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Chromis pacifica, a new Pacific Ocean damselfish distinct from Indian Ocean *Chromis agilis* (Teleostei: Pomacentridae)

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Abstract

The common coral-reef damselfish, *Chromis agilis* Smith, 1960, has long been considered a widespread Indo-Pacific species, ranging from East Africa to French Polynesia and the Hawaiian Islands. The population from the western Indian Ocean looks different from the more well-known Pacific Ocean population and has been described separately as the species *Chromis xutha* Randall, 1988. However, *Chromis agilis* was described from type specimens from Seychelles and East Africa, and thus *C. xutha* is a junior synonym of *Chromis agilis*. The Pacific population widely recognized as *C. agilis* is therefore unnamed and is described here as the new species *Chromis pacifica*. It differs from true *C. agilis* by having a larger black spot at the base of the pectoral fin, lateral greyish to purplish stripes along scale rows, more dorsal-fin and pectoral-fin rays and lateral-line scales, and a larger size (up to 80 mm SL vs. 55 mm SL). An expanded diagnosis of *C. agilis* is presented, along with photographs illustrating the differences from *C. pacifica*.

Key words: taxonomy, ichthyology, coral-reef fishes, Indo-Pacific Ocean, Australia

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Introduction

The pomacentrid genus *Chromis* Cuvier, 1814 is common on coral and rocky reefs throughout tropical and warm temperate seas worldwide. The genus presently contains 105 valid species (Fricke et al. 2020) and represents the largest genus in the family Pomacentridae. Of those, 77 species occur in the tropical Indo-Pacific Ocean, mostly associated with coral reefs.

Chromis agilis Smith, 1960 was originally described on the basis of type specimens from the Seychelles and East Africa (northwards of Bazaruto, Mozambique). Subsequently, Randall & Swerdloff (1973) reported the species from scattered locations in the western and central Pacific Ocean, including the Hawaiian Islands. The widespread occurrence of the species in the Pacific, primarily at oceanic islands, from the Ogasawara Islands of Japan through Micronesia and the Marshall Islands, across to Hawaii, and south to the Great Barrier Reef and New Caledonia, Cook Islands, French Polynesia, and Pitcairn Island was further documented by Allen (1975, 1991), Myers (1989, 1999), Randall et al. (1990, 1996), Allen et al. (2003), and Randall (2005, 2007).

More recently, the first author conducted surveys of pomacentrid fishes in the western Indian Ocean (from 1979 to 2018), including at Maldives, Seychelles, Kenya, Mauritius, and Madagascar. The familiar form of Pacific *Chromis agilis* was not present, and the only damselfish species seen or collected that resembled Smith's original description of *C. agilis* was *Chromis xutha* Randall, 1988. We therefore conclude that *C. xutha* is a junior synonym of the original *Chromis agilis* of Smith and the widespread Pacific population represents an unnamed species that we describe here as a new species. We also provide a more comprehensive description and diagnostic photographs for *C. agilis*, which was only briefly described by Smith (1960).

Materials and Methods

Type specimens are deposited at the Bernice P. Bishop Museum, Honolulu, HI, USA (BPBM) and the Western Australian Museum, Perth, Australia (WAM). Additional specimens examined came from the South African Institute for Aquatic Biology (SAIAB), Grahamstown, South Africa (specimens prefixed with RUSI).

Lengths of specimens are given as standard length (SL) measured from the anterior end of the upper lip to the base of the caudal fin (posterior edge of hypural plate); head length (HL) is measured from the same anterior point to the posterior edge of the opercle flap; body depth is the maximum depth taken vertically between the belly and base of the dorsal spines; body width is the maximum width just posterior to the gill opening; snout length is measured from the anterior end of the upper lip to the anterior edge of the eye; orbit diameter is the horizontal fleshy diameter, and interorbital width the least fleshy width; upper-jaw length is taken from the front of the upper lip to the posterior end of the maxilla; caudal-peduncle depth is the least depth, and caudal-peduncle length is the horizontal distance between verticals at the rear base of the anal fin and the caudal-fin base; lengths of fin spines and rays are measured to their extreme bases (i.e. not from the point where the ray or spine emerges from the basal scaly sheath); caudal-fin length is the horizontal length from the posterior edge of the hypural plate to a vertical at the tip of the longest ray; caudal concavity is the horizontal distance between verticals at the tips of the shortest to longest rays; pectoral-fin length is the length of the longest ray; pelvic-fin length is measured from the base of the pelvic-fin spine to the filamentous tip of the longest soft ray; pectoral-fin ray counts include the small splint-like, uppermost rudimentary ray (the decimal figure ".5" appearing in the scale row count above and below the lateral line refers to a small truncated scale at the respective bases of the dorsal and anal fins); only the tube-bearing anterior lateral-line scales are counted, a separate count is given for the deeply pitted scales occurring in a continuous series midlaterally on the caudal peduncle; gill-raker counts include all rudiments and are presented as separate counts for the upper and lower limbs, as well as a combined count; the last fin-ray element of the dorsal and anal fins is usually branched near the base and is counted as a single ray.

Morphopmetric data in the description is based on the holotype and 12 paratypes, 41.5–61.2 mm SL. Counts and proportions in parentheses are the range for the paratypes, if different from the holotype. Proportional measurements expressed as percentage of the standard length are provided in Table 1.

Chromis pacifica, n. sp.

Pacific Bronze Chromis

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Figures 1–6A; Tables 1 & 2

Chromis agilis (*non* Smith) Randall & Swerdloff 1973: 336 (Hawaiian Islands and various Pacific island locations); Allen 1975: 75; Allen 1991: 59; Randall, Allen & Steene 1990, 1996: 255; Myers 1999: 177, plates 94 B & C; Allen et al. 2003: 80; Randall 2005: 353; Randall 2007: 305; and many others (see Fricke et al. 2020, all for islands and reefs of the Pacific Ocean).

Holotype. WAM P.34767-002, 66.2 mm SL, Australia, Coral Sea, Holmes Reefs, -16.4499°, 148.0014°, 5–8 m, barrier net, T. Bennett, 20 March 2017.

Paratypes. BPBM 6091, 55 & 64 mm SL, Society Islands, Tahiti, Papara, Teavaraa Pass, -17.7865°, 149.4727°, 21 m, J.E. Randall & C.K. Walters, 4 September 1967; BPBM 7111, (6 specimens) 42–67 mm SL, Japan, Bonin Islands, Minami Tori Shima (Marcus Island), 24.2930°, 153.9755°, 6–12 m, J.E. Randall & T. Pederson, 6 September 1968; BPBM 8002, (4 specimens) 19–54 mm SL, Marshall Islands, Enewetak Atoll, Medren Island, 11.4093°, 162.3695°, 12 m, G.R. Allen & J.E. Randall, 18 April 1968; BPBM 8505, (3 specimens) 25–75 mm SL, USA, Hawaii, Kona coast (no coordinates given), 23 m, J.E. Randall, 15 August 1969; BPBM 8966, (12 specimens) 66–75 mm SL, USA, Johnston Atoll, north of North Island in lagoon, 16.7581°, 169.5142°, 1.5–6 m, J.E. Randall, R.L. Bowers & A.C. Banner, 25 July 1968; BPBM 11292, (3 specimens) 66–76 mm SL, USA, Hawaii, Oahu, Waianae coast, off Nanikuli, 21.3715°, 158.1495°, 27.5 m, J.E. Randall, 17 September 1971; BPBM 17043, 36 & 70 mm SL, Pitcairn Group, Pitcairn Island, off Western Harbor, -25.0615°, 130.1191°, 12–15 m, J.E. Randall, D.B. Cannoy, S.R. Christian, C. Christian & N. Young, 27 December 1970; BPBM 40060, (4

Figure 1. *Chromis pacifica*, approx. 65 mm SL, Ouvea Atoll (G.R. Allen).

specimens) 29–38 mm SL, Fiji Islands, Viti Levu, off Suva Harbour, -18.1591°, 178.3996°, 21–27 m, R.L. Pyle & D.F. Pence, 3 February 2002; WAM P.25129-005, 50.1 & 50.3 mm SL, Vanuatu, Efate, Mele Bay, Port Vila, off Erakor, -17.7656°, 168.2662°, 13 m, rotenone, G.R. Allen & D. Popper, 23 June 1973; WAM P.32094-001, (7 specimens) 41.5–61.2 mm SL, Phoenix Islands, Nikumaroro Atoll, outer reef on northeastern side, -04.6668°, 174.5151°, 18 m, rotenone, G.R. Allen & S. Bailey, 11 June 2002; WAM P.34734-002, 58.0 & 58.3 mm SL, New Caledonia, Cook Reef, False Pass, -19.8799°, 164.1488°, 15 m, spear, G.R. Allen, 4 December 2006.

