

## TWO NEW SPECIES OF DAMSELFISHES (POMACENTRIDAE) FROM WESTERN AUSTRALIA

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### ABSTRACT

Two new species of damselfishes belonging to the genus *Chromis* are described from Western Australia. *C. megalopsis* is described from two specimens taken by bottom trawl in 70-85 metres near Bernier Island and off Cape Cuvier. The salient features of this species include a large eye (2.3 to 2.4 in head length) and exposed suborbital margin. *C. westaustralis* n.sp. is closely related to *C. fumea* Tanaka from Taiwan, the Ryukyu Islands and Western Australia. The two species are separable, however, on the basis of coloration, maximum size, anal ray count, and the condition of the preopercle margin. In addition to the description of new taxa, the species of Pomacentridae of Western Australia, including 26 previously unrecorded forms, are briefly reviewed.

### INTRODUCTION

Pomacentridae is one of the largest families of reef fishes, containing approximately 250 species. They occur primarily in the tropics, but several are found at temperate latitudes. The distribution includes Atlantic, Mediterranean, and Indo-Pacific reefs, but the majority of species are confined to the latter region.

Whitley (1948) listed the following representatives from Western Australia (if no longer valid present allocation indicated in parentheses): *Actinochromis victoriae* Günther (*Parma victoriae*); *Amphiprion melanostolus* Richardson (*A. clarkii* Bennett); *A. milii* Bory de St. Vincent (*A. clarkii*); *A. rubrocinctus* Richardson; *Chromis klunzingeri* Whitley; *C. scotochil-*

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*opterus* (non Fowler; = *C. westaustralis* n.sp.); *Dischistodus perspicillatus* (non Cuvier and Valenciennes; = *D. prosopotaenia* (Bleeker)); *Glyphisodon septemfasciatus* Cuvier and Valenciennes (*Abudefduf septemfasciatus*); *Glyphisodon palmeri* Cockrell (*Abudefduf bengalensis* (Bloch)); *Parapomacentrus* n.sp. (not described in subsequent literature, but probably synonymous with *Neopomacentrus filamentosus* (Macleay); *Parma mccullochi* Whitley; *Pomacentrus obreptus* Whitley (*Eupomacentrus obreptus*); *Pseudopomacentrus fasciatus* (Macleay) (*Dischistodus fasciatus* (Cuvier)).

Mees (1960) recorded *Amphiprion melanopus* Bleeker from Yampi Sound. This is a misidentification and actually represents *A. rubrocinctus*. McKay (1970) listed several new pomacentrid records for Western Australia including *Abudefduf anabatoides* Bleeker (= *Neopomacentrus filamentosus*); *A. coelestinus* (Cuvier); *A. saxatilis* (Linnaeus); *A. sordidus* (Forskål); *Amphiprion percula* (non Lacépède; = *A. ocellaris* Cuvier); *Chromis caeruleus* (non Cuvier; = *C. atripectoralis* Welander and Schultz); *Daya jerdoni* (Day) (= *Pristotis jerdoni*); *Dascyllus aruanus* (Linnaeus); *D. reticulatus* (Richardson); *D. trimaculatus* (Rüppell); *Pomacentrus lividus* (Bloch and Schneider) (*Eupomacentrus lividus*); *P. tripunctatus* (non Cuvier; = *P. milleri* Taylor).

During 1974-75 the author examined the pomacentrid collection at the Western Australian Museum and made underwater observations and collections at Albany, Geographe Bay, Rottnest Island, the Houtman Abrolhos, Shark Bay, Northwest Cape, and the Dampier Archipelago. These efforts produced 26 additional records, including two new *Chromis* which are described herein. The known pomacentrid fauna of Western Australia is summarised in Table 1. There are 50 species now recognized from the state, which makes it the fourth largest family, being surpassed only by the Labridae, Serranidae, and Gobiidae.

## METHODS OF COUNTING AND MEASURING

The methods of counting and measuring are the same as those described by Allen (1972) except the length of the dorsal and anal spines are measured proximally at the base of the spine rather than the point at which the spine emerges from the scaly sheath. Measurements were made with dial calipers to the nearest 0.1 millimetre (mm). Standard length is abbreviated as SL. The counts and proportional measurements of the holotype are followed by the range of the paratypes in parentheses. The last element of the dorsal and anal fins, which in some specimens appears as a bifurcation of the adjacent ray, is counted separately.

