Depth 40–400 m.

Heteralepas cornuta (Darwin, 1852)

Alepas cornuta Darwin, 1852: 165, pl. 3 fig. 6, pl. 10 figs 8, 28.

Heteralepas (Heteralepas) cornuta – Pilsbry, 1907: 101.

Material Examined. AM-P40882, Pt Lookout, N Stradbroke I. (27°30'S, 153°30'E); SAM-Tc11470, Peel I., Moreton Bay (27°30'S, 153°21'E), on antipatharian.

Remarks. First reported from Australia by Jones *et al.* (1990: 6) from SE Queensland.

Distribution. Qld (SE); cosmopolitan.

Habitat. Depth 90–4315 m; attached to *Antipathes* sp.

Heteralepas japonica (Aurivillius, 1892)

Alepas japonica Aurivillius, 1892: 125.

Heteralepas japonica – Pilsbry, 1911: 71, fig. 4.

Material Examined. AM-P23775, Moreton Bay (27°25'S, 153°20'E).

Remarks. This species was first reported from north-western and south-eastern Australia by Jones *et al.* (1990: 6).

Distribution. WA (NW), NSW, Qld (SE); Indo-west Pacific.

Habitat. Depth 48–915 m; attached to inanimate and animate substrata.

Family MALACOLEPADIDAE Hiro, 1933

Arcalepas Jones & Morton, 2009

Arcalepas brucei Jones & Morton, 2009

Arcalepas brucei Jones & Morton, 2009: 847–868.

Material Examined. Holotype. QM-W28660; Moreton Bay, (27°28'00"S, 153°28'00"E); commensal with *Arca navicularis* Bruguière, dredged, J.D. Taylor & E. Glover on R.V. *Tom Marshall*, 10.02.05, 6.5 m, sand with shell debris. Paratypes. QM-W28661, 1 spec.; NHM 2008.4552, 1 specimen; WAM-C40046, 1 dissected spec.; paratypes with same data as holotype.

Remarks. This commensal species was collected from Moreton Bay during the 13th International Marine Biological Workshop but has been published separately. The barnacles occur inside the mantle cavity and attach to the shell of the bivalve, *Arca navicularis* Bruguière, 1789. This is the first record of such an association from Australian waters.

Distribution. Eastern Australia.

Habitat. Depth 6.5 m; commensal, attached to the inside of the shell of the living epibenthic bivalve, *Arca navicularis* Bruguière.

Suborder LEPADOMORPHA Pilsbry, 1916

Family LEPADIDAE Darwin, 1852

Alepas Sander-Rang, 1829

Alepas pacifica Pilsbry, 1907

Alepas pacifica Pilsbry, 1907: 105, fig. 36, pl. 5 figs 2, 4–6.

Material Examined. QM-W23113, 1 spec., Peregrine Beach (26°29'S, 153°05'E), J. Hooper, 24.01.1998, flotsam, symbiotic with *Cyanea* sp.

Remarks. The species was recorded from the Java Sea (6°19'S, 110°50'E) at a depth of 38 m by Nilsson-Cantell (1934: 39) but was first recorded from Australia by Tubb (1946: 383) from Tasmanian waters. Subsequent records are those of Utinomi (1968: 167; Tasman Sea, depth 610 m, attached to *Phacelophora camtchatica* (Brandt)) and Jones *et al.* (1990: 8; NSW, Qld).

Distribution. Tas., NSW, Qld (SE); Tropical Indo-west Pacific.

Habitat. Pelagic; epizoic on Scyphomedusae.

Conchoderma Olfers, 1814

Conchoderma aurita Linnaeus, 1767

Lepas aurita Linnaeus, 1767: 1110.

Conchoderma aurita – Darwin, 1852: 141, pl. 3 fig. 4, 4a–c.

Material Examined. QM-W16411, 39 specs, Fraser I., 0.4 km N of Browns Rocks (24°36'S, 153°20'E), 03.07.1989, R. Paterson, S. Van Dyck, attached to *Coronula diadema* ex humpback whale, *Megaptera novaeangliae* (QM JM 7302); QM-W16410, 03.07.1989, R. Paterson, S. Van Dyck; QM-W16933, 6 specs, Fraser I., 0.4 km N of Browns Rocks (24°47'S, 153°16'E), 05.07.1989, R. Paterson, S. Van Dyck, ex stranded humpback whale, *Megaptera novaeangliae*; QM-W4637, Heron I. lagoon (23°27'S, 151°55'E), 19.12.1974, C. Limpus, ex *Platylepas hexastylus* on *Caretta caretta*; QM-W12173, Noosa Heads, 04.06.1986, S. Van Dyke, attached to tooth of male dense beak whale.

Remarks. *Conchoderma aurita* is a cosmopolitan species which has been reported from western, southern and eastern Australia (Jones *et al.* 1990: 8; Jones 1990a: 215; 1990b: 369); Qld (Monroe & Limpus 1979: 199, on *Platylepas hexastylus* attached to *Caretta caretta*); Tas. (Guiler 1956: 3, on *Coronula* sp. attached to *Megaptera* sp.) and western areas of the continent (Jones 1990a: 215; 1990b: 369; 1991: 167; 1992b: 90; 2003: 483; 2004: 145).

Distribution. WA, SA, Vic., Tas., NSW, Qld; cosmopolitan in all seas.

Habitat. Pelagic, nektonic, epizoic on pelagic animals; also fouling ships and boats.

Conchoderma hunteri (Owen, 1830)

Cineras Hunteri Owen, 1830: 71.

Conchoderma Hunteri – Darwin, 1852: 153, pl. 3 fig. 3.

Material Examined. QM-W752, Pt Lookout, Stradbroke I. (27°26'S, 153°32.0'E).

Remarks. Darwin (1852: 153) described *Conchoderma hunteri* 'attached to the skin of a snake, probably *Hydeus* or *Pelamis bicolor* and therefore from the tropical Indian or Pacific Oceans'. The species is known from the waters of SE Queensland and the GBR (QM material) and from NSW (AM material). Specimens of *C. hunteri* held in the WAM record the species from Scarborough, WA, north to the Montebello Islands (Jones & Berry 2000: 60) and across north-western WA to NT. In Australia the species has been found attached to sea-snakes, e.g. *Pelamis platura* (Linnaeus), crustaceans, e.g. *Dardanus australis* Forest & Morgan, and fouling ships and submerged structures.

Distribution. WA, NSW, Qld; Indo-west Pacific.

Habitat. Attached to animate and inanimate substrates in pelagic and benthic environments; also fouling boats and ships.

Conchoderma virgatum (Spengler, 1790)

Lepas virgata Spengler, 1790: 207, pl. 6 fig. 9.
Conchoderma virgatum — Olfers, 1814: 177.

Material Examined. QM-W20754, 4 specs, C. Moreton (27°02'S, 153°28'E), 06.02.1988, P. Speare, pelagic, symbiotic on copepod (*Pennella instructa*) in muscle of sailfish, *Istiophorus platypterus*, 06.02.1988; QM-W7368, 3 specs, Heron I. (23°27'S, 151°55'E), 31.10.1977, C. Limpus, ex *Caretta caretta* (ex 2698) subsp. *chelonophilum* (ex mouth), 31.10.1977; QM-W7369, 2 specs, Heron I. (23°27'S, 151°55'E), 31.10.1977, C. Limpus, ex *Caretta caretta* (ex 2698), 31.10.1977; QM-W4636, 3 specs, Heron I. lagoon (23°27'S, 151°55'E), 19.12.1974, C. Limpus, attached to W 4635 (*Platylepas hexastylus*) and stored with it; QM-W6496, Mon Repos (24°53'S, 152°28'E), July 1974, C. Limpus, ex *Caretta caretta*; W 7369, Heron I., ex *Caretta caretta* (Linnaeus); W 4636, Heron I., ex *Caretta caretta* (Linnaeus); QM-W431, 10 specs, Moreton Bay (27°00'S, 153°00'E); QM-W440, Caloundra, on seasnake, *Hydrus platurus*.

Remarks. *Conchoderma virgatum* is a cosmopolitan species that has been reported from western, southern and eastern Australia (Jones 1990a: 215; 1990b: 371; 1991: 167; 1992b: 90; 2003: 483; 2004: 145; Jones *et al.* 1990: 8) and Qld (Monroe & Limpus 1979: 198, ex *Caretta caretta* (Linnaeus)).

Distribution. WA, Tas., NSW, Qld; cosmopolitan in all tropical and warm temperate seas.

Habitat. Attached to inanimate objects and animals in pelagic and benthic environments; also fouling boats and ships.

Lepas Linnaeus, 1758

Lepas (Anatifa) Bruguière, 1789

Lepas (Anatifa) anatifera Linnaeus, 1758

Lepas anatifera Linnaeus, 1758: 668.

Lepas (Anatifa) anatifera — Zevina, 1982: 17, fig. 8.

Material Examined. AM-P11766, Caloundra (153°08'S, 26°48'E); AM-P21757, Brennan Shoals, off C. Moreton (153°28'S, 27°02'E); AM-P21923, Caloundra (153°08'S, 26°48'E); AM-P21924, Noosa (153°07'S, 26°25'E); AM-P21926, Caloundra (153°08'S, 26°48'E); QM-W80, Noosa Heads (26°23'S, 153°06'E), on log washed up on shore; QM-W6453, 6 specs, Mon Repos (24°53'S, 152°28'E), C. Limpus, ex *Caretta caretta*; QM-W6454, 7 specs, Mon Repos (24°53'S, 152°28'E), 13.01.1976, C. Limpus, ex *Caretta caretta*, 13.01.1976; QM-W6455, 7

specs, Mon Repos (24°53'S, 152°28'E), 21.12.1975, C. Limpus, ex *Caretta caretta* (ex 3508), 21.12.1975; QM-W7375, Mon Repos (24°53'S, 152°28'E), 13.01.1977, C. Limpus, ex *Caretta caretta* (ex 4300), 13.01.1977; QM-W7465, 2 specs, Mon Repos Beach (24°53'S, 152°28'E), 17.12.1978, C. Limpus and party; SAM-Tc11655, Smith's Rock, Moreton Bay (27°15'S, 153°15'E), on buoy; SAM-Tc11656, Smith's Rock, Moreton Bay (27°15'S, 153°15'E), on buoy; SAM-Tc11657, Smith's Rock, Moreton Bay (27°15'S, 153°15'E), on buoy.

Remarks. This cosmopolitan species has been reported from around the Australian continent (Jones *et al.* 1990: 7). Records from eastern Australia are those of Darwin 1852: 73 (Bass Str., Van Diemen's Land [Tas.]); Krüger 1911a: 25 (Bass Str., Van Diemen's Land [Tas.]); Guiler 1952a: 20 (Tas.); Dakin *et al.* 1953: 206 (NSW); Pope 1959: 118 (NSW); Underwood 1977: 27 (NSW, description of *L. anatifera* but photograph = *L. australis* Darwin, 1852); Zann & Harker 1978: 207 (Qld); Monroe & Limpus 1979: 197 (Qld). Records from the western and north-western coasts of Australia are those of Nilsson-Cantell (1927: 752) and Jones (1989: 81; 1990a: 215; 1990b: 347; 1991: 150; 1992b: 90; 1994: 6; 2003: 483).

Distribution. Cocos-Keeling Is, WA, SA, Vic., Tas., NSW, Lord Howe I., Qld, NT; cosmopolitan in temperate, subtropical and tropical seas.

Habitat. Pelagic, neuston; on floating objects, pelagic animals and plants in open water.

Lepas (Anatifa) anserifera Linnaeus, 1767

Lepas anserifera Linnaeus, 1767: 1109.

Lepas (Anatifa) anserifera — Zevina, 1982: 14, fig. 4.

Material Examined. AM-P23507, Stradbroke I. (27°25'S, 153°20'E); QM-W24695, 6 specs, Frenchmans Bay, N Stradbroke I. (27°25'S, 153°32'E), M.P. Hines, 05.02.1999, flotsam, ex beached fishing float; QM-W24696, 22 specs, Frenchmans Bay, N Stradbroke I. (27°25'S, 153°32'E), M.P. Hines, 18.01.1999, flotsam, ex beached fishing float; QM-W6456, Mon Repos (24°53'S, 152°28'E), 23.12.1975, C. Limpus, ex *Caretta caretta* (ex 3564); QM-W6457, Mon Repos (24°53'S, 152°28'E), C. Limpus, ex *Caretta caretta* (ex 3535); QM-W6458, Mon Repos (24°53'S, 152°28'E), summer 1975/1976, C. Limpus, ex *Caretta caretta*; QM-W16028, 8 specs, South I., nr Lord Howe I. (31°28'S, 159°09'E), 12.10.1987, N. Coleman, surface.

Remarks. *Lepas anserifera* is a cosmopolitan species that has been reported from the waters of all Australian states (Jones *et al.* 1990: 7); e.g. NSW (Darwin 1852: 82; Dakin *et al.* 1953: 206; Pope 1959: 118; Utinomi 1968: 166; Underwood

1977: 27); Qld (Hoek 1883: 39; Monroe & Limpus 1979: 197); Tas., on *Janthina* sp. (Guiler 1952a: 20); and WA (Jones, 1989: 89; 1990b: 351; 1991: 155, 1992b: 90; 1993: 122; 1994: 6; 2003: 483; 2004: 144).

Distribution. WA, SA, Vic., Tas., NSW, Qld, NT; cosmopolitan in temperate and tropical seas.

Habitat. Pelagic, neuston; on floating objects, pelagic animals and plants in open water.

Lepas (Anatifa) hilli (Leach, 1818)

Pentalasmis Hillii Leach, 1818: 413.

Lepas hillii — Darwin, 1852: 77, pl. 1 fig. 2.

Lepas (Anatifa) hilli — Zevina, 1982: 14, fig. 5.

Material Examined. QM-W6452, Mon Repos (24°53'S, 152°28'E), C. Limpus, ex *Caretta caretta*; AM-P11767, Lady Elliot I. (24°07'S, 152°43'E); AM-P21974, Pt Curtis, 16 km W of Lady Elliot I. (23°55'S, 151°23'E); AM-P21975, Heron I. (23°27'S, 151°55'E).

Remarks. *Lepas hillii* has been recorded from eastern and western parts of the Australian continent (Jones *et al.* 1990: 7), e.g. eastern Australia (Fischer 1884: 355); Qld (Monroe & Limpus 1979: 1981); NSW (Darwin 1852: 78; Dakin *et al.* 1953: 206; Pope 1959: 118); and southern WA to SE Qld (Jones 1990b: 357; Jones 1992: 90; Jones *et al.* 1990: 7).

Distribution. WA (S), Vic., Tas., NSW, Qld (SE); cosmopolitan.

Habitat. Pelagic, neuston; on floating objects, pelagic animals and plants in open water.

Lepas (Anatifa) pectinata Spengler, 1793

Lepas pectinata Spengler, 1793: 106, pl. 10 fig. 2.

Lepas (Anatifa) pectinata — Zevina, 1982: 15, fig. 6.

Material Examined. AM-P21982, Caloundra (26°48'S, 153°08'E).

Remarks. This species was first collected in Australian waters by *Challenger*, between Sydney, NSW and Wellington, New Zealand, on *Spirula* sp. (Hoek 1883: 40). It has since been reported from the southern areas of Australia (Jones *et al.* 1990: 8); e.g. south eastern Australia (Weltner 1899: 442; Broch 1922: 266; Fischer 1940: 283; Utinomi 1968: 166; Anderson 1980: 147) and the western side of the continent (Jones 1990b: 357; 1993: 122; 2003: 483; 2004: 145).

Distribution. WA (S), SA, NSW, Lord Howe I., Qld (SE); cosmopolitan in subtropical and tropical seas.

Habitat. Pelagic, neuston; attached to floating objects, epizoic on pelagic animals.

Family OXYNASPIDIDAE Gruvel, 1905

Oxynaspis Darwin, 1852

Oxynaspis celata Darwin, 1852

Oxynaspis celata Darwin, 1852: 134, pl. 3 fig. 1.

Oxynaspis celata indica Annandale, 1910: 69.

Oxynaspis indica — Foster, 1979: 22, fig. 9.

Material Examined. QM-W7810, Wistari Reef (23°29'S, 151°53'E), 18–24 m, D. Fisk, 1978, ex mooring rope.

Remarks. Specimens of *Oxynaspis celata* were collected in WA by Nilsson-Cantell (1921: 226). Material from Tasmanian waters, as *O. celata* forma *novae-zealandica*, was collected on antipatharians by *Endeavour*, at a depth of 183 to 293 m (Broch 1922: 275). Jones (1990b: 375) and Jones *et al.* (1990: 8) recorded the species, as *O. indica*, from WA across southern Australia to SE Queensland.

Distribution. WA, Vic, Qld (SE); cosmopolitan in tropical and warm temperate seas.