Diagnosis. A species of *Chromis* with the following combination of characters: dorsal-fin elements XII,12–14 (usually XII,13); II,12–14 (usually II,13); pectoral-fin rays 16–18 (usually 17); spiniform caudal-fin rays 2; tubed lateral-line scales 14–17 (usually 15–16); total gill rakers on first branchial arch 27–32; body depth 1.8–2.0 (mean 1.9) in SL; color in life overall yellowish brown, typically with lateral greyish to purplish stripes along scale rows; dorsal and anal fins brownish with dark-brown triangular marking posteriorly and caudal fin yellowish; pectoral fin with a prominent round, blackish spot covering entire base and axil.

Description. Dorsal-fin elements XII,13 (XII,12–14); anal-fin elements II,13 (II,12–14); all dorsal-fin and anal-fin soft rays branched, last to base; pectoral-fin rays 17 (16–18), uppermost and lowermost two unbranched; pelvic-fin rays I,5; principal caudal-fin rays 15, uppermost and lowermost unbranched; spiniform caudal-fin rays 2, followed by two accessory segmented rays; scales in longitudinal series 27; tubed lateral-line scales 15 (14–17); posterior midlateral scales with a pore or deep pit (in continuous series) 7/8 (5–9, usually 7 or 8); scales above lateral line to origin of dorsal fin 2.5; scales above lateral line to base of middle dorsal-fin spine 1.5; scales below lateral line to origin of anal fin 8.5; gill rakers 8+21 = 29 (7–9+19–24, total 27–32); branchiostegal rays 6; supraneural (predorsal) bones 3; vertebrae 11+15.

Body relatively deep and ovate, depth 1.9 (1.8–2.0) in SL, and compressed, body width 2.9 (2.7–3.1) in body depth; head length 3.5 (3.1–3.6) in SL; dorsal profile of head with slight convexity above eye; snout shorter than orbit diameter, length 3.5 (3.3–4.7) in HL; orbit diameter 3.1 (2.3–2.9) in HL; interorbital space convex, width 3.0 (2.7–3.1) in HL; caudal-peduncle depth 1.8 (1.7–2.1) in HL; caudal-peduncle length 1.8 (1.8–2.5) in HL.

Mouth terminal, small, and oblique, forming an angle of about 35° to horizontal axis of head and body; posterior edge of maxilla reaching a vertical about level with anterior edge of pupil, upper-jaw length 3.0 (2.9–3.5) in HL; teeth multiserial, an outer row of conical teeth in each jaw, largest anterior, 20 (20–28) upper and 20 (20–24) lower on each side of jaw; a narrow band of villiform teeth posterior to outer row, in 2 or 3 irregular rows anteriorly, narrowing to a single row on side of jaws; tongue triangular with rounded tip; gill rakers long and slender, longest on lower limb near angle about 70% length of longest gill filaments; nostril with a low fleshy rim, more elevated on posterior edge and located at level of middle of pupil, about one-half distance from front of orbit to rear edge of upper lip. Opercle ending posteriorly in a flat spine, tip relatively obtuse and obscured by a large scale; margin of preopercle smooth, posterior margin extending dorsally to level of upper edge of pupil, posterior margin extending anteriorly to level of middle of pupil; suborbital with free lower margin extending nearly to a vertical at posterior edge of pupil.

Scales finely ctenoid; tubed lateral-line scales ending beneath base of last spine to first two soft rays of dorsal fin; head scaled except lips, tip of snout, and a narrow zone from orbit to edge of snout containing nares; a scaly sheath at base of dorsal and anal fins, about one-half to nearly full pupil diameter wide at base of posterior dorsal-fin spines, progressively narrower on soft portion; a column of scales on each membrane of dorsal and anal fins, narrowing distally, column on spinous portion of dorsal fin progressively longer, reaching about two-thirds to three-fourths distance to spine tips on posterior membranes, then progressively shorter on soft portion; small scales covering most of rayed portion of caudal fin, but highly deciduous and frequently missing on preserved specimens; small scales on fleshy base of pectoral fins, but scarcely extending onto rayed portion; a median scaly process extending posteriorly from between base of pelvic fins, length half to three-quarters of pelvic-fin spine; axillary scale above base of pelvic-fin spine half to two thirds length of spine.

Origin of dorsal fin over third or fourth lateral-line scale, predorsal distance 2.5 (2.3–2.6) in SL; dorsal-fin base 1.6 (1.7–1.8) in HL; first dorsal-fin spine 5.4 (3.9–5.5) in HL; seventh dorsal-fin spine 2.4 (2.0–2.4) in HL; last dorsal-fin spine 2.3 (2.1–2.5) in HL; membranes of spinous portion of dorsal fin prominently incised; fourth and fifth dorsal-fin soft rays longest (filamentous if undamaged), 1.4 (1.1–1.5) in SL; preanal distance 1.6 (1.4–1.6) in SL; anal-fin base 2.0 (1.9–2.2) in dorsal-fin base; first anal-fin spine 4.4 (3.1–4.6) in HL; second anal-fin