Table 1: Species of Pomacentridae from Western Australia.  
 (\* represents new record; † = endemic to W.A.)

Species	Approximate distribution in W.A.
<i>Abudefduf bengalensis</i> (Bloch)	Perth northwards
<i>A. coelestinus</i> (Cuvier)	Perth northwards
<i>A. saxatilis</i> (Linnaeus)	Perth northwards
<i>A. septemfasciatus</i> (Cuvier)	Perth northwards
<i>A. sordidus</i> (Forskål)	Carnarvon northwards
* <i>Amblyglyphidodon curacao</i> (Bloch)	Dampier northwards.
<i>Amphiprion clarkii</i> (Bennett)	Abrolhos northwards
<i>A. ocellaris</i> Cuvier	Derby northwards
* <i>A. perideraion</i> Bleeker	Carnarvon northwards
<i>A. rubrocinctus</i> Richardson	Carnarvon northwards
* <i>A. sandaracinos</i> Allen	Carnarvon northwards
* <i>Cheiloprion labiatus</i> (Day)	Dampier northwards
<i>Chromis atripectoralis</i> Schultz & Welander	Abrolhos northwards
* <i>C. cinerascens</i> (Cuvier)	Dampier northwards
* <i>C. fumea</i> (Tanaka)	Northwest Cape northwards
<i>C. klunzingeri</i> Whitley	† Albany to Perth
* <i>C. megalopsis</i> Allen	† Shark Bay vicinity
* <i>C. margaritifer</i> Fowler	Carnarvon northwards
* <i>C. weberi</i> Fowler & Bean	Carnarvon northwards
<i>C. westaustralis</i> Allen	† Albany to Northwest Cape
<i>Dascyllus aruanus</i> (Linnaeus)	Abrolhos northwards
<i>D. reticulatus</i> (Richardson)	Abrolhos northwards
<i>D. trimaculatus</i> (Rüppell)	Abrolhos northwards
<i>Dischistodus fasciatus</i> (Cuvier)	Dampier northwards
<i>D. prosopotaenia</i> (Bleeker)	Carnarvon northwards
* <i>Eupomacentrus fasciolatus</i> (Ogilby)	Carnarvon northwards
<i>E. lividus</i> (Bloch & Schneider)	Carnarvon northwards
* <i>E. nigricans</i> (Lacepede)	Carnarvon northwards
<i>E. obreptus</i> (Whitley)	Abrolhos northwards
* <i>Hemiglyphidodon plagiometopon</i> Bleeker	Dampier northwards
* <i>N. azysron</i> (Bleeker)	Carnarvon northwards
* <i>N. cyanomos</i> (Bleeker)	Carnarvon northwards
<i>Neopomacentrus filamentosus</i> (Macleay)	Shark Bay northwards
* <i>Paraglyphidodon behni</i> (Bleeker)	Carnarvon northwards
* <i>P. melas</i> (Cuvier)	Carnarvon northwards
<i>Parma mccullochi</i> Whitley	† Albany to Abrolhos
<i>P. occidentalis</i> Allen & Hoese	† Geographe Bay to Carnarvon
<i>P. victoriae</i> (Günther)	S.A. border to Geographe Bay
* <i>Plectroglyphidodon dickii</i> (Liénard)	Abrolhos northwards
* <i>P. johnstonianus</i> Fowler & Ball	Abrolhos northwards
* <i>P. lacrymatus</i> (Quoy & Gaimard)	Abrolhos northwards
* <i>P. leucozonus</i> (Bleeker)	Abrolhos northwards
* <i>Pomacentrus alexanderae</i> Evermann & Seale	Dampier northwards
* <i>P. amboinensis</i> Bleeker	Dampier northwards
* <i>P. coelestis</i> Jordan & Starks	Abrolhos northwards
* <i>P. milleri</i> Taylor	Perth northwards
* <i>P. popei</i> Jordan & Seale	Carnarvon northwards
* <i>P. vaiuli</i> Jordan & Seale	Carnarvon northwards
* <i>P. sp.</i>	Carnarvon northwards
<i>Pristotis jerdoni</i> (Day)	Shark Bay northwards

A summary of counts for the dorsal, anal, and pectoral fin rays, gill rakers on the first arch, and tubed lateral-line scales is presented in Table 2.

