

# Trapeziidae Miers, 1886 and Tetraliidae Castro, Ng and Ahyong, 2004 (Crustacea, Brachyura): coral crabs of Western Australia, with notes on their biogeography

Peter Castro<sup>1</sup> and Melissa M. Titelius<sup>2</sup>

<sup>1</sup> Biological Sciences Department, California State Polytechnic University,  
Pomona, CA 91768, U.S.A.

email: pcastro@csupomona.edu

<sup>2</sup> Department of Aquatic Zoology, Western Australian Museum, Locked Bag 49,  
Welshpool DC, 6986, Western Australia, Australia.

email: melissa.titelius@museum.wa.gov.au

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**Abstract** – Nineteen species in four genera of coral crabs (Trapeziidae and Tetraliidae) are listed as associated with reef corals and other colonial anthozoans in Western Australia: two *Quadrella* species, nine *Trapezia*, six *Tetralia*, and two *Tetraloides*. Although species diversity of coral crabs decreases with latitude along the coast of Western Australia, it remains relatively high in the low-diversity, high latitude coral communities along their southernmost limit on the southwestern coast.

## INTRODUCTION

Brachyuran crabs belonging to the Trapeziidae and Tetraliidae are obligate symbionts of reef corals and other colonial cnidarians. Species of *Trapezia* are associated with reef-building, hermatypic corals of the family Pocilloporidae, and tetraliids (*Tetralia* and *Tetraloides*) with similar corals of the Acroporidae.

Collections of trapeziids and tetraliids from Western Australia, the Cocos (Keeling) Islands and Christmas Island deposited in the Western Australian Museum and other museums, as well as observations on live material, are reported herein. Specimens examined are listed starting with those from the most northerly locations. The synonymies are mostly restricted to recent nomenclatorial changes. More complete synonymies, as well as other references for many of the species listed, were given by Castro (1999a) and in the revision of Castro *et al.* (2004). Trapeziids and tetraliids of eastern Australia were listed by Castro (1997a) and records for all Australian regions by Davie (2002).

## MATERIAL AND METHODS

The material examined is deposited in the following museums: AM (Australian Museum, Sydney), QM (Queensland Museum, Brisbane), MNHN (Muséum National d'Histoire Naturelle, Paris), WAM (Western Australian Museum, Perth), and RMNH (Nationaal Natuurhistorisch Museum, Leiden, The Netherlands).

Abbreviations used in the text are as follows: Arch. for Archipelago; coll. for collected by; I. for Island; juv. for juvenile; n. mls for nautical miles; Pt for Point.

## SYSTEMATICS

### Family Trapeziidae Miers, 1886

#### *Quadrella* Dana, 1851

#### *Quadrella coronata* Dana, 1852\*

### Western Australia records

Galil, 1986b: 282 (off Port Hedland). – Davie, 2002: 495 (NW coast).

### Material examined

**Western Australia.** WAM C 15818 (1 male, 1 female), 71 n. mls. NNW of Dampier Arch. (19°30.2'S, 116°28.3'E to 19°31.3'S, 116°27.8'E), 86–100 m, coll. F.R.V. *Soela*, 01.10.1982; WAM C 15817 (1 male), 7 n. mls N of North West Cape, on alcyonacean, coll. R. Rowe on F.R.V. *Jurabi*, 05.08.1973.

### Remarks

This species is associated with alcyonaceans, antipatharians and gorgonians from the Red Sea, Indian Ocean, and western Pacific Ocean (Castro 1999a; 2000). In Australia, the species has only been recorded from Western Australia (Davie 2002).

*Quadrella maculosa* Alcock, 1898

## Western Australia records

Davie, 2002: 495 (NW coast).

## Material examined

**Western Australia.** WAM C 16790 (1 male), 106 n. mls N of Port Hedland (18°30.1'S, 118°36.2'E to 18°31.6'S, 118°37'E), 136–146 m, coll. F.R.V. *Soela*, 19.08.1982; WAM C 24497 (2 females), 18°38'S, 118°38'E, 132–135 m, coll. F.R.V. *Courageous*, 28.05.1978; WAM C 15988 (1 female), unknown station, coll. F.R.V. *Courageous*, 1978; WAM C 15980 (2 females), 80 n. mls NW of Port Hedland (19°10'S, 117°49'E to 19°07'S, 117°50'E), coll. F.R.V. *Soela*, 18.08.1982.

## Remarks

Known inhabiting antipatharians from the Red Sea and western Indian Ocean and in the Pacific Ocean from Japan to French Polynesia (Castro 1999a; 2000) and Western Australia (Davie 2002).

*Trapezia Latreille, 1828**Trapezia cymodoce* (Herbst, 1801)

## Western Australian records

Balss, 1935: 139, 145 (Shark Bay), 146 (Rottnest I.); Black and Prince, 1983: 140 (Pt Quobba; Rottnest I.); Berry and Morgan, 1986: 61 (Scott Reef, as *Trapezia* cf. *cymodoce*); Jones, 1990: 201 (Shark Bay); Morgan, 1990: 51 (Kimberley region); Jones and Morgan, 1993: 156 (Rottnest I.); Davie, 2002: 498, 499 (NW, central, and lower W coast).

## Material examined

**Western Australia.** QM W 17771 (1 juv. female), Hibernia Reef (11°58.3'S, 123°32.8'E), patch reef, 6.0–9.0 m, coll. J. Short, 11.05.1992; QM W 17801 (1 male, 1 female), 6.0 m, on *Stylophora pistillata*, 12.05.1992; 11°58.7'S, 123°22.8'E, 1 male, 1 female, 6.0 m, 12.05.1992 (QM W 17809); QM W 17638 (1 male, 1 female), Cartier Reef, reef slope (12°30.7'S, 123°33.4'E), 23.0 m, on *Seriatopora* sp., J. Short, 07.05.1992; QM W 15760; (2 males, 2 females), Cartier Reef, lagoon (12°31.8'S, 123°33.1'E), 4.0–6.0 m, J. Short, 05.05.1992; QM W 21106 (1 female), stn 5, Jones I., Vansittart Bay, Kimberley region (13°44.5'S, 126°22.2'E), coll. J. Short, 22.11.1995; WAM C 20581 (1 feminised male, 1 female), Cassini I. (13°56'S, 125°37'E), 4.0–24.0 m, coll. KIRE 1991, 17–18.08.1991; WAM C 24478 (1 female), Scott Reef (14°03'S, 121°46'E), coll. K. Kenneally, 27.08.1977; WAM C 18891 (1 male, 1 female), stn 54, Condillac I. (14°07'S, 125°34'E), 10.0 m, G. Morgan, 16.07.1988; WAM C 20592 (1 male), KIRE 1991 stn 19, SE end of Condillac I. (14°06'S, 125°33'E), coll. G. Morgan, 18.08.1991; WAM C 20557 (1 male, 1 female), KIRE 1991 stn 20,