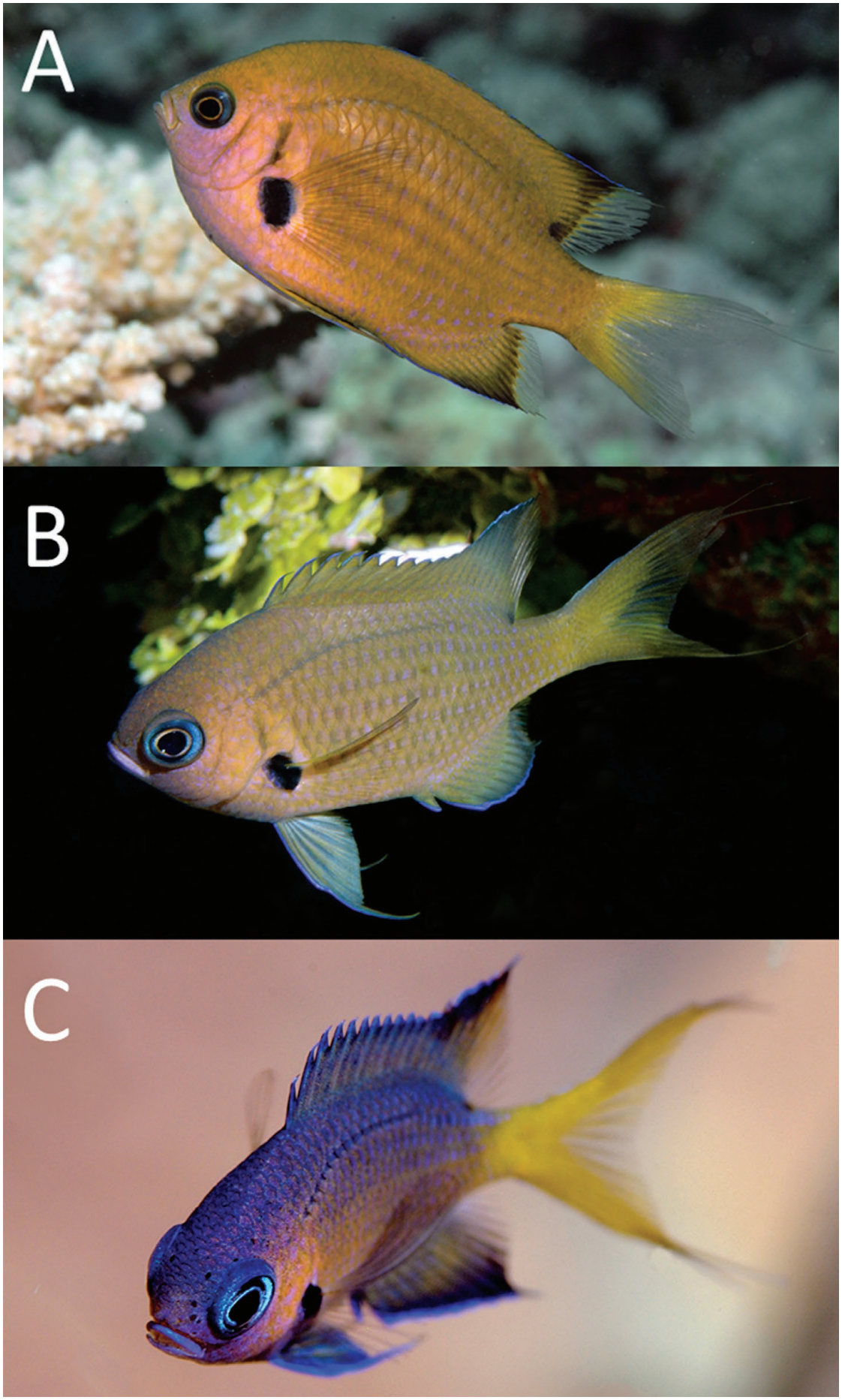

Figure 2. *Chromis pacifica*, A) adult, approx. 60 mm SL, New Caledonia; B) subadult, approx. 40 mm SL, Fiji; C) juvenile, approx. 20 mm SL, Chuuk, Micronesia (G.R. Allen).

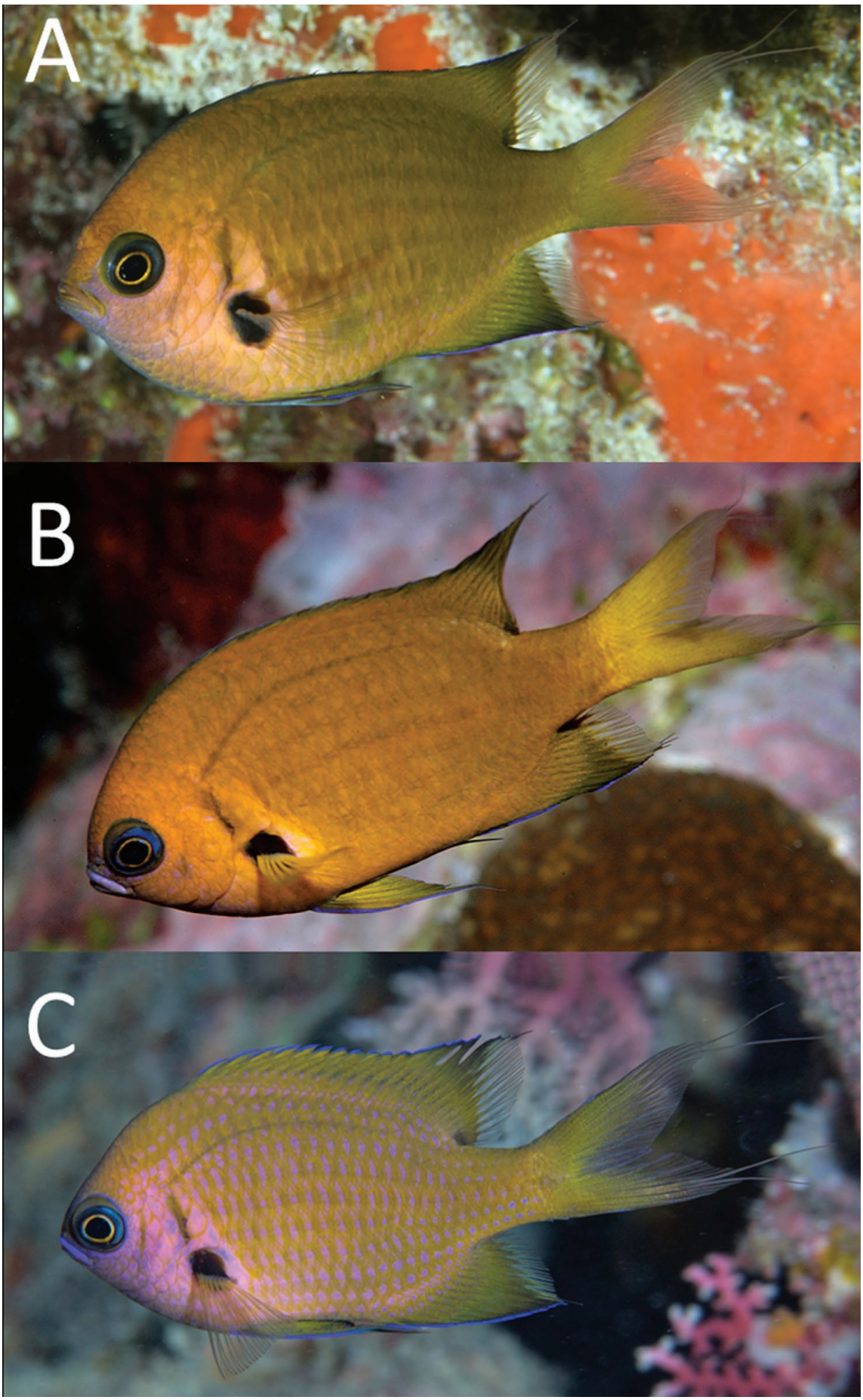

Figure 3. *Chromis pacifica*, A) adult, approx. 65 mm SL, Ouvea Atoll, Loyalty Islands (G.R. Allen); B) adult, approx. 60 mm SL, Yap, Micronesia (G.R. Allen); C) subadult, approx. 45 mm SL, Fiji (M.V. Erdmann).

TABLE 1

Proportional measurements of type specimens of *Chromis pacifica*, n. sp. as percentages of the standard length
(*=damaged)

	holotype	paratypes								
	WAM P.34767-002	WAM P.32094-001	WAM P.34734-002	WAM P.32094-001	WAM P.32094-001	WAM P.25129-005	WAM P.25129-005	WAM P.32094-001	WAM P.32094-001	WAM P.32094-001
Standard length (mm)	66.2	61.2	58.3	57.0	52.8	50.3	50.1	47.9	45.9	41.9
Body depth	53.1	51.9	53.7	51.2	50.6	56.9	53.9	54.9	52.9	50.6
Body width	18.1	18.9	18.0	18.5	16.6	18.1	18.9	19.1	18.0	18.5
Head length	28.7	29.8	30.5	30.3	32.2	31.0	31.7	30.8	30.5	30.2
Snout length	8.3	9.0	7.6	7.6	8.7	7.8	8.1	8.4	7.6	6.5
Orbit diameter	9.4	10.3	10.8	11.3	11.6	11.8	12.4	12.2	12.3	13.0
Interorbital width	9.5	10.8	10.4	10.6	10.9	10.7	10.2	11.4	10.5	9.8
Caudal-peduncle depth	16.2	15.6	16.3	16.2	15.1	16.0	16.6	16.3	16.0	15.6
Caudal-peduncle length	16.0	13.9	13.7	14.9	12.9	15.0	14.8	14.0	16.9	15.1
Upper-jaw length	9.6	9.9	9.3	9.7	9.3	9.9	9.0	10.7	10.1	10.4
Predorsal length	40.7	38.1	39.2	42.0	42.0	44.0	43.3	42.4	42.0	41.7
Preanal length	62.4	68.4	63.9	65.9	65.6	67.5	66.4	69.1	64.4	66.1
Prepelvic length	38.1	43.4	39.6	40.6	42.1	39.6	39.1	41.5	38.4	37.2
Base of dorsal fin	60.7	54.5	60.3	56.6	55.2	58.2	58.1	59.0	60.3	55.9
Base of anal-fin	29.9	28.6	27.9	28.6	29.0	27.5	29.4	28.4	28.5	27.6
Pectoral-fin length	33.0	34.4	38.5	36.3	34.9	36.9	36.6	36.9	36.9	36.3
Pelvic-fin length	33.1	39.3	40.7	38.2	39.0	35.0	38.1	42.3	39.9	39.8
Pelvic-fin-spine length	13.7	17.1	17.0	16.5	14.9	15.8	16.1	17.1	16.9	17.1
First dorsal-fin spine	5.3	7.7	7.0	6.8	6.5	6.8	6.0	5.7	7.2	6.0
Seventh dorsal-fin spine	12.0	14.5	13.9	13.7	14.1	13.9	13.8	14.6	14.0	12.4
Last dorsal-fin spine	12.6	13.8	12.5	12.2	13.0	13.3	12.9	14.1	13.9	12.4
Longest dorsal-fin ray	21.3	20.0	29.0	23.4	24.4	24.3	24.4	29.1	25.1	23.6
First anal-fin spine	6.5	9.6	6.7	7.6	8.0	7.6	7.8	6.7	7.7	6.9
Second anal-fin spine	14.6	17.1	15.6	16.2	15.0	12.9	15.9	15.3	16.2	13.5
Longest anal-fin ray	15.4*	21.8	23.5	22.0	21.2	23.7	21.9	26.6	23.7	26.2
Caudal-fin length	25.8*	47.7	54.8	48.9	43.8	46.7	43.4	61.2	42.8	53.8
Caudal concavity	3.8*	28.2	32.4	26.9	24.2	22.4	23.2	34.7	25.6	24.5