Type material has been deposited at the following institutions: Australian Museum, Sydney (AM); Bernice P. Bishop Museum, Honolulu (BPBM); British Museum (Natural History), London (BMNH); United States National Museum of Natural History, Washington, D.C. (USNM); Western Australian Museum, Perth (WAM).

*Chromis megalopsis* n.sp.

(Fig. 1; Tables 2 and 3)

Holotype. — WAM P25207-001, 84.1 mm SL, collected with bottom trawl approximately 40 nautical miles west of Bernier Island, Western Australia (24° 59'S, 112° 27'E) in 71 fathoms by R. George and crew of "Dimantina" on 8 October 1963.

**Paratype**

WAM P2234, 102.0 mm SL, collected with bottom trawl about 37 nautical miles northwest of Cape Cuvier, Western Australia (approximately 24° 59'S, 113° 00'E) in 70-85 fathoms by J. Penn on 29 July 1972.

**Diagnosis**

A species of *Chromis* with the following combination of characters: dorsal rays XIII,15 or XIV,14; anal rays II,12 to 13; eye relatively large, 2.3 to 2.4 in head length. suborbital margin exposed. body depth 2.1 in SL; colour generally pale, silvery or whitish on ventral half of body; small diffuse dark spot on uppermost part of pectoral base and dark spot covering most of outer face of pectoral axil.

**Description**

Dorsal rays XIII,15 (XIV,14); anal rays II,13 (II,12); pectoral rays 19; pelvic rays 1,5; gill rakers on first arch 8 + 20 = 28 (10 + 20 = 30); tubed lateral-line scales 17; horizontal scale rows from terminal lateral-line scale to base of dorsal fin 1-2; from lateral-line to origin of anal fin 9; procurent spines on upper and lower edge of caudal fin 2.

Body ovate, laterally compressed, the greatest depth 2.1 in the standard length. Head profile conical, the head length contained 2.9 (3.0) in the standard length. The following proportions are expressed into the head

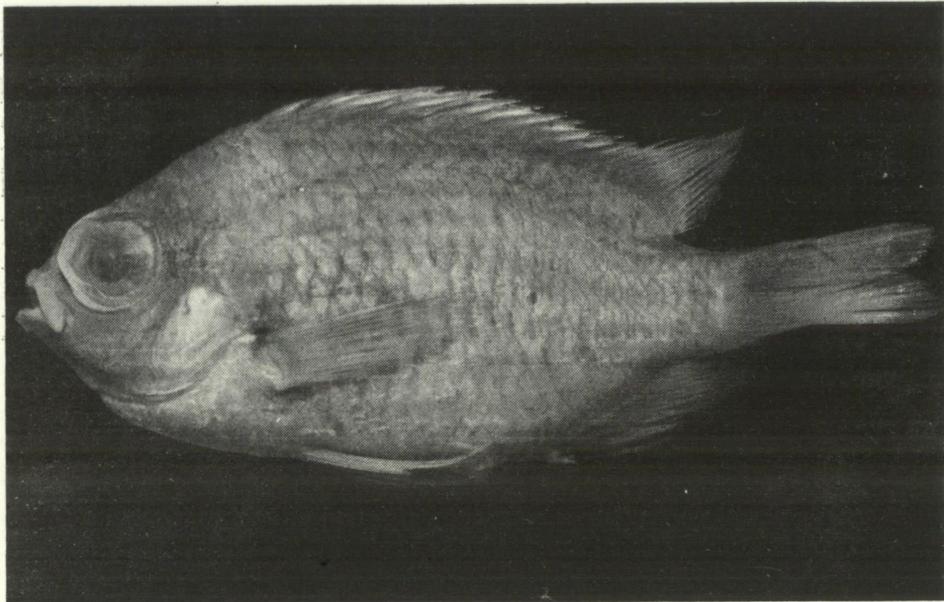


Figure 1: *Chromis megalopis* holotype, 84.1 mm SL, west of Bernier Island, Western Australia.