Habitat. Depth 29–1425 m; attached to inanimate objects and epizoic on antipatharians (e.g. *Antipathes* sp., *Aphanipathes* sp.).

Family POECILASMATIDAE Annandale, 1910

Octolasmis Gray, 1825

Octolasmis angulata (Aurivillius, 1894)

Dichelaspis angulata Aurivillius, 1894: 22, pl. 2 figs 9–11, pl. 8, figs 18, 24.

Dichelaspis aperta Aurivillius, 1894: 22, pl. 1 figs 14–16.

Dichelaspis bullata Aurivillius, 1894: 26, pl. 2 figs 12–13, pl. 6 figs 10–11, pl. 8 figs 19, 25.

Octolasmis angulata — Nilsson-Cantell, 1934: 46.

Material Examined. QM-W16917, Moreton Bay (27°00'S, 153°00'E), Feb. 1989, J.D. Shields, stn 3–51, sublittoral, symbiotic with swimming crab; QM-W16919, Moreton Bay (27°00'S, 153°00'E), Sept. 1990, J.D. Shields, stn 25A, sublittoral, symbiotic with brachyuran crab, *Galene bispinosa*, in branchial cavity; WAM-C32653 Moreton Bay (27°15'S, 153°15'E), on *Portunus pelagicus*.

Remarks. This endozoic species has been reported from the waters of north-western WA, from the Dampier Archipelago and the Kimberley (Jones 1992: 52; 2003: 483; 2004: 144; as *O. angulata*). Specimens are also held in the QM from decapods collected in Moreton Bay.

Distribution. WA, Qld; Indo-west Pacific.

Habitat. Sublittoral; endozoic on gills of crustaceans (e.g. brachyuran crabs, rock lobsters).

Octolasmis cor Aurivillius, 1892

Dichelaspis cor Aurivillius, 1892: 124 – 1894: 20, pl. 2 figs 1–2.

Octolasmis cor – Barnard, 1924: 58.

Material Examined. QM-W18116, 18 specs, Moreton Bay (22°25'S, 153°20'E), Jan. 1992, D.A. Hudson, sublittoral, symbiotic on gills, gill cleaners and carapace of *Scylla serrata* (Forsskål); AM-P40881, Deception Bay (27°12'S, 153°02'E); SAM-Tc11475, Tallebudgera Ck (28°06'S, 153°28'E), from branchial chamber of large, edible common crab (*Leptodius* type).

Remarks. Jones *et al.* (1990: 9) recorded *Octolasmis cor* from NSW and Queensland waters and the species has been recorded subsequently from WA (Jones 2003: 483). Specimens from Gove, NT, are also held in the collections of the WAM.

Distribution. WA, NT, NSW, Qld (SE); Indo-west Pacific.

Habitat. Depth 0–50 m, endozoic on decapod crustaceans (e.g. *Scylla serrata* (Forsskål)).

Octolasmis neptuni (MacDonald, 1869)

Paradolepas neptuni MacDonald, 1869: 440, fig. 1, pls 33, 34.

Dichelaspis neptuni – Hoek, 1883: 32.

Octolasmis (Octolasmis) neptuni neptuni – Newman, 1961: 100, pl. 21, figs 1–9.

Material Examined. QM-W16921, Heron I. (23°27'S, 151°55'E), Feb. 1990, J.D. Shields, reef, symbiotic with brachyuran crab, *Atergatopsis*, on gills; QM-W21396, Moreton Bay (27°00'S, 153°00'E), Feb. 1989, J.D. Shields, stn 3–51, sublittoral, symbiotic with *Portunus pelagicus*.

Remarks. MacDonald (1869: 442) originally described *Paradolepas neptuni* from specimens attached to the gills of *Portunus pelagicus* from Moreton Bay, Qld, and Sydney, NSW. *Octolasmis neptuni* has been reported from Australia (Hoek 1883: 32; Jones *et al.* 1990: 9); WA (Jones 2003: 483); Tas. (Nilsson-Cantell 1927: 768); NSW and Qld (MacDonald 1869: 40; Gruvel 1905: 128; Wu 1967: 277); and Qld (Newman 1961: 100).

Distribution. WA, Tas., NSW, Qld; Indo-west Pacific.

Habitat. Depth 0–30 m; endozoic, attached to gills of decapod crustaceans (e.g. *Charybdis*

jaubertensis Rathbun, *Portunus pelagicus* (Linnaeus), *Thalamita* sp.).

Octolasmis warwickii (Gray, 1825)

Octolasmis warwickii Gray, 1825: 100 – 1830: pl. 6 fig. 16.

Dichelaspis warwicki – Darwin, 1852: 120, pl. 2 fig. 6–6b.

Dichelaspis equina Lanchester, 1902: 385, pl. 35 figs 7a–d.

Material Examined. AM-P21915, Raby Bay (27°32'S, 153°16'E); QM-W4618 (as *Dichelaspis cf equina*), Scarness (25°17'S, 152°51.0'E), ex *Thenus orientalis* (W 1710); QM-W16918, Moreton Bay (27°00'S, 153°00'E), Mar. 1989, J.D. Shields, stn 4–62, sublittoral, symbiotic with *Portunus pelagicus*, on gills; WAM-C32651, Moreton Bay (27°15'S, 153°15'E).

Remarks. This species has been recorded from WA, NT, Qld and NSW (Jones *et al.* 1990: 10); WA (Jones 2003: 483; Jones & Hewitt 1995: 54); and northern Qld (Zann & Harker 1978: 207; on *Thenus orientalis* 10–40 m, and observed on *Charybdis callianassa*, *C. jaubertensis* and *Portunus pelagicus*).

Distribution. WA, NT, Qld, NSW; Indo-west Pacific.

Habitat. Depth 0–100 m; epizoic, e.g. on antipatharians, decapod crustaceans (attached to mouthparts, limbs and carapace).

Temnaspis Hinds, 1844

Temnaspis tridens asymmetrica Broch, 1947

Temnaspis tridens asymmetrica Broch, 1947: 20, fig. 4.

Material Examined. [as *Octolasmis tridens*] QM-W16922, Heron I. (23°27'S, 151°55'E), Feb. 1990, J.D. Shields, reef, symbiotic with spiny lobster, *Panulirus penicillatus*, on legs.

Remarks. Material in the AM from east of Townsville (AM-P40900) was reported by Jones *et al.* (1990: 10), a first record from Australia. The QM material reported herein confirms the presence of this species in Queensland.

Distribution. Qld; Indo-Malayan.

Habitat. Depth 16–296 m; epizoic on decapod crustaceans (e.g. Portunidae, Palinuridae).

Trilasmis Hinds, 1844

Trilasmis eburnea Hinds, 1844

Trilasmis eburnea Hinds, 1844: 60, pl. 21 fig. 5.

Poecilasma eburneum – Darwin, 1852: 112, pl. 2 fig. 5, pl. 10 fig. 15.

Material Examined. [as *Poecilasma eburneum*] QM-W12090 Swains Survey (21°46.9'S, 152°50'E), 54 m, 27.06.1980, Queensland Fisheries Service, stn 12, ex *Prionocidaris bispinosa*.

Remarks. This species has been recorded previously from WA (Jones *et al.* 1990: 8; Taylor & Rainbow 1997: 385).

Distribution. WA, Qld; Indo-west Pacific.

Habitat. Depth 20–448 m; epizoic (on cidarians).

Order SCALPELLIFORMES Buckeridge & Newman (2006)

Suborder SCALPELLOMORPHA
Newman, 1987

Family CALANTICIDAE Zevina, 1978

Smilium Gray, 1825

Smilium peronii (Quoy & Gaimard, 1834)

Anatifa obliqua Quoy & Gaimard, 1834: 628, pl. 93 fig. 16.

Smilium peronii Gray, 1825: 100 – 1830: pl. 53, fig. 10.
Scalpellum peronii – Darwin, 1852: 264, pl. 6 fig. 6.

Material Examined. AM-P21151, 600 m W of Mud I. (27°20'S, 153°15'E); AM-P21152, off Tin Can Bay (25°54'S, 153°01'E); AM-P23739, Caloundra (26°48'S, 153°08'E); QM-W2791, Moreton Bay, 0.5 ml W of Mud I, (27°20'S, 153°15'E), 7–10 m, 22.02.1962.

Remarks. Darwin (1852: 265) first recorded specimens from the Swan River, WA and Port Western, Bass Strait, Vic., which had been collected by *Astrolabe*. Further specimens were recorded by Krüger (1914: 431) from WA, at Shark Bay and Fremantle. The species was first recorded from Queensland (Moreton Bay) by Stephenson *et al.* (1970: 492). Jones (1990a: 214; 1990b: 338; 1993: 122) and Jones *et al.* (1990: 4) subsequently recorded the species across southern Australia, from WA (Abrolhos Islands southward) to southern Qld (Tin Can Bay). This Australian endemic differs from all other shallow water Scalpellidae known from Australian waters in the lack of calcareous scales on the peduncle. In life the thin integument covering the capitulum is characteristically claret-purple or royal purple.

Distribution. WA, SA, Bass Str. (E), Vic., NSW, Qld (SE); Australia (southern).

Habitat. Depth 0–135 m; attached to a variety of substrata, e.g. seagrasses (*Cymodocea* sp.), corallines, wooden stakes, *Pyura* sp.

Order SESSILIA Lamarck, 1818

Suborder BALANOMORPHA Pilsbry, 1916
Superfamily CHTHAMALOIDEA Darwin, 1854
Family CATOPHRAGMIDAE Utinomi, 1968

Catomerus Pilsbry, 1916

Catomerus polymerus (Darwin, 1854)

Catophragmus polymerus Darwin, 1854: 487, pl. 20 figs 4a–e.

Catomerus polymerus – Newman & Ross, 1976: 40.

Material Examined. None; south eastern Queensland literature records are those of Endean *et al.* (1956a: 107), Pope (1965: 16) and Westcott *et al.* (1980: 53).

Remarks. This endemic species was described by Darwin (1854: 487) from material collected from NSW and WA and cited by Hoek (1883: 33) and Gruvel (1905: 196), but the locality of the WA material is questionable (see Pope 1965: 19). Queensland records are those of Endean *et al.* (1956a: 107; Qld); Pope (1965: 16; Qld from Currumbin southward, NSW, Vic., GAB, Tas.); and Westcott *et al.* (1980: 53; Qld, NSW, Vic., Tas., SA). Additional records for eastern Australia are Pilsbry (1916: 336; NSW, Vic.); Nilsson-Cantell (1926: 8; NSW, Tas.); Fischer (1940: 312; temperate Australia); Pope (1943: 236, NSW; 1945: 356, NSW); Dakin *et al.* (1948: 199; NSW); Guiler (1950: 179, Tas.; 1951b: 60, Tas.; 1952: 20, Tas.); Dakin *et al.* (1953: 208; eastern Australia); Bennet & Pope (1953: 105, Vic.); Womersley & Edmonds (1958: 217; SA); Bennet & Pope (1960: 182; Tas.); Wisely & Blick (1964: 164; NSW); Underwood (1977: 11, 19; NSW); and Anderson (1983: 7; SE Australia).

Distribution. Australian endemic: GAB, SA, Vic., Tas., NSW, Qld (SE). ?WA (see Remarks).

Habitat. Littoral; MTL–LWS; favouring turbulent seas and high energy coasts.

Family CHTHAMALIDAE Darwin, 1854

Subfamily CHTHAMALINAE Darwin, 1854

Chthamalus Ranzani, 1817

Chthamalus antennatus Darwin, 1854

Chthamalus antennatus Darwin, 1854: 460, pl. 18 fig. 2, pl. 29 fig. 3.

Material Examined. AM-P19737, Pt Lookout, Stradbroke I., Moreton Bay (27°40'S, 153°30'E); AM-P19738, Pt Lookout, Stradbroke I., Moreton Bay (27°40'S,

153°30'E); AM-P19739, Bustard Heads (24°01'S, 151°46'E); AM-P19740, Caloundra (26°48'S, 153°08'E); AM-P52083, Pt Lookout, N Stradbroke I. (27°26'S, 153°32'E); SAM-Tc11479, Moreton Bay (27°15'S, 153°15'E); WAM-C19259, Cooe Bay (23°08'S, 150°45'E).

Remarks. This endemic species was first recorded from Australian waters by Darwin (1854: 460) from Tas., NSW and Queensland. Further Queensland records are those of Fischer (1940: 292, 301, 307; NSW, Qld, Tas.); Endean *et al.* (1956a: 107; Qld); Pope (1965: 45; Qld, NSW, Vic., Tas., SA, WA); Rosell (1972: 178; Qld, NSW, Vic., Tas., WA); and Jones *et al.* (1990: 11; WA, across southern Australia to Qld).

Distribution. WA (from Eucla eastward), SA, Tas., Vic., NSW, Qld (SE, to Bustard Head); Australia (southern).

Habitat. Littoral extending to supralittoral.

Chthamalus malayensis Pilsbry, 1916

Chthamalus malayensis Pilsbry, 1916: 310, fig. 90, pl. 72 figs 5, 5a.

Material Examined. AM-P19781, Wooded I., off Urangan (25°17'S, 152°54'E); AM-P19783, C. Capricorn (23°29'S, 151°14'E); AM-P19785, Bustard Head (24°01'S, 151°46'E); AM-P19786, Double I. Pt (25°56'S, 153°11'E); AM-P19787, Sarina (21°26'S, 149°13'E); AM-P19789, Niggerhead, Heron I. (23°27'S, 151°55'E); AM-P19791, island off High Peak I. (21°58'S, 150°41'E); AM-P19792, Pt Vernon, Hervey Bay (25°15'S, 152°49'E); AM-P19793, Bagara (24°49'S, 152°28'E); AM-P19794, Slade Pt, nr Mackay (21°04'S, 149°14'E); AM-P19795, Bargara (24°50'S, 152°28'E); WAM-C19264, Cooe Bay (23°08'S, 150°45'E), high barnacle zone, N edge.

Remarks. The species is recorded from WA (Shark Bay northward) across northern Australia to Queensland (~25°S). The first Australian records of the species are from WA (Krüger 1914: 435, as *C. stellatus* var. *communis*; Broch 1916: 14, as *C. antennatus*) and thence from Queensland (Endean *et al.* 1956a: 88; Endean *et al.* 1956b: 317; Stephenson *et al.* 1958: 268) and Qld, NT and WA (Pope 1965: 51; Foster 1974: 4; Lewis 1981: 4; Jones 1990a: 216; 1991: 165; 1992a: 52; 1992b: 90; 1993: 216; 2003: 483; 2004: 146; Jones & Hewitt 1996: 51; Jones *et al.* 1990: 11).

Distribution. WA (from Garden I. north), NT, Torres Str., Qld (to 25°S); Tropical Indo-west Pacific.

Habitat. Littoral, HWS–LWN; on open rock faces.

Subfamily EURAPHIINAE Newman & Ross, 1976

Caudoeuraphia Poltarukha, 1997

Caudoeuraphia caudata (Pilsbry, 1916)

Chthamalus caudatus Pilsbry, 1916: 314, fig. 92, pl. 73 figs 1, 1a, 1b.

Euraphia caudata — Newman & Ross, 1976: 41.

Caudoeuraphia caudata — Poltarukha, 1997: 1110, figs 1, 6.

Material Examined. AM-P19746, Bargara (24°49'S, 152°28'E); AM-P19747, C. Capricorn, NW side (23°29'S, 151°14'E); AM-P19749, Port Vernon, Hervey Bay (25°15'S, 152°49'E); AM-P19750, Port Vernon (25°15'S, 152°49'E); AM-P19751, Clews Pt, Bustard Head (24°00'S, 151°44'E); AM-P19752, Bargara (24°49'S, 152°28'E); AM-P19753, Elliot R. Heads (24°55'S, 152°29'E).

Remarks. The species was first recorded from Australia by Endean *et al.* (1956a: 107; 1956b: 332) on the NE Queensland coast and later at the Low Islands (Stephenson *et al.* 1958: 268). Pope (1965: 35) recorded the species from Queensland (from Point Vernon northward to Port Douglas) and WA; Foster (1974: 42) from the Queensland coast to 25°S; Jones *et al.* (1990: 11) from north-western WA and Queensland, and Jones (2003: 483; 2004: 145) from north-western WA. The species is characterized by the presence of a pair of long, slender caudal appendages.

Distribution. WA (from Dampier northward), NT, Qld (to 25°S); Indo-Malaya.

Habitat. MHW–MLW; shaded areas in the upper intertidal zone.

Microeuraphia Poltarukha, 1997

Microeuraphia withersi (Pilsbry, 1916)

Chthamalus withersi Pilsbry, 1916: 312, fig. 91, pl. 73 figs 2–2e.

Euraphia withersi — Newman & Ross, 1976: 41.

Microeuraphia withersi — Poltarukha, 1997: 1116, figs 3(6), 4(3), 6.

