

## A New Species of the Genus *Chromis* (Perciformes: Pomacentridae) from Taiwan and Japan

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**Abstract** A new pomacentrid fish, *Chromis onumai*, is described on the basis of 9 specimens taken from southern Taiwan and Izu-oshima Island, the Izu Islands, Japan. The species is distinguished from the other members of the genus by the following combination of characters: dorsal rays XIV, 12–13; anal rays II, 12–13; pectoral rays 19–20; spiniform caudal rays 3; tubed lateral line scales 16–17; gill rakers 5–7+19–20=25–27; 3 white spots about pupil size posteriorly, 1 at rear base of dorsal fin, 1 at rear base of anal fin, and the remainder at mid base of caudal fin (these spots usually fading after death, but visible as a pale area on preserved specimen).

**Key words:** New species, Pomacentridae, *Chromis onumai*, Taiwan, Japan.

The fishes of the pomacentrid genus *Chromis* are common on coral and rocky reefs throughout tropical and temperate seas in the world. Allen (1991) recognized 75 species as valid in the largest genus among the family. In his work, however, a valid species, *Chromis dispilus* Griffin, 1923 had been inadvertently omitted (Allen and Adrim, 2000). After Allen's work, 10 species of this genus were described as new (Randall and McCosker, 1992; Randall, 1994; de Moura, 1995; Randall, 2001; Allen and Randall, 2004; Lecchini and Williams, 2004; Allen and Erdmann, 2005), and one species was synonymized (Allen, 1993). Therefore, the number of species are 86 in total.

During the course of studies on the fish fauna of the Izu-Ogasawara Islands, we obtained a small specimen of an undescribed species of the genus from Izu-oshima Island, the Izu Islands. However, it was difficult to get additional specimens because the species is very rare, and inhabits areas deeper than 50 m. Recently, we learned that the same species is common in southern Taiwan, and that some specimens are deposited in

Taiwanese research organizations. We describe herein them as new.

All measurements were made to the nearest 0.1 mm with a vernier calliper. Methods of counts and measurements generally follow Hubbs and Lagler (1964) except as follows. Body width is the greatest dimension. Caudal concavity was measured horizontally between a tip of the longest caudal ray when squeezed parallel to body axis and a tip of the shortest one. Length of caudal peduncle was measured horizontally between a rear end of base of anal fin and a mid point of base of caudal fin. Base length of spinous and soft portions of dorsal fin was measured between bases of the first and last rays. A contour of body which is recognized as a fold between a scaly sheath on fin and scales on body was considered as the base of rays of unpaired fins except the first ray. Length of fin ray, therefore, was measured between a distal tip and at the body considered to be the base. Preanal and pre-pelvic lengths were measured from the tip of snout to a structural base of the first spine. Procurent and branched caudal rays, supraneural

bones, and vertebrae were counted from soft X-ray negatives. Proportional measurements expressed as percentage of the standard length (SL).

Type specimens are deposited in the following museums: Research Museum, Research Center for Biodiversity, Academia Sinica, Taipei (ASIZP); Bernice P. Bishop Museum, Honolulu (BPBM); National Museum of Marine Biology and Aquarium, Pingtung, Taiwan (NMMB-P); National Museum of Nature and Science (formerly National Science Museum), Tokyo (NSMT-P). Images were deposited at the Kanagawa Prefectural Museum of Natural History (KPM-NR).

*Chromis onumai* sp. nov.

(New Japanese name: Ryusei-suzumedai)

(Figs. 1–4; Table 1)

**Holotype.** ASIZP 0062621, 118.2 mm SL, Eluanbi, Pingtung, Taiwan (21.52°N; 120.5°E), 29 Sep. 2003, collected by J. P. Chen.