Figure 4. *Chromis pacifica*, preserved holotype, WAM P.34767-002, 66.2 mm SL, Holmes Reefs, Coral Sea, Australia (G.R. Allen).

spine 2.0 (1.7–2.4) in HL; seventh and eighth anal-fin soft rays longest (filamentous if undamaged), 1.9 (1.2–1.5) in SL; caudal fin forked with long outer filaments (usually damaged or missing in preserved specimens), length 3.9 (1.6–2.3) in SL, caudal concavity 7.6 (0.8–1.4) in SL; second to fourth (from uppermost) pectoral-fin ray longest, 3.0 (2.6–2.9) in SL; first soft ray of pelvic fin filamentous (usually damaged in preserved specimens), 3.0 (2.3–2.9) in SL; pelvic-fin spine 2.1 (1.5–2.2) in HL.

Color in life. (Figs. 1–3) Adults overall yellowish brown, typically with lateral greyish to purplish stripes, following scale rows; suborbital, cheek, opercle, and breast with lavender hue of variable intensity; upper rear edge of opercle with diffuse brown outline; iris bluish with narrow yellow ring around margin of pupil; dorsal, anal, and pelvic fins with narrow blue outer margin; dorsal and anal fins brownish with dark-brown triangular marking posteriorly, both fins abruptly translucent posterior to marking, a conspicuous dark brown spot at base of last two dorsal-fin rays; pectoral fin with prominent round blackish spot covering entire base and axil of fin; pelvic fins dusky yellowish; caudal fin yellowish. Large juveniles and subadults (Figs. 1B & 2C) similar except upper lip violet to lavender and often longitudinal rows of lavender spots, one per scale. Small juveniles (Fig. 1C) largely bluish on upper half of body, including spinous dorsal fin; blue color also prominent on lips, dorsal scleral surface of eye, and on pelvic fins; caudal fin yellow.

Color in alcohol. (Fig. 4) Generally reddish brown, darker on dorsal, anal, and pelvic fins, with dark markings on fins and upper edge of opercle as in life; caudal fin yellowish tan.

Etymology. The new species is named for its native range in the Pacific Ocean. The specific epithet is treated as a noun in apposition.

Distribution and habitat. The new species is very widely distributed in the western and central Pacific (Fig. 5), including the Hawaiian Islands, Johnston Atoll, Line Islands, Pitcairn Island, Oeno Atoll, Gambier Islands, Tuamotu Archipelago, Society Islands, Austral Islands, Rapa, Cook Islands, Phoenix Islands, Fiji, Tonga, New Caledonia, Loyalty Islands, Chesterfield Islands, Vanuatu, Coral Sea islands and reefs, Marshall Islands, Chuuk, Pohnpei, Yap, Wake Island, Mariana Islands, and at the Ogasawara Islands and Bonin Islands of Japan. It is typically found on outer reef slopes at depths of about 5–56 m.

Comparisons. The new species is distinguished from Indian Ocean, *C. agilis*, by having a larger black spot at the base of the pectoral fin, covering the entire pectoral-fin base, inner and outer, vs. a smaller, less conspicuous spot mainly concentrated in the axil of the fin rather than the outer base (Fig. 6). It also typically has multiple

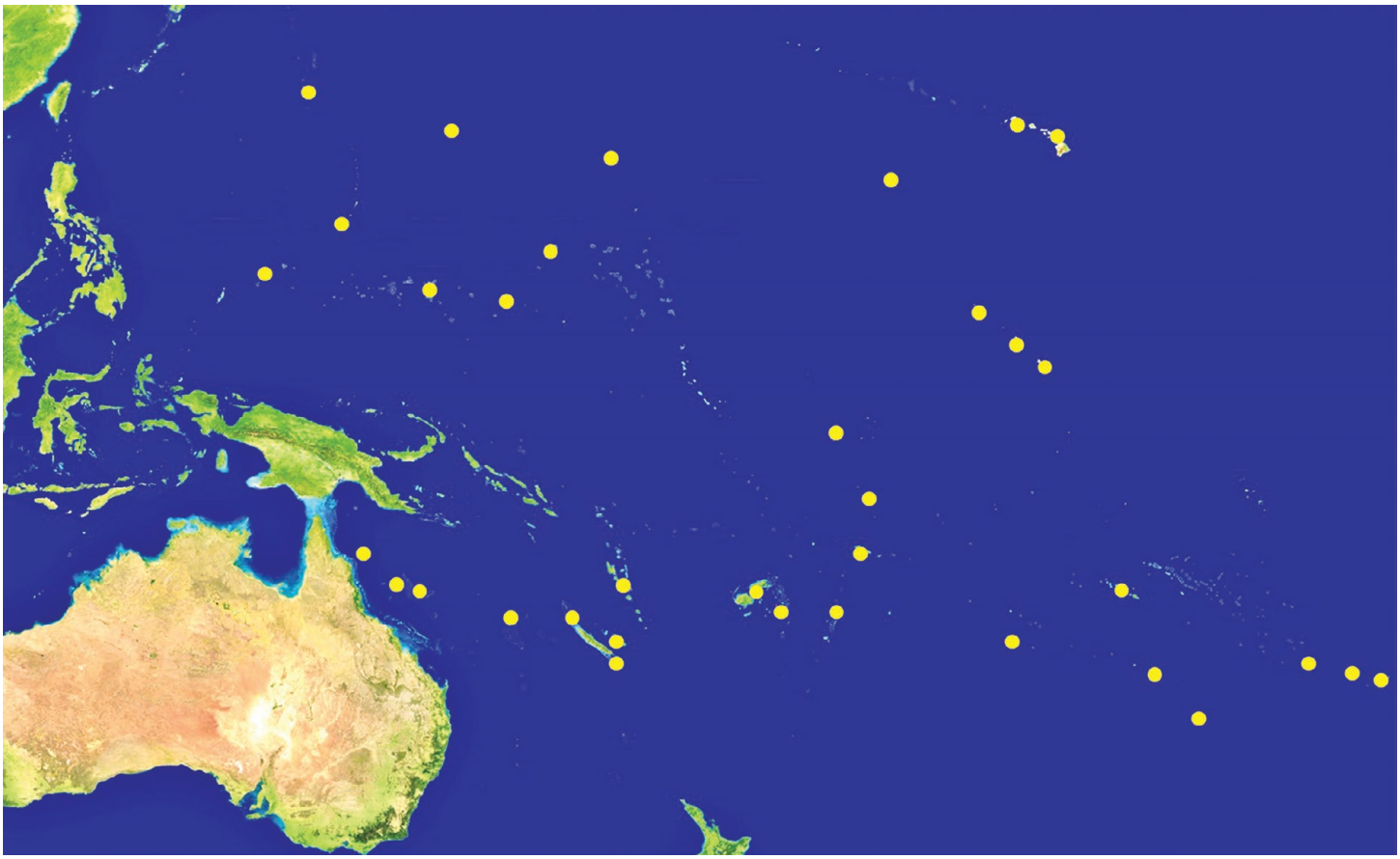

Figure 5. *Chromis pacifica*, distribution in the western and central Pacific Ocean.

lateral greyish to purplish stripes on the body following scale rows (vs. none), and is generally darker brown (Fig. 6). In meristic characters, *C. pacifica* has one more dorsal-fin and pectoral-fin ray and one higher lateral-line scale count (Table 2). There also appears to be a difference in the maximum size, with *C. pacifica* attaining about 80 mm SL, while *C. agilis* reaches a maximum of about 55 mm SL.