Material Examined. AM-P19815, Urangan, Hervey Bay (25°17'S, 152°54'E); AM-P19817, Urangan (25°17'S, 152°54'E); AM-P19831, Pt Vernon (25°15'S, 152°49'E); AM-P19834, S Yeppoon (23°08'S, 150°44'E); AM-P19837, Wreck Pt, nr Cooe Bay, Yeppoon (23°09'S, 150°46'E); AM-P19838, Little Woody I., off Urangan (25°19'S, 153°01'E); AM-P19844, River Heads (24°55'S, 152°29'E); AM-P19845, Bargara (24°49'S, 152°28'E); WAM-C19263, Cooe Bay (23°08'S, 150°45'E), highest barnacle zone, sheltered.

Remarks. The species has been reported from the east coast of Queensland and NT (Pope 1965: 44; Endean *et al.* 1956a: 107; 1965b: 332) and northern WA, NT and Qld (Jones 2003: 483; 2004: 145; Jones *et al.* 1990: 11).

Distribution. WA (Carnarvon northward), NT, Qld (to ~25°S); Indo-west Pacific.

Habitat. Littoral, HWS–HWN; on sheltered shores in crevices or areas of slight shade.

Octomeris Conrad, 1837

Octomeris brunnea Darwin, 1854

Octomeris brunnea Darwin, 1854: 484, pl. 20 figs 3a–b.

Material Examined. AM-P19853, Wreck Pt, Cooe Bay, Yeppoon (23°09'S, 150°46'E); AM-P19859, N Keppell I., E of Yeppoon (23°08'S, 150°56'E).

Remarks. *Octomeris brunnea* was first discovered in Australia on the Queensland coast in 1952 (Pope 1965: 21). Further Queensland records are those of Endean *et al.* (1956a: 107; 1956b: 332), Pope (1965: 20), Foster (1974: 39) and Jones *et al.* (1990: 11). The species has not been recorded elsewhere along the northern Australian coast.

Distribution. Qld: from Cooktown southward to Yeppoon (~23°S); Malay Arch. and Western Pacific.

Habitat. Littoral HWS–MHW; hypobiotic, deep in crevices, on underside of small boulders, or walls on intertidal caves.

Family CHELONIBIIDAE Pilsbry, 1916

Chelonibia Leach, 1817

Chelonibia caretta (Spengler, 1790)

Lepas caretta Spengler, 1790: 185, pl. 6 fig. 4.

Chelonibia caretta – Darwin, 1854: 394, pl. 14 fig. 2.

Material Examined. AM-P21323, Moreton Bay (27°25'S, 153°20'E); AM-P21324, Moreton Bay (27°25'S, 153°20'E); AM-P21330, Woody Pt, Moreton Bay (27°16'S, 153°06'E); AM-P2371, 8 specs, Victoria Pt, Moreton Bay (27°35'S, 153°19'E); AM-P24135, Moreton Bay (27°25'S, 153°20'E); AM-P23716, Heron I. (23°27'S, 151°55'E); QM-W3654, North Reef (23°11'S, 151°54'E), 10.12.1951, ex *Caretta caretta*; QM-W4903, 5 specs, Heron I. lagoon (23°27'S, 151°55'E), 11.07.1975, R. Monroe, from male *Caretta caretta* (ex 2159); QM-W6498, Wistari Reef, Capricorn Gp (23°29'S, 151°53'E), C. Limpus ex *Caretta caretta*; QM-W7372, Boydong I, C. York (11°29'S, 143°01'E), 09.12.1976, C. Limpus, ex *Eretmochelys imbricata* (ex 4115); QM-W7374, Wistari Reef (23°29'S, 151°53'E), 27.05.1976, C. Limpus, ex

Eretmochelys imbricata (ex 2803); QM-W7489, 5 specs, Mon Repos Beach (24°53'S, 152°28'E), 28.12.1977, C. Limpus and party, ex *Caretta caretta* (ex 8287); QM-W7490, 6 specs, Mon Repos Beach (24°53'S, 152°28'E), 27.12.1977, C. Limpus and party, ex *Caretta caretta* (ex 8301); QM-W7491, 3 specs, Mon Repos Beach (24°53'S, 152°28'E), 20.12.1977, C. Limpus and party, ex *Caretta caretta* (ex 8131); SAM-Tc11471, Moreton Bay (27°15'S, 153°15'E).

Remarks. The species was first recorded from northern Australia by Darwin (1854: 394). Subsequent records are those of Weltner (1899: 443), Broch (1931: 133), Hiro (1937: 69), Jones (2003: 483; 2004: 147) and Jones *et al.* (1990: 11). Specific records from Queensland are those of Monroe & Limpus (1979: 199) and Monroe (1981: 237).

Distribution. WA, NT, Torres Str., Qld; cosmopolitan in tropical seas.

Habitat. Surface, epizoic on turtles (e.g. *Caretta caretta* (Linnaeus), *Chelonia mydas* (Linnaeus), *Eretmochelys imbricata* (Linnaeus), *Eretmochelys squamosa* Girard).

Chelonibia patula (Ranzani, 1818)

Coronula patula Ranzani, 1818: 86, pl. 3 figs 25–28.

Chelonibia patula – Darwin, 1854: 396, pl. 14 figs 3a–b, 4.

Material Examined. QM-W7354, Moreton Bay, nr Tangalooma (27°27'S, 151°26'E), 10.07.1977, fishing trawl, from left human femur; QM-W7847, Moreton Bay, central (27°25'S, 153°20'E), 03.02.1972, C. Boel, ex *Portunus pelagicus*; QM-W7870, North Reefs (23°11'S, 151°54'E), 31.07.1973, W. Phillips, ex sacculinized *Portunus pelagicus*; SAM-Tc11473, Stradbroke (27°28'S, 153°27'E), on sand crab.

Remarks. *Chelonibia patula* was first recorded from 'Australia' by Darwin (1854: 396). Subsequent Australian records are those of Gruvel (1905: 269), Pilsbry (1916: 268), Broch (1931: 133) and Nilsson-Cantell (1934a: 71, 1934b: 61, 1937: 95). Specific Queensland records are those of Monroe (1981: 242) and Jones *et al.* (1990: 11; WA, NSW, Qld, NT). The species is also recorded from brachyuran crabs in the waters of WA (Jones 2003: 483; 2004: 147; Jones & Hewitt 1996: 53).

Distribution. WA, NT, Qld, NSW; cosmopolitan in tropical and subtropical seas.

Habitat. Epizoic on decapod crustaceans, e.g. *Portunus pelagicus* (Linnaeus), *Scylla serrata* (Forskål); less often on molluscs, e.g. *Busycon contrarius* (Conrad) and xiphosurans, e.g. *Limulus* spp; occasionally on ships.

Chelonibia testudinaria Linnaeus, 1758

Lepas testudinaria Linnaeus, 1758: 668.

Coronula testudinaria – Ranzani, 1820: 13, pl. 3.

Chelonibia testudinaria – Darwin, 1854: 392, pl. 14 figs 1a–1d, 5, pl. 15 fig. 1.

Material Examined. AM G 4973, Masthead I. (23°32'S, 151°44'E); AM-P21334, Bird I., Moreton Bay (27°31'S, 153°23'E); AM-P21335, Heron I., Capricorn Gp (23°27'S, 151°55'E); AM-P21338, Heron I., Capricorn Gp (23°27'S, 151°55'E); AM-P21340, Wistari Reef, Capricorn Gp (23°29'S, 151°53'E); AM-P24136, Sarina (21°26'S, 149°13'E); QM-W3067, 3 specs, Mon Repos (24°53'S, 152°28'E), ex carapace of loggerhead *Caretta caretta*; QM-W4840, 4 males, Heron I. lagoon (23°27'S, 151°55'E), May 1975, C. Limpus, from *Caretta caretta*, sub-adult male in poor condition; QM-W4846, 1 male, Heron I. lagoon (23°27'S, 151°55'E), May 1975, C. Limpus, from *Caretta caretta* (ex 2083) sub-adult male in poor condition, from plastron; QM-W4902, 2 specs, Heron I (23°27'S, 151°55'E), 10.08.1975, R. Monroe, from male *Chelonia mydas* (ex 2115); QM-W4904, 9 specs, Heron I. lagoon (23°27'S, 151°55'E), 11.07.1975, R. Monroe, from *Chelonia mydas* (ex 1009); QM-W6499, Mon Repos (24°53'S, 152°8'E), Dec. 1968, C. Limpus, ex *Chelonia depressus*; QM-W6500, Mon Repos (24°53'S, 152°8'E), 28.12.1970, C. Limpus, from turtle (ex 3608), 28.12.1970; QM-W7370, Mon Repos (24°53'S, 152°8'E), 20.01.1977, C. Limpus, ex *Caretta caretta* (ex 4283); QM-W7371, Mon Repos (24°53'S, 152°8'E), 16.01.1977, C. Limpus, ex *Caretta caretta* (ex 3865); QM-W7736, Mon Repos (24°53'S, 152°28'E), 17.12.1977, C. Limpus and party; QM-W7737, Mon Repos (24°53'S, 152°28'E), 12.01.1978, R. Monroe, ex *Caretta caretta*, female (ex 8313), from under flippers; QM-W7738, Mon Repos (24°53'S, 152°28'E), 20.04.1977, C. Limpus and party, ex *Caretta caretta*, female (ex 8408); QM-W7739, Mon Repos (24°53'S, 152°28'E), 24.11.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 8102), from head; QM-W7740, Mon Repos (24°53'S, 152°28'E), 01.12.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 8102), from head; QM-W7741, Mon Repos (24°53'S, 152°28'E), 10.05.1977, C. Limpus and party, ex *Caretta caretta*, female (ex 8102) from carapace; QM-W7743, Mon Repos (24°53'S, 152°28'E), 01.12.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 72), from carapace; QM-W7744, Curtis I. (23°38'S, 151°10'E), 16.04.1977, C. Limpus and party, ex *Chelonia depressa*; QM-W7745, Mon Repos (24°53'S, 152°28'E), 24.11.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 8102); QM-W7746, Moreton Bay (27°25'S, 153°20'E), 10.10.1977, R. Monroe, L. Connor, ex *Chelonia mydas* from carapace; QM-W7747, Mon Repos (24°53'S, 152°28'E), 10.12.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 8102), from head; QM-W7748, Mon Repos (24°53'S, 152°28'E), 10.01.1978, R. Monroe, ex *Chelonia depressa*, female (ex 8244), from carapace; QM-W7749, Mon Repos at 'The Oaks' (24°53'S, 152°28'E), 27.11.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex

8286); QM-W7750, Mon Repos (24°53'S, 152°28'E), 12.12.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 8473), from carapace; QM-W7751, Mon Repos (24°53'S, 152°28'E), 12.11.1977, C. Limpus and party, ex female (ex 8244), from carapace; QM-W7752, Mon Repos (24°53'S, 152°28'E), 08.12.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 8244), from carapace; QM-W7753, Mon Repos (24°53'S, 152°28'E), 01.12.1977, C. Limpus and party, ex *Caretta caretta*, female (ex 72), from plastron; QM-W7754, Mon Repos (24°53'S, 152°28'E), 04.12.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 8145), from carapace; QM-W7755, Moreton Bay (27°25'S, 153°20'E), 10.10.1977, R. Monroe, L.R.G. Cannon, ex *Chelonia mydas*, from plastron; QM-W7838, Wynnum (27°27'S, 153°10'E), 10.01.1977, P. Davie, ex carapace and flippers of female green turtle; QM-W7839, Wynnum (27°27'S, 153°10'E), 10.01.1977, P. Davie, ex ventral side of female green turtle; QM-W7840, Mon Repos (24°53'S, 152°28'E), 08.12.1977, C. Limpus, ex plastron of *Chelonia depressa* (ex 8244); QM-W7841, Mon Repos (24°53'S, 152°28'E), 10.12.1977, C. Limpus, ex flippers of *Caretta caretta* (ex 8102); QM-W7842, Mon Repos (24°53'S, 152°28'E), 22.11.1977, C. Limpus, ex plastron of *Chelonia depressa* (ex 8244); QM-W7843, Mon Repos (24°53'S, 152°28'E), 28.12.1978, C. Limpus, ex *Chelonia depressa* (ex 8102); QM-W7844, Mon Repos (24°53'S, 152°28'E), summer 1977–78, C. Limpus, ex *Caretta caretta*; QM-W15953, 2 specs, Heron I. (23°27'S, 151°55'E), from back of turtle, Nov. 1949.

Remarks. The species was first recorded by Darwin (1854: 392) from the NE coast of Australia. It has since been recorded from the west coast of Australia and Torres Str. (Krüger 1911: 57); WA (Broch 1916: 14; Jones 1990b: 383; 1991: 167; 2003: 484; 2004: 147; Jones & Berry 2000: 60; Jones & Hewitt 1995: 54.); and Qld (Monroe & Limpus 1979: 199; Monroe 1981: 237) and WA, NT and Qld (Jones *et al.* 1990: 11).

Distribution. WA, NT, Torres Str., Qld; cosmopolitan in temperate and tropical seas.

Habitat. Epizoic, attached to sea turtles, e.g. *Caretta caretta* (Linnaeus); *Chelonia depressa* Garmann; *Chelonia japonica* (Thunberg); *Chelonia mydas* (Linnaeus); *Eretmochelys imbricata* (Linnaeus); *Eretmochelys squamosa* Girard), *Lepidochelys olivacea* (Eschscholtz).

Superfamily CORONULOIDEA Leach, 1817

Family CORONULIDAE Leach, 1817

Coronula Lamarck, 1802

Coronula diadema (Linnaeus, 1767)

Lepas diadema Linnaeus, 1767: 1108.

Coronula diadema – Lamarck, 1818: 387.

Material Examined. QM-W7464, 4 specs, ocean beach, Fraser I. (25°22'S, 153°07'E), Mar. 1978, Anatomy Dept, University of Qld, ex humpback whale, tip of flipper; QM-W16410, 26 specs, 0.4 km N. of Browns Rocks, Fraser I. (24°36'S, 153°20'E), 03.07.1989, R. Paterson, S. Van Dyck, ex humpback whale, *Megaptera novaeangliae* (QM JM 7302); QM-W16932, 11 specs, 0.4 km of Browns Rocks, Fraser I. (24°47'S, 153°16'E), 05.07.1989, R. Paterson, S. Van Dyck, ex stranded humpback whale, *Megaptera novaeangliae*.

Remarks. The first Australian record of this species is that of Guiler (1956: 3), recorded from *Coronula diadema* on *Megaptera* sp. in Tasmanian waters. Jones (1990a: 218; 1990b: 386; 1993: 218; 2003: 484) and Jones *et al.* (1990: 12) further documented the species from WA, Vic., Tas., NSW and southern Queensland.

Distribution. WA, Vic., Tas., NSW, Qld; cosmopolitan.

Habitat. Epizoic, attached to fin, blue, sperm and humpback whales, e.g. *Megaptera novaeangliae* Borowski; *M. nodosa* (Bonnaterre); *M. versabilis* Cope.

Xenobalanus Steenstrup, 1851

Xenobalanus globicipitis Steenstrup, 1851

Xenobalanus globicipitus Steenstrup, 1851: pl. 3 figs 11–15; 1852: 158, 161.

Material Examined. AM-P12975, Heron I., Capricorn Group (23°27'S, 151°55'E).

Remarks. The first western Pacific record of this cosmopolitan species is that of Pope (1958: 159), who recorded eight specimens from the tail flukes of a dolphin stranded on Heron Island, SE Queensland. Since that time, *X. globicipitus* has also been recorded from the NT and NSW (Jones *et al.* 1990: 13).

Distribution. NT, Qld, NSW; cosmopolitan.

Habitat. Epizoic on a wide range of marine mammals (fishes, dolphins, porpoises, whales).

Family PLATYLEPADIDAE Newman & Ross, 1976

Chelolepas Ross & Frick, 2007

Chelolepas cheloniae (Monroe & Limpus, 1979)

Stephanolepas muricata — Nilsson-Cantell, 1932: 258; Hendrickson, 1958: 52.

Tubicinella cheloniae Monroe & Limpus, 1979: 199, fig. 6, pl. 1 figs 5–6; Monroe 1981: 241; Jones *et al.* 1990; Limpus *et al.* 1994: 147.

Chelolepas cheloniae — Ross & Frick, 2007: 3–5, figs 1D, E, 2A.