**Paratypes.** ASIZP 0066516, 80.6 mm SL, Taitung, Lu tao, Taiwan (22.63°N; 121.46°E), 100 m depth, 24 May 2005, collected by J. E. Randall *et al.*; ASIZP 0066517, 75.9 mm SL, same data as ASIZP 0066516; ASIZP 0066704, 125.8 mm SL, same data as holotype;

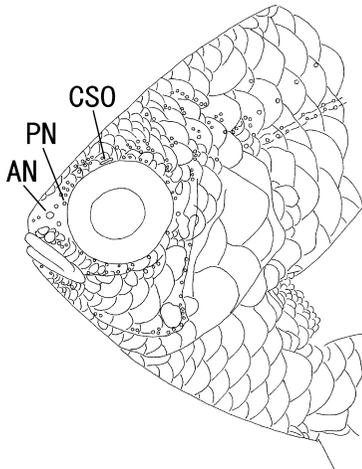


Fig. 1. Head of *Chromis onumai* sp. nov., NSMT-P 73060, paratype, 56.8 mm SL, Izu-oshima Island, Izu Islands. AN: anterior nostril; CSO: crescent opening of supraorbital canal; PN: posterior nostril. Drawn by K. Uchino.

BPBM 40446, 113.4 mm SL, Hou-bi-hwo fish market, Nan-Wan, Pingtung, Taiwan, 18 July 2005, collected by J. P. Chen; NMMB-P 1204, two specimens, 105.5 and 112.3 mm SL, Hou-bi-hwo fish market, Nan-Wan, Pingtung, Taiwan, 29 July 2002, collected by J. P. Chen; NMMB-P 1205, 100.4 mm SL, Hou-bi-hwo fish market, Nan-Wan, Pingtung, Taiwan, 19 Aug. 2004, collected by J. P. Chen; NSMT-P 73060 (formerly KPM-NI 8795), 56.8 mm SL, Izu-oshima Island, Izu Islands, 53 m depth, collected by H. Onuma, 24 Dec. 2000.

**Diagnosis.** Dorsal fin rays XIV, 12–13; anal fin rays II, 12–13; pectoral fin rays 19–20; spiniform caudal fin rays 3; tubed lateral line scales 16–17; gill rakers 5–7+19–20=25–27; 3 white spots about pupil size posteriorly, 1 at rear base of dorsal fin, 1 at rear base of anal fin, and the third at mid base of caudal fin (these spots usually fading after death, but visible as a pale area on preserved specimen).

**Description.** Dorsal fin rays XIV, 12–13; anal fin rays II, 12–13; soft rays of dorsal fin except first one and all soft rays of anal fin branched; pectoral fin rays 19–20, upper 2 and lower 1 or 2 rays simple; pelvic fin rays I, 5, all soft rays branched; principal caudal fin rays 15, median 13 (7+6) branched; upper and lower procurent caudal rays 5, respectively, each anterior three spiniform; tubed lateral line scales 16–17; pored scales in continuous series midlaterally on caudal peduncle 7–8; longitudinal scale series 26–28; scales above lateral line 3; scales below lateral line 9–10; circumpeduncular scales 16; gill rakers on first gill arch 5–7+19–20=25–27; supraneural bones 3; vertebrae 11+15=26.

Body moderately deep, depth 49.8–56.3, and compressed, width 18.5–21.0; head length 29.7–34.7; dorsal profile of head from interorbital to nape above eye straight; snout short, 7.7–9.1; eye moderately large, orbit diameter 10.5–14.1; interorbital space convex, least bony width 8.4–10.4; depth of caudal peduncle 13.6–15.8; length of caudal peduncle 10.7–13.1.

Mouth terminal and oblique, forming angles of about 40–45 degrees to longitudinal axis of body; mouth small, length of upper jaw 9.1–11.6, maxilla reaching just below or slightly beyond a

vertical at front edge of orbit; an outer row of conical teeth in jaws, larger anteriorly; 23–30 on side of upper jaw and 21–29 on lower jaw, the posterior teeth angling forward; 1–4 (usually 2–3) irregular rows of inner smaller teeth anteriorly on upper and lower jaws, narrowing to a single row posteriorly in the case of plural rows anteriorly; tongue triangular, the tip rounded; gill rakers slender, length of longest gill raker on first gill arch two-thirds to four-fifths of longest gill filament; anterior nostril large with a fleshy rim, located at a level of horizontal line through the center of pupil or slightly above the line, and nearer to anterior edge of orbit than upper lip; posterior nostril much smaller than anterior one, same size as a pore of supraorbital canal, located dorsoposterior to anterior one and very close to edge of orbit; pores of lateralis system on head prominent, a crescent opening of supraorbital canal present (Fig. 1).

Opercle with an obtuse flat spine covered by a large scale on posterior edge; posterior margin of preopercle straight and smooth, slightly concave just above the corner, and broadly rounded and rough at the corner; lower margin of preopercle free to below between anterior edges of orbit and pupil; lower edge of suborbital free to below anterior edge of pupil.