Both species belong to the large *Chromis amboinensis* complex (named for the first described species), characterized by 12 dorsal-fin spines, a relatively deep body, and long, thread-like, double filaments (often triple) on each lobe of the caudal-fin lobe plus a shorter filament at the apex of the dorsal and anal fins (these delicate filaments are frequently damaged or missing in preserved specimens). The new species differs from the other 19 species of the complex by its especially large and conspicuous pectoral-fin base blackish spot, along with a lavender-hued head, a yellowish caudal fin, and no obvious white zone on the posterior body. Eleven members

TABLE 2

Meristic values for *Chromis agilis* and *Chromis pacifica*

[data from present study combined with Randall & Swerdloff (1973) and Randall (1988)]

	Dorsal-fin soft rays				Anal-fin soft rays			Pectoral-fin rays			
	11	12	13	14	12	13	14	15	16	17	18
C. agilis	2	53	2		3	45		2	55		
C. pacifica		1	30	1	2	32	5		1	35	3

	Lateral-line scales					Total gill-rakers					
	13	14	15	16	17	27	28	29	30	31	32
C. agilis	1	20	36			2	5	27	15	6	2
C. pacifica		2	18	19	5	1	3	6	1	1	1

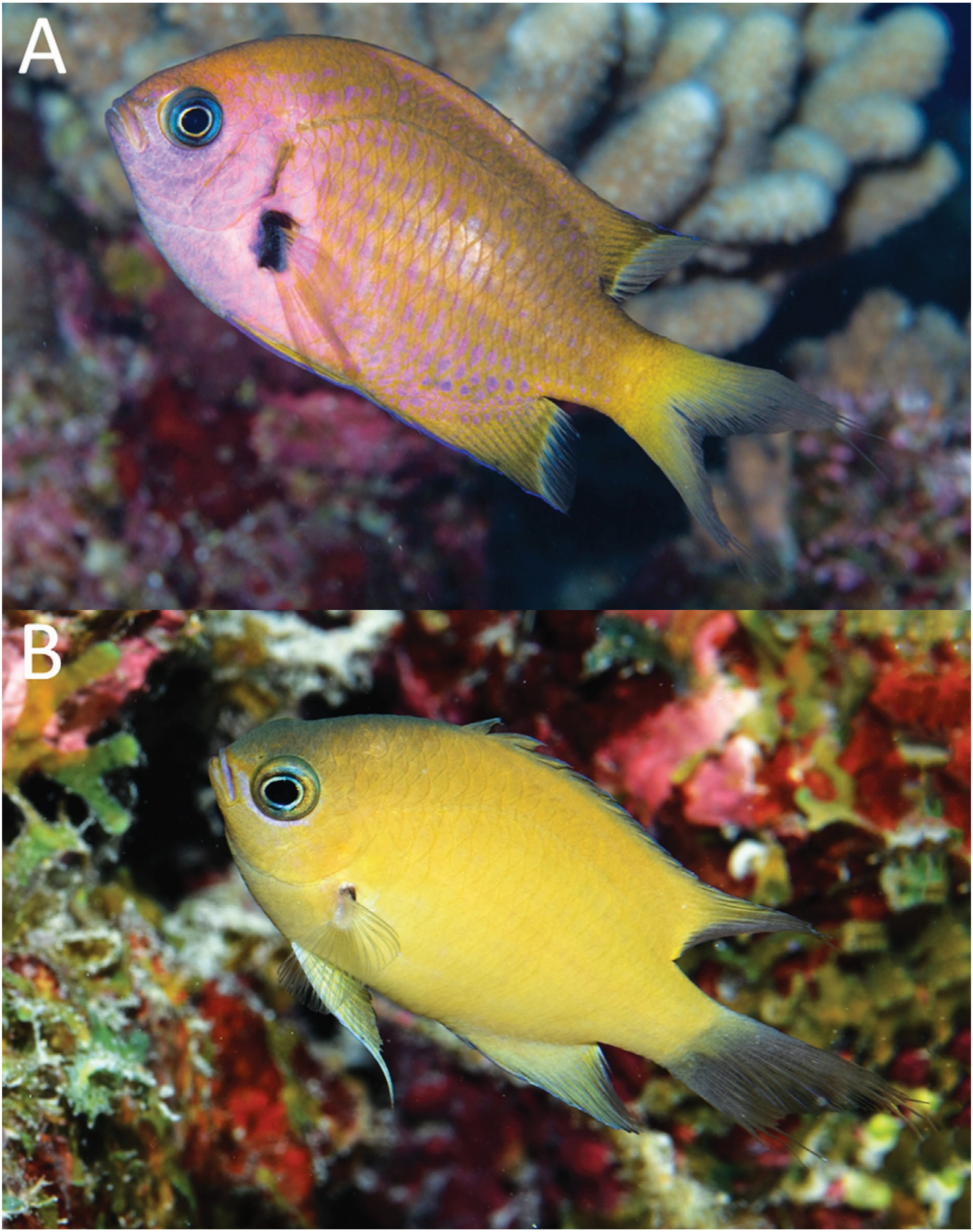

Figure 6. A) *Chromis pacifica*, approx.60 mm SL, Niue Island, central Pacific (M.V. Erdmann). B) *Chromis agilis*, approx.45 mm SL, Laamu Atoll, Maldives (G.R. Allen).

of the complex share the large dark pectoral-fin base spot, but all have white areas on the posterior body or an abruptly white caudal fin, The 11 congeners include 6 that are sympatric with *C. pacifica*, i.e. *Chromis bami* Randall & McCosker 1992; *Chromis delta* Randall, 1988; *Chromis hanui* Randall & Swerdloff, 1973; *Chromis iomelas* Jordan & Seale, 1906, *Chromis leucura* Gilbert, 1905; and *Chromis margaritifer* Fowler, 1946 (Fig. 7). The remaining 5 are allopatric: *Chromis abrupta* Randall, 2001; *Chromis alleni* Randall, Ida & Moyer, 1981; *Chromis dimidiatus* (Klunzinger, 1871); *Chromis fatuhiva* Randall, 2001; and *Chromis fieldi* Randall & DiBattista, 2013.