Material Examined. Holotype: QM-W7248, Mon Repos (24°53'S, 152°28'E), C. Limpus, Dec. 1968, ex dead *Caretta caretta* (re-registered from W 6501). Paratypes: QM-W6501, 2 specs, Mon Repos (24°53'S, 152°28'E), C. Limpus, Dec. 1968, ex *Caretta caretta* (dead); QM-W6502, 1 specimen, Mon Repos (24°53'S, 152°28'E), ex *Caretta caretta*. Other material: AM-P40885, Mon Repos, Bundaberg (24°52'S, 152°28'E); QM-W6502, Mon Repos (24°53'S, 152°28'E), C. Limpus, ex *Caretta caretta*; QM-W7356, 7 specs, Mon Repos (24°53'S, 152°28'E), 21.01.1977, C. Limpus, ex *Caretta caretta* (ex 4417), 21.01.1977; QM-W7473, Wynnum, Moreton Bay (27°27'S, 153°10'E), 10.01.1978, P. Davie, ex *Chelonia mydas* male; QM-W7474, Mon Repos (24°53'S, 152°28'E), 12.11.1977, C. Limpus and party, ex *Caretta caretta* (ex 8108).

Remarks. Ross & Frick (2007) reviewed earlier accounts of this species and erected the genus *Chelolepas* to accept it, also indicating that Monroe & Limpus (1979) had misinterpreted some generic and familial characters when they placed it in *Tubicinella*. *Tubicinella* species are otherwise exclusively associated with cetaceans. *Chelolepas cheloniae* is recorded from Queensland (Monroe & Limpus 1979: 199; Jones *et al.* 1990: 13) and specimens in the collections of the WAM now extend the distribution of this species to the waters of WA.

Distribution. WA, Qld; Indo-Malayan.

Habitat. Epizoic on carapace or plastron of turtles, e.g. *Caretta caretta* (Linnaeus), *Chelonia mydas* (Linnaeus), *Eretmochelys imbricata* (Linnaeus) (Dobbs & Landry 2004). Shell flanges serve to anchor the barnacle in the tissues of the host, where they are commonly entwined with fibrous connective tissue (Monroe 1981).

Cylindrolepas Pilsbry, 1916

Cylindrolepas darwiniana Pilsbry, 1916

Cylindrolepas darwiniana Pilsbry, 1916: 288, pl. 68 figs 3–3b.

Material Examined. AM-P40880, St. Helena I., Moreton Bay (27°40'S, 153°30'E).

Remarks. In Australia this species has been reported from Queensland waters (Monroe, 1981: 237; Jones *et al.* 1990: 12).

Distribution. Qld; cosmopolitan.

Habitat. Epizoic; attached to turtles, e.g. *Chelonia mydas* (Linnaeus), *Eretmochelys coriacea* (Vandelli), *Lepidochelys olivacea* (Eschscholtz).

Platylepas Gray, 1825*Platylepas coriacea* Monroe & Limpus, 1979

Platylepas coriacea Monroe & Limpus, 1979: 208, fig. 12, pl. 5 figs 1–8.

Material Examined. Holotype: QM-W7247, Wreck Rock, nr Bundaberg (24°19'S, 151°58'E), 17.01.1975, C. Limpus, ex *Eretmochelys coriacea*. Paratypes: QM-W4638, 2 specs, Wreck Rock, nr Bundaberg (24°16'S, 151°58'E), 17.01.1975, C. Limpus, ex *Eretmochelys coriacea*; QM-W4640, 7 specs, Mon Repos Beach, nr Bundaberg (24°53'S, 152°28'E), 11.01.1975, C. Limpus, ex leatherback turtle; QM-W4872, 2 specs, Alexander Headlands (26°40'S, 153°07'E), 12.09.1967, C.O. Harris, ex *Eretmochelys coriacea* (J 16133).

Remarks. Monroe & Limpus (1979: 208) described the species from SE Queensland (Mon Repos) attached to the Leatherback Turtle, *Eretmochelys coriacea* (Vandelli). Jones *et al.* (1990: 12) subsequently reported the species from Queensland and Tasmanian waters.

Distribution. Qld, Tas; Australia.

Habitat. Epizoic on turtles (e.g. *Eretmochelys coriacea* (Vandelli)).

Platylepas decorata Darwin, 1854

Platylepas decorata Darwin, 1854: 429, pl. 17 figs 2a–b.

Material Examined. QM-W4913, 6 specs, Heron I. lagoon (23°27'S, 151°55'E), 10.07.1975, R. Monroe, from *Chelonia mydas* female (ex 2111); QM-W4914, 4 specs, Heron I. lagoon (23°27'S, 151°55'E), 10.07.1975, R. Monroe, from *Chelonia mydas* sub-adult (ex 2146); QM-W4915, 6 specs, Heron I. lagoon (23°27'S, 151°55'E), 11.07.1975, R. Monroe, from *Chelonia mydas* sub-adult (ex 2157); QM-W4916, 3 specs, Heron I. lagoon (23°27'S, 151°55'E), 11.07.1975, R. Monroe, from *Caretta caretta* female (ex 2149); QM-W4917, 16 specs, Heron I. lagoon (23°27'S, 151°55'E), 10.07.1975, R. Monroe, from *Chelonia mydas* sub-adult (ex 2143); QM-W4919, 4 specs, Heron I. lagoon (23°27'S, 151°55'E), 11.07.1975, R. Monroe, from *Chelonia mydas* sub-adult female (ex 2091); QM-W4920, Heron I. lagoon (23°27'S, 151°55'E), 10.07.1975, R. Monroe, from *Chelonia mydas* male (ex 2117); QM-W4921, Heron I. lagoon (23°27'S, 151°55'E), 10.07.1975, R. Monroe, from *Caretta caretta* female (ex 647); QM-W4922, 2 specs, Heron I. lagoon (23°27'S, 151°55'E), 11.07.1975, R. Monroe, from *Caretta caretta* male (ex 2151); QM-W7142, Mon Repos (24°53'S, 152°28'E), Dec. 1975, C. Limpus, ex *Caretta caretta*; QM-W7183, Mon Repos (24°53'S, 152°28'E), Dec. 1975, C. Limpus, ex *Caretta caretta*; QM-W7184, 1 male, Heron I. lagoon (23°27'S, 151°55'E), May 1975, C. Limpus, ex *Caretta caretta*. sub-adult male in poor condition; QM-W7343, Heron I. lagoon (23°27'S, 151°55'E), 10.07.1975, R. Monroe, ex *Caretta caretta*,

female (ex 2126); QM 7361, 2 specs, Wistari Reef (23°29'S, 151°53'E), 27.05.1977, C. Limpus, ex *Eretmochelys imbricata* (ex 2803); QM 7362, 5 specs, Wistari Reef (23°29'S, 151°53'E), 23.05.1977, C. Limpus, ex *Eretmochelys imbricata* (ex 2773); QM 7363, 6 specs, Wistari Reef (23°29'S, 151°53'E), 23.05.1977, C. Limpus, ex *Eretmochelys imbricata* (ex 2774); QM-W7861, Heron I. (23°27'S, 151°55'E), 05.02.1978, C. Limpus, ex *Chelonia mydas*, male, barnacles from dorsal side of tail; QM 7867, Stradbroke I. (27°30'S, 153°30'E), June 1977, J. Johnson, ex *Caretta caretta* jaw.

Remarks. Darwin (1854: 429) described this species from material collected in the Pacific Ocean (Galapagos Archipelago, Lord Hood's, Island and the Low Archipelago). Monroe & Limpus (1979: 206) first recorded the species from Queensland waters and Jones *et al.* (1990: 12) extended the distribution to NSW and Queensland. The species is also now recorded from the waters of WA (Jones 2003: 484; 2004: 147).

Distribution. WA (N), Qld, NSW; Indo-west Pacific.

Habitat. Surface; epizoic, attached to turtles, e.g. *Caretta caretta* (Linnaeus), *Chelonia mydas* (Linnaeus), *Eretmochelys imbricata* (Linnaeus).

Platylepas hexastylus (Fabricius, 1798)

Lepas hexastylus Fabricius, 1798: 35, pl. 10 figs 1–2.

Platylepas bissexlobata – Darwin, 1854: 428, pl. 17 figs 1a–1d.

Platylepas hexastylus – Pilsbry, 1916: 285, pl. 67 figs 1–1c, 3.

Material Examined. QM-W4635, Heron I. lagoon (23°27'S, 151°55.0'E), 19.12.1974, C. Limpus, ex *Caretta caretta*; QM-W4844, 6 males, Heron I. lagoon (23°27'S, 151°55.0'E), May 1975, C. Limpus, from *Caretta caretta* (ex 2083) sub-adult male in poor condition, from flippers and neck; QM-W4847, 4 males, Heron I. lagoon (23°27'S, 151°55'E), May 1975, C. Limpus, from *Caretta caretta* (ex 2083) sub-adult male in poor condition, from plastron; QM-W4918, 3 specs, Heron I. lagoon (23°27'S, 151°55'E), R. Monroe, from *Caretta caretta* female (ex 2126); QM-W6503, Heron I. (23°27'S, 151°55'E), C. Limpus (ex 2151); QM-W6504, Mon Repos at 'The Oaks' (24°52'S, 152°21'E), Dec. 1974, C. Limpus, sublittoral, symbiotic with turtle *Caretta caretta*; QM-W7304, Moreton Bay (27°25'S, 153°20'E), 06.03.1977, ex *Chelonia mydas*; QM-W7364, Heron I. lagoon (23°27'S, 151°55'E), 31.10.1976, C. Limpus, ex *Caretta caretta* (ex 2698); QM-W7366, 8 specs, Mon Repos (24°53'S, 152°28'E), 18.12.1976, C. Limpus, ex *Chelonia depressa* (ex 8189); QM-W7367, 2 specs, Wistari Reef (23°29'S, 151°53'E), 27.05.1977, C. Limpus, ex *Eretmochelys imbricata* (ex 2803); QM-W7514, specs, Mon Repos (24°53'S, 152°28'E), 10.12.1977, C. Limpus

and party, ex *Caretta caretta*, female, from flippers (ex 8459); QM-W7515, Mon Repos (24°53'S, 152°28'E), 09.11.1977, C. Limpus and party, ex *Caretta caretta*, female, from plastron and flippers (ex 5212); QM-W7516, Mon Repos (24°53'S, 152°28'E), 12.12.1977, C. Limpus and party, ex *Caretta caretta*, female (ex 8143); QM-W7517, Mon Repos (24°53'S, 152°28'E), 07.01.1978, R. Monroe, ex *Caretta caretta*, female (ex 8163); QM-W7518, Mon Repos (24°53'S, 152°28'E), 12.01.1978, R. Monroe, ex *Chelonia depressa*, female from neck (ex 8145); QM-W7519, Mon Repos (24°53'S, 152°28'E), 12.01.1978, R. Monroe, ex *Chelonia depressa*, female (ex 8145), from flippers and neck; QM-W7520, Mon Repos (24°53'S, 152°28'E), 12.01.1978, R. Monroe, ex *Chelonia depressa*, female (ex 8145), from flippers; QM-W7521, Mon Repos (24°53'S, 152°28'E), 12.01.1978, R. Monroe, ex *Chelonia depressa*, female (ex 8145), from plastron; QM-W7522, Mon Repos (24°53'S, 152°28'E), 25.12.1977, R. Monroe, ex *Caretta caretta*, female (ex 8254); QM-W7523, Mon Repos (24°53'S, 152°28'E), 17.12.1977, R. Monroe, ex *Chelonia depressa*, female (ex 72), from flippers; QM-W7524, Mon Repos (24°53'S, 152°28'E), 01.12.1977, R. Monroe, ex *Chelonia depressa*, female (ex 8244), from carapace; QM-W7525, Mon Repos (24°53'S, 152°28'E), 08.12.1977, R. Monroe, ex *Chelonia depressa*, female (ex 8244), from plastron; QM-W7526, Mon Repos (24°53'S, 152°28'E), 08.12.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 8244), from flipper; QM-W7527, Mon Repos (24°53'S, 152°28'E), 10.01.1978, C. Limpus and party, ex *Chelonia depressa*, female (ex 8244), from flipper; QM-W7528, Mon Repos (24°53'S, 152°28'E), 01.12.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 72), from flippers; QM-W7529, Mon Repos (24°53'S, 152°28'E), 24.11.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 8102), from carapace; QM-W7530, Mon Repos (24°53'S, 152°28'E), 10.12.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 8102), from carapace; QM-W7531, Mon Repos (24°53'S, 152°28'E), 10.12.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 8102), from flipper; QM-W7532, Mon Repos (24°53'S, 152°28'E), 24.11.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 8102), from flippers; QM-W7533, Mon Repos at 'The Oaks' (24°53'S, 152°28'E), 23.11.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 296), from flippers; QM-W7534, Mon Repos at 'The Oaks' (24°53'S, 152°28'E), 23.11.1977, C. Limpus and party, ex *Chelonia depressa*, female (ex 8296), from carapace; QM-W7535, Mon Repos (24°53'S, 152°28'E), 12.01.1978, R. Monroe, ex *Caretta caretta*, female (ex 8313); from tail; QM-W7536, Mon Repos (24°53'S, 152°28'E), 12.01.1978, R. Monroe, ex *Caretta caretta*, female (ex 8332); QM-W7537, Mon Repos (24°53'S, 152°28'E), 12.01.1978, R. Monroe, ex *Caretta caretta*, female (ex 8332); QM-W7538, Mon Repos (24°53'S, 152°28'E), 12.01.1978, R. Monroe, ex *Caretta caretta*, female (ex 8332), from rear soft parts; QM-W7539, Mon Repos (24°53'S, 152°28'E), 10.12.1977, C. Limpus and party, ex *Caretta caretta*, female (ex 8503), from flippers; QM-W7540, Mon Repos (24°53'S, 152°28'E), 12.01.1978, C. Limpus and party, ex *Caretta caretta*, female (ex 8580), from soft tail skin; QM-W7541, Mon Repos (24°53'S, 152°28'E), C. Limpus and party, ex *Caretta caretta*, female (ex 8580); QM W7542, Mon Repos (24°53'S, 152°28'E), C. Limpus and party, ex *Caretta caretta*, female (ex 8580), embedded in carapace; QM-W7543, Mon Repos (24°53'S, 152°28'E), C. Limpus and party, ex *Caretta caretta*, female (ex 8622), from soft skin in front of carapace; QM-W7544, Moreton Bay (27°25'S, 153°20'E), 10.10.1977, R. Monroe, ex *Chelonia mydas*; QM-W7545, Moreton Bay (27°25'S, 153°20'E), 10.10.1977, R. Monroe, ex *Chelonia mydas* at base of tail; QM-W7546, Moreton Bay (27°25'S, 153°20'E), 10.10.1977, R. Monroe, ex *Chelonia mydas*, anterior soft skin; QM-W7547, Moreton Bay (27°25'S, 153°20'E), 10.10.1977, R. Monroe, ex *Chelonia mydas*, posterior soft skin; QM-W7548, Wilson I. (23°18'S, 151°55'E), Oct 1977, C. Limpus and party, ex *Chelonia mydas*; QM-W7549, Heron I. (23°27'S, 151°55'E), 04.02.1978, C. Limpus and party, ex *Caretta caretta*, female (ex 2394), from around tail; QM-W7550, Mon Repos (24°53'S, 152°28'E), 12.01.1978, R. Monroe, ex *Caretta caretta*, female (ex 8622), from flipper; QM-W7551, Mon Repos (24°53'S, 152°28'E), 21.12.1977, C. Limpus and party, ex *Caretta caretta*, female (ex 8213), from shoulder; QM-W7552, Mon Repos (24°53'S, 152°28'E), 24.01.1977, C. Limpus and party, ex *Caretta caretta*, female (ex 8588); QM-W7553, Mon Repos (24°53'S, 152°28'E), 12.01.1977, R. Monroe, ex *Caretta caretta*, female (ex 8622), belly ahead of plastron; QM-W7554, Curtis I. (23°38'S, 151°10'E), 16.12.1977, C. Limpus and party, ex *Chelonia depressa*; QM-W7555, Mon Repos (24°53'S, 152°28'E), 12.01.1978, R. Monroe, ex *Caretta caretta*, female (ex 8622), from carapace ahead of rear right flipper; QM-W7556, Mon Repos (24°53'S, 152°28'E), 12.01.1978, R. Monroe, ex *Caretta caretta*, female (ex 8160), from front right flipper; QM-W7557, Mon Repos (24°53'S, 152°28'E), 20.01.1978, R. Monroe, ex *Caretta caretta*, female (ex 8408); QM-W7811, Heron I. (23°27'S, 151°55'E), 05.02.1978, C. Limpus, ex *Chelonia mydas*; QM-W7814, Mon Repos (24°53'S, 152°28'E), 12.01.1978, R. Monroe, ex *Caretta caretta*, female (ex 8313), from back right flipper; SAM-Tc11522, E Masthead I. (23°32'S, 151°43'E).

Remarks. The first report of the species in Australian waters was from Moreton Bay, from a dugong (Darwin 1854: 428). Further Queensland records were documented by Zann & Harker (1978: 206, ex *Dugon dugon* and *Chelonia mydas*) and Monroe & Limpus (1979: 205, ex *Caretta caretta*, *Chelonia depressa*, *Chelonia mydas* and *Eretmochelys imbricata*). The distribution of the species has been further extended by Jones (2003: 485; 2004: 147) and Jones *et al.* (1990) to include WA (N), NT, Qld and NSW.