SW of Fenelon I. (14°09'S, 125°39'E), 4.0–14.0 m, coll. G. Morgan, 19.08.1991; WAM C 20577 (1 male, 1 female), KIRE 1991 stn 24, Albert Reef (14°15'S, 125°10'E), 3.0–15.0 m, coll. G. Morgan, 20.08.1991; WAM C 21814 (1 male, 1 female), Monte Bello Is, channel between Alpha and Trimoville Is (20°24'S, 115°33'E), 6.0 m, coll. S. Slack-Smith and P. Berry, 23.08.1993; WAM C 27501 (7 males, 7 females), DA4/00/14, NW of Legendre I., Dampier Archipelago (20°21.206'S, 116°50.439'E), 9.0–10.0 m, on *Pocillopora verrucosa*, coll. P. Castro, 30.07.2000; WAM C 27508 (2 males, 2 females), DA4/00/37, Legendre I. (20°21.270'S, 116°50.557'E), 7.5 m, on *P. damicornis*, coll. P. Castro and C. Bryce, 06.08.2000; WAM C 27515 (1 male), Legendre I. (20°23.354'S, 116°53.802'E), DA4/00/38, on *P. verrucosa*, coll. P. Castro and G. Morgan, 06.08.2000; WAM C 27491 (3 males, 5 females), DA4/00/16, NW of Legendre I. (20°24.025'S, 116°55.079'E), 13–14 m, on *P. verrucosa*, coll. P. Castro, 31.07.2000; WAM C 24646 (1 male, 1 female), stn DA1/98/03, Legendre I. (20°24.320'S, 116°108'E), 2.0–15.0 m, coll. M. Titelius *et al.*, 18.10.1998; WAM C 28115 (1 male), stn DA1/18/98, Häüy I. (20°26.400'S, 116°58.634'E), 3.0–10.0 m, coll. M. Titelius *et al.*, 23.10.1998; WAM C 27507 (1 male, 1 female), DA4/00/34, W of Gidley I. (20°27.695'S, 116°47.512'E), 10.0 m, *P. damicornis*, coll. P. Castro and C. Bryce, 05.08.2000; WAM C 25573 (1 male, 1 female), stn DA1/98/29, Angel I. (20°29.18'S, 116°47.71'E), coll. M. Titelius *et al.*, 27.10.1998; WAM C 15979 (1 male, 1 female), Kendrew I., reef flat (20°29'S, 116°32'E), coll. L. Marsh and R. George, 11.10.1972; WAM C 16007 (1 female), Crown-of-Thorns Survey, Kendrew I., 20.02.1973; WAM C 16008 (1 male), Crown-of-Thorns Survey, Kendrew I., 22.02.1973; WAM C 16006 (1 male, 1 female), Crown-of-Thorns Survey, Kendrew I., 28.02.1973; WAM C 16023 (1 male, 2 females), Crown-of-Thorns Survey, Kendrew I., 11.05.1973; WAM C 15931 (4 males, 5 females), WAM C 11879 (1 male, 1 female), Crown-of-Thorns Survey, 20.05.1974; 7.5 m; WAM C 28116 (2 juvs), stn DA3/99/46, Kendrew I. (20°29.671'S, 116°35.894'E), 3.0–11.0 m, coll. M. Titelius *et al.*, 30.08.1999; WAM C 28117 (1 male), stn DA3/99/44, Rosemary I. (20°29.629'S, 116°34.425'E), 2.5–6.0 m, on *P. damicornis*, coll. M. Titelius *et al.*, 28.08.1999; WAM C 27495 (4 males, 4 females), DA4/00/23, NW corner of Roly Rock (20°29.88'S, 116°30.05'E), 15.0 m, on *P. verrucosa*, coll. P. Castro, 02.08.2000; WAM C 24483 (2 males, 2 females), Mariel King Expedition, NE Malus Is. (20°31'S, 116°41'E), coll. R.D. Royce, 31.05.1960; WAM C 16020 (1 male, 1 female), WSW of Kendrew I. (20°32'S, 116°38'E), coll. L. Marsh, 26.05.1972; WAM C 28118 (1 male, 1 female) stn DA3/99/49, Goodwyn I. (20°32.398'S, 116°33.443'E), 3.0–9.0 m, coll. M. Titelius *et al.*, 31.08.1999; WAM C 27494 (2 males, 2 females), DA4/00/08, SW tip of West Lewis I. (20°36.310'S, 116°35.696'E), 5.0 m, on *Pocillopora* sp.,

coll. P. Castro 27.07.2000; WAM C 16031 (2 males, 3 females), Kendrew I., W of West Pt (20°40'S, 116°42'E), coll. Crown-of-Thorns Survey, 25.03.1974; WAM C 22448 (1 male), stn 6, South Muiron I. (21°39.45'S, 114°20.72'E), 11.0–13.0 m, coll. M. Titelius *et al.*, 21.08.1995; WAM C 22449 (1 female), stn 7, South Muiron I., 1.0–1.5 m, coll. M. Titelius *et al.*, 22.08.1995; WAM C 22450 (1 female), stn 8, South Muiron I., 4.0–8.0 m, coll. M. Titelius *et al.*, 22.08.1995; WAM C 22453 (1 male), stn 8, South Muiron I., 11.0–13.0 m, on *P. eydouxi*, coll. M. Titelius *et al.*; WAM C 22452 (1 male, 1 female), stn 6, SE of South Muiron I. (21°40.86'S, 114°20.55'E), 4.0–8.0 m, coll. M. Titelius *et al.* 21.08.1995; WAM C 23045 (1 female), stn 4, SW of South Muiron I. (21°41.55'S, 114°18.17'E), 19.0–20.0 m, 20.08.1995, coll. M. Titelius *et al.*; WAM C 16828 (1 male, 1 female), North West Cape, S of Sandy Bay (21°47'S, 114°10'E), 6.0–9.0 m, 31.05.1981; WAM C 24470 (1 male), stn 2, on *Seriatopora* sp., coll. P. Berry, 27.05.1981; WAM C 15941 (2 males, 2 females), Ningaloo, 14 mi. N of Pt Cloates (22°42'S, 113°40'E), 6.0 m, coll. Ningaloo Expedition 08.09.1968; ex AM P 45107 (1 male), W of Pt Cloates (22°42'S, 113°39'E), 1.0 m, on *Acropora* sp., 30.08.1968; WAM C 15989 (1 female), stn 19, Warroora (23°29'S, 113°48'E), coll. L. Marsh, 5.06.1981; WAM C 15944 (1 female), Pt Quobba (24°29'S, 113°25'E), coll. G. Mees, 16.12.1962; WAM C 22447 (1 female), stn 24, Shark Bay, N end of Bernier I. (24°43.34'S, 113°09.45'E), 1.0–16.0 m, 19.05.1995; WAM C 22445 (1 male), stn 17 (24°59.24'S, 113°07.18'E), 1.0–5.0 m, 17.05.1995; WAM C 15945 (1 male, 1 female), Carnarvon (24°53'S, 113°40'E), 10–12.1959; WAM C 15937 (1 female), Carnarvon (24°53'S, 113°40'E), 10.1959; WAM C 24471 (1 male), stn 1, Shark Bay, NE of Dorre I. (24°59.7'S, 113°07.3'E), coll. M. Titelius *et al.* 11.05.1995; WAM C 22446 (1 female), stn 13, Shark Bay, W of Dorre I (25°09.04'S, 113°05.33'E), 5.0–22.0 m, 16.05.1995; WAM C 7365-70 (1 male, 5 females), Dirk Hartog I. (25°29'S, 112°57'E), coll. B. Wilson; WAM C 15929 (1 female) Shark Bay, Monkey Mia (25°48'S, 113°43'E), coll. A. Kalmins, 25–30.08.1960; WAM C 20150 (1 male, 1 female), Shark Bay, South Passage (26°08'S, 113°10'E), coll. G. Morgan, 13.03.1986; WAM C 20191 (2 males, 2 females), WAM C 20178 (4 males, 2 females), stn 9, Shark Bay, Monkey Rock (26°08'S, 113°10'E), coll. G. Morgan, 11.03.1986; WAM C 15940 (1 male, 2 females), Port Gregory, reef flat, (28°12'S, 114°15'E), 27.12.1962, coll. B.R. Wilson and R. Slack-Smith; WAM C 15946, WAM C 15928 (2 males, 3 females), Port Gregory 1.0 m, 26.12.1962; WAM C 24476 (1 male) Houtman Abrolhos Is, coll. J. Allchin, 03–08.1960; WAM C 11735 (2 females), Beacon I. (28°28'S, 113°47'E), coll. L. Marsh *et al.*, 22.04.1974; WAM C 11742 (1 male, 1 female), Beacon I., coll. S. Bingham, 21.04.1974; WAM C 24481 (1 male, 1 female), NW of Split I., Morning Reef (28°28.1'S, 113°47.8'E), on *P. damicornis*, coll. C. Bryce,