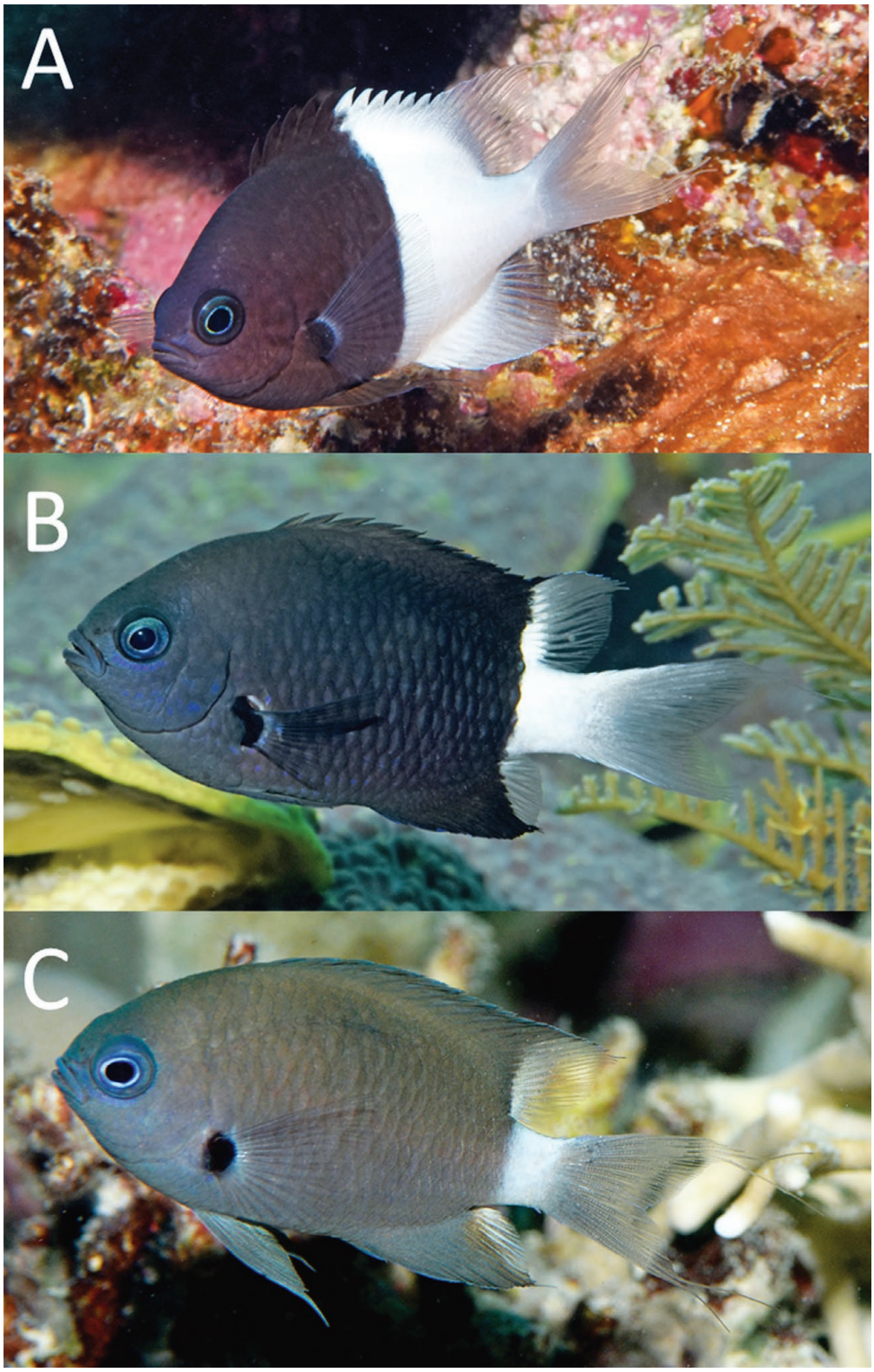

Figure 7. *Chromis amboinensis* species complex: species with with a prominent black spot on the pectoral-fin base, A) *C. iomelas*, approx. 50 mm SL, Ouvea Atoll, Loyalty Islands; B) *C. margaritifer*, approx. 50 mm SL, Timor Leste; C) *C. delta*, approx. 45 mm SL, West Papua, Indonesia (G.R. Allen).

Chromis agilis Smith, 1960

Agile Chromis

Figures 6B, 8–9, Table 2

Chromis agilis Smith, 1960: 324, plates 26A & 32J (type locality: Astove Reef, Seychelles).
Chromis xutha Randall, 1988: 54, figs. 5 & 6 (type locality: Villingili Island, North Male Atoll, Maldives); Allen 1991: 87 (Kenya & Maldives); Debelius 1993: 209 (Kenya & Maldives); McKenna & Allen 2005: 114 (Madagascar); Randall 2005: 355 (as western Indian Ocean sister species of "*C. atripes*"); Fricke et al. 2018: 265 (East Africa, Comoros and Madagascar east to Maldives and Chagos Archipelago).

Material examined. BPBM 18864 (holotype of *C. xutha*), 44 mm SL, Maldives, North Male Atoll, Villingili Island; BPBM 30654, (6 specimens) 27–45 mm SL, Comoro Islands, Grand Comore Island, Moroni; RUSI 292 (holotype of *C. agilis*), 45 mm SL, Seychelles, Astove Island; RUSI 2342 (paratypes of *C. agilis*), 45 & 47 mm SL, Seychelles, Assumption Island; RUSI 30553, (3 specimens) 43–49 mm SL, Comoro Islands, Grand Comore Island, Moroni; RUSI 34528, 40 mm SL, Comoro Islands, Grand Comore Island, Moroni; WAM P. 26514-003, (3 specimens) 41.1–50.3 mm SL, Maldives, North Male Atoll, Villingili Island; WAM P.26516-001, 41.2 & 45.2 mm SL, Kenya, Shimoni; WAM P.26517-001 (paratypes of *C. xutha*), (3 specimens) 39.7–47.4 mm SL, Kenya, Watamu; WAM P.32020-003, 32.9 & 39.3 mm SL, Madagascar, Magnet Reef, -12.1667°, 48.9267°.

Diagnosis. Dorsal-fin elements XII,11-13 (usually 12); anal-fin elements II,11–12 (usually 12); pectoral-fin rays 15–16 (usually 16); pelvic-fin rays I,5; principal caudal-fin rays 15; branched caudal-fin rays 13; spiniform caudal-fin rays 2; tubed lateral-line scales 13–15 (rarely 13); longitudinal scales from above lateral-line origin to caudal-fin base 27 or 28; scales above lateral line to dorsal-fin origin 2.5; scales below lateral line to anal-fin origin 8.5; gill rakers 7–9+19–23, total 27–32.

Body depth 1.8–2.1 in SL; body width 2.5–2.8 in depth; head length 3.1-3.3 in SL, snout length 3.5–3.9 in HL; upper-jaw length 2.9–3.2 in HL; orbit diameter 2.2–2.9 in HL; fleshy width of interorbital 2.6–3.3 in HL;

Figure 8. *Chromis agilis*, approx. 45 mm SL, Shimoni, Kenya (G.R. Allen).

caudal-peduncle depth 1.9–2.2 in HL; caudal-peduncle length 2.0–2.6 in HL; first dorsal-fin spine 3.1–5.1 in HL; last dorsal-fin spine 1.5–2.6 in HL; longest soft dorsal-fin ray 2.9–4.3 in SL; first anal-fin spine 2.7–4.3 in HL; second anal-fin spine 1.4–2.0 in HL; pectoral fin 2.6–3.1 in SL; pelvic fin 2.4–2.9 in SL; longest soft anal-fin ray 2.8–4.0 in SL; caudal fin deeply forked, length 1.4–2.0 in SL.

Color in life. (Figs.6 B, 8 & 9) Head and body overall pale yellowish brown, snout and dorsal head and nape grayish, with gray posterior scale margins, scales above lateral-line with gray margins; preorbital and suborbital series of scales pale lavender, scales of cheek and lower opercle with large pale lavender spots; lips pale lavender to bluish; lower side sometimes with stripes of very pale lavender spots, one per scale, following scale rows; iris largely golden yellow with narrow pale yellow to bluish ring around pupil; dorsal and anal fins yellowish brown, darker brown posteriorly; caudal fin dusky brownish with clear membranes; pelvic fins yellowish to brown; pectoral fins clear with brown fin rays, a dusky brown spot on upper half of base, becoming intensely black on upper edge of fin, and large blackish spot limited to axil of fin.