Distribution. WA, NT, Qld, NSW; cosmopolitan in tropical and subtropical waters.

Habitat. Surface; attached to a variety of hosts: chelonians, e.g. *Caretta caretta* (Linnaeus); *Chelonia depressa* Garman; *Chelonia mydas* (Linnaeus); *Eretmochelys coriacea* (Linnaeus); *E. imbricata* (Linnaeus); *E. squamosa* Girard, *Lepidochelys olivacea* (Eschscholtz); sirenians, e.g. *Dugong dugon* (Müller); fish, e.g. *Lepidosteus* sp.; and crabs, e.g. *Charybdis jaubertensis* Rathbun.

Platylepas ophiophilus Lanchester, 1902

Platylepas ophiophilus Lanchester, 1902: 371, pl. 35 figs 5–5b.

Platylepas decorata – Nilsson-Cantell, 1921: 376.

Material Examined. QM-W7862, Mon Repos (24°53'S, 152°28'E), 11.11.1978, C. Limpus, ex sea snake *Hydrophis elegans*; QM-W7863, Noosa Heads (26°23'S, 153°06'E), 1975, P. Sutton, on beach, ex sea snake; QM-W7865, Manly, Moreton Bay (27°28'S, 153°11'E), 19.11.1951, U.A. Rallings, ex *H. elegans*.

Remarks. Nilsson-Cantell (1921: 376) recorded *Platylepas decorata* Darwin, 1854 from a sea-snake off the West Australian coast. Utinomi (1970: 363) suggested that this was a misidentification of *P. ophiophilus*. This view was supported by Newman & Ross (1976: 44), Monroe & Limpus (1979: 208) and Jones *et al.* (1990: 12) and is supported herein.

Distribution. WA, Qld; Indo-west Pacific.

Habitat. Epizoic, attached to sea-snakes (e.g. *Enhydris curtus* Boulenger; *E. hardwickii* Boulenger; *Enhydrina valakadyn* (Boie); *Hydrophis cyanocinctus* Daudin; *Hydrophis elegans* Gray).

Stephanolepas Fischer, 1886

Stephanolepas muricata Fischer, 1886

Stephanolepas muricata Fischer, 1886: 193, pl. 4 figs 9–11; Monroe & Limpus, 1979: 201.

Material Examined. QM-W4845, 1 male, Heron I. lagoon (23°27'S, 151°55'E), May 1975, C. Limpus, from *Caretta caretta* (ex 2083), sub-adult male in poor condition, from flippers; QM-W4906, 10 specs, Heron I. lagoon (23°27'S, 151°55'E), 11.07.1975, R. Monroe, from *Chelonia mydas* sub-adult (ex 2091); QM-W4907, 7 specs, Heron I. lagoon (23°27'S, 151°55'E), 10.07.1975, R. Monroe, from *Chelonia mydas* sub-adult (ex 2145); QM-W4908, 1 male, Heron I. lagoon (23°27'S, 151°55'E), 11.07.1975, R. Monroe, from *Caretta caretta* (ex 2159); QM W4909, 2 specs, Heron I. lagoon (23°27'S, 151°55'E), 10.07.1975, R. Monroe, from *Caretta caretta* female (ex 2133); QM-W4910, 4 specs, Heron I. lagoon

(23°27'S, 151°55'E), 11.07.1975, R. Monroe, from *Caretta caretta* male (ex 2151); QM-W4911, 10 specs, Heron I. lagoon (23°27'S, 151°55'E), 10.07.1975, R. Monroe, from *Chelonia mydas* sub-adult (ex 2134); QM-W4912, Heron I. lagoon (23°27'S, 151°55'E), 10.07.1975, R. Monroe, from *Chelonia mydas* male (ex 2117); QM-W7303, Moreton Bay (27°25'S, 153°20'E), 06.03.1977, ex *Chelonia mydas*, from leading edge of front flipper; QM-W7466, Moreton Bay (27°25'S, 153°20'E), 10.10.1972, R. Monroe, ex *Chelonia mydas*; QM-W7467, 2 specs, Heron I, Capricorn Gp (23°27'S, 151°55'E), 04.02.1978, C. Limpus and party, ex *Caretta caretta* (ex 2691), sub-adult, between and through scales of front flippers.

Remarks. The record of Monroe & Limpus (1979: 201) represents the first for Australian waters and possibly the first record of the species since it was described by Fischer in 1886. Material in the WAM now extends the distribution of this species to WA.

Distribution. WA, Qld; Indo-Malayan.

Habitat. Epizoic on turtles, e.g. *Caretta caretta* (Linnaeus); *Chelonia mydas* (Linnaeus); *Eretmochelys imbricata* (Linnaeus).

Stomatolepas Pilsbry, 1910

Stomatolepas dermochelys Monroe & Limpus, 1979

Stomatolepas dermochelys Monroe & Limpus, 1979: 203, fig. 9, pl. 3 figs 1–5.

Material Examined. Holotype: QM-W6505, Wreck Rock, nr Bundaberg (24°16'S, 151°58'E), 17.01.1975, C. Limpus, from *Eretmochelys coriacea*. Paratypes: QM-W4639, 8 specs, Wreck Rock, nr Bundaberg (24°16'S, 151°58'E), 17.01.1975, C. Limpus, ex *Eretmochelys coriacea*. Other material: NMV-J42337, 6 specs from turtle host caught in fishing trawl net off Grassy, King I., Tas. (39°52'S, 143°59'E), 08.02.1996.

Remarks. The species was described from SE Queensland by Monroe & Limpus (1979: 203) attached to the Leatherback Turtle *Eretmochelys coriacea* (Linnaeus). It is here also recorded from King I., Tasmania.

Distribution. Qld, Tas; cosmopolitan.

Habitat. Surface, epizoic on the Leatherback Turtle, *Eretmochelys coriacea* (Linnaeus).

Stomatolepas praegustator Pilsbry, 1910

Stomatolepas praegustator Pilsbry, 1910: 304, pl. 68 figs 1–1b.

Material Examined. AM-P40879, Mon Repos, Bundaberg (24°52'S, 152°21'E); QM-W4848, QM-W7357, 19 specs, Heron I. (23°27'S, 151°55'E); QM-W7357, 75

specs, Mon Repos (24°53'S, 152°28'E); QM-W7481-6, 51 specs, Mon Repos (24°53'S, 152°28'E), ex *Caretta caretta* from soft skin of neck and base of front flipper.

Remarks. The first record of this species from Australian waters is from SE Queensland waters (Monroe & Limpus 1979: 203). Specimens in the WAM now extend the distribution of this species to the waters of WA. The species embeds in the mucous membrane of upper end of gullet, soft skin of neck and base of front flippers of turtles.

Distribution. WA, Qld; cosmopolitan.

Habitat. Surface, epizoic on turtles, e.g. *Caretta caretta* (Linnaeus); *Lepidochelys olivacea* (Eschscholtz).

Stomatolepas transversa Nilsson-Cantell, 1930

Stomatolepas transversa Nilsson-Cantell, 1930a: 2; 1930b: 20; Monroe & Limpus, 1979: 205.

Material Examined. QM-W7468-W7471, 4 specs, Wistari Reef (23°29'S, 151°53'E), ex *Chelonia mydas*; QM-W7469-70, 16 specs, Heron I. (23°27'S, 151°55'E), ex *Chelonia mydas*.

Remarks. The species was first recorded in Australian waters by Monroe & Limpus (1979: 205) from SE Queensland. The species is distinguished from other *Stomatolepas* species by its host (*Chelonia mydas*), its attachment position (along the median groove of the plastron) and its elongate proportions.

Distribution. Qld; Aroe Arch., Indonesia.

Habitat. Surface, epizoic on the turtle *Chelonia mydas* (Linnaeus).

Superfamily TETRACLITOIDEA Gruvel, 1903

Family TETRACLITIDAE Gruvel, 1903

Subfamily AUSTROBALANINAE Newman & Ross, 1976

Austrobalanus Ross, 1970

Austrobalanus imperator (Darwin, 1854)

Balanus imperator Darwin, 1854: 288, pl. 8 figs 4a-c. *Balanus* (*Austrobalanus*) *imperator* — Pope, 1945: 364, pl. 28 fig. 8, 10, pl. 30 figs 11-12. *Austrobalanus imperator* — Newman & Ross, 1976: 46.

Material Examined. AM-P20041, Pt Vernon, Hervey Bay (25°15'S, 152°49'E); AM-P20042, Caloundra (26°48'S, 153°08'E); AM-P20043, Slade Pt, nr Mackay (21°04'S, 149°14'E); AM-P20045, Wreck Pt, Cooe Bay, Yeppoon (23°09'S, 150°46'E); AM-P20046, Elliot River Heads (24°55'S, 152°29'E); AM-P20047, Little Woody I., Hervey

Bay (25°19'S, 153°01'E); AM-P20048, Rat I., Port Curtis (23°46'S, 151°19'E); AM-P20049, Port Vernon, Hervey Bay (25°15'S, 152°49'E); AM-P20050, Double Heads, Yeppoon (23°10'S, 150°48'E); AM-P23617, Brampton I., Mackay (20°49'S, 149°17'E); QM-W23910, 1 spec., Kings Headland, Caloundra (26°8'S, 153°08'E), 30.07.1997, P. Davie, D. Potter, littoral, rocky shore; SAM-Tc11479, Moreton Bay (27°15'S, 153°15'E); SAM-Tc11483, E Duck I., N of Mary R. (25°21'S, 153°00'E); SAM-Tc11655, Smith's Rock, Moreton Bay (27°15'S, 153°15'E), buoy; SAM-Tc11656, Smith's Rock, Moreton Bay (27°15'S, 153°15'E), attached to *Lepas anatifera*; SAM-Tc11657, Smith's Rock, Moreton Bay (27°15'S, 153°15'E), buoy.

Remarks. The species was first recorded from NSW (Sydney) and Qld (Moreton Bay) by Darwin (1854: 288). Subsequent records of this endemic Australian species are those of Hoek (1883: 32), Gruvel (1905: 246), Pope (1943: 236; 1945: 364), Allen & Wood (1950: 103), Newman & Ross (1976: 46), Underwood (1977: 13), Foster (1979: 100; 1980: 614), Newman (1979: 285), Lewis (1981: 5) and Jones *et al.* 1990: 14 (NSW, Qld). The purple colouration of the internal parietal walls and their rugged external sculpturing are characteristic for this species.

Distribution. NSW (Port Jackson northward); Qld (N to Torres Strait and N coastline; distribution sporadic); Australia (eastern).

Habitat. Littoral, MTL-LWS in sheltered position, attached to hard substrata.

Subfamily NEWMANELLINAE Ross & Perreault, 1999

Yamaguchiella Ross & Perreault, 1999

Neonrosella subgen. nov.

Rosella — Ross & Perreault, 1999: 5.

Remarks. Ross & Perreault (1999) proposed the subgenus *Rosella* in honour of Neon C. Rosell, for his numerous contributions to the knowledge of the cirripedes fauna of the Philippines, especially the tetracelitids. However, the subgenus is preoccupied (Clark, 1980; Jones, 1979). I therefore propose the alternate genus name *Neonrosella*, to perpetuate the recognition of Neon Rosell and his contributions to cirripedology.

Yamaguchiella (*Neonrosella*) *vitiata* (Darwin, 1854)

Tetraclita vitiata Darwin, 1854: 340, pl. 11 figs 3a-e. *Newmanella vitiata* — Yamaguchi, in Ikeya & Yamaguchi, 1993: 93.

Yamaguchiella (Rosella) vitiata – Ross & Perreault, 1999: 5.

Material Examined. [all as *Newmanella vitiata*]: AM-P12407, W Reef, Heron I. (23°27'S, 151°55'E); AM-P20964, Heron I., Capricorn Gp. (23°27'S, 151°35'E), AM-P21131, Lady Elliot I. (24°07'S, 152°43'E); AM-P21373, Heron I. (23°27'S, 151°55'E); AM-P23730, Heron I. (23°27'S, 151°55'E); AM-P24125, edge of reef, Heron I. (23°27'S, 151°55'E); AM-P24126, Heron I. (23°27'S, 151°55'E); AM-P24133, Heron I. (23°27'S, 151°55'E); AM-P52104, Heron I. (23°27'S, 151°55'E).

Remarks. The species was first recorded from Raines Islet, GBR, by Darwin (1854: 340). Subsequent records are those of Hoek (1883: 33, Raine I., GBR); Gruvel (1905: 290, Australia); Hiro (1936a: 635, GBR); Nilsson-Cantell (1938: 76, Australia and GBR); Endean *et al.* (1956a: 88, 317); Endean *et al.* (1956b: 335, Heron I.); Stephenson *et al.* (1958: 268, Low Isles); Stephenson (1968: 52, Heron I.); Daniel (1972: 186, GBR); Foster (1974; Qld); Newman & Ross (1976: 48, GBR); and Lewis (1981: 6, Nth Barnard I., Qld). The distribution of the species has been extended to north-western WA by Jones (1992a: 52; 2003: 484; 2004: 148), Jones & Hewitt (1996: 51, 53; 1997: 94) and Jones *et al.* (1990: 14). Material held in the WAM collection confirms the presence of the species in the NT.

Distribution. WA (Exmouth Gulf northward), NT, Qld (North Stradbroke Island northward; also GBR); Indo-west Pacific.

Habitat. Intertidal to sublittoral, attached to hard substrata, including coral reefs.

Subfamily TETRACLITELLINAE
Newman & Ross, 1976

Tetraclitella Hiro, 1939

Tetraclitella purpurascens (Wood, 1815)

Lepas purpurascens Wood, 1815: 55, pl. 9 fig. 42.

Tetraclitella purpurascens – Darwin, 1854: 337 (part.), pl. 9 figs 1a, c-d.

Tetraclitella purpurascens – Newman & Ross, 1976: 47 (part).

Material Examined. AM-P11288, Noosa Heads (26°23'S, 153°06'E); AM-P12390, Heron I. (23°27'S, 151°55'E); AM-P12395 Noosa Heads (26°23'S, 153°06'E); AM-P20938, Pt Lookout, N Stradbroke I. (27°01'S, 153°30'E); AM-P20940, Bargara (24°49'S, 152°28'E); AM-P23842, Noosa Heads (26°23'S, 153°06'E); AM-P52063, Yeppoon (23°07'S, 150°46'E); AM-P52068, Pt Lookout, N Stradbroke I. (27°26'S, 153°32'E); NMV-J39342, Elliot

Head, Bundaberg, H.V. Dobinson, Dec. 1963; NMV-J42379 Elliot Head, Bundaberg, H.V. Dobinson, Dec. 1963; NMV-J42379; QM-W4923, Hoffmans Rocks, 4 mls S of Burnett Heads (24°50'S, 152°25'E), July 1975, R. Monroe.

Remarks. This endemic species was first recorded from Australia by Darwin (1854: 337), from WA, Tas., NSW and the GBR, Qld. Subsequent eastern Australian records are those of Hoek 1883: 33 (Australia, Tas.); Weltner 1899: 443 (NSW); Gruvel 1905: 285 (WA, Tas., NSW); Nilsson-Cantell 1931: 115 (Australia); Fischer 1940: 292, 304, 307, 309 (SA, Tas., NSW, Qld); Pope 1943: 231 (NSW); Pope 1945: 367 (NSW); Dakin *et al.* 1948: 176 (NSW); Guiler 1950: 179 (Tas.); 1951b: 60 (Tas.); 1952: 20 (Tas.); Dakin *et al.* 1953: 208 (NSW); Endean *et al.* 1956a: 88 (Qld, but not N of lat. 25°S); Wisely & Blick 1964: 163 (NSW); Anderson 1969: 183 (southern Australia); Foster 1974: 46 (temperate Australia); Underwood 1977: 17, 23 (NSW); Foster 1979: 93 (southern Australian shores to lat. 25°S); Denley & Underwood 1979: 269 (NSW); Foster 1980: 614 (Australia, Lord Howe I.); Wescott *et al.* 1980: 56 (SE Australia); Anderson & Buckle 1983: 645 (NSW); Marine Research Group of Victoria 1984: 106 (WA, Tas., Vic., Qld); Anderson & Anderson 1985: 100 (eastern Australia); Foster & Anderson 1986: 65 (Australia: Qld from 26°S to Tas. and W to about Fremantle, 32°S), and Jones *et al.* (1990: 13) and Jones (1990b: 391) (WA, SA, Tas., Vic., NSW, S Qld).

Distribution. WA (S), GAB, SA, Tas., Bass Str., Vic., NSW, Norfolk I., Lord Howe I., Qld (SE); Australia (southern shores to ~25°S).

Habitat. Littoral, HWS-LWN; in shaded crevices, under overhangs or in sea caves.