08.04.1978; WAM C 11931 (1 male, 1 female), stn D 23, Leo I. (28°41'S, 113°51'E), coll. Sixth Abrolhos Expedition, 31.08.1972; WAM C 15932 (4 males, 3 females), WAM C 15936 (2 males), Rat I., (28°43'S, 113°46'E), 3.7 m, coll. F.R.V. *Lancelin*, 15.03.1963, WAM C 11932 (1 female), stn D25, Rat I., coll. Sixth Abrolhos Expedition, 29.08.1972; WAM C 16005 (1 male), Gregory Reef, Geraldton (28°46'S, 114°37'E), coll. G. Kendrick, 25.09.1962; WAM C 16028 (1 male, 1 female), N of Gun I. (28°53'S, 113°51'E), coll. A. James and G. Davenport, 05.01.1968; WAM C 15934 (1 male, 1 female), 31°01'S 115°20'E, coll. F.R.V. *Lancelin*, Neptune Submariners, 14.01.1958; WAM C 24473 (1 male, 3 females), Wreck Point (31°30'S, 115°35'E), coll. A. Robinson, 20.04.1958; WAM C 20373 (1 male), Rottneest I., Kitson Pt. (32°01'S, 115°30'E), coll. G. Morgan, 23.01.1991; WAM C 24502 (2 males), Rottneest I., Salmon Bay, (32°01.2'S, 115°31.1'E), 2.0 m, on *Acropora* sp., coll. P. Castro and M. Titelius, 03.02.2000; WAM C 24503 (1 female), Rottneest I., Salmon Bay, (32°01.2'S, 115°31.1'E), 2.0 m, on *P. damicornis*, coll. P. Castro and M. Titelius, 03.02.2000.

#### Remarks

A juvenile, incomplete specimen from Scott Reef originally identified as *Trapezia* cf. *cymodoce* by Berry and Morgan (1986: 61; WAM C 14120) could not be identified with certainty.

#### *Trapezia digitalis* Latreille, 1828

##### Western Australian records

Black and Prince, 1983: 140 (Rottneest I.); Jones and Morgan, 1993: 156 (Rottneest I.); Castro, 1999a: 107 (Cocos Keeling Is., Christmas I).

##### Material examined

**Western Australia.** WAM C 24480 (1 male, 1 female), Dampier Archipelago, WSW of Kendrew I. (20°32'S, 116°38'E), coll. L. Marsh, 26.05.1972; WAM C 22460 (1 male, 1 female), stn 8, South Muiron I. (21°39.45'S, 114°20.72'E), 11.0–13.0 m, on *Pocillopora eydouxi*, coll. M. Titelius *et al.* 22.08.1995; WAM C 15974 (1 male), Houtman Abrolhos Is, Pidgin I. (28°30'S, 113°45'E), coll. P. Barret Lennard, – .05.1959. **Christmas Island, Indian Ocean.** WAM C 15973 (1 male), S end of Flying Fish Cove, E. Car, 15.06.1961.

#### *Trapezia formosa* Smith, 1869

##### Western Australian records

Davie, 2002: 500 (NW coast).

##### Material examined

**Western Australia.** WAM C 24479 (1 female),

Dampier Archipelago, WSW of Kendrew I. (20°32'S, 116°38'E), coll. L. Marsh, 26.05.1972. **Christmas Island, Indian Ocean.** WAM C 15943 (1 male, 3 females), Flying Fish Cove, coll. R. Slack-Smith and A. Paterson, -.09.1969; (1 male), WAM C 24084, stn 1, Flying Fish Cove, 1.0–9.0 m, coll. S. Slack-Smith and L. Marsh, 15.02.1987; WAM C 24086 (1 female), Ethel Beach, 20.02.1987, coll. G. Morgan.

#### Remarks

The species is known throughout the Indo-west Pacific and eastern Pacific regions (Castro 1998). In Australian waters it has only been recorded from Western Australia (Davie 2002).

#### *Trapezia guttata* Rüppell, 1830

##### Western Australian records

Berry and Morgan, 1986: 61 (Scott Reef); Morgan, 1990: 52 (Kimberley region); Castro, 1999a: 110 (Cocos (Keeling) Is., Christmas I.); Davie, 2002: 500 (NW coast).

##### Material examined

**Western Australia.** QM W 17772 (1 male, 1 female), Hibernia Reef, patch reef (11°58.3'S, 123°32.8'E), 6.0–9.0 m, coll. J. Short, 11.05.1992; QM W 17782 (1 male, 1 female), Hibernia Reef, on *Seriatopora* sp.; QM W 17803 (1 male, 1 female), Hibernia Reef, on *Stylophora* sp.; QM W17667 (1 male), Cartier Reef (12°30.7'S, 123°33.4'E), 23.0 m, on base of *Pachyseris*, coll. J. Short, 07.05.1992; QM W 1763 (3 females), Cartier Reef, on *Seriatopora* sp., coll. J. Short, 07.05.1992; QM W 17571 (1 male, 1 juv. male, 1 female, 1 juv. female), Cartier Reef, lagoon, (12°31.8'S, 123°33.1'E), 4.0–6.0 m, coll. J. Short, 05.05.1992; WAM C 22988 (1 male), Seringapatam Reef (13°32.47'S, 121°59.9'E), coll. C. Bryce, 15.09.1996; QM W 21301 (4 males, 6 females), stn 18, Kimberley region (13°45.3'S, 126°48.5'E), 1.5 m, coll. J. Short, 29.11.1995; WAM C 20583, stn 16, W of Cassini I. (13°56'S, 125°37'E), coll. KIRE 1991, 17–18.08.1991; WAM C 22670 (1 male, 1 female), E of Cassini I. (13°56.36'S, 125°38.47'E), stn 13, on *Seriatopora* sp., coll. M. Titelius *et al.*, 28.11.1996; WAM C 18915 (1 male, 1 female), stn 58, Long Reef (13°59'S, 125°44'E), to 15.0 m, coll. G. Morgan, 17.07.1988; WAM C 14119 (6 males, 2 feminized males, 6 females), stn 1, Scott Reef, Sandy Islet (14°03'S, 121°46'E), 2.0–18.0 m, coll. P. Berry, 07.09.1984; WAM C 22671 (1 male, 1 female), stn 10, Albert Reef (14°15.5'S, 125°10'E), on *Seriatopora* sp., M. Titelius *et al.*, 27.11.1996; WAM C 20694 (1 male), stn 25, NW end of West Montalivet I. (14°17'S, 125°13'E), 3.0–26.0 m, coll. KIRE 1991, 21.08.1991; WAM C 22669 (1 male, 1 female), stn 8, Rob Roy Reef (14°25.5'S, 124°51.9'E), on *Seriatopora* sp., M. Titelius *et al.*, 26.11.1996; RMNH D37773 (1

male), stn 49, Rob Roy Reef, coll. G. S. Morgan, 15.07.1988; WAM C 22668 (1 female), stn 19, De Freycinet I. (14°59.3'S, 124°32.3'E), M. Titelius *et al.*, 01.12.1996; WAM C 20513 (1 male), Beagle Reef (15°21'S, 123°32'E), stn 35, 4.0–12.0 m, coll. KIRE 1991 expedition, 24.08.1991. **Christmas Island, Indian Ocean.** (1 male), Dolly Beach, coll. S.R. Slack-Smith, -.02.1987 (WAM C 24085). **Cocos (Keeling) Islands, Indian Ocean.** WAM C 19750 (2 males, 2 females), S end of lagoon, Blue Hole, stn 36, G. Morgan; WAM C 19697 (1 male), N of West I., stn 25, to 30 m, 21.02.1989, G. Morgan.

#### *Trapezia lutea* Castro, 1997

##### Western Australian records

Jones and Morgan, 1994: 178–179 (colour, as *Trapezia cymodoce*); 2002: 178–179 (colour); Castro, 1997a: 84 (Dampier Arch., Cocos (Keeling) Is., Christmas I.), 1999a: 111 (Dampier Arch., Cocos (Keeling) Is., Christmas I.); Davie, 2002: 500 (NW coast).