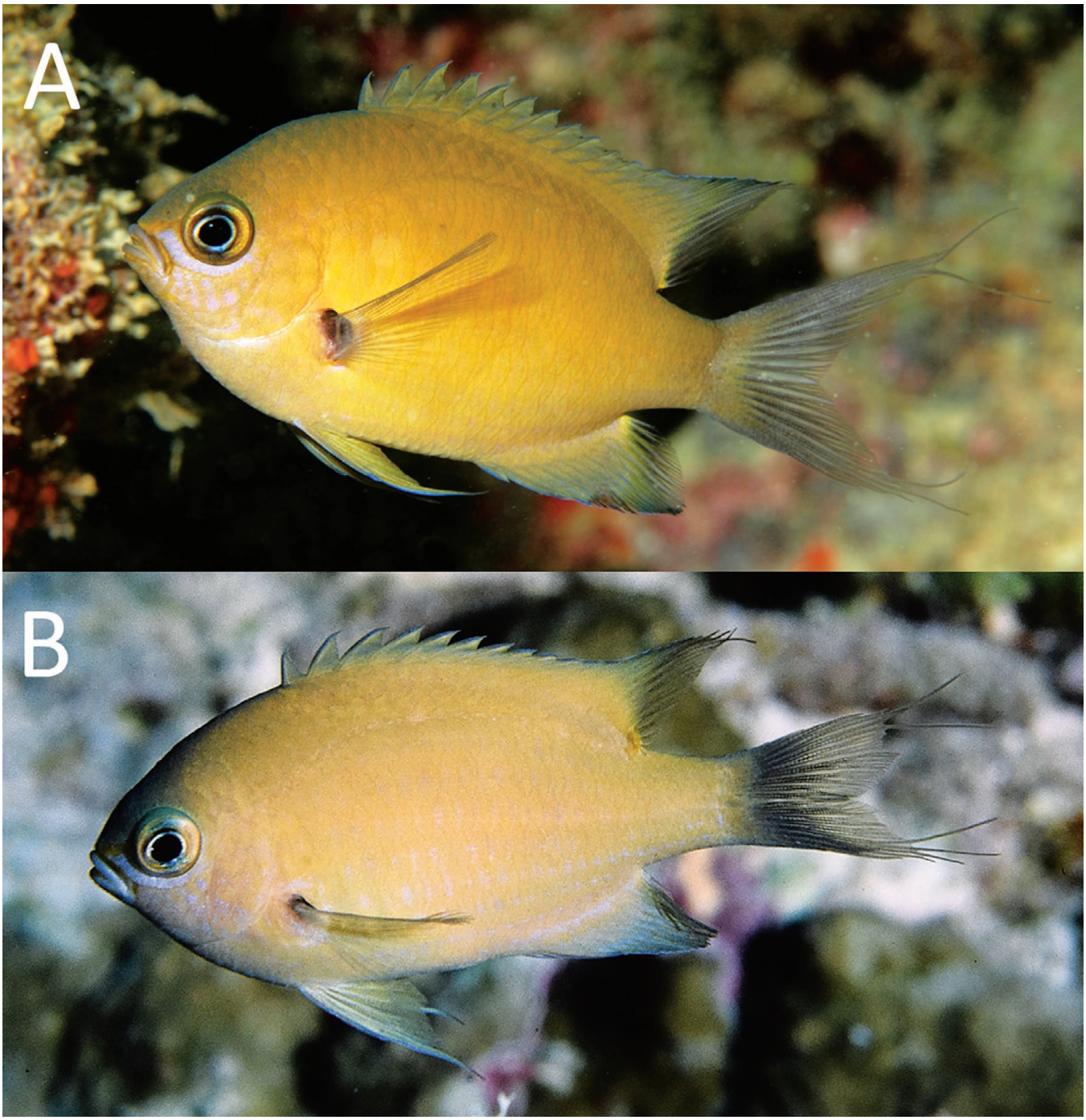

Figure 9. *Chromis agilis*, adults, approx. 45–50 mm SL, showing color variation: A) southwestern Madagascar; B) South Male Atoll, Maldives (G.R. Allen).

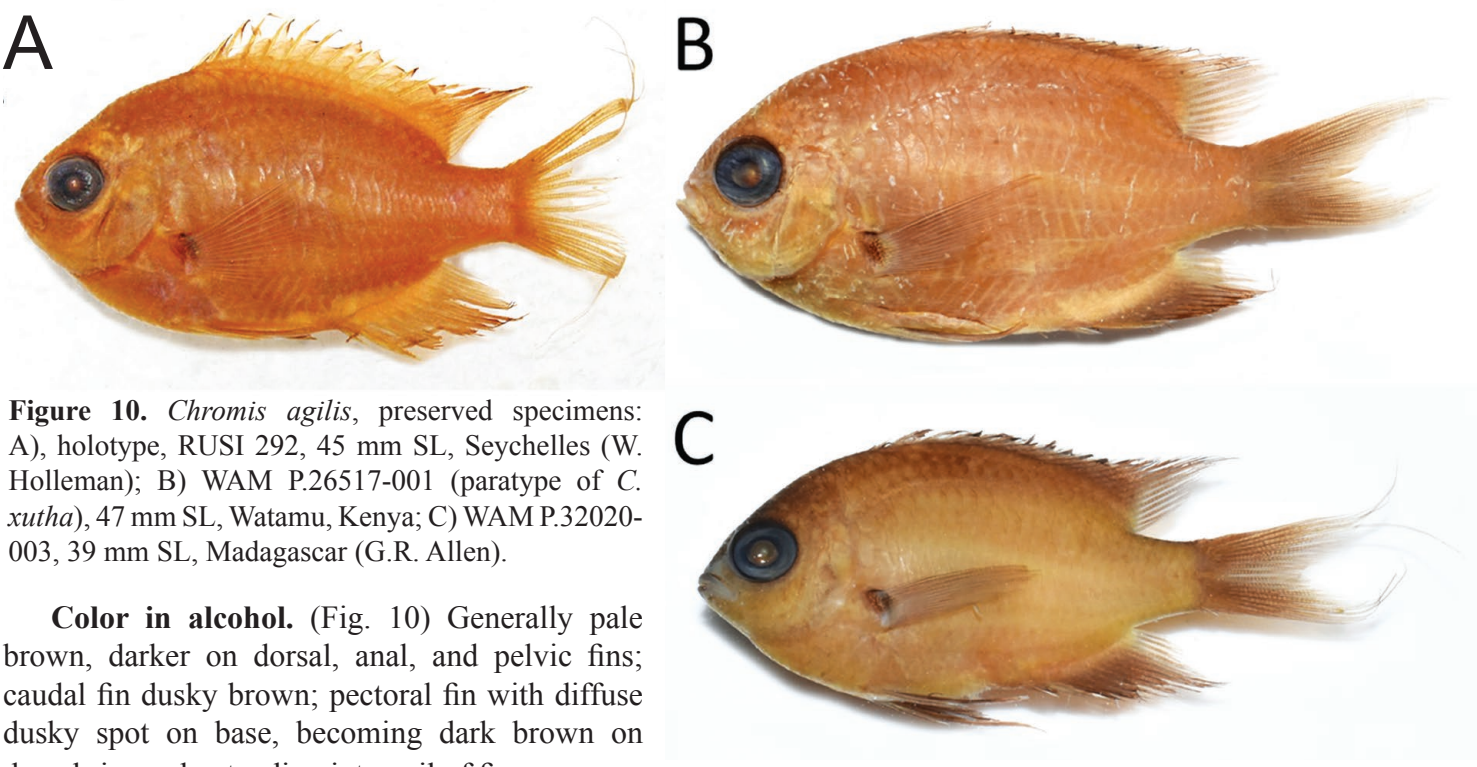

Figure 10. *Chromis agilis*, preserved specimens: A), holotype, RUSI 292, 45 mm SL, Seychelles (W. Holleman); B) WAM P.26517-001 (paratype of *C. xutha*), 47 mm SL, Watamu, Kenya; C) WAM P.32020-003, 39 mm SL, Madagascar (G.R. Allen).

Color in alcohol. (Fig. 10) Generally pale brown, darker on dorsal, anal, and pelvic fins; caudal fin dusky brown; pectoral fin with diffuse dusky spot on base, becoming dark brown on dorsal rim and extending into axil of fin.

Distribution and habitat. *Chromis agilis* is widely distributed in the western and central Indian Ocean (Fig. 11). It is currently known from the Maldives, Chagos Archipelago, Seychelles, Madagascar, Comoro Islands, and along the East African coast between Shimoni, Kenya and Bazaruto, Mozambique. It is typically found on outer reef slopes at depths of about 12–48 m.