Subfamily TETRACLITINAE Gruvel, 1903

Tesseropora Pilsbry, 1916

Tesseropora rosea (Krauss, 1848)

Conia rosea Krauss, 1848: 136, pl. 6 fig. 28.

Tetraclitella rosea – Darwin, 1854: 335, pl. 10 figs 3a-d.

Tetraclitella (Tesseropora) rosea – Pilsbry, 1916: 260.

Tesseropora rosea – Newman & Ross, 1976: 47.

Material Examined. AM-P12385, Brennan Shoals, off C. Moreton (27°02'S, 153°28'E); AM-P12387, Pt Lookout, N Stradbroke I., Moreton Bay, (27°25'S, 153°20'E); AM-P12388, Brennan Shoals, off C. Moreton (27°02'S, 153°28'E); AM-P12389, Brennan Shoals, off

C. Moreton (27°02'S, 153°28'E); AM-P21136, Caloundra (26°48'S, 153°08'E); AM-P21141, 24°49'S, 152°28'E; AM-P21142, Double I. Pt (25°56'S, 153°11'E); QM-W23959, 30+ specs, Pt Lookout, N Stradbroke I. (27°26'S, 153°32'E), 19.08.1997, P. Davie, littoral, rocky shore; QM-W23911, 26 specs, Kings Headland, Caloundra (26°48'S, 153°08'E), 30.07.1997, P. Davie, D. Potter, littoral, rocky shore; QM-W23959, 30+ specs, Pt Lookout, N Stradbroke I. (27°26'S, 153°32'E), 19.08.1997, P. Davie, littoral, rocky shore.

Remarks. Darwin (1854: 335) first recorded this species from NSW and Queensland. Subsequent records are as follows: Hoek 1883: 161 (NSW); Weltner 1897: 227 (NSW); Pilsbry 1916: 260 (Vic.); Barnard 1924: 92 (Australia); Nilsson-Cantell 1927: 788 (Australia); Hiro 1937: 68 (SA); Nilsson-Cantell 1938: 14 (Australia); Fischer 1940: 287, 305 (NSW, Qld); Pope 1943: 236 (NSW); Pope 1945: 366 (NSW); Dakin *et al.* 1948: (NSW); Dakin *et al.* 1953: 208 (NSW); Endean *et al.*, 1956a: 107 (Qld); Wisely & Blick 1964: 166 (NSW); Anderson 1969: 183 (NSW); Ross 1970: 1 (Australia); Daniel 1972: 186 (Australia); Newman & Ross 1976: 47 (Australia); Underwood 1977: 17, 21 (NSW); Foster 1979: 90 (Vic., NSW, Qld, Lord Howe I.); Denley & Underwood 1979: 269 (NSW); Foster 1980: 614 (Australia, Lord Howe I.); Wescott *et al.* 1980: 57 (Qld, NSW, Vic.); Anderson & Buckle 1983: 645 (NSW); Marine Research Group of Victoria 1984: 106 (Vic., NSW, Qld); Anderson & Anderson 1985: 89 (eastern Australia) and Jones *et al.* 1990: 13 (WA (S), Vic., NSW, Qld).

Distribution. ?WA (represented only by 2 specs), Vic., Bass Str., Tas., NSW, Lord Howe I., Qld (SE, to Magnetic I.); Australia, Lord Howe Is, Kermadec Islands. The records of the species from South Africa (Darwin, 1854: 335) need confirmation.

Habitat. Littoral; MLW-11 m.

Tetraclita Schumacher, 1817

Tetraclita squamosa (Bruguère, 1789)

Balanus squamosus Bruguère, 1789: 170, pl. 165 figs 9-10.

Tetraclita squamulosa Schumacher, 1817: 91.

Tetraclita porosa (and var. *viridis*, var. *nigrescens*) Darwin, 1854: 329, pl. 10 fig. 1a-m.

Tetraclita squamosa squamosa — Pilsbry, 1916: 251.

Material Examined. AM G 3290, Fraser I. (25°33'S, 153°07'E); AM-P12403, Rat I., Port Curtis (27°52'S, 153°24'E); AM-P21253, Wreck Pt, Cooe Bay, nr

Yeppoon (23°09'S, 150°46'E); AM-P21257, Double Head, Yeppoon (23°10'S, 150°48'E); AM-P21258, Barga (24°49'S, 152°28'E); AM-P21260, Rat I., off Port Curtis (23°46'S, 151°19'E); AM-P21267, Curtis I. (23°38'S, 151°10'E); AM-P21751, Lammermoor (23°09'S, 150°46'E); QM-W14252, Sarina Beach headland (21°26'S, 149°13'E), 12.04.1987, J. Johnson; QM-W14540, W. side of Lindeman I. (20°27'S, 149°02'E), 24.03.1987, P. Davie, J.W. Short, entrance to small creek down from golf course; on rock; SAM-Tc11646, C. Capricorn (23°29'S, 151°14'E).

Remarks. *Tetraclita squamosa* was first collected in 'Nouvelle-Hollande' (Australia) by Péron in 1802 (Gruvel 1903: 161; Lamy & André 1932: 219). Darwin (1854: 330) collected the species from the east coast of Australia and further east coast records are those of Hoek (1883: 33); Broch, 1922: 337 (NSW); Endean *et al.* 1956a: 88 (Qld S to 25°S); Endean *et al.* 1956b: 317 (Qld); Stephenson *et al.* 1958: 261 (Qld); and Lewis 1981: 6 (Qld). Jones *et al.* (1990: 14) recorded the species from WA, NT, Qld and NSW and further records from WA are those of Jones (1990a: 219; 1992a: 52; 1993: 218; 2003: 484; 2004: 148); Jones & Berry (2000: 60); and Jones & Hewitt (1995: 54, 55; 1996: 51, 53; 1997: 94).

Distribution. WA (NW), Cartier Reef, NT, Qld (SE); Indo-west Pacific.

Habitat. Littoral to 5 m.

Superfamily BALANOIDEA Leach, 1817

Family ARCHAEOBALANIDAE

Newman & Ross, 1976

Subfamily ACASTINAE Kolbasov, 1993

Neoacasta Kolbasov, 1993

Neoacasta glans Lamarck, 1818

Acasta glans Lamarck, 1818: 398.

Neoacasta glans — Kolbasov, 1993: 407.

Material Examined. AM-P21911, S of Yeppoon (23°08'S, 150°44'E).

Remarks. This species was reported from the eastern and southern coasts of Australia by Darwin (1854: 314, southern Australia) and Gruvel (1905: 261, NSW, southern Australia). Subsequently, Jones *et al.* (1990: 15) have reported *Neoacasta glans* from WA, SA, NSW and southern Queensland waters.

Distribution. WA, SA, NSW, Qld (SE); Indo-west Pacific.

Habitat. LWM-55 m; epizoic (sponges).

Pectinoacasta Kolbasov, 1993*Pectinoacasta pectinipes* Pilsbry, 1912

Acasta pectinipes Pilsbry, 1912: 294.

Acasta nitida Hoek, 1913: 237, pl. 24 figs 17–19, pl. 26 figs 1–3.

Pectinoacasta pectinipes – Kolbasov, 1993: 411.

Material Examined. AM-P21912, Dunwich, N Stradbroke I. (27°30'S, 153°24'E).

Remarks. The first Australian record of this species is that of Krüger (1914: 438) from material collected at Shark Bay, WA (as *A. nitida*). Jones *et al.* (1990: 15) and Jones 1993: 222) documented the species from WA, Vic., NSW and southern Queensland.

Distribution. WA, Vic., NSW, Qld (SE); Indo-west Pacific.

Habitat. Depth 0–170 m, epizoic (sponges).

Subfamily ARCHAEOBALANINAE
Newman & Ross, 1976

Armatobalanus Hoek, 1913*Armatobalanus quadrivittatus* (Darwin, 1854)

Balanus quadrivittatus Darwin, 1854: 284, pl. 8 fig. 1.

Balanus (Armatobalanus) quadrivittatus – Zullo, 1963: 589.

Armatobalanus (Armatobalanus) quadrivittatus – Newman & Ross, 1976: 49.

Material Examined. [as *Armatobalanus* sp.] SAM-Tc11472, Moreton Bay (27°15'S, 153°15'E).

Remarks. The material from Moreton Bay reported upon herein is the first record of *A. quadrivittatus* from Queensland waters. The species was first reported from Australia from the Kimberley in northern WA and Rottnest Island, WA (Jones 1992a: 52; 1993: 122) and thence from various areas of north-western WA (2003: 484; 2004: 149; Jones & Hewitt 1995: 54, 55; 1996: 51). Material in the WAM also confirms the presence of the species in the NT.

Distribution. WA, Qld; Indo-west Pacific.

Habitat. Depth 1–51 m.

Conopea Say, 1822*Conopea calceola* (Ellis, 1758)

Balanus calceolus keratophyto involutus Ellis, 1758: 853, pl. 34 fig. 19.

Balanus calceolus – Darwin, 1854: 218, pl. 3 fig 3a–3e.

Balanus (Conopea) calceolus – McLaughlin & Henry, 1972: 25, figs 12–16.

Conopea calceola – Newman & Ross, 1976: 54.

Material Examined. AM-P20029, SW Bribie I., Moreton Bay (26°57'E 153°07'E).

Remarks. The species was reported from WA and Queensland waters (Jones *et al.* 1990: 16). Subsequent records of the species are from WA (Jones, 2003: 484; 2004: 152; Jones & Hewitt, 1996: 51).

Distribution. WA (NW), Qld; cosmopolitan.

Habitat. Epizoic on gorgonians and antipatharians; 16–250 m.

Solidobalanus Hoek, 1913*Solidobalanus ciliatus* (Hoek, 1913)

Balanus ciliatus Hoek, 1913: 199, pl. 19 figs 8–16.

Solidobalanus ciliatus – Henry & McLaughlin, 1967: 47.

Material Examined. SAM-Tc11470, Peel I., Moreton Bay (27°30'S, 153°21'E), on antipatharian.

Remarks. The species has been reported from WA and Queensland waters (Jones *et al.* 1990: 15). More recent records have extended the distribution of the species in the waters of north-western WA (Jones 2003: 485; 2004: 150; Jones & Hewitt 1996: 52; 1997: 95).

Distribution. WA, Qld; Indo-west Pacific.

Habitat. 13–220 m.

Striatobalanus Hoek, 1913*Striatobalanus amaryllis* (Darwin, 1854)

Balanus amaryllis Darwin, 1854: 279, pl. 7 figs 6a–c.

Balanus (Chirona) amaryllis – Ren & Liu, 1978: 159, fig. 21, pl. 7 figs 1–5.

Chirona (Striatobalanus) amaryllis – Newman & Ross, 1976: 50.

Striatobalanus amaryllis – Newman, 1996: 503.

Material Examined. AM-P6396, 30 specs, Port Curtis (23°24'S, 151°37'E); AM-P19912, Dunwich, N Stradbroke I. (27°30'S, 153°24'E); AM-P19913, E of Peel I., Moreton Bay, (27°30'S, 153°21'E); AM-P19914, S end of Curtis I., (23°38'S, 151°10'E); AM-P21545, Moreton Bay area (27°25'S, 153°20'E); AM-P23873, Gillett Cay, Coral Sea (21°20'S, 152°30'E); AM-P23875, Noosa Beach (26°25'S, 153°07'E); AM-P23876, Moreton Bay (27°25'S, 153°20'E); AM-P23877, 200 m S of Scarborough, Moreton Bay (27°12'S, 153°07'E); QM-W2592, 2 specs, SE Douglas Light (27°30'S, 153°23'E), 7.3 m, 18.12.1961, clean, gritty sand; SAM-Tc11545, 1 specimen (large), Smith's Rock, Moreton Bay (27°15'S, 153°15'E), with *B. trigonus* attached; SAM-Tc11657, 2 specs, Smith's Rock, Moreton Bay (27°15'S, 153°15'E), buoy; SAM-Tc11357, Caloundra (26°48'S, 153°08'E) and Bribie I. (26°57'S, 153°07'E); SAM-Tc11394, Moreton Bay (27°15'S, 153°15'E); SAM-Tc11476, Qld coast;

WAM-C22244, Pots Pt, off Redland Bay, Moreton Bay (27°15'S, 153°15'E), rubble bottom.

Remarks. Darwin (1854: 279) described *Striatobalanus amaryllis* (as *Chirona amaryllis* var. a) from the NE coast of Australia and *Challenger* collected specimens from Moreton Bay, NE coasts of Australia and Torres Strait (Hoek 1883: 153). Subsequent Queensland records are those of Edean *et al.* (1956a: 88) and Stephenson *et al.* (1970: 492), and broader distributions are reported by Wood & Allen (1958: 17; NSW, Qld), Daniel (1972: 184; Australia, northern coast); Lewis (1981b: 6; northern Australia to NSW in the east), and Jones *et al.* (1990: 14) and Jones (1990a: 220) from WA, across northern Australia and south to NSW.

Distribution. Northern WA across northern Australia to NSW; Indo west Pacific.

Habitat. Sublittoral, 0–500 m.

Striatobalanus tenuis (Hoek, 1883)

Balanus tenuis Hoek, 1883: 154, pl. 13 figs 29–33.

Balanus albus Hoek, 1913: 185, pl. 16 figs 12–13, pl. 17 figs 1–6.

Balanus (*Chirona*) *tenuis* – Ren & Liu, 1978: 161, fig. 22, pl. 7 figs 6–10.

Chirona (*Striatobalanus*) *tenuis* – Newman & Ross, 1976: 50.

Striatobalanus tenuis – Newman, 1996: 503.

Material Examined. SAM-Tc11654, Palmerston (21° 32'S, 149°29'E), on old telegraph cable.

Remarks. *Striatobalanus tenuis* was first reported from Australian waters by Jones *et al.* (1990: 14) and Jones (1990a: 221; 2004: 152) from WA and Qld.

Distribution. Arafura Sea, WA (N), Qld (SE); Indo-west Pacific.

Habitat. Sublittoral, 7–551 m.

Subfamily ELMINIINAE Foster, 1982

Austrominius Buckeridge, 1983

Elminius (*Austrominius*) Buckeridge, 1983: 354.

†*Austrominius* – Newman, 1996: 503.

Austrominius – Buckeridge & Newman, 2010: 44.

Austrominius covertus (Foster, 1982)

Elminius covertus Foster, 1982: 24, figs 1B, 3, 4A–C.

Elminius modestus – Pope, 1945: 368.

Elminius sp. Foster, 1980: 614, figs 1, 3, 4.

Elminius (*Austrominius*) *covertus* – Buckeridge, 1983: 353.

Material Examined. AM-P21306, Dunwich, Stradbroke I., Moreton Bay (153°24'S, 27°30'E); AM-P21313, Myora Springs, Stradbroke I. (153°25'S, 27°29'E).

Remarks. This endemic species was described by Foster (1982: 24) from SE Qld, NSW, Vic., Tas., SA and WA. *Austrominius covertus* has often been mistakenly identified as *Elminius modestus* Darwin (now *Austrominius modestus*) in Australian collections (Foster 1982: 23). Material described as *Elminius modestus* by Pope (1945: 368, NSW), Guiler (1952: 20, Tas.) and Underwood (1977: 23, ?17, NSW) and as *Elminius* sp. (Foster 1980: 614, NSW) is now attributed to *A. covertus*. Further information and records of *A. covertus* are also provided by Buckeridge (1983: 353, eastern Australia), Egan & Anderson (1985: 383, NSW) and Jones (1990b: 401, WA across southern Australia, including Tas, to Qld; as *Elminius* (*Austrominius*) *modestus* (part)).

Distribution. Southern Australia: WA (from Bunbury southward), SA, Tas., Vic., NSW, SE Qld.

Habitat. Littoral, towards upper limit of the tidal range; in harbours and estuaries on sheltered shores.

Austrominius modestus (Darwin, 1854)

Elminius modestus Darwin, 1854: 350, pl. 12 figs 1a–e.

Elminius (*Austrominius*) *modestus* – Buckeridge, 1983: 357.

Austrominius modestus – Buckeridge *et al.*, 2001: 3; Hayward *et al.*, 2001: 55.

Material Examined. AM-P21306, Dunwich, N Stradbroke I. (27°30'S, 153°24'E); AM-P21313, Myora Springs, N Stradbroke I. (27°29'S, 153°25'E); QM-W12220, Dunwich (23°55'S, 153°24'E), 21.07.1951, on mangrove leaves.

Remarks. The record of Darwin (1854: 350) established the presence of this species in Australian waters (NSW and Tas.). Foster (1982: 23) pointed out the confusion between *A. covertus* and *A. modestus* Darwin in Australian collections. Subsequently, Jones (1990b: 404) and Jones *et al.* (1990: 16) have documented *A. modestus* (as *Elminius* (*Austrominius*) *modestus* (part)) from the waters of WA, SA, Vic., Tas., NSW and southern Qld. The fouling proclivity of the species has enabled it to overcome oceanic barriers and become established in European waters (Bishop 1947: 501, Sandison 1950: 79, Southward & Crisp 1963: 24).