##### Material examined

**Western Australia.** QM W 17802 (1 male, 1 female), Hibernia Reef (11°58.7'S, 123°22.8'E), 6.0 m, on *Stylophora pistillata*, coll. J. Short, 12.05.1992; QM W 17810 (1 male), Hibernia Reef, on *Acropora* sp.; QM W 17597 (6 females), Cartier Reef, reef slope, (12°30.7'S, 123°33.4'S), 13.0 m, coll. J. Short 06.05.1992; QM W 17640 (2 males, 1 female), Cartier Reef, 23.0 m, on *Seriatopora* sp., 07.05.1992; QM W 17682 (1 juv. male), Cartier Reef, reef slope (12°31.4'S, 123°32.7'E), 12.0–14.0 m, on *Tubipora musica*, 08.05.1992, coll. J. Short; WAM C 27510 (1 female), stn DA4/00/14, Dampier Arch., NW of Legendre I. (20°21.206'S, 116°50.439'E), 9.0–10.0 m, on *Pocillopora verrucosa*, coll. P. Castro, 30.07.2000; WAM C 27490 (1 female), NW of Delambre I. (20°25.936'S, 116°04.017'E), stn DA4/00/40, 5.0 m, on *Pocillopora* sp., coll. P. Castro and M. Berggren, 07.08.2000; WAM C 28203 (1 male, 1 female), Crown-of-Thorns Survey, Kendrew I., (20°28.5'S, 116°32'E), 6.0 m, 20.05.1974; WAM C 27498 (1 juv. male), stn DA4/00/23, NW corner of Roly Rock (20°29.88'S, 116°30.05'E), 15.0 m, on *P. verrucosa*, coll. P. Castro, 02.08.2000; WAM C 28120 (1 female), Malus Is. (20°30.050'S, 116°40.594'E), stn DA3/99/36, 6.0–14.0 m, on *P. damicornis*, coll. M. Titelius *et al.*, 27.08.1999; WAM C 22451 (1 female), stn 8, South Muiron I. (21°39.45'S, 114°20.72'E), 11.0–13.0 m, on *P. eydouxi*, coll. M. Titelius *et al.*, 22.08.1995. **Christmas Island, Indian Ocean.** WAM C 24469 (1 female), Flying Fish Cove, coll. R. Slack-Smith and A. Paterson, -.09.1969; C 24083 (1 female), Flying Fish Cove, 10.0–15.0 m, coll. G. Morgan, 11.02.1987; WAM C 24080 (1 female), Ethel Beach, coll. G. Morgan, 20.02.1987. **Cocos (Keeling) Islands,**

**Indian Ocean.** WAM C 19667 (1 female), stn 32, NW end of North Keeling I., to 28 m, coll. G. Morgan, 23.02.1989; WAM C 19820 (1 male, 1 female), stn 13, Landing Place, North Keeling I., to 29 m, coll. G. Morgan, 17.02.1989; WAM C 19650 (1 male, 1 female), stn 4, Horsburgh I., to 37 m, coll. G. Morgan, 09.02.1989; WAM C 19666 (1 male, 3 females), stn 7, NW end of Direction I., to 18 m, coll. G. Morgan, 10.02.1989; WAM C 19955 (1 male, 1 female), Home I., stn 27, coll. L. Marsh, 21.02.1989; WAM C 19487 (1 female), West I., stn 1, coll. G. Morgan, 08.02.1989; WAM C 19698 (1 male, 1 female), stn 25, N of West I., to 30 m, coll. G. Morgan, 21.02.1989; WAM C 19813 (1 male, 1 female), stn 24, SW end of West I., reef flat, coll. L. Marsh, 20.02.1989.

#### Remarks

The colour pattern of live material was similar to that of western Pacific Ocean populations (see Castro 1997a: 86, Castro 1999b: 53). It differed from eastern Indian Ocean populations by the lack of a purple-brown spot at the distal end of the propodi of the walking legs (Castro 1999a: 112).

#### *Trapezia plana* Ward, 1941

*Trapezia punctipes* Castro, 1997a: 87, figs 2C, 2D, 3, pls 2C, 5A.

*Trapezia plana* – Castro, 2002: 364.

#### Western Australian records

Davie, 2002: 500 (NW coast, as *Trapezia punctipes*).

#### Material examined

**Western Australia.** QM W 17808 (1 female), Hibernia Reef (11°58.7'S, 123°22.8'E), patch reef, 6.0 m, coll. J. Short, 12.05.1992; QM W 17644 (1 male, 1 female), Cartier Reef (12°30.7'S, 123°33.4'E), reef slope, 23 m, on *Seriatopora* sp., coll. J. Short, 07.05.1992.

#### Remarks

*Trapezia plana* is known from the Andaman Sea and the western Pacific from the Mariana Is to Fiji. Its status was reviewed by Castro (2002).

#### *Trapezia septata* Dana, 1852

#### Western Australian records

Black and Prince, 1983: 140 (Rottnest I., as *Trapezia areolata*); Berry and Morgan, 1986: 61 (Scott Reef); Morgan, 1991: 52; Jones and Morgan, 1993: 156 (Rottnest I.); Castro, 1999a: 114 (Cocos (Keeling) Is.); Davie, 2002: 501 (NW, central, and lower west coast).

#### Material examined

**Western Australia.** QM W 17944 (1 male), Hibernia Reef (11°59'S, 123°22'E), 0.0–0.5 m, coll. J. Short, 15.05.1992; QM W 17673 (1 male), Cartier Reef, reef slope (12°31.4'S, 123°32.7'E), 12.0–14.0 m, on *Tubipora musica*, coll. J. Short, 08.05.1992; QM W 17601 (1 male, 2 females), Cartier Reef (12°32.3'S, 123°33.4'E), 13.0 m, 06.05.1992; WAM C 20582 (1 male), Kimberley region, Cassini I. (13°56'S, 125°37'E), 4.0–24.0 m, coll. KIRE 1991, 17–18.08.1991; WAM C 18901 (1 male), stn 58, Long Reef (13°59'S, 125°44'E), to 15 m, coll. G. Morgan, 17.07.1988; WAM C 14118 (1 male, 1 female), stn 1, Scott Reef, Sandy Islet (14°03'S, 121°46'E), 2.0–18.0 m, coll. P. Berry, 07.09.1984; WAM C 27514 (3 males, 6 females), DA4/00/14, Dampier Arch., NW of Legendre I. (20°21.206'S, 116°50.439'E), 9.0–10.0 m, on *Pocillopora verrucosa*, coll. P. Castro, 30.07.2000; WAM C 27492 (1 male), stn DA4/00/38, Legendre I. (20°23.354'S, 116°53.802'E), on *P. verrucosa*, coll. P. Castro and G. Morgan, 06.08.2000; WAM C 28121 (1 female), stn DA1/98/03, Legendre I. (20°24.320'S, 116°56'E), 2.0–15.0 m, coll. M. Titelius *et al.* 18.10.1998; WAM C 11873 (1 female), Kendrew I. (20°38.3'S, 116°32'E), coll. Crown-of-Thorns Survey, 11.05.1973; WAM C 22458 (1 female), stn 8, South Muiron I. (21°39.45'S, 114°20.72'E), 11–13 m, on *P. eydouxi*, coll. M. Titelius *et al.*, 22.08.1995; WAM C 15976 (1 female), Pt Quobba (24°29'S, 113°25'E), coll. G. Mees, 16.12.1962; WAM C 22457 (1 female), stn 14, Shark Bay, Dorre I. (25°16.38'E, 113°05.65'E), 3.0–20.0 m, 16.05.1995; WAM C 11737 (1 male, 1 female), Houtman Abrolhos Is., S of Beacon I. (28°28'S, 113°47'E), M. Liddell *et al.*, 20.04.1974; WAM C 11919 (1 male), Easter Group, coll. Sixth Abrolhos Expedition, 31.08.1972; WAM C 11929 (1 male), N of Leo I. (28°41'S, 113°51'E), 1.0 m, coll. Sixth Abrolhos Expedition, 31.08.1972; WAM C 15775 (3 males, 2 females), Rottnest I., C. Vlamingh (32°01'S, 115°30'E), on *P. septata*, coll. E. Hodgkin, –.11.1958; WAM C 24501 (1 male, 1 female), Rottnest I., Salmon Bay (32°01.2'S, 115°31.1'E), 2.0 m, on *P. damicornis*, coll. P. Castro and M. Titelius, 03.02.2000. **Cocos (Keeling) Islands, Indian Ocean.** WAM C 19553, (1 male), stn 7, NW of Horsburgh I., to 18 m, coll. G. Morgan, 10.02.1989; WAM C 19787 (1 male, 2 females), stn 22, SE of Horsburgh I., to 35 m, coll. G. Morgan, 20.02.1989; WAM C 19954 (1 male, 2 females), stn 27, Home I., coll. L. Marsh, 21.02.1989; WAM C 19473 (2 males, 2 females), stn 12, S end of West I., coll. G. Morgan, 19.02.1989.