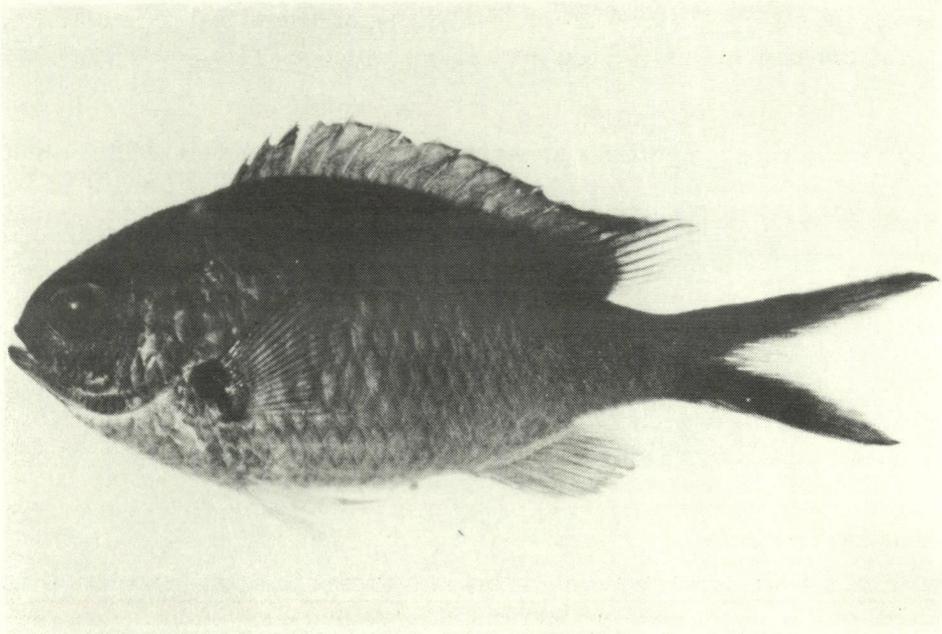


Figure 2: *Chromis westaustralis*, holotype, 84.0 mm SL, Abrolhos Islands, Western Australia.

length: snout 4.0 (4.3), eye diameter 2.4 (2.3), interorbital width 3.5 (3.2), least depth of caudal peduncle 3.5 (2.3), length of caudal peduncle 4.5 (3.7), of pectoral fin 1.0, of pelvic fin 1.1 (1.0), of caudal fin 1.0 (1.2).

Single nasal opening on each side of snout; mouth oblique, terminally located; lateral-line gently arched beneath dorsal fin, terminating 1-2 scale rows below base of last dorsal spine; lips, chin, isthmus, posterior and inferior limb of preopercle, and area around nostrils naked; remainder of head and body scaled; scales finely ctenoid; preopercle with two large scale rows and additional row of small scales on inferior limb; small sheath scales covering basal 1/2-2/3 of dorsal, anal, and caudal fins; edge of suborbital, preopercle, and opercle entire except flattened spine at angle of opercle; suborbital narrow, about 1/3 pupil diameter.

Teeth of jaws conical, multiserial, an outer row in each jaw consisting of 36 to 37 enlarged teeth and inner series of irregularly arranged smaller teeth; height of largest teeth of upper jaw about twice nostril diameter.

Origin of dorsal fin at level of fourth tubed scale of lateral-line; spines of dorsal fin gradually increasing in length to fourth, fifth, or sixth spine, remaining spines gradually decreasing in length. The following proportions are expressed into the head length: length of first dorsal spine 3.2, of fifth dorsal spine 1.9, of last dorsal spine 2.8 (2.7); of longest soft dorsal ray 1.8; of first anal spine 5.1 (3.7), of second anal spine 1.7 (1.5), of longest soft anal ray 1.6.

The following proportions are expressed into the standard length: snout to origin of dorsal fin 2.6 (2.4); snout to origin of anal fin 1.3 (1.5); snout to origin of pelvic fin 2.3 (2.5); length of dorsal fin base 1.6, length of anal fin base 4.3 (4.0).