Distribution. WA, SA, Vic., Bass Str., Tas., NSW, Qld (SE); Australasian.

Habitat. Littoral, MTL to shallow sublittoral (5 m); introduced to Europe as a fouling species.

Hexaminius Foster, 1982

Hexaminius foliorum Anderson, Anderson & Egan, 1988

Hexaminius foliorum Anderson, Anderson & Egan, 1988: 207, figs 2–4; Jones *et al.*, 1990: 16.

Material Examined. SAM-Tc11474, Hercules Bank (renamed Bishop I.), Brisbane, (27°22'S, 153°11'E), very abundant between tidemarks.

Remarks. This endemic species has been reported from NSW (Anderson *et al.*, 1988: 207; Jones *et al.*, 1990: 16). The records reported herein are the first of this species from Queensland.

Distribution. NSW, Qld (SE).

Habitat. Littoral; frequently attached to leaves of mangrove trees (e.g. *Avicennia marina*).

Hexaminius popeiana Foster 1982

Hexaminius popeiana Foster, 1982: 28, figs 4B–D, 5–6. *Solidobalanus* sp. Foster, 1980: 614, fig. 3.

Material Examined. WAM-C19260, Cooe Bay (23°08'S, 150°45'E), intermediate barnacle zone, N edge, colour live, pink-orange; WAM-C19261, Cooe Bay (23°08'S, 150°45'E), mid-barnacle zone, on limpet, colour pinkish-orange.

Remarks. This endemic species has been reported from NSW by Foster (1982: 28) and Egan & Anderson (1985: 383), and from NSW and Qld (Jones *et al.* 1990: 16). *H. popeiana* is superficially similar to *Austrominius modestus* Darwin, 1854 and *A. covertus* (Foster, 1982), but has six parietal plates, whereas *Austrominius* species have four.

Distribution. NSW, Qld (SE); Australia (eastern).

Habitat. Littoral.

Family PYRGOMATIDAE Gray, 1825

Subfamily PYRGOMATINAE Gray, 1825

Tribe PYRGOMATINI Ross & Newman, 1995

Cantellius Ross & Newman, 1973

Cantellius acutum (Hiro, 1938)

Creusia spinulosa forma *acuta* Hiro, 1938: 398, figs 6c–f.

Creusia spinulosa var. 6 (subvariety 2) – Darwin, 1854, pl. 14 fig. 6n.

Cantellius acutum – Newman & Ross, 1976: 56.

Material Examined. AM-P40914, North Reef Crest, One Tree I., Capricorn Gp (23°30'S, 152°05'E).

Remarks. The first report of this species in Australian waters was from Queensland by Jones *et al.* (1990: 17), from material held in the AM. Subsequently, Anderson (1992: 281) recorded *C. acutum* from John Brewer Reef, GBR (19°S 145'E), on *Acropora* coral. Material held in the NTM further confirms the presence of the species in the waters of the NT (Trepang Bay, Cobourg Peninsula).

Distribution. NT, Qld; Western Pacific.

Habitat. Depth 0.5–2.0 m, attached to corals (*Acropora* species).

Cantellius secundus (Broch, 1931)

Creusia spinulosa forma *secunda* Broch, 1931: 118.

Cantellius secundus – Newman & Ross, 1976: 57.

Material Examined. Literature record of Anderson, 1992, from One Tree Reef, Capricorn Gp, GBR (23°30'S, 152°05'E).

Remarks. The first report of this species in Australian waters is that of Anderson (1992: 281) who recorded the species from John Brewer Reef (19°S 145'E) and One Tree Reef, GBR, Queensland, on *Acropora*.

Distribution. Qld (GBR); Indo-west Pacific.

Habitat. Depth 0.5–2.0 m, attached to corals (species of *Acropora* and *Pavona*).

Cantellius sumbawae Hoek, 1913

Cantellius sumbawae Hoek, 1913: 265, pl. 17 figs 9–16.

Material Examined. QM-W7807, Wistari Reef, N side (23°29'S, 151°53'E), 22.9 m, 1978, D. Fisk, on *Heteropsammia michelini* Milne Edwards & Haime.

Remarks. Present material from Queensland represents the first record of this species in Australian waters.

Distribution. Qld; Indo-Malayan.

Habitat. Depth 23–36 m.

Creusia Leach, 1817

Creusia spinulosa Leach, 1818

Creusia spinulosa var. 9 Leach, 1818: 171, pl. 57.

Creusia spinulosa var. 9 – Darwin, 1854: 380.

Material Examined. AM G 5271 (dry), Great Barrier Reef, May 1905; AM-P21321, Mud I., Moreton Bay (27°20'S, 153°15'E); AM-P23567, Swain Reefs, GBR (22°05'S, 152°30'E).

Remarks. The first report of this species in Australian waters is that of Jones *et al.* (1990: 17) from material held in the collections of the AM from Queensland. Subsequently, Anderson (1992: 281) recorded *C. spinulosa* from John Brewer Reef, GBR (19°S 145°E), on *Acropora* coral.

Distribution. Qld; Indo-Malayan.

Habitat. Depth 0–11 m; associated with madreporarian corals.

Wanella Anderson, 1993

Wanella milleporum (Darwin, 1854)

Pyrgoma milleporae Darwin, 1854: 367, pl. 13, figs 2a–f.

Savignium milleporum – Jones *et al.*, 1990: 17.

Newmania milleporum – Anderson, 1992: 329.

Wanella milleporum – Anderson, 1993: 377.

Material Examined. AM-P40889, One Tree I., Capricorn Gp (23°30'S, 152°05'E).

Remarks. The species was recorded from Queensland waters as *Savignium milleporum* by Jones *et al.* (1990: 17). Anderson (1992: 281) further recorded the species from One Tree Reef and John Brewer Reef, GBR, on *Millepora*, and at the same time transferred *S. milleporum* to a new genus *Newmania* Anderson, 1992. However, the genus was preoccupied and thus the alternative genus, *Wanella*, was later proposed (Anderson, 1993). Material in the WAM now confirms the presence of this species in north-western WA (Kimberley region).

Distribution. WA (N), Qld; Indo-west Pacific.

Habitat. Depth 0–5 m; associated with corals (e.g. *Millepora*).

Family BALANIDAE Leach, 1817

Subfamily AMPHIBALANINAE

Pitombo, 2004

Amphibalanus Pitombo, 2004

Amphibalanus amphitrite amphitrite
(Darwin, 1854)

Balanus amphitrite var. (1) *communis* Darwin, 1854: 240 (part), pl. 5 figs 2a–d, i–k, m–o.

Balanus amphitrite amphitrite – Newman & Ross, 1976: 62.

Amphibalanus amphitrite amphitrite – Pitombo, 2004: 274.

Material Examined. AM-P11338, Sandgate, nr Brisbane (27°29'S, 153°04'E); AM-P20025, Ross Creek, nr Yeppoon (25°26'S, 150°20'E); AM-P20026 (as var.

malayensis), SW of Bribie I., Moreton Bay (26°57'S, 153°07'E); AM-P20027 (as var. *malayensis*), SW of Bribie I., Moreton Bay (26°57'S, 153°07'E); AM-P21549 Sandgate, nr Brisbane (27°20'S, 153°04'E); AM-P21554, Bingham (25°24'S, 152°55'E); AM-P23765, Ely Creek, Hervey Bay (25°03'S, 153°05'E); AM-P23854 (as var. *malayensis*), Hope Banks, Moreton Bay (27°25'S, 153°20'E); AM-P52105, Torquat (25°17'S, 152°52'E); QM-W10933, Pine R (27°17'S, 153°01'E), 03.10.1980, Kelvin Grove College Students, estuarine; QM-W23897, 15 specs, Boggy Ck, Myrtle town (27°24'S, 153°08'E), 29.07.1997, P. Davie, J.W. Short, estuarine, littoral.

Remarks. The species was first reported by Darwin (1854: 240) from NSW, as var. *communis*. Jones *et al.* (1990: 18), Jones (1990a: 223; 1990b: 406; 1992b: 90) and Huisman *et al.* (2008: 210) have recorded the species as introduced into the waters of WA, SA, Bass Str., Vic., NSW and Qld. Other Queensland records of this species include Stephenson *et al.* (1970: 492), Allen & Wood (1950: 102; NSW, Qld, as var. *communis*); Allen (1953: 313; Qld, Torres Str., as var. *denticulata*) and Saenger *et al.* (1979: 401, Qld). Material housed in the WA Museum confirms the presence of this species in the NT.

Distribution. WA, SA, Bass Str., Vic., NSW, Qld, NT; cosmopolitan in tropical and warm temperate seas.

Habitat. Littoral to 9 m; fouling species.

Amphibalanus cirratus (Darwin, 1854)

Balanus amphitrite var. (9) *cirratus* Darwin, 1854: 241, pl. 5 fig. 2b.

Balanus cirratus – Lewis, 1985: 129.

Amphibalanus cirratus – Pitombo, 2004: 274.

Material Examined. AM-P20013 (as *Balanus variegatus* var. *cirratus*) nr Myora Springs, Stradbroke I. (27°29'S, 153°25'E); QM-W417, Caloundra (26°48'S, 153°08'E); QM-W1204, Myora (27°29'S, 153°25'E), University Science Students Association; QM-W2471, Brisbane (27°28'S, 153°0'E), M. Stroughan, in rocks and jetty piles; QM-W4778, Bogimbah Ck, Fraser I. (25°19'S, 153°05'E), Dec. 1973, R. Timmins; QM-W5163, Serpentine Ck (27°24'S, 153°07'E), 23.08.1972, B. Campbell *et al.*, transect 1, site S; QM-W5226, Serpentine Ck (27°23'S, 153°05'E), Oct. 1972, B. Campbell *et al.*, transect 4, site C; QM-W5252, 6 specs, Jacksons Ck (27°23'S, 153°05'E), 12.10.1972, B. Campbell *et al.*, transect 2, site D; QM-W5269, Jacksons Ck (27°24'S, 153°07'E), 20.09.1972, B. Campbell *et al.*, Transect 11, site B; QM-W7384, Southport (27°58'S, 153°25'E), Aug. 1977, B. Noonan, ex *Tursiops truncatus*; QM-W7558, Graham Inlet, Gladstone (23°51'S, 151°1'E), Apr. 1978, P. Saenger, on *Rhizophora* stilt roots; QM-W16046, 1 specimen, Lady Elliot I. (24°07'S, 152°43'E),

Nov. 1988, N. Coleman, littoral, rocky shore, on rocks (live), or at tide-line (dead); SAM-Tc11545 (1 spec., smaller) Smith's Rock, Moreton Bay (27°15'S, 153°15'E), with *B. trigonus* attached; WAM-C19916, entrance to causeway, Cooe Bay area (23°08'S, 150°45'E); WAM-C19917, Corio Bay (22°56'S, 150°46'E), low barnacle zone.

Remarks. Darwin (1854) originally described the species as *Balanus amphitrite* var. (9) *cirratus*, from material collected from 'Mouth of Indus, Australia, Philippine Archipelago'. The first report of *Amphibalanus cirratus* from Australia is that of Jones *et al.* (1990) from north-western and northern coasts. The material reported on herein confirms the presence of the species in Queensland waters and material housed in the WAM extends its presence to the NT. Material described as *B. amphitrite cirratus* by Pope (1945: 362, pl. 28 fig. 6, p1. 29 fig. 6; pl. 30 figs 13–14) and *B. variegatus cirratus* (Pope, 1966: 179) is now referable to *Amphibalanus variegatus*.

Distribution. WA (N), NT, Qld (SE); Indo-west Pacific.

Habitat. Littoral-sublittoral; fouling species.

Amphibalanus reticulatus (Utinomi, 1967)

Balanus reticulatus Utinomi, 1967: 216, figs 9–12, pl. 6 figs 7–8.

Amphibalanus reticulatus – Pitombo, 2004: 274.

Material Examined. Qld port survey material.

Remarks. Lewis (1979, 1981b) first reported the species from north Queensland waters (1979: 11, as *Balanus amphitrite*; 1981: 9, as *B. reticulatus*). Jones *et al.* (1990: 18) extended the distribution of this species to WA, the Gulf of Carpentaria and Qld. Material in the WAM confirms the presence of the species in the territories of the Cocos-Keeling Island and Christmas Island (Indian Ocean) (Huisman *et al.* 2008: 21). Further WA records are those of Jones (1990b: 410; 2003: 485, 487; 2004: 156).

Distribution. Cocos-Keeling Is., Christmas I., WA, NT, Qld; cosmopolitan in tropical waters.

Habitat. Circumtropical fouling species.

Amphibalanus variegatus (Darwin, 1854)

Balanus amphitrite var. (8) *variegatus* Darwin, 1854: 241.

Balanus amphitrite var. *cirratus* – Pope, 1945: 362, pl. 28 fig. 6, pl. 29 figs 13, 14.

Balanus variegatus – Harding, 1962: 291, pl. 10 figs a–k.

Balanus variegatus cirratus – Pope, 1966: 179.

Amphibalanus variegatus – Pitombo, 2004: 274.

Material Examined. AM-P20013, nr Myora Springs, N Stradbroke I., Moreton Bay (27°29'S, 153°25'E); QM-W7377, 4 specs, Mon Repos (24°53'S, 152°28'E), 21.01.1977, C. Limpus, ex *Caretta caretta* (ex 4520); QM-W7380, 27 specs, Mon Repos (24°53'S, 152°28'E), 22.01.1977, C. Limpus, ex *Caretta caretta* (W 4529).

Remarks. The species was first described by Darwin (1854: 241) as *Balanus amphitrite* var. (8) *variegatus*, from material collected from Sydney, Australia, and New Zealand. Subsequently, Jones (1987a: 143; 1987b: 160; 1990a: 224; 1990b: 413) and Jones *et al.* (1990: 18) reported the species from WA, SA, Bass Str., Vic., NSW and Qld. Material housed in the collection of the TMAG confirms the presence of the species in Tasmanian waters.

Distribution. WA, SA, Bass Str., Vic., NSW, Qld (SE); Australasia.

Habitat. Littoral, LWS to sublittoral; fouling species.

Subfamily BALANINAE Leach, 1817

Balanus da Costa, 1778

Balanus trigonus Darwin, 1854

Balanus trigonus Darwin, 1854: 223, pl. 3 fig. 7a–f.

Material Examined. AM-P35, Bowen (20°01'S, 145°15'E); AM-P20076, Myora Beacon, Stradbroke I. (27°29'S, 153°25'E); QM-W6497, Mon Repos (24°53'S, 152°28'E), 24.12.1968, C. Limpus; QM-W7355, Moreton Bay, nr Tangalooma (27°27'S, 151°26'E), 10.07.1977, fishing trawl, from left human femur; QM-W7376, 4 specs, Mon Repos (24°53'S, 152°28'E), 21.01.1977, C. Limpus, ex *Caretta caretta* (ex 4520); QM-W7475, 5 specs, Mon Repos Beach (24°53'S, 152°28'E), 27.12.1977, C. Limpus *et al.*, ex *Caretta caretta* (ex 8301); QM-W7476, 10 specs, Mon Repos Beach (24°53'S, 152°28'E), 10.12.1977, C. Limpus *et al.*, ex carapace of *Caretta caretta* (ex 8301); QM-W7477, 3 specs, Mon Repos Beach (24°53'S, 152°28'E), 12.11.1977, C. Limpus *et al.*, ex *Caretta caretta* (ex 8108); QM-W7478, 5 specs, Mon Repos Beach (24°53'S, 152°28'E), 17.11.1977, C. Limpus *et al.*, ex carapace *Caretta caretta* (ex 8226); QM-W7479, 5 specs, Mon Repos Beach (24°53'S, 152°28'E), Dec. 1977, C. Limpus *et al.*, ex carapace of *Caretta caretta* (ex 8377); QM-W7480, 3 specs, Mon Repos Beach (24°53'S, 152°28'E), 10.12.1977, C. Limpus *et al.*, ex *Caretta caretta* (ex 4820); QM-W15599, 9 specs, Fishermen I., Brisbane R. mouth (27°22.5'S, 153°10'E), 07.07.1988, J.W. Short *et al.*, estuarine, on rocks near boat ramp at container terminal, low tide; SAM-Tc11477, E Moreton Bay (27°15'S, 153°15'E); SAM-Tc11478, Moreton Bay (27°15'S, 153°15'E), from

buoy; Tc 11545, Smith's Rock, Moreton Bay (27°15'S, 153°15'E), attached to *Striatobalanus amaryllis* and *Amphibalanus amphitrite*; SAM-Tc11656, Smith's Rock, Moreton Bay (27°15'S, 153°15'E), attached to *Lepas anatifera*.