#### *Trapezia serenei* Odinetz, 1984

#### Western Australian records

Berry and Morgan, 1986: 61 (Scott Reef, as

*Trapezia* cf. *ferruginea*); Jones and Morgan, 1994: 178 (colour, as *Trapezia ferruginea*); 2002: 178 (colour); Castro, 1997a: 92 (Dampier Archipelago); Davie, 2002: 501, 502 (NW coast).

#### Material examined

**Western Australia.** QM W 17861 (1 juv. male), Hibernia Reef, reef slope, (11°59.2'S, 123°22.9'E), 12.0 m, coll. J. Short, 13.05.1992; QM W 17599 (1 male, 1 female), QM W 17602 (1 juv. female), Cartier Reef, reef slope, (12°32.2'S, 123°33.4'E), 13.0 m, coll. J. Short, 06.05.1992; WAM C 24482 (1 female), Kimberley region, Cassini I. (13°56'S, 125°37'E), 4.0–24.0 m, coll. KIRE 1991, 17–18.08.1991; WAM C 27503 (1 male, 1 female), stn DA4/00/14, Dampier Arch., NW of Legendre I. (20°21.206'S, 116°50.439'E), 9.0–10.0 m, on *Pocillopora verrucosa*, coll. P. Castro, 30.07.2000; WAM C 22673 (2 males, 2 females), Kendrew I. (20°28.5'S, 116°32'E), 6.0 m, 20.05.1974, coll. Crown-of-Thorns Survey. **Cocos (Keeling) Islands, Indian Ocean.** WAM C 19537 (1 male, 1 female), stn 7, NW of Horsburgh I., to 18 m, coll. G. Morgan, 10.02.1989.

#### Remarks

Although Castro (1999a) does not list it among the Indian Ocean trapeziids, it had been previously recorded for Western Australia (Castro 1997a). A juvenile specimen from Scott Reef originally identified as *Trapezia* cf. *ferruginea* by Berry and Morgan (1986: 61; WAM C 14139) could not be identified with certainty but was possibly *T. serenei*.

#### *Trapezia tigrina* Eydoux and Souleyet, 1842

##### Western Australian records

Davie, 2002: 502 (NW coast).

##### Material examined

**Western Australia.** QM W 17595 (1 male, 1 female), Cartier Reef, reef slope, (12°32.2'S, 123°33.4'E), 13.0 m, coll. J. Short, 6.05.1992; WAM C 22461 (1 male), stn 8, NW point of South Muiroon I. (21°39.45'S, 114°20.72'E), 11.0–13.0 m, on *Pocillopora eydouxi*, coll. M. Titelius *et al.*, 22.08.1995.

##### Remarks

This species is widely distributed throughout the Indo-west Pacific region (Castro 1999a, 2000). In Australia it has only been recorded from Western Australia (Davie, 2002).

#### Family Tetraliidae Castro, Ng and Ah Yong, 2004

##### *Tetralia* Dana, 1851

##### *Tetralia cinctipes* Paul'son, 1875

##### Western Australian records

Jones and Morgan, 1994: 179 (colour, as *Tetralia glaberrima*); 2002: 179 (colour); Davie, 2002: 495 (NW coast).

##### Material examined

**Western Australia.** WAM C 24492 (2 males, 2 females), Rowley Shoals (17°30'S, 119°00'E), coll. Rowley Shoals Expedition 21.07.1986; WAM C 27496 (1 male, 1 female), Dampier Arch., NW of Legendre I. (20°21.206'S, 116°50.439'E), stn DA4/00/14, 9.0–10.0 m, on *Acropora* sp., coll. P. Castro, 30.07.2000; WAM C 22462 (1 male, 1 female), stn 2, NE of South Muiroon I. (21°40.46'S, 114°20.91'E), 3.0–5.0 m, col. M. Titelius *et al.*, 15.08.1995; AM P 45106 (2 males, 2 females), Ningaloo, W of Pt Cloates (22°42'S, 113°39'E), 1.0 m, coll. Ningaloo Expedition, 30.08.1968. **Christmas Island, Indian Ocean.** WAM C 24093 (1 female), Dolly Beach, -02.1987, coll. S. Slack-Smith; WAM C 24494 (1 male), stn 11, West White Beach, 5.0–30.0 m, 18.02.1987.

##### Remarks

Known throughout the Indo-west Pacific region (Castro 1999a; 2000). Live specimens from the Dampier Archipelago (WAM C 27496) showed the characteristic blue band across the frontal border of the carapace observed in other locations (see Jones and Morgan 1994: 179; as *T. glaberrima*).

##### *Tetralia glaberrima* (Herbst, 1790)

*Tetralia glaberrima fulva* Serène, 1984: 282.

*Tetralia glaberrima* – Castro *et al.*, 2004: 25, 26, fig. 3, pls 1D, 1E, 2A.

##### Western Australian records

Berry and Morgan, 1986: 61 (Scott Reef, as *Tetralia glaberrima fulva*); Castro, 1999a: 101 (Christmas I., as *Tetralia fulva*); Davie, 2002: 496 (NW coast, as *Tetralia fulva*).

##### Material examined

**Western Australia.** WAM C 20580 (1 male, 1 female), KIRE 1991 stn 15, Kimberley region, W of Cassini I. (13°56'S, 125°37'E), 24.0–25.0 m, 17–18.08.1991; WAM C 2494 (1 male), Scott Reef (14°03'S, 121°46'E), coll. P. Berry, 7.09.1984; WAM C 20586 (1 male, 1 female), KIRE 1991 stn 27, Rob Roy Reef (14°25'S, 124°51'E), 3.0–22.0 m, 21.08.1991; QM W20125 (1 male), stn 3, S of Sunday I. (16°25.4'S, 123°09'E), 12.0 m, 16.11.1994;

coll. J. Short, WAM C 27497 (2 males, 1 female), stn DA4/00/14, Dampier Arch., NW of Legendre I. (20°21.206'S, 116°50.439'E), 9.0–10.0 m, on *Acropora* sp., coll. P. Castro, 30.07.2000; WAM C 24472 (1 male, 1 female), Kendrew I., reef flat (20°29'S, 116°32'E), coll. L. Marsh and R. George, 11.10.1972; WAM C 27512 (1 male, 1 female), stn DA4/00/01, W of Angel I. (20°29.05'S, 116°47.83'E), 4.0 m, on *Acropora* sp., coll. P. Castro, 25.07.2000; WAM C 22463 (1 female), stn 12, SE of South Muiron I. (21°39.19'S, 114°22.47'E), 6.0–13.0 m, coll. M. Titelius *et al.*, 24.08.1995. **Christmas Island, Indian Ocean.** WAM C 23890 (1 female), stn 12, Egeria Pt., coll. G. Morgan, 19.02.1987. **Cocos (Keeling) Islands, Indian Ocean.** WAM C 19896 (1 male), stn 27, Home I., outer reef, coll. P. Berry, 21.02.1989.

### Remarks

It is possible that some of the preserved specimens identified as *T. glaberrima* may belong to a colour variety (*Tetralia* aff. *glaberrima*, see below) identifiable only by its colour pattern. The colour has been unfortunately lost after at least two years of preservation.