Colour of holotype in alcohol: head and body mostly pale; upper part of head and back light brown; lower half of sides whitish or silvery with faint dusky patches; fins yellowish-tan except slightly dusky on basal portions; pectoral with diffuse dark spot on uppermost portion of fin base; pectoral axil with dark spot covering most of outer face.

#### Remarks

This species is known only from the types. It is distinguished from other species of *Chromis* on the basis of the combination of characters given in the diagnosis. It is named *megalopsis* with reference to the unusually large eye.

*Chromis westaustralis* n.sp.

(Fig. 2; Tables 2 and 4)

**Holotype**

WAM P25317-008, 84.0 mm SL, collected with multiprong spear at Long Island, Wallabi Group, Houtman Abrolhos, Western Australia (approximately 28° 30'S, 113° 47'E) in 2-8 metres by G. Allen on 21 May 1975.

**Paratypes**

AM I.18475-001, 68.0 mm SL, collected with trawl west of Koks Island, Shark Bay, Western Australia in 75 metres by W. and W. Poole, on 1 October 1964; BM(NH) 1975.9.23.9, 62.0 mm SL, collected at Mandurah (approximately 50 km south of Fremantle), Western Australia by N. Wall on 29 June 1972; BPBM 19058, 2 specimens, 56.2 and 61.0 mm SL, collected at the Houtman Abrolhos, Western Australia by J. Alchin in March-June, 1960; BPBM 19059, 3 specimens; 59.1-67.3 mm SL, collected with trawl approximately 9 km west of Garden Island (off Perth-Fremantle district), Western Australia by L. Marsh and M. Sheperd aboard M.R.V. "Flinders" on 8 March 1972; BPBM 19163, 45.5 mm SL, collected with multiprong spear on outer reef off Tantabiddi Creek, Northwest Cape, Western Australia in 15-18 metres by G. Allen on 30 June 1975; USNM 214702, 2 specimens, 53.3 and 66.2 mm SL, collected at Shark Bay, Western Australia in 75 metres by E. Barker on 24 October 1964; WAM P2789, 45.0 mm SL, collected at Dirk Hartog Island, Western Australia in November 1944; WAM P24853, 26.5 mm SL, collected with rotenone near Middleton Beach, Albany, Western Australia in 3 metres by G. Allen on 24 July 1974; WAM P25307-011, 71.2 mm SL, collected with multiprong spear at Goss Passage, Beacon Island, Houtman Abrolhos, Western Australia in 2-3 metres by G. Allen on 16 May 1975; WAM P25308-006, 2 specimens, 50.5 and 59.6 mm SL, collected with multiprong spear and rotenone at Seal Island, Wallabi Group, Houtman Abrolhos, Western Australia in 12-16 metres by G. Allen on 17 May 1975; WAM P25317-009, 84.0 mm SL, collected with multiprong spear at Long Island, Wallabi Group, Houtman Abrolhos, Western Australia in 2-8 metres by G. Allen on 21 May 1975; WAM P25376-002, 50.0 mm SL, collected with quinaldine at Northwest Cape, outer reef off Tantabiddi Creek, Western Australia in 16-18 metres by G. Allen on 3 July 1975.

**Diagnosis**

A species of *Chromis* with the following combination of characters: dorsal rays XIII,11 to 12; anal rays II,10 to 11; suborbital margin hidden; body

Table 2: Selected counts for specimens of new *Chromis* from Western Australia.

Species	Soft dorsal rays					Soft anal rays				Pectoral rays		Lateral-Line Scales				Gill Rakers						
	11	12	13	14	15	10	11	12	13	19	20	17	18	19	20	28	29	30	31	32	33	
<i>C. megalopsis</i>			1	1			1	1		2		2				1		1				
<i>C. westaustralis</i>	2	14				1	15			9	7	1	7	7	1	3	7	4	1	1		

Table 3: Morphometric proportions (in thousandths of the standard length of type specimens of *Chromis megalopsis*).