Remarks. The species was described by Darwin (1854) from material collected from Formosa, Java, East Indian Arch., Peru, West Colombia, California, Sydney and New Zealand. Records of the species from Queensland are those of Fischer (1940: 280, 287, 303, 304, 319; tropical Australia, NSW, Qld); Wood & Allen (1958: 18; NSW, Qld); Monroe & Limpus (1979: 199; SE Qld); and Monroe, 1981: 242; SE Qld). Jones (1987a: 143; 1987b: 158; Jones 1990b: 417; 1993: 122) and Jones *et al.* (1990: 18) have reported *B. trigonus* from WA, Bass Str, Tas., Vic., NSW and Queensland.

Distribution. WA, SA, Bass Str, Tas., Vic., NSW, Qld; cosmopolitan in tropical and subtropical seas.

Habitat. Depth 0–150 m; fouling species.

Subfamily MEGABALANINAE
Newman, 1979

Austromegabalanus Newman, 1979

Austromegabalanus nigrescens (Lamarck, 1818)

Balanus nigrescens Lamarck, 1818: 391, pl. 4 fig. 16.
Megabalanus nigrescens – Newman & Ross, 1976: 68.
Austromegabalanus nigrescens – Newman, 1979: 287, fig. 4.

Material Examined. AM-P20052, Pt. Lookout, Stradbroke I. (27°01'S, 148°35'E); AM-P20066, Caloundra (26°48'S, 153°08'E); QM-W12217, Caloundra (26°48'S, 153°08'E), 16.06.1951, lower littoral (exposed); QM-W12218, mouth of Pine R., nr Hornibrook Highway (27°17'S, 153°04'E), 28.08.1960, R. Atkinson, estuarine (LWN), on bivalve; QM-W23958, 2 specs, Pt Lookout, N Stradbroke I. (27°26'S, 153°32'E), 19.08.1997, P. Davie, littoral, rocky shore; SAM-Tc11478, Moreton Bay (27°15'S, 153°15'E), from buoy, with *M. volcano*; SAM-Tc11479, Moreton Bay (27°15'S, 153°15'E).

Remarks. Specimens of this endemic species were first collected in NSW (Sydney) by Darwin (1854). Subsequently, Fischer (1940: 305) and Endean *et al.* (1956a: 88) reported the species from Queensland waters. The species has been recorded from WA, GAB, SA, Tas., Bass Str., Vic., NSW and Qld by Jones (1987a: 143; 1987b: 157; 1990b: 421; 1993: 122) and Jones *et al.* (1990: 18).

Distribution. WA, GAB, SA, Tas., Bass Str., Vic., NSW, Qld (SE); Australia (S).

Habitat. Littoral, MLWN to 9 m.

Megabalanus Hoek, 1913

Megabalanus ajax (Darwin, 1854)

Balanus ajax Darwin, 1854: 214, pl. 3 figs 1a–d.
Megabalanus ajax – Newman & Ross, 1976: 67.

Material Examined. AM-P23609, One Tree I., Capricorn Gp (23°30'S, 152°05'); AM-P23879, One Tree I., Capricorn Gp (23°30'S, 152°05').

Remarks. The first records of the species occurring in the waters of Australia are from the Australian Territory of the Cocos-Keeling Is, Indian Ocean (Jones 1989: 89; 1994: 6), Queensland (Jones *et al.* 1990: 19) and WA (Huisman *et al.* 2008: 21).

Distribution. Cocos-Keeling Is, Indian Ocean; WA, Qld (GBR); Indo-west Pacific.

Habitat. Sublittoral, 0–5.0 m; attached to reefs, coral (e.g. *Millepora complanata* Lamarck).

Megabalanus tintinnabulum (Linnaeus, 1758)

Lepas tintinnabulum Linnaeus, 1758: 668.
Balanus tintinnabulum var. *communis* – Darwin, 1854: 195, pl. 1 figs a, b, f supra, pl. 2 figs 1a, 1d, 1e, 1i, 1k.
Balanus tintinnabulum tintinnabulum – Pilsbry, 1916: 55, fig. 9, pl. 10 figs 1–1e.
Megabalanus tintinnabulum – Newman & Ross, 1976: 68.

Material Examined. QM-W1614, Bald Hills, Bowen (20°01'S, 148°15'E), on *Pinna*; QM-W166, Tortilla (22°28'S, 150°03'E).

Remarks. The species was first recorded from Australian waters by Jones (1990b: 425; 1992b: 90, WA) and Jones *et al.* (1990: 19; WA, Vic., NSW and Qld), and subsequently by Jones (1990a: 225; 1990b: 424), Jones & Hewitt (1997: 95, WA), Jones & Berry (2000: 60, WA), Hass & Jones (2000: 39, WA) and Huisman *et al.* (2008: 22; WA, Bass Str., Vic., NSW, Qld and NT).

Distribution. WA, Bass Str. (E), Vic., NSW, Qld, NT; cosmopolitan.

Habitat. Littoral to sublittoral; fouling species.

Megabalanus volcano Pilsbry, 1916

Balanus (Megabalanus) tintinnabulum volcano Pilsbry, 1916: 60, pl. 11 figs 2–2e.

Balanus (Megabalanus) volcano — Yamaguchi, 1973: 133, fig. 18, pl. 6 figs 2a–j, 4, 5, pl. 7 figs 1a–2b, pl. 8 figs 1–26.

Megabalanus volcano — Newman & Ross, 1976: 69.

Material Examined. SAM-Tc11478, Moreton Bay (27° 15'S, 153°15'E), from buoy, with *Austrobalanus nigrescens*.

Remarks. The first report of this species from Australian waters is that of Allen (1953: 310) from the east coast, fouling aircraft carriers and other vessels returning to Australia after service in Japanese and Korean waters. However, the species was not recorded as establishing on the Australian coastline and it is unknown where the ships docked. Jones *et al.* (1990: 19) reported the species from NSW, from two specimens taken from a ship docked at Garden Island, Port Jackson, New South Wales. The material reported on herein represents the first record of this species from Queensland waters.

Distribution. NSW, Qld; Japan, China; elsewhere fouling.

Habitat. Low tidal, upper subtidal and sublittoral fringe; fouling species.

DISCUSSION

Barnacles are conspicuous components of the intertidal rocky shore fauna of south-eastern Queensland. They are also commonly found attached to jetties, pilings and boats, and to the leaves, trunks and prop roots of mangrove trees. Highest intertidal barnacle diversity occurs where complex habitats offer a large variety of substrata for barnacle attachment. Conversely, lowest diversity occurs where there are less complex habitats and fewer suitable attachment sites.

In south-eastern Queensland the shores are dominated by sessile balanomorph species. Chthamalamoids, tetraclitids and balanids are the most widely-distributed intertidal barnacles, occurring throughout the coasts of the mainland as well as the islands. Zonation follows the chthamalid-tetraclitid-balanid trend that is characteristic of tropical and warm temperate Australian shores (Jones 1992a, 2003) and is fairly universal on warm temperate shores (Foster 1979). Ibliforme representation is sparse with *Ibla* species occurring in essentially refugial shore habitats. In the sublittoral, whilst sessile forms dominate, pedunculates become more prominent than in the littoral. Some pedunculate

(e.g. *Octolasmis cor*) and sessile (e.g. *Chelonibia patula*) species are epizoic, i.e. attach to living substrata. Sessile commensal barnacles are also associated with sponge, gorgonian and coral hosts.

South-eastern Queensland represents a transitional area for temperate and tropical cirripede species. The Tropic of Capricorn lies at 23° 26'22"S of the equator and latitudes to the south are in the Southern Temperate Zone, those to the north in the Tropics. This transitional position is reflected in the composition of barnacle species. For example, the tropical chthamalids *Caudoeuraphia caudata*, *Microeuraphia withersi* and *Chthamalus malayensis* extend from Point Vernon northward, whilst the southern *Chthamalus antennatus* extends from Double Island Point southward. Similarly, the tropical tetraclitid *Tetraclita squamosa* extends from Point Vernon northward, whilst the southern *Tetraclitella purpureascens* and *Tesseropora rosea* extend from Double Island Point and Bustard Heads southward, respectively. Intertidal iblomorphs occur infrequently on Australian shores in essentially refugial habitats. In south-eastern Queensland, *Ibla cumingii* occurs from Point Vernon northward, whilst its temperate southern counterpart, *Ibla quadricolpis*, extends from Currumbin southward.

The present paper confirms that the littoral and shallow water barnacle fauna of south-eastern Queensland is comprised of 74 species. The fauna is dominated by species with Indo-west Pacific (25), cosmopolitan (22), and, to a lesser extent, Indo-Japanese (9) affinities (Table 1). Two species show Australasian affinities (i.e. they occur in Australia and New Zealand), two exhibit western Pacific affinities (extending from the east Australian coast to Hawaii) and one has Indo-Australasian affinities (extending from the western Indian Ocean to Australasia). The number of Australian endemic species (12) is relatively high, reflecting the influence of the southern fauna in this transitional zone. Compared to the northern Australian tropical province that has, as well as a high incidence of tropical species, a low species endemism and high species diversity, the southern Australian warm-temperate province exhibits decreased species diversity, high species endemism, and a low incidence of tropical species (Jones 2003: 492).

Table 1: Biogeographic affinities of intertidal and shallow-water barnacles of south-eastern Queensland, Australia. **C**, Cosmopolitan species; **IWP**, Indo-west Pacific species (extend from east Africa to Hawaii); **WP**, Western Pacific species (extend from east Australian coast to Hawaii); **IJ**, Indo-Japanese species (extend from Indo-Malayan Archipelago, Australia and New Guinea to Japan); **IA**, Indo-Australasian species (extend from western Indian Ocean to Australasia); **AA**, Australasian species (occurring in Australia and New Zealand); **AE**, Australian endemic species (occurring only in Australia).

| Order IBLIFORMES | | | | | | | | | | |
|------------------------------------|----------------------|---------------------|-------------------|-----------------|-----------|-----------|-----------|-----------|-----------|--|
| Suborder Iblomorpha | | | | | | | | | | |
| Family | Genus | Species | C | IWP | WP | IJ | IA | AA | AE | |
| Iblidae | <i>Ibla</i> | <i>cumingi</i> | | + | | | | | | |
| | | <i>quadrivalvis</i> | | | | | + | | | |
| Order LEPADIFORMES | | | | | | | | | | |
| Suborder Heteralepadomorpha | | | | | | | | | | |
| Heteralepadidae | <i>Heteralepas</i> | <i>adiposa</i> | | | + | | | | | |
| | | <i>cornuta</i> | + | | | | | | | |
| | | <i>japonica</i> | | + | | | | | | |
| Malacolepadidae | <i>Arcalepas</i> | <i>brucei</i> | | | | | | | + | |
| Suborder Lepadomorpha | | | | | | | | | | |
| Lepadidae | <i>Alepas</i> | <i>pacifica</i> | | + | | | | | | |
| | | <i>Conchoderma</i> | <i>aurita</i> | + | | | | | | |
| | | | <i>hunteri</i> | | + | | | | | |
| | | | <i>virgatum</i> | + | | | | | | |
| | <i>Lepas</i> | <i>anatifera</i> | + | | | | | | | |
| | | <i>anserifera</i> | + | | | | | | | |
| | | <i>hillii</i> | + | | | | | | | |
| | | <i>pectinata</i> | + | | | | | | | |
| | | Oxynaspididae | <i>Oxynaspis</i> | <i>celata</i> | + | | | | | |
| | | Poecilasmataidae | <i>Octolasmis</i> | <i>angulata</i> | | + | | | | |
| <i>cor</i> | | | | + | | | | | | |
| <i>neptuni</i> | | | | + | | | | | | |
| <i>warwickii</i> | | | | + | | | | | | |
| <i>Temnaspis</i> | <i>tridens</i> | | | | | | + | | | |
| | <i>asymmetrica</i> | | | | | | | | | |
| <i>Trilasmis</i> | <i>eburnea</i> | | | + | | | | | | |
| Order SCALPELLIFORMES | | | | | | | | | | |
| Suborder Scalpellomorpha | | | | | | | | | | |
| Calanticidae | <i>Smilium</i> | <i>peronii</i> | | | | | | | + | |
| Order SESSILIA | | | | | | | | | | |
| Suborder Balanomorpha | | | | | | | | | | |
| Catophragmidae | <i>Catomerus</i> | <i>polymerus</i> | | | | | | | + | |
| Chthamlidae | <i>Chthamalus</i> | <i>antennatus</i> | | | | | | | + | |
| | | <i>malayensis</i> | | + | | | | | | |
| | <i>Caudoeuraphia</i> | <i>caudata</i> | | | | + | | | | |
| | <i>Microeuraphia</i> | <i>withersi</i> | | + | | | | | | |
| | <i>Octomeris</i> | <i>brunnea</i> | | | | + | | | | |
| Chelonibiidae | <i>Chelonibia</i> | <i>caretta</i> | + | | | | | | | |

Barnacles of SE Queensland

Table 1 continued ...

| Family | Genus | Species | C | IWP | WP | IJ | IA | AA | AE |
|------------------|--------------------------|-----------------------|---|-----|----|----|----|----|----|
| | <i>Chelonibia</i> | <i>patula</i> | + | | | | | | |
| | | <i>testudinaria</i> | + | | | | | | |
| Coronulidae | <i>Coronula</i> | <i>diadema</i> | + | | | | | | |
| | <i>Tubicinella</i> | <i>cheloniae</i> | | | | + | | | |
| | <i>Xenobalanus</i> | <i>globicipitis</i> | + | | | | | | |
| Platylepadidae | <i>Cylindrolepas</i> | <i>darwiniana</i> | + | | | | | | |
| | <i>Platylepas</i> | <i>coriacea</i> | | | | | | | + |
| | | <i>decorata</i> | | + | | | | | |
| | | <i>hexastylus</i> | + | | | | | | |
| | | <i>ophiophilus</i> | | + | | | | | |
| | <i>Stephanolepas</i> | <i>muricata</i> | | | | + | | | |
| | <i>Stomatolepas</i> | <i>dermochelys</i> | + | | | | | | |
| | | <i>praegustator</i> | + | | | | | | |
| | | <i>transversa</i> | | | | + | | | |
| Tetraclitidae | <i>Austrobalanus</i> | <i>imperator</i> | | | | | | | + |
| | <i>Yamaguchiella</i> | <i>vitiata</i> | | + | | | | | |
| | <i>Tetraclitella</i> | <i>purpurascens</i> | | | | | | | + |
| | <i>Tesseropora</i> | <i>rosea</i> | | | | | | | + |
| | <i>Tetraclita</i> | <i>squamosa</i> | | + | | | | | |
| Archaeobalanidae | <i>Neoacasta</i> | <i>glans</i> | | + | | | | | |
| | <i>Pectinoacasta</i> | <i>pectinipes</i> | | + | | | | | |
| | <i>Armatobalanus</i> | <i>quadrivittatus</i> | | + | | | | | |
| | <i>Conopea</i> | <i>calceolus</i> | + | | | | | | |
| | <i>Solidobalanus</i> | <i>cilatus</i> | | + | | | | | |
| | <i>Striatobalanus</i> | <i>amaryllis</i> | | + | | | | | |
| | | <i>tenuis</i> | | + | | | | | |
| | <i>Austrominius</i> | <i>covertus</i> | | | | | | | + |
| | | <i>modestus</i> | | | | | | + | |
| | <i>Hexaminius</i> | <i>foliorum</i> | | | | | | | + |
| | | <i>popeiana</i> | | | | | | | + |
| Pyrgomatidae | <i>Cantellius</i> | <i>acutum</i> | | | + | | | | |
| | | <i>secundus</i> | | + | | | | | |
| | | <i>sumbawae</i> | | | | + | | | |
| | <i>Creusia</i> | <i>spinulosa</i> | | | | + | | | |
| | <i>Wanella</i> | <i>milleporum</i> | | + | | | | | |
| Balanidae | <i>Amphibalanus</i> | <i>amphitrite</i> | + | | | | | | |
| | | <i>cirratus</i> | | + | | | | | |
| | | <i>reticulatus</i> | + | | | | | | |
| | | <i>variegatus</i> | | | | | | + | |
| | <i>Balanus</i> | <i>trigonus</i> | + | | | | | | |
| | <i>Austromegabalanus</i> | <i>nigrescens</i> | | | | | | | + |

continued ...

Table 1 continued ...

| Family | Genus | Species | C | IWP | WP | IJ | IA | AA | AE |
|--------------------|--------------------|----------------------|-----------|-----------|----------|----------|----------|----------|-----------|
| | <i>Megabalanus</i> | <i>ajax</i> | | + | | | | | |
| | | <i>tintinnabulum</i> | + | | | | | | |
| | | <i>volcano</i> | | | | + | | | |
| 16 families | 44 genera | 74 species | 22 | 25 | 2 | 9 | 1 | 2 | 12 |

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