### *Tetralia* aff. *glaberrima* (Herbst, 1790)

#### Material examined

**Western Australia.** WAM C 27517 (1 male, 1 female), stn DA3/99/67, Dampier Arch., Nelson Rocks (20°26.51'S, 116°40.26'E), coll. M. Titelius *et al.*, 07.09.1999; WAM C 27518 (1 male), stn DA3/99/47, Kendrew I. (20°28.94'S, 116°32.52'E), 4.0–5.0 m, coll. M. Titelius *et al.* 30.08.1999; WAM C 27516 (1 male), stn DA4/00/24, SW end; Enderby I. (20°37.10'S, 116°26.72'E), 16.0 m, on *Acropora* sp., coll. P. Castro, 03.08.2000.

### Remarks

Four specimens from the Dampier Archipelago were morphologically identical to *T. glaberrima* (= *T. fulva*) except for a different colour pattern. The walking legs had red spots along the anterior portion of the carpi (distal edge), propodi, and dactyli (proximal edge). The carapace and chelipeds of the only specimen that was observed alive (male, WAM C 27516) were of the same light orange brown colour as in *T. glaberrima* but clearly lighter in colour (light orange brown) than in *T. glaberrima*.

### *Tetralia nigrolineata* Serène and Dat, 1957

#### Western Australian records

Morgan, 1990: 51 (Kimberley region, as *Tetralia glaberrima obscura*); Davie, 2002: 496 (NW coast).

### Material examined

**Western Australia.** WAM C 20737 (1 male, 1 female), stn 14, Kimberley region, Long Reef, intertidal (13°48'S, 125°47'E), coll. KIRE 1991, 17.08.1991; WAM C 20533 (2 males, 2 females), stn 15, Kimberley region, Long Reef, 12.0 m, coll. KIRE 1991, 17.08.1991; WAM C 20750 (1 male), stn 9, Sir Graham Moore Is., Scorpion I., intertidal (13°52'S, 126°36'E), coll. KIRE 1991, 14–15.08.1991; WAM C 20579 (2 males), stn 15, W of Cassini I. (13°56'S, 125°37'E), 24.0–25.0 m, coll. KIRE 1991, 17–18.08.1991; WAM C 20654 (1 male, 1 female), stn 4, Tranquil Bay (13°56'S, 127°18'E), coll. KIRE 1991, 13.08.1991; QM W 21189 (1 male, 1 female), stn 9, Long I., Vansittart Bay (13°58.9'S, 126°19.6'E), coll. J. Short, 24.11.1995; WAM C 20558 (5 males, 4 females), stn 20, Solem I., intertidal (14°09'S, 125°39'E), coll. KIRE 1991, 19.08.1991; WAM C 20669 (1 male, 1 female), stn 21, Solem I., intertidal (14°09'S, 125°39'E), coll. KIRE 1991, 19.08.1991; WAM C 20578 (1 male, 1 female), stn 24, Albert Reef (14°15'S, 125°09'E), 3.0–15.0 m, 20.08.1991; coll. KIRE 1991; WAM C 18823 (1 male, 1 female), stn 50, Don I. (14°16'S, 125°19'E), 8.0 m, coll. G. Morgan, 16.07.1988; WAM C 20553 (1 male, 2 females), stn 23, Hale I. (14°22'S, 125°25'E), 3.0–11.0 m, 20.08.1991, KIRE 1991; WAM C 20587 (2 males, 2 females), stn 27, Rob Roy Reef (14°25'S, 124°51'E), coll. KIRE 1991, 21.08.1991; WAM C 18910 (5 males, 5 females), Rob Roy Reef (14°25.6'S, 124°51.9'E), stn 49, coll. G. Morgan, 15.07.1988; WAM C 22666 (1 male, 1 female), Rob Roy Reef, on *Acropora valida*, coll. M. Titelius *et al.*, 26.11.1996; WAM C 22667 (1 male), intertidal, Maret I. (14°25.6'S, 124°58.9'E), coll. M. Titelius *et al.*, 27.11.1996; WAM C 22665 (1 male), Jesseux I. (14°42.77'S, 124°58.91'E), stn 17, 7.0–32.0 m, coll. M. Titelius *et al.* 26.11.1996; WAM C 19118 (1 female), stn 85, W of Buffon I. (14°55'S, 124°44'E), 3.0–22.0 m, G. Morgan, 23.07.1988; WAM C 19242 (1 male, 1 female), stn 101, Lucas I. (15°13'S, 124°29'E), 3.0–29.0 m, coll. G. Morgan, 24.07.1988; WAM C 21844 (2 males, 1 female), Monte Bello Is., W of Alpha I. (20°24.5'S, 115°30'E), 3.0–4.0 m, coll. L. Marsh *et al.*, 12.08.1993; WAM C 24491 (1 female), W of Hermite I. (20°27'S, 115°29'E), 6.0–7.0 m, coll. L. Marsh *et al.*, 10.08.1993; WAM C 21834 (1 female), W of Hermite I., SW of barrier reef, intertidal reef flat, (20°30'S, 115°27'E), L. Marsh *et al.*, 19.08.1993; WAM C 27513 (1 male, 1 female, 1 juv. male), stn DA4/00/14, Dampier Arch., NW of Legendre I. (20°21.206'S, 116°50.439'E), 9.0–10.0 m, on *Acropora* sp., coll. P. Castro, 30.07.2000; WAM C 27506 (1 female), Legendre I., (20°21.270'S, 116°50.557'E), stn DA4/00/37, 7.5 m, on *Acropora* sp., coll. P. Castro and C. Bryce, 06.08.2000; WAM C 25301 (1 male), WAM C 25508 (1 male), Legendre I. (20°24.32'S, 116°56.11'E), stn DA1/98/03, M. Titelius *et al.*, 18.10.1998; WAM C 28107 (1 female), stn DA3/99/40, Brigadier I. (20°26.657'S, 116°36.507'E), 6.0–

14.0 m, coll. M. Titelius *et al.*, 28.08.1999, WAM C 27499 (1 male, 1 female), W of Gidley I. (20°27.695'S, 116°47.512'E), stn DA4/00/34, 10 m, on *Acropora* sp., coll. P. Castro and C. Bryce, 05.08.2000; WAM C 15983 (3 males, 3 females), Kendrew I. (20°28.5'S, 116°32'E), coll. Crown-of-Thorns Survey, 06.05.1973; WAM C 11885 (1 female), Kendrew I. (20°28.5'S, 116°32'E), coll. Crown-of-Thorns Survey, 10.05.1973; WAM C 16032 (1 female), Kendrew I. (20°28.5'S, 116°32'E), coll. Crown-of-Thorns Survey, 10.10.1972; WAM C 14316 (1 male), Kendrew I. (20°28.5'S, 116°32'E), coll. Crown-of-Thorns Survey, 01.11.197; WAM C 24488 (1 male), WAM C 16018 (1 female), Kendrew I. (20°28.5'S, 116°32'E), coll. Crown-of-Thorns Survey, 02.11.1974; WAM C 27493 (2 males, 2 females), stn DA4/00/01, W of Angel I. (20°29.05'S, 116°47.83'E), 4.0 m, on *Acropora* sp., coll. P. Castro, 25.07.2000; WAM C 25382 (1 male), stn DA1/98/08, Angel I. (20°29.18'S, 116°47.71'E), M. Titelius *et al.*, 20.10.1998; WAM C 25394 (2 males), DA1/98/08, Angel I. (20°29.18'S, 116°47.71'E), M. Titelius *et al.*, 20.10.1998; WAM C 25385 (1 male, 1 female), DA1/98/08, Angel I. (20°29.18'S, 116°47.71'E), M. Titelius *et al.*, 20.10.1998; WAM C 25386 (1 female), DA1/98/08, Angel I. (20°29.18'S, 116°47.71'E), M. Titelius *et al.*, 20.10.1998; WAM C 25390 (1 female), DA1/98/08, Angel I. (20°29.18'S, 116°47.71'E), M. Titelius *et al.*, 20.10.1998; WAM C 28108 (1 male, 1 female), Kendrew I. (20°29.671'S, 116°35.894'E), stn DA3/99/46, 3.0–11.0 m, coll. M. Titelius *et al.*, 30.08.1999; WAM C 27504 (7 males, 7 females), stn DA4/00/32, W of Angel I. (20°29.765'S, 116°47.480'E), 8.0 m, on *Acropora* sp., coll. P. Castro, 04.08.2000; WAM C 27509 (4 males, 3 females), NW corner of Roly Rock (20°29.88'S, 116°30.05'E), stn DA4/00/23, 15.0 m, on *Acropora* sp., coll. P. Castro, 02.08.2000; WAM C 28109 (1 female), stn DA3/99/36, Malus Is. (20°30.050'S, 116°40.594'E), 6.0–14.0 m, on *Pocillopora damicornis*, coll. M. Titelius *et al.*, 27.08.1999; WAM C 28110 (1 male), stn DA3/99/37, Malus Is., (20°30.632'S, 116°38.788'E), 2.3–5.0 m, M. Titelius *et al.*, 27.08.1999; WAM C 28110 (1 male), stn DA3/99/48, Goodwin I., intertidal, (20°32'S, 116°32'E), M. Titelius *et al.*, 31.08.1999; WAM C 28112 (1 female), stn DA3/99/58, Enderby I. (20°34.398'S, 116°33.443'E), 2.5–4.0 m, coll. M. Titelius *et al.*, 03.09.1999; WAM C 28113 (1 female), stn DA3/99/53, Enderby I. (20°34'52''S, 116°34'58''E), coll. M. Titelius *et al.*, 01.09.1999; WAM C 27488 (1 male, 1 female), stn DA4/00/10, W of Enderby I. (20°35.385'S, 116°28.572'E), 3.0 m, on *Acropora* sp., coll. P. Castro, 28.07.2000; WAM C 27505 (5 males, 8 females), stn DA4/99/04, SW tip of West Lewis I. (20°36.16'S, 116°35.74'E), 2.0–3.0 m, on *Acropora* sp., coll. P. Castro, 26.07.2000; WAM C 27502 (3 males, 4 females), stn DA4/00/08, SW tip of West Lewis I. (20°36.310'S, 116°35.696'E), 5.0 m, on *Acropora* sp., coll. P. Castro, 27.07.2000; WAM C 22468 (1 male, 1 female), stn 13, SE of South Muiron