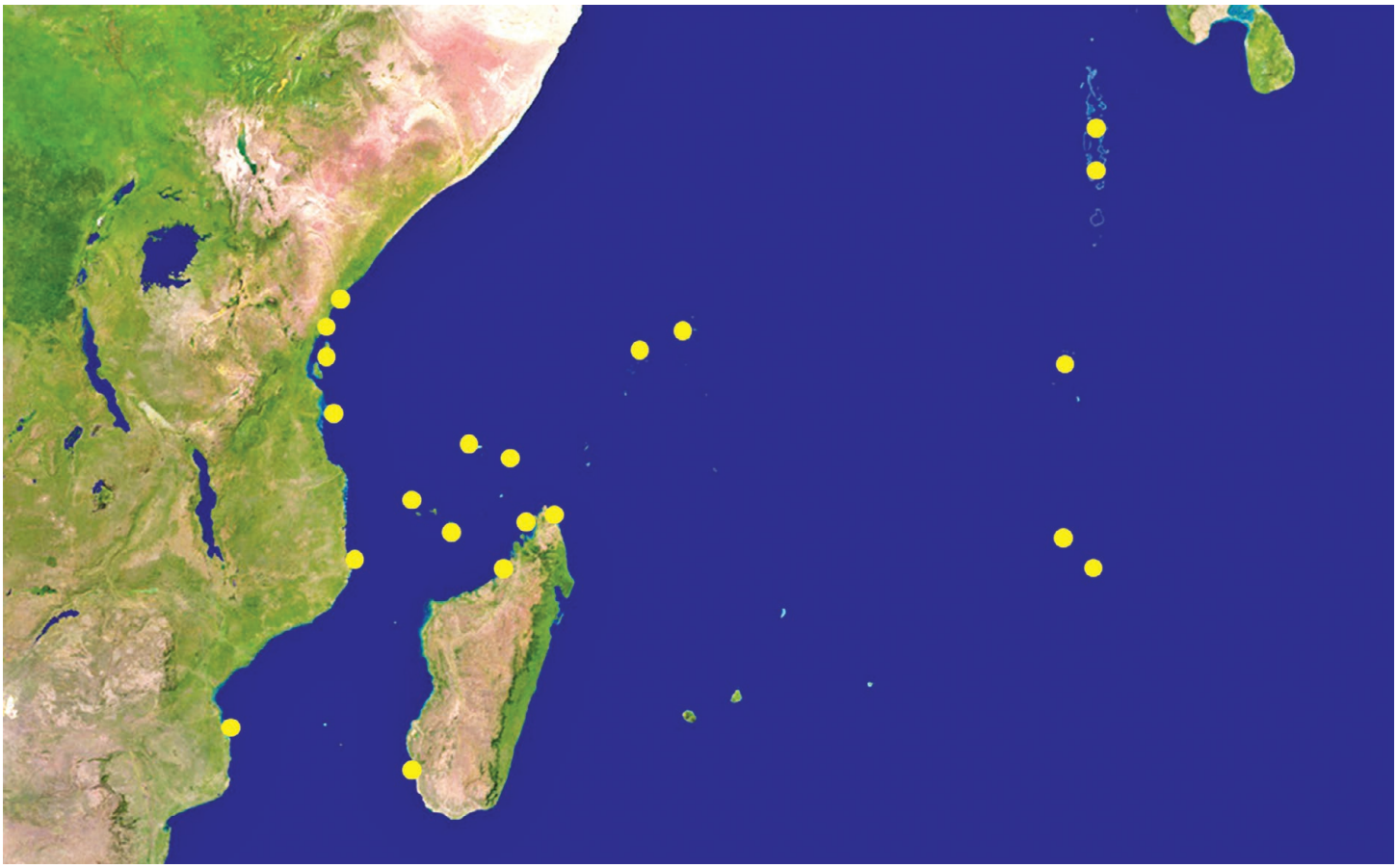

Figure 11. *Chromis agilis*, distribution in the western Indian Ocean .

Remarks. Randall & Swerdloff (1973) reviewed the damselfishes of the Hawaiian Islands and were the first to apply the name *C. agilis* to the Pacific damselfish now named *C. pacifica*. Their identification was based on examination of two paratypes of *C. agilis* borrowed from RUSI. They noted these paratypes differed in having 12 dorsal-fin soft rays and 16 pectoral-fin rays, one fewer than the Pacific population. They concluded "it is not unusual to find slight differences between Pacific and Indian Ocean populations of reef fishes". They did not mention any color-pattern differences, but stated "the color plate in Smith (1960) leaves little doubt that Pacific specimens are the same". We have reproduced Smith's original color plate (Fig. 12), which is generally accurate, except for the expansive blue patch on the cheek, opercle, and breast. Based on our experience the bluish hue is sometimes seen in freshly dead specimens of various damselfish species.

Much later, Randall (1988) described *Chromis xutha* on the basis of specimens from the Maldives, Chagos Archipelago, Seychelles, and Kenya. Understandably, he did not consider those to belong to the somewhat different-appearing *C. agilis*, a species he was very familiar with from Hawaii (where he lived) and other central Pacific islands he frequently visited. Indeed, later, in Randall (2005: 355), he noted that *C. xutha* was most likely the sister species to *Chromis atripes* Fowler & Bean, 1928, a species in the same complex with a similarly reduced pectoral-fin base spot.

The first author became suspicious of the synonymy of *C. xutha* with *C. agilis*, when he found no apparent *C. agilis* on several trips to the western Indian Ocean, but saw only *C. xutha*, which was common on reefs of Kenya, Madagascar, and the Maldives. In addition, experienced underwater photographers and researchers in South Africa had not encountered any East African damselfish matching the appearance of the Pacific population. Moreover, our examination of specimens at WAM, including paratypes of *C. xutha*, revealed that they appeared the same as type specimens of *C. agilis* that were examined and photographed for us by staff of the South African Institute of Aquatic Biology (SAIAB).

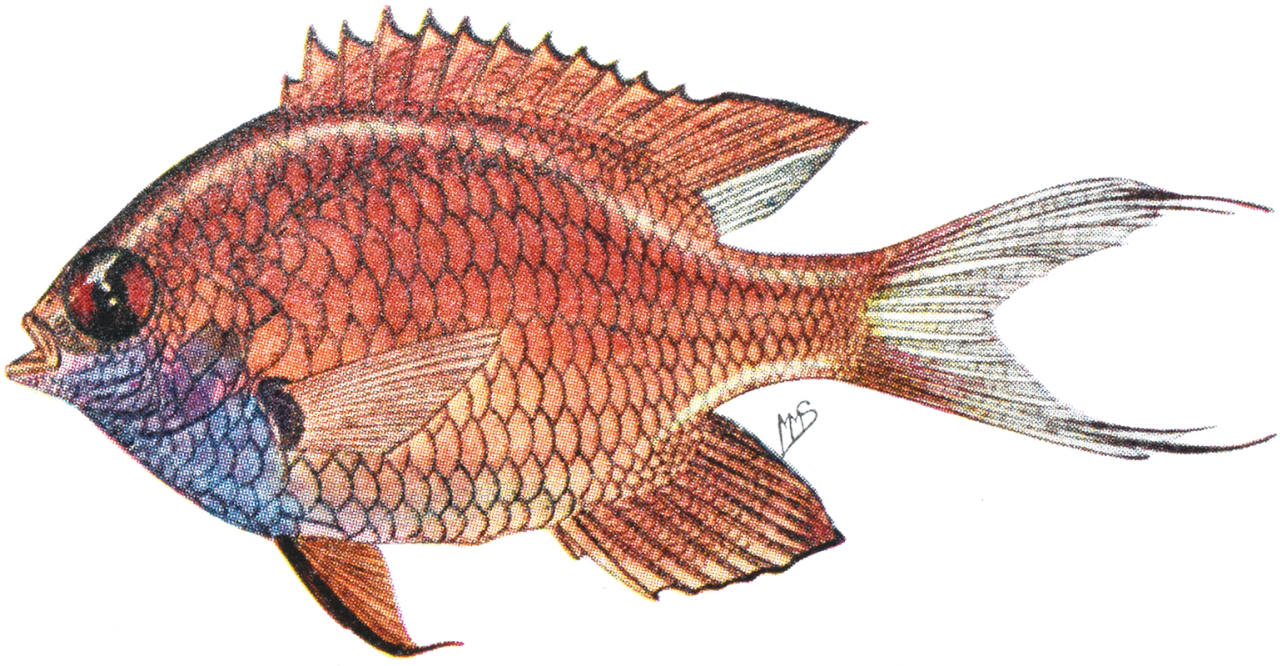

Figure 12. *Chromis agilis*, 70 mm TL, Zanzibar, illustration by M.M. Smith that accompanied original description (Smith 1960).

Acknowledgments

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