Characters	Holotype	
	WAM P25207-001	WAM P2234
Standard length (mm)	84.1	102.0
Greatest body depth	482	466
Head length	344	333
Snout length	87	78
Eye diameter	145	142
Interorbital width	98	104
Least depth of caudal peduncle	98	143
Length of caudal peduncle	76	89
Snout to origin of dorsal fin	382	412
Snout to origin of anal fin	741	686
Snout to origin of pelvic fin	436	398
Length of dorsal fin base	628	642
Length of anal fin base	232	221
Length of pectoral fin	351	337
Length of pelvic fin	319	328
Length of 1st dorsal spine	108	105
Length of 7th dorsal spine	184	176
Length of last dorsal spine	125	125
Longest soft dorsal ray	187	182
Length of 1st anal spine	67	91
Length of 2nd anal spine	206	221
Longest soft anal ray	209	204
Length of caudal fin	341	280

Table 4: Morphometric proportions (in thousandths of the standard length) of selected types of *Chromis westaustralis*.

Characters	Holotype	Paratypes				BPBM 19163	WAM P24853
	WAM P25317-008	WAM P25307-011	WAM P25308-006	WAM P25308-006			
Standard length (mm)	84.0	71.2	59.6	50.5	45.5	26.5	
Greatest body depth	440	421	403	396	418	434	
Head length	286	309	319	317	330	340	
Snout length	65	70	76	69	70	68	
Eye diameter	101	103	117	119	132	132	
Interorbital width	89	94	97	89	88	106	
Least depth of caudal peduncle	143	140	143	119	143	121	
Length of caudal peduncle	131	140	134	139	132	113	
Snout to origin of dorsal fin	339	379	386	376	385	377	
Snout to origin of anal fin	738	681	696	713	703	717	
Snout to origin of pelvic fin	458	435	419	446	418	491	
Length of dorsal fin base	595	562	570	535	571	528	
Length of anal fin base	190	190	201	182	187	219	
Length of pectoral fin	310	309	336	307	308	245	
Length of pelvic fin	286	281	268	277	297	264	
Length of 1st dorsal spine	71	70	67	79	99	75	
Length of 7th dorsal spine	137	140	151	139	165	113	
Length of last dorsal spine	107	112	101	99	132	94	
Longest soft dorsal ray	185	190	201	186	220	136	
Length of 1st anal spine	42	53	59	59	77	60	
Length of 2nd anal spine	155	166	176	168	176	158	
Longest soft anal ray	173	169	185	178	198	189	
Length of caudal fin	345	323	336	327	308	283	

depth 2.3 to 2.5 in SL; preopercle margin smooth or crenulate without distinctive serrae; colour generally light brown, darker dorsally with prominent dark streak on each lobe of caudal fin; pectoral axil with black spot extending on to upper half of external part of pectoral base; white spot present at base of posterior soft dorsal rays in live individuals.

### Description

Dorsal rays XIII,12 (XIII,11 to 12); anal rays II,11 (II,10 to 11); pectoral rays 19 (19 to 20); pelvic rays I,5; gill rakers on first arch  $9 + 22 = 31$  (29 to 33); tubed lateral-line scales 19 (17 to 20); horizontal scale rows from terminal lateral-line scale to base of dorsal fin  $1\frac{1}{2}$ ; from lateral-line to origin of anal fin 9; procurent spines on upper and lower edge of caudal fin 2.

Body relatively elongate, laterally compressed, the greatest depth 2.3 (2.3 to 2.5) in the standard length. Head profile conical, the head length contained 3.5 (3.0 to 3.2) in the standard length. The following proportions are expressed into the head length: snout 4.4 (4.2 to 4.7), eye diameter 2.8 (2.5 to 3.0), interorbital width 3.2 (3.3 to 4.0), least depth of caudal peduncle 2.6 (2.2 to 2.7), length of caudal peduncle 2.2 (2.2 to 2.5), of pectoral fin 0.9 (1.0 to 1.1), of pelvic fin 1.0 (1.1 to 1.2), of caudal fin 0.8 (0.9 to 1.1).