I. (21°39.13'S, 114°22.26'E), 1.0–2.0 m, coll. M. Titelius *et al.*, 24.08.1995; WAM C 22474 (1 female), WAM C 22476 (1 female), stn 2, NE of South Muiron I. (21°40.46'S, 114°20.91'E), 3.0–5.0 m, coll. M. Titelius *et al.*, 15.08.1995; WAM C 22475 (1 female), stn 7, E of South Muiron I. (21°40.60'S, 114°20.75'E), 1.0–1.5 m, coll. S. Slack-Smith *et al.*, 22.08.1995; AM P 45108 (2 males, 2 females), W of Frazer I. near Pt Cloates (22°38'S, 113°37.5'E), 29.08.1968; AM P 45105 (2 males, 2 females), Ningaloo, W of Pt Cloates (22°42'S, 113°39'E), 1.0 m, coll. Ningaloo Expedition, 28.08.1968; WAM C 22473 (1 male), stn 26, Shark Bay, N end of Bernier I. (24°45.54'S, 113°09.65'E), 0.5–4.0 m, 20.05.1995; WAM C 22455 (1 female), NE of Bernier I. (24°47.94'S, 113°10.13'E), 1.0–2.0 m; WAM C 24486 (1 male), stn 1, Shark Bay, NE of Dorre I. (24°59.7'S, 113°07.3'E), coll. M. Titelius *et al.*, 11.05.1995; WAM C 15987 (1 female), W of Kelvin Right anchorage (26°10.20'S, 113°11'E), 2.0 m, coll. N. Sarti, 11.04.1979; WAM C 24499 (1 male, 1 female), Rottneest I., Salmon Bay (32°01.2'S, 115°31.1'E), 2.0 m, coll. P. Castro and M. Titelius, 03.02.2000.

#### Remarks

Live specimens of *T. nigrolineata* collected in Western Australia showed a wide variation of colour forms, varying from light to dark brown, a situation already observed elsewhere (see Castro, 1997a). Smaller individuals tended to be lighter in colour. It is by far the most common symbiotic crab of *Acropora* in inshore locations.

#### *Tetralia rubridactyla* Garth, 1971

##### Western Australian records

Davie, 2002: 496 (NW coast).

##### Material examined

**Western Australia.** QM W 17598 (1 male, 1 female), Cartier Reef, reef slope, (12°32.2'S, 123°33.4'E), 13.0 m, coll. J. Short, 6.05.1992; WAM C 22942 (1 male), stn 18, Kimberley region, Colbert I., SE reef (14°52.6'S, 124°43.0'E), coll. M. Titelius *et al.*, 01.12.1996; WAM C 27500 (3 males, 4 females), Dampier Arch., NW of Legendre I. (20°21.206'S, 116°50.439'E), stn DA4/00/14, 9.0–10 m, on *Acropora* sp., coll. P. Castro, 30.07.2000; WAM C 27511 (1 male, 1 female), stn DA4/00/16, NW of Legendre I. (20°24.025'S, 116°55.079'E), 13.0–14.0 m, on *Acropora* sp., coll. P. Castro, 31.07.2000; WAM C 25304 (1 male), WAM C 25497 (1 female), stn DA1/98/03, Legendre I. (20°24.32'S, 116°56.11'E), M. Titelius *et al.*, 18.10.1998; WAM C 28114 (1 male), stn DA3/99/40, Brigadier I. (20°26.657'S, 116°36.507'E), 6.0–14.0 m, coll. M. Titelius *et al.*, 28.08.1999; WAM C 27489 (1 male, 1 female), stn DA4/00/34, W of Gidley I. (20°27.695'S,



116°47.512'E), 10.0 m, on *Acropora* sp., coll. P. Castro and C. Bryce, 05.08.2000; WAM C 16019 (1 male, 1 female), WAM C 15939 (1 male, 1 female), Kendrew I. (20°29'S, 116°32'E), 08.05.1973, coll. Crown-of-Thorns Survey, 16.10.1973; WAM C 22480 (1 male, 1 female), stn 13, South Muiron I. (21°39.13'S, 114°22.26'E), 1.0–2.0 m, coll. M. Titelius *et al.*, 24.08.1995; WAM C 22477 (1 male, 1 female), stn 13, SE of South Muiron I. (21°39.13'S, 114°22.26'E), 1.0–2.0 m, coll. M. Titelius *et al.*, 24.08.1995; AM P 45107 (2 males, 2 females), Ningaloo, W of Pt Cloates (22°42'S, 113°39'E), 1.0 m, coll. Ningaloo Expedition, 30.08.1968; WAM C 24489 (1 male), stn 2, Shark Bay, NE of Dorre I., off Quoin Bluff (25°03.3'S, 113°07.5'E), coll. M. Titelius *et al.*, 12.05.1995; WAM C 22478 (1 male, 1 female), stn 13, Dorre I., W coast N of Boulder Cliff (25°09.04'S, 113°05.33'E), 5.0–22.0 m, coll. S. Slack-Smith, 16.05.1995; WAM C 11736 (1 male, 1 female), Houtman Abrolhos Is., Beacon I. (28°28'S, 113°47'E), coll. S. Bingham, 21.04.1974; WAM C 11930 (1 male), stn D23, Wooded I. (28°45'S, 113°48'E), 1.0 m, coll. M. Liddell, 01.09.1972; WAM C 16030 (3 males, 2 females), Stick I. (28°53'S, 113°55'E), coll. A. James and G. Davenport, 07.01.1968; WAM C 24500 (1 male), Rottneest I., Salmon Bay (32°01.2'S, 115°31.1'E), 2.0 m, coll. P. Castro and M. Titelius, 03.02.2000. **Christmas Island, Indian Ocean.** WAM C 23892 (2 males, 1 female), West White Beach, 5.0–30.0 m, 18.02.1987.