Scales finely ctenoid; no auxiliary scales; tubed lateral line ending beneath between bases of 12th and 14th dorsal spines; head largely scaled except for lips, symphysis, and a part from front end of snout through anterior nostril to posterior nostril (Fig. 1); a low scaly sheath at base of dorsal and anal fins; each interspinous membrane of dorsal fin covered with a narrow pointed band of scales extending outward more than half distance to the tip of spine; soft portion of dorsal fin covered with small scales extending outward about half distance to margin, covering of scales decreasing toward posterior part; squamation of anal fin similar to that of dorsal fin, but scales extending more outward about four-fifths distance to margin in the anterior membrane; caudal fin covered with scales on basal part, covering scales becoming smaller posteriorly and extending

more outward along the upper and lower edges; small scales present only basally on pectoral fins; pelvic fin with a scaly process midventrally between bases, its length about half to two-thirds of pelvic spine; a slender pointed axillary scale above and adjacent to each pelvic fin, about half length of pelvic spine.

Dorsal fin origin above base of third lateral line scale, predorsal length 38.8–43.7; base length of spinous and soft portions of dorsal fin 48.0–50.1 and 13.1–15.4, respectively; membranes of spinous portion of dorsal fin incised about one-thirds length of spine at first, progressively less posteriorly; fourth, fifth or sixth spine longest, length of each dorsal spine 7.5–10.9 (first), 12.4–16.2 (second), 15.1–19.2 (third), 16.1–19.9 (fourth), 17.2–19.5 (fifth), 17.1–19.4 (sixth), 12.6–17.3 (last), respectively; third and/or fourth dorsal soft rays longest, length 20.3–32.6, sometimes producing a filament at tip; anal fin origin below base of 11th dorsal spine, the preanal length 72.3–74.5; first and second anal spines 6.0–9.5 and 20.8–25.0, respectively; first anal soft ray longest, 20.7–23.5 except the paratype NSMT-P 73060 (56.8 mm SL) that 6th one with a filament in the tip is the longest and 30.1; caudal fin deeply forked, producing a filament in a posterior tip of upper and lower lobes, caudal concavity 15.2–32.0; pectoral fin pointed, third or fourth ray longest, length 34.0–37.9; insertion of pelvic fin below or slightly beyond lower end of pectoral fin base, pre-pelvic length 43.6–44.7; pelvic spine 15.1–19.9; first pelvic soft ray with a long filament 26.8–36.3.

*Coloration of the adult over 100 mm SL when fresh* (Fig. 2). Ground color light to reddish brown; iris reddish brown, yellowish brown partially; spinous dorsal fin light yellowish brown except reddish brown scales on each fin membrane; soft portion of dorsal fin dark reddish brown in an anterior half, and the posterior one whitish and translucent with a faint, bluish white spot of pupil size at base of posterior rays; caudal fin whitish and translucent with a prominent and broad, dark brown stripe in each lobe, and a faint,



Fig. 2. *Chromis onumai* sp. nov., ASIZP 0062621, holotype, 118.2 mm SL, Eluanbi, Pingtung, Taiwan. Photographed by J. P. Chen.

bluish white spot of pupil size at middle of the base; anal fin light yellowish to reddish brown in anterior three-fourths, and the posterior one-fourth whitish and translucent with a faint, bluish white spot of pupil size at base of posterior rays; pectoral fin transparent, the upper corner of base and axil black; pelvic fin light yellowish to reddish brown, the anterior edge whitish.

*Coloration of a small specimen of 56.8 mm SL* (Fig. 3). Ground color grayish brown, lower parts of head and sides somewhat pale lilac; upper edge of eye blue, iris deep yellow; spinous portion of dorsal fin deep yellow in each membrane, and a scaly sheath at base and a band of scales in each membrane grayish brown; soft portion of dorsal fin dark grayish brown in anterior half, and posterior half of fin transparent with a pale lilac spot of pupil size at base; caudal fin transparent with a prominent and broad, dark grayish brown stripe in each lobe, and a pale lilac spot of pupil size at middle of fin base; anal fin dark grayish brown in anterior three-fourths, the posterior one-fourth transparent with a pale lilac spot of pupil size at rear base; pectoral fin transparent, the upper corner and axil black; pelvic fin brown; a narrow white margin on distal edge of spinous dorsal fin, on front edges of soft portion of dorsal fin and anal and pelvic fins, and on upper and lower margins of caudal fin.