Single nasal opening on each side of snout; mouth oblique, terminally located; lateral-line gently arched beneath dorsal fin, terminating  $1\frac{1}{2}$  scale rows below middle of soft dorsal fin; tip of snout, lips, chin, and isthmus naked; remainder of head and body scaled; scales finely ctenoid; preopercle with two large scale rows and row of smaller scales on inferior and posterior limb; small sheath scales covering basal  $\frac{1}{2}$  to  $\frac{3}{4}$  of membranous portions of dorsal and anal fins and most of caudal; edge of suborbital hidden; rear margin of preopercle entire or slightly crenulate; edge of bones of opercle series entire except a single flattened spine on upper portion of opercle.

Teeth of jaws conical, multiserial, about 40 to 46 in outer row of upper jaw and 34 to 42 in outer row of lower jaw; teeth at front of jaws slightly enlarged, the largest about 1.0 to 1.5 nostril diameter; irregular series of smaller teeth behind outer row teeth at front of jaws.

Origin of dorsal fin at level of third tubed scale of lateral-line; spines of dorsal fin gradually increasing in length to about sixth or seventh spine, remaining spines gradually decreasing in length. The following proportions are expressed into the head length: length of first dorsal spine 4.0 (3.3 to 4.8), of seventh dorsal spine 2.1 (2.0 to 2.3), of last dorsal spine 2.7 (2.5 to 3.2), of last dorsal spine 2.7 (2.5 to 3.2), of longest soft dorsal ray 1.5

(1.5 to 1.7), of first anal spine 6.9 (4.3 to 5.9), of second anal spine 1.8 (1.6 to 1.9), of longest soft anal ray 1.7 (1.5 to 1.8).

Colour of holotype in alcohol: ground colour of head and body brown, darker dorsally, grading to silvery on breast and abdomen; dorsal and anal fins brown except posteriormost portion translucent; pectoral fins pale with black spot in axil and invading upper half of outer pectoral base; pelvic fins slightly dusky; caudal fin with broad dark streak on each lobe, inner portion of fork pale. There is considerable variation in the ground colour of the paratypes. Generally the specimens which have been in preservative for several years are pale yellowish-brown to tan.

Colour in life: live colours are similar to those described above except there is a small white spot, less than pupil size, below the base of the posteriormost dorsal rays. In addition, the dorsal, anal, and caudal fins have a narrow blue margin.

#### Remarks

McKay (1970) reported five specimens of an unidentified *Chromis* from the Houtman Abrolhos and Shark Bay. They are identifiable as *C. westaustralis* and are among the designated paratypes. McKay also indicated that the record of *C. scotochilopterus* (non Fowler) by Whitley (1948) was incorrect and refers to this species.

*C. westaustralis* is closely allied to *C. fumea* Tanaka which is known from Taiwan, the Ryukyu Islands and Western Australia. The latter locality represents a new locality record which is based on four specimens, 32.5-55.0 mm SL, at BPBM and WAM from Northwest Cape and Kendrew Island, Dampier Archipelago.

Both species have the same general shape and are similar in coloration, particularly with regards to the dark caudal streaks and small white spot in live individuals at the base of the posterior dorsal rays. However, they differ in several important respects. *C. westaustralis* generally has an additional soft anal ray (11 vs 10 for *C. fumea*) and lacks the distinct preopercle serrae which are typical of *C. fumea*. Furthermore, the black spot on the pectoral axil of *C. westaustralis* extends onto the outer portion of the pectoral base, covering most of the upper half. Finally, there appears to be a significant difference in maximum size. The largest of many individuals of *C. fumea* observed at Northwest Cape and the Dampier Archipelago was approximately 60 mm SL compared with many species of *C. westaustralis* in excess of 80 mm SL seen at the Abrolhos Islands.

The species inhabits coral areas and rocky reefs at depths ranging from two metres to at least 75 metres. Over the southern portion of its range

*C. westaustralis* is usually encountered at depths greater than 25 metres, but on the coral reefs of the Houtman Abrolhos (between 28 and 29°S latitude) it is common in depths of less than 10 metres. Indeed, it is perhaps the most abundant reef fish in that island group, occurring in huge aggregations, which feed on plankton up to several metres above the bottom.

The species is known only from Western Australia and is therefore named *westaustralis*.

#### ACKNOWLEDGEMENTS

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