#### Remarks

The colour pattern of live individuals was similar to that observed among Coral Sea and western Pacific populations (see Castro 1999b). The fingers, however, were closer to those of western Indian Ocean populations: orange to light brown instead of the orange-red to red-brown dorsal portion of the dactylus (particularly of the largest cheliped) in the western Pacific populations (see Castro 1997a: pl. 1, fig. E). The species is widely distributed throughout the Indo-west Pacific region. In Australia it is known from Queensland (Great Barrier Reef, NE coast) and Western Australia (NW coast) (Davie, 2002).

#### *Tetralia muta* (Linnaeus, 1758)

*Tetralia vanninii* Galil and Clark, 1988: 146, figs 1C, 2B, 3C, 4C, 4H, 6C.

*Tetralia muta* – Castro *et al.*, 2004: 25, 29.

#### Western Australian records

Davie, 2002: 496 (NW coast, as *Tetralia vanninii*).

#### Material examined

**Western Australia.** WAM C 25398 (1 female), stn DA1/98/08, Dampier Arch., Angel I. (20°29.18'S,

116°47.71'E), M. Titelius *et al.*, 20.10.1998; WAM C 24487 (1 female), Houtman Abrolhos Is., Coronation I. (28°52'S, 113°59'E), coll. G. Morgan, –10.1985; WAM C 24498 (1 male), Rottneest I., Salmon Bay (32°01.2'S, 115°31.1'E), 2.0 m, coll. P. Castro and M. Titelius, 03.02.2000. **Christmas Island, Indian Ocean.** WAM C 24092 (1 male, 1 female), off Merial Beach, 3.0–12.0 m, coll. S. Slack-Smith and L. Marsh, 17.02.1987.

#### Remarks

*Tetralia muta* is known from most of the Indo-west Pacific (Castro 1999a; 2000, as *T. vanninii*). It has been recorded from both the east and west coasts of Australia: Great Barrier Reef, Queensland and NW coast of Western Australia (Davie, 2002).

The colour of the single specimen that was observed alive (WAM C 24498) had a black band (followed proximally by a thin blue line) along the anterior border of the white carapace, red fingers and a red tubercle on the proximal edge of each cheliped propodus. This colour pattern is similar to that observed among specimens from French Polynesia (Castro, 1997b: 114) and Guam (Castro, 2003). Colour variations were observed among Guam specimens, however. The situation is further complicated because the live colour of the type material is unknown. Preserved juveniles and small specimens of *Tetralia nigrolineata* where some of the colour pattern has been lost are difficult to distinguish from juveniles of *T. muta* so it is possible that specimens identified as *T. nigrolineata* belong instead to *T. muta*.

#### *Tetraloides* Galil, 1986

#### *Tetraloides heterodactyla* (Heller, 1861)

#### Western Australian records

Berry and Morgan, 1986: 61 (Scott Reef, as *Tetralia heterodactyla fusca*); Davie, 2002: 497 (NW coast).

#### Material examined

**Western Australia.** QM W 17786 (3 males, 2 females), Hibernia Reef, patch reef, (11°58.8'S, 123°21.2'E), 9.0 m, coll. R. Kelley, 11.05.1992.

#### *Tetraloides nigrifrons* (Dana, 1852)

#### Western Australian records

Jones and Morgan, 1994: 178 (colour, as *Tetralia heterodactyla*); 2002: 178 (colour); Davie, 2002: 497 (NW coast).

#### Material examined

**Western Australia.** QM W 17633 (1 male, 1 female), reef slope, Cartier Reef (12°32.2'S,

123°33.4'E), 13.0 m, on gorgonacean coral, coll. J. Short, 06.05.1992; AM ex P 45105 (1 male, 1 female), Ningaloo, W of Point Cloates (22°42'S, 113°39'E), 1.0 m, coll Ningaloo Expedition, 28.08.1968; WAM C 17418 (1 male), Houtman Abrolhos Is, Coronation I. (28°52'S, 113°59'E), coll. G. Morgan, -.10.1985.

### BIOGEOGRAPHY

The geographic distribution of trapeziids and tetraliids is determined by the distribution of their obligate coral hosts. The distribution of coral crabs is of particular interest along the coast of Western Australia, which extends from areas of highly diverse coral reefs in the Timor Sea, bordering Indonesia, to low species-diversity, high-latitude communities with only scattered colonies of reef-building corals but no structural reefs south of the Houtman Abrolhos Islands (see Veron and Marsh,

1988; Veron, 1993). The distribution of the species of *Tetralia*, *Tetraloides*, and *Trapezia* is summarized in Table 1.

All seventeen species belonging to these three genera present in Western Australia are also known from Indonesia (Castro, 1999b) except two species: *Tetralia muta*, a widespread Indo-west Pacific species and *Tetralia* aff. *glaberrima*. *Trapezia bidentata* (Forskål, 1775) (= *T. ferruginea* Latreille, 1828) and *T. rufopunctata* (Herbst, 1799) are widely-distributed species known from Indonesia, the Cocos (Keeling) Islands, and Christmas Island (Castro 1999a: 109, 114) but are yet to be identified from Western Australia. The specimen of *T. rufopunctata* illustrated by Jones and Morgan (1994: 179; 2002: 179) appears not to have been collected in Western Australia.

The southernmost limit of the distribution of these species of coral crabs is much different (Table 1). Three species appear to be restricted to the

**Table 1** Geographic distribution of trapeziid (*Trapezia*) and tetraliid (*Tetralia*, *Tetraloides*) crabs symbiotic with hermatypic corals along the coast of Western Australia. Species are arranged according to increasing southernmost limits of their distributions.

Species	Northernmost limit	Southernmost limit
<i>Tetraloides heterodactyla</i>	Timor Sea	Timor Sea (11°58'S)
<i>Trapezia plana</i>	Timor Sea	Timor Sea (12°30'S)
<i>Trapezia guttata</i>	Timor Sea	Southern Kimberley region (15°21'S)
<i>Trapezia serenei</i>	Timor Sea	Dampier Archipelago (20°28'S)
<i>Trapezia formosa</i>	Dampier Archipelago	Dampier Archipelago (20°32'S)
<i>Tetralia</i> aff. <i>glaberrima</i>	Dampier Archipelago	Dampier Archipelago (20°37'S)
<i>Tetralia glaberrima</i>	Timor Sea	Dampier Archipelago (21°39'S)
<i>Trapezia lutea</i>	Timor Sea	Dampier Archipelago (21°39'S)
<i>Trapezia tigrina</i>	Timor Sea	Dampier Archipelago (21°39'S)
<i>Tetralia cinctipes</i>	Rowley Shoals (17°30'S)	Ningaloo (22°42'S)
<i>Trapezia digitalis</i>	Dampier Archipelago	Houtman Abrolhos Is. (28°30'S)
<i>Tetraloides nigrifrons</i>	Timor Sea	Houtman Abrolhos Is. (28°52'S)
<i>Tetralia nigrolineata</i>	Timor Sea	Rottneest I. (32°01'S)
<i>Tetralia rubridactyla</i>	Timor Sea	Rottneest I. (32°01'S)
<i>Trapezia cymodoce</i>	Timor Sea	Rottneest I. (32°01'S)
<i>Trapezia septata</i>	Timor Sea	Rottneest I. (32°01'S)
<i>Tetralia muta</i>	Dampier Archipelago	Rottneest I. (32°01'S)

Timor Sea and its southern limits, six as far south as the Dampier Archipelago (20°28'S), one to Ningaloo (22°42'S) and two to the Houtman Abrolhos Islands further south (28°30'S). Five species (29% of all species), however, are now known to extend as far as the southernmost limit of *Pocillopora* and *Acropora* at Rottneet Island (32°01'S) off Perth. The sharp latitudinal decrease in the hosts' species diversity (from five species of *Pocillopora* and 48 of *Acropora* off the Western Australia coast of the Timor Sea to one species of *Pocillopora* and two of *Acropora* south of Perth; Veron, 1993) is, therefore, not directly correlated to the species diversity of coral crabs. There is no evidence of host specificity in the settlement of megalopa larvae among trapeziids and tetraliids, so that coral crabs are found in reefs as long as larvae are found in the plankton and colonies of *Pocillopora* and/or *Acropora* are present in the substrate.

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