*Coloration of a small fish when alive* (Fig. 4). Generally same as a small specimen of 56.8 mm SL; ground color dull yellow, grayish olive or grayish green; all margins of fins bluish; each spot on dorsal, caudal and anal fins prominent, having a jet-like marking posteriorly.

*Coloration in preserved specimen.* Reddish and yellowish color faded, ground color light grayish to grayish brown; dark area of soft portion of dorsal and anal fins, and dark band on caudal fin well remained; each white spot on fins visible as a pale area.

**Distribution.** Known from southern Taiwan and the Izu Islands of Japan. The new species is common in Taiwan, often collected by fishermen at depths of 70–90 m of the Kenting National Park area (J. P. Chen, pers. comm.). In Izu-oshima Island, the Izu Islands, the new species inhabits at depths of 51 to 60 m in a slope of rocky reef (Fig. 4: KPM-NR 89367, 24 Nov. 2000, 51 m depth, photographed by T. Kudo; KPM-NR 38018–38023, 19 Aug. 2000, 55–60 m depth, photographed by H. Onuma). It was also recorded from Hachijo-jima Island (KPM-NR 16318: 55 m depth, 6 Apr. 1998, photographed by S. Kato; KPM-NR 28036, 75 m depth, 5 Oct. 1998, photographed by H. Kobayashi).

**Remarks.** Twenty species of *Chromis* having 14 dorsal spines are known to date (Allen, 1991;

Table 1. Proportional measurements and counts in *Chromis onumai* sp. nov.

	Holotype	Paratypes	
	Taiwan	3 specimens Japan and Taiwan	5 specimens Taiwan
Standard length (SL, mm)	118.2	56.8–80.6	100.4–125.8
Morphometrics (% SL)			
Body depth	53.1	54.8–56.3 (55.8)	49.8–54.5 (52.5)
Body width	20.2	18.5–18.8 (18.6)	18.6–21.0 (20.3)
Head length	31.9	32.0–34.7 (33.5)	29.7–31.9 (30.8)
Snout length	9.1	8.7–9.1 (8.9)	7.7–9.1 (8.4)
Diameter of orbit	10.8	11.8–14.1 (12.6)	10.5–11.3 (11.0)
Least bony width of interorbital	9.1	9.3–10.4 (9.7)	8.4–9.7 (9.2)
Depth of caudal peduncle	15.4	15.5–15.8 (15.6)	13.6–15.4 (14.5)
Length of caudal peduncle	11.8	10.7–12.8 (11.8)	11.5–13.1 (12.2)
Length of upper jaw	10.4	10.4–11.6 (10.9)	9.1–10.4 (10.0)
Predorsal length	40.6	40.5–43.7 (41.7)	38.8–41.3 (40.1)
Base length of spinous portion of dorsal fin	48.3	48.0–50.1 (49.1)	48.3–48.9 (48.7)
Base length of soft portion of dorsal fin	13.6	14.4–15.4 (14.9)	13.1–14.6 (13.9)
Length of first dorsal fin spine	8.0	7.8–10.9 (9.3)	7.5–9.1 (8.3)
Length of second dorsal fin spine	12.4	12.8–16.2 (14.4)	12.4–13.3 (12.8)
Length of third dorsal fin spine	15.9	16.8–19.2 (17.6)	15.1–16.6 (15.9)
Length of fourth dorsal fin spine	17.6	18.4–19.9 (18.9)	16.1–18.6 (17.2)
Length of fifth dorsal fin spine	17.9	17.8–19.5 (18.7)	17.2–18.6 (17.9)
Length of sixth dorsal fin spine	18.5	18.3–19.4 (18.9)	17.1–18.5 (17.8)
Length of last dorsal fin spine	14.5	14.4–17.3 (15.4)	12.6–14.5 (13.7)
Length of longest dorsal fin soft ray	25.0	31.0–32.6 (31.7)	20.3–27.1 (23.5)
Preanal length	72.3	72.8–73.2 (73.1)	72.3–74.5 (73.3)
Length of first anal fin spine	8.5	7.7–9.5 (8.5)	6.0–8.5 (7.5)
Length of second anal fin spine	23.5	22.7–25.0 (23.5)	20.8–23.5 (22.3)
Length of longest anal fin soft ray	22.9	23.1–30.1 (25.5)	20.7–22.9 (21.8)
Caudal concavity	21.6	26.6–32 (30.1)	15.2–21.8 (18.7)
Length of longest pectoral fin ray	35.4	34.3–37.9 (35.9)	34–35.6 (34.9)
Prepelvic length	44.3	44.7–47.7 (45.9)	43.6–46.6 (45.0)
Length of pelvic fin spine	18.4	18.7–19.9 (19.2)	15.1–18.4 (17.0)
Length of first pelvic fin soft ray	33.8	31.1–36.3 (33.9)	26.8–33.8 (30.9)
Counts			
Dorsal fin rays	XIV, 12		XIV, 13
Anal fin rays	II, 12		II, 12–13
Pectoral fin rays	19		19–20
Pelvic fin rays	1, 5		1, 5
Branched caudal fin rays (upper+lower)	7+6		7+6
Procurrent caudal rays [upper (spiniform)/lower (spiniform)]	5(3)/5(3)		5(3)/5(3)
Tubed lateral line scales	17		16–17
Pored scales on midline of caudal peduncle	8		7–8
Longitudinal scale rows	28		26–28
Transvers scale rows (upper/below)	3/10		3/9–10
Circumpeduncular scales	16		16
Gill rakers on right first arch	5+20=25		6–7+19–20=25–27
Supraneural bones	3		3
Vertebrae (abdominal+caudal)	11+15=26		11+15=26



Fig. 3. *Chromis onumai* sp. nov., NSMT-P 73060, paratype, 56.8 mm SL, Izu-oshima Island, Izu Islands. Photographed by T. Kudo.



Fig. 4. *Chromis onumai* sp. nov., Izu-oshima Island, Izu Islands, 51 m depth. Photographed (KPM-NR 89367) by T. Kudo.

Lecchini and Williams, 2004). Of these, the new species is distinguished from all but 2 species (*Chromis albomaculata* Kamohara, 1960, from Japan and *Chromis verater* Jordan and Metz, 1912, from the Hawaiian Islands; see Randall *et al.*, 1981, about the data for the former, and Randall and Swerdloff, 1973 for the latter) by the following combination of characters: dorsal rays XIV, 12–13; anal rays II, 12–13; pectoral rays 19–20; spiniform dorsal and ventral procurrent rays 3 in each; tubed lateral line scales 16–17; gill rakers 5–7+19–20=25–27. From *C. albomaculata*, the new species is easily distinguished by its distinctive color pattern: 3 white spots pos-

teriorly on its body and fins and dark stripes on caudal fin (no prominent markings, but a center of each scale on the lateral side of body paler than edge, forming 13 longitudinal rows of pale spots in *C. albomaculata*). Furthermore, in the adult over 100 mm SL, both species are different in diameter of orbit (10.5–11.3% SL in the new vs. 8.7–9.5 in *C. albomaculata*) and a degree of incision of each membrane in spinous dorsal fin (relatively deep in the new vs. shallow, scarcely incised posteriorly).

The new species and *C. verater* not only share the above meristic characters except for the number of gill rakers (7–9+20–24 in *C. verater* vs. 5–7+19–20 in *C. onumai*), but also 3 white spots posteriorly on its body and fins. However, at least in an adult stage, the new species can be distinguished from *C. verater* by having incised membranes of spinous dorsal fin (scarcely incised posteriorly in *C. verater*) and deeply forked caudal fin (caudal concavity 15.2–21.8% SL in the new vs. 10–14% in *C. verater*). The juvenile of *C. verater* is more similar than the adult to the new species (see an underwater photograph showed by Randall, 1996: 118), but it differs from the new species in having a dark edge of spinous dorsal fin and no stripes on caudal fin lobes.

In the coloration, the new species is also very similar to *Chromis trialpha* described by Allen and Randall (1980) from the Red Sea. However, it is quite different from the new species in having 12 dorsal fin spines (14 spines in the new) and 2 spiniform procurrent rays (3).

**Etymology.** *Chromis onumai* is named in honor of Hisashi Onuma, who was the first to discover the